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2026 AJBS-Palgrave Macmillan Best Paper Award

The Best Paper Award Committee has meticulously conducted a blind review and evaluation of papers that received the highest ratings or were recommended by reviewers as the Best Paper. The committee members considered the following criteria for the shortlisted papers selected from all submissions.

- a. Does the paper show basic academic quality?*
- b. Does the paper give insights from Japan that apply to wider theory?*
- c. Can we better understand what is distinctive about Japanese firms?*

After undergoing a rigorous selection process, we are pleased to announce the **Best Paper Award** and Finalists. These papers represent outstanding contributions to Japanese business studies and have demonstrated exceptional scholarship, creativity, and impact. The following papers were awarded the honor of being presented in a dedicated AJBS session (Session 3.4.15) at the 2026 AIB Annual Meeting in Manchester.

Winner

[AJBS-039] Layered Co-Learning with Agentic AI: Reconfiguring Tacit Knowledge Transfer in a Japanese Industrial Conglomerate

Natsumi Takahashi (Japan Advanced Institute of Science and Technology, Japan)

Indranil Bhattacharjee (Birla Institute of Technology and Science, India)

Finalists

[AJBS-012] Voice Norms in Context: How Cultural Values Influence Team Voice Norms on Employee Behavior in Japan

Ranxin Liao (Hitotsubashi University, Japan)

Xiji Zhu (Hitotsubashi University, Japan)

Ran Li (Beijing Normal University, China)

[AJBS-023] Building and Utilizing HR Department's Social Capital with Line Managers for Effective HRM Implementation: Evidence from Japanese Firms

Shuichi Moritani (Kwansei Gakuin University, Japan)

Arjan Keizer (Alliance Manchester Business School, University of Manchester, United Kingdom)

DETAILED PROGRAM

 COMPETITIVE	Session ID: 1.1
	Format: Competitive Session
	Session Title: Human Resource Management
	Session Chair: Naoki Ando (Hosei University, Japan)
[AJBS-019] A Hybrid Longitudinal Analysis of Subsidiary General Manager Staffing: Evidence from 30 Years of Japanese MNEs <i>Jong Min Lee (Yonsei University, Korea, South)</i> <i>Liang (Arthur) Li (Toronto Metropolitan University, Canada)</i> <i>Andreas P.J. Schotter (Western University & WU Vienna, Canada)</i> <i>Shige Makino (Kyoto University, Japan)</i>	
[AJBS-006] Home and Work Alone: Skilled Migrants' Loneliness in Japan <i>Vesa Peltokorpi (Hiroshima University, Japan)</i>	
[AJBS-012] Voice Norms in Context: How Cultural Values Influence Team Voice Norms on Employee Behavior in Japan <i>Ranxin Liao (Hitotsubashi University, Japan)</i> <i>Xiji Zhu (Hitotsubashi University, Japan)</i> <i>Ran Li (Beijing Normal University, China)</i>	
	

 COMPETITIVE	Session ID: 1.2
	Format: Competitive Session
	Session Title: Organizational Behavior and Decision-Making
	Session Chair: Takashi Sakikawa (Chuo University, Japan)
[AJBS-013] Achieving optimal Distinctiveness Under the Condition of Dual Embeddedness: How Japanese CPA-Led Firms in Thailand Balance Differentiation and Homogenization in the Market and Profession <i>Nobuko Nishiwaki (Nihon University College of Economics, Japan)</i> <i>Junnosuke Kurachi (BizWings, Thailand)</i>	
[AJBS-004] Entrepreneurs' Religiousness as a Control Mechanism in reducing Moral Disengagement and Unethical Decision Making: A Multi Country Study <i>Saddam Khalid (University of Hyogo, Japan)</i> <i>Hassan Imam (Roehampton Business School, United Kingdom)</i> <i>Alexis Sandes (Kyoto University, Japan)</i> <i>Tomoki Sekiguchi (Kyoto University, Japan)</i> <i>Jie Li (Xi'an Jiaotong-Liverpool University, China)</i> <i>Shehnaz Tehseen (Sunway University, Malaysia)</i> <i>Adriana Bonomo-Odizzio (Universidad Católica de Uruguay, Uruguay)</i> <i>Catherine Krauss-Delorme (Universidad Católica de Uruguay, Uruguay)</i>	

Margie Faith (*Tecnológico de Costa Rica, Costa Rica*)
 Leslie Bridshaw Araya (*Universidad de Valparaíso, Chile*)
 Lizbeth González Tamay (*Universidad de Monterrey, Mexico*)
 Mónica Blanco-Jiménez (*Universidad Autónoma de Nuevo León, Mexico*)
 Carolina Ortiz Riaga (*Universidad Militar Nueva Granada, Colombia*)

[AJBS-055] Organizational Decision-Making as Inference Under Top-Down and Japanese Consensus-Based Decision Architectures

K. Skylar Powell (Western Washington University, USA)

	Session ID:	1.3
	Format:	Panel Session
	Session Title:	Rethinking Global Mobility in Asia: Gender, Digitalization, and the Future of International Knowledge Work
	Session Chair:	Hina Mehreen (Adelaide University, Australia)

[AJBS-056] Rethinking Global Mobility in Asia: Gender, Digitalization, and the Future of International Knowledge Work
Hina Mehreen (Adelaide University, Australia)
Tomoki Sekiguchi (Kyoto University, Japan)

	Session ID:	1.4
	Format:	Interactive Session
	Session Title:	Internationalization, Global Strategy, and Cross-Border Business Dynamics
	Session Chair:	Chie Iguchi (Keio University, Japan)

[AJBS-046] Digital Transformation and Green Economy Readiness: Unveiling the underlying Motives of Japanese MNE Digital and Green Economy Sector Investment Intent
H Richard Nakamura (University of Gothenburg, Sweden)
Patrik Ström (Stockholm School of Economics, Sweden)
Åsa Malmström Rognes (Stockholm School of Economics, Sweden)

[AJBS-028] Zen, Wabi-Sabi, and Beyond: What Drives Voluntary Simplicity in Contemporary Markets?
Peeraya Aimimtham (Thammasat Business School, Thammasat University, Thailand)
Sukrit Vinayavekhin (Thammasat Business School, Thammasat University, Thailand)
Kedwadee Sombultawee (Thammasat Business School, Thammasat University, Thailand)
Mariko Watanabe (Tokyo University of Science, Japan)
Akitsu Oe (Tokyo University of Science, Japan)
Sakun Boon-it (Thammasat Business School, Thammasat University, Thailand)

[AJBS-041] The Internationalization of Emerging Market Multinationals in Advanced Economies: Comparative Case Studies of Thai Hospitality Multinationals in Japan
Rapeeporn Rungsithong (Chulalongkorn Business School, Chulalongkorn University, Thailand)
Akiko Sato (Kyushu University Business School, Kyushu University, Japan)

[AJBS-049] Corporate Participation in Standard-Setting Organizations: A Review and Agenda for Performance Effects
Yukako Sugiura (Tokyo University of Science, Japan)
Mariko Watanabe (Tokyo University of Science, Japan)

 COMPETITIVE	Session ID: 2.1 Format: Competitive Session Session Title: Staffing, Institutions, and Talent Management in MNE Session Chair: Tamiko Kasahara (Waseda University, Japan)
	[AJBS-011] Japanese Firms' Human Capital Strategies in Middle-Income ASEAN Economies: Education, Institutional Constraints, and Long-Term Competitiveness <i>Masatoshi Hara (Business Breakthrough University, Japan)</i> [AJBS-016] Paradoxical gains and losses in boundary spanning: Locally hired parent country nationals in emerging market multinational corporations <i>Xin Lu (Hiroshima University, Japan)</i> <i>Vesa Peltokorpi (Hiroshima University, Japan)</i> [AJBS-001] Strategic Ambiguity and Talent Signals in Global Talent Management: Insights from U.S. and Asian Multinationals <i>Tamiko Kasahara (Waseda University, Japan)</i> [AJBS-009] Intraregional Institutional Diversity and the Staffing of Foreign Subsidiaries <i>Naoki Ando (Hosei University, Japan)</i> [AJBS-023] Building and Utilizing HR department'S Social Capital with Line Managers for Effective HRM Implementation: Evidence from Japanese Firms <i>Shuichi Moritani (Kwansei Gakuin University, Japan)</i> <i>Arjan Keizer (Alliance Manchester Business School, University of Manchester, United Kingdom)</i> 
 COMPETITIVE	Session ID: 2.2 Format: Competitive Session Session Title: Strategy, Innovation, and Firm Behavior in International Business Session Chair: Kiyohiko Ito (University of Hawai'i at Manoa, USA)
	[AJBS-051] How Market-Level Knowledge Diversity Shapes Innovation: Market Entry in the Japanese Chemical Industry <i>Ryota Hamasaki (Tokyo University of Science, Japan)</i> <i>Akitsuo Oe (Tokyo University of Science, Japan)</i> [AJBS-032] Strategic ESG Signaling by Japanese Firms: The Timing and Consequences of Green Patenting in Europe <i>Shuhei Chiba (Tokyo University of Science, Japan)</i> <i>Akitsuo Oe (Tokyo University of Science, Japan)</i> <i>Sukrit Vinayavekhin (Thammasat Business School, Thammasat University, Thailand)</i> <i>Mariko Watanabe (Tokyo University of Science, Japan)</i> [AJBS-045] The Cultural Configuration of the MNE Subsidiary and its Change Trajectory: The Cases of UK-Based Japanese Companies <i>Takashi Sakikawa (Chuo University, Japan)</i> <i>Anh Hoang (Cardiff Business School, Viet Nam)</i>

[AJBS-043] University-Based Entrepreneurial Innovation: Comparing Academic Innovation Systems in Sweden and Japan

Emilene Leite (University of Vaasa, Finland)
Mariko Nakagawa (Sophia University, Japan)
Agata Kapturkiewicz (Sophia University, Japan)
Genjiro Kosaka (Waseda University, Japan)

[AJBS-025] Innovative Capability and the Choice of Full versus Partial Ownership in Cross-Border Acquisitions: Evidence from Japan

Niyata Kawewong (Chiang Mai University Business School, Thailand)
Piman Limpaphayom (Portland State University; Sasin School of Management of Chulalongkorn University, United States of America)
Napitiporn Manoli (Chiang Mai University Business School, Thailand)
Natdanai Homkong (Big Data Agency Co., Ltd., Thailand)



Session ID: 2.3

Format: **Panel Session**

Session Title: Navigating Contradictions and Catalyzing Change: Leadership, Legacy, and Economic Institutions in Japan

Session Chair: Minoru Shimamoto (Hitotsubashi University, Japan)

[AJBS-017] Navigating Contradictions and Catalyzing Change: Leadership, Legacy, and Economic Institutions in Japan

Minoru Shimamoto (Hitotsubashi University, Japan)
Xiji Zhu (Hitotsubashi University, Japan)
Sanghoon Cho (Hitotsubashi University, Japan)
Miduki Miyatake (Hitotsubashi University, Japan)
Yeqin Yu (Hitotsubashi University, Japan)
Yiming Xu (Hitotsubashi University, Japan)
Luqing Qi (Hitotsubashi University, Japan)
Jiacheng Cai (Hitotsubashi University, Japan)



Session ID: 2.4

Format: **Interactive Session**

Session Title: Global Strategy, Institutions, and Industry Dynamics

Session Chair: James Hagen (Hamline School of Business, USA)

[AJBS-036] The Process of Human Resource Localization in Japanese Overseas Subsidiaries: The Role of Headquarters-Led International Human Resource Management Practices

Shiho Nakamura (Ritsumeikan University, Japan)

[AJBS-040] From Activation to Value Capture: How Governance Structures Shape Alumni Network Dynamics and Post-Separation Value Creation

Tatsuyuki Takahashi (Chuo University, Japan)
Tomonori Inukai (Chuo University, Japan)

[AJBS-057] Japanese Intellectual Property Rights and the Growth of Asian Home Appliance Firms
Masashi Arai (Asia University, Japan)

[AJBS-030] Sociocultural Challenges to Sustainable Immigrant Entrepreneurship in Japan
Kiril Ivanov (Media University, Germany)
Akitsuo Oe (Tokyo University of Science, Japan)

[AJBS-047] Career Self-Management and Career Optimism Among Women in STEM: The Moderating Role of Paternalistic Leadership
Zhuo Zhang (Ritsumeikan University, Japan)
Jie Li (Xi'an Jiaotong-Liverpool University, China)

[AJBS-010] Restructuring in Container Shipping Alliances - Evidence from ONE After Hapag-Lloyd's Withdrawal -
Ryo Nakajima (Keio University, Japan)
Satoka Oka (Keio University, Japan)
Soushi Iijima (Keio University, Japan)

 INTERACTIVE	Session ID: 2.5
	Format: Interactive Session
	Session Title: Sustainability, CSR, and Social Responsibility
	Session Chair: K. Skylar Powell (Western Washington University, USA)
[AJBS-022] Employee Volunteering as Corporate Social Responsibility in Japanese Companies: Its Relationship with Meaningful Work <i>Junko Araki (Meiji University, Japan)</i>	
[AJBS-053] Internationalization Cases of Local SMEs in Saitama Prefecture, Japan <i>Kazuhiro Akitomo (Hosei University, Japan)</i> <i>Yukio Takagaki (Surugadai University, Japan)</i>	
[AJBS-054] When Green Goes Political: ESG Controversies, Lobbying and Ownership in Global Energy Firms <i>Lev Shalev (University of Reading, United Kingdom)</i> <i>Irina Heim (University of Reading, United Kingdom)</i> <i>Yelena Kalyuzhnova (University of Reading, United Kingdom)</i>	
[AJBS-029] Servitization's Profit Effects in Japan: Does Service Revenue Heterogeneity Matter? <i>Takayuki Suzuki (Kyoto University of Advanced Science, Japan)</i> <i>Kiminori Gemba (Hosei University, Japan)</i>	
[AJBS-050] Re-Exit Among Immediate-Contributor Hires: A Temporal Process Model of Post-Entry Turnover Decision Making <i>Mikiko Inoue (University of Tsukuba, Japan)</i>	

	Session ID:	3.1
	Format:	Competitive Session
	Session Title:	International Business and MNE
	Session Chair:	H. Richard Nakamura (University of Gothenburg, Sweden)
[AJBS-033] The Impact of Faltering Free Trade Agreements on Foreign Direct Investment Flows from Major East Asian Investor Economies to TPP and RCEP Members <i>Yiping Lien (Tottori University of Environmental Studies/ Faculty of Business Administration, Japan)</i>		
[AJBS-042] Rethinking the Determinants of Reverse Knowledge Transfer in Overseas Subsidiaries of Japanese Multinational Enterprises - From the perspective of embeddedness mechanisms - <i>Jiacheng Liu (Keio University, Japan)</i>		
[AJBS-052] How Internationalization Shapes Voluntary Sustainability Disclosure of Japanese Firms: An Empirical Study <i>Suoling Suoling (Ritsumeikan University, Japan)</i> <i>Mengqi Zhu (Tohoku University, Japan)</i>		
[AJBS-038] Dynamic OLI Cycle in International Business: Case Analysis of Retail Business and Fast-food Business <i>Yukio Takagaki (Surugadai University, Japan)</i>		

	Session ID:	3.2
	Format:	Competitive Session
	Session Title:	Knowledge, Communication, and Organizational Processes in International Contexts
	Session Chair:	Mario Henrique Ogasavara (ESPM, Brazil)
[AJBS-037] Beyond Support: A Conceptual Framework of Expatriate–HCN Boundary-Spanning Roles <i>Keisuke Ujike (Monash University, Japan)</i> <i>Ivan Destian Butar Butar (Monash University, Indonesia)</i>		
[AJBS-014] Exploring the Use of Energy-related Metaphors: A Comparison of UK and Japanese Broadsheet and Regional Newspapers <i>Elise François (KEDGE Business School, France)</i> <i>Ralf Barkemeyer (KEDGE Business School, France)</i>		
[AJBS-048] A Usage Ecology of Workplace English: BELF Communication, Corporate Monolingualism, and AI-Mediated Language Use <i>Saeko Ujiie (SBF Consulting LLC, Japan)</i>		
[AJBS-039] Layered Co-Learning with Agentic AI: Reconfiguring Tacit Knowledge Transfer in a Japanese Industrial Conglomerate <i>Natsumi Takahashi (Japan Advanced Institute of Science and Technology, Japan)</i> <i>Indranil Bhattacharjee (Birla Institute of Technology and Science, India)</i>		



	Session ID: 3.3 Competitive Session Format: Special Joint Session with the Japan Association for Management Information Systems (JASMIN) Session Title: Operations Management and Strategy in the Era of Technological Revolution in Japan Session Chair: Yusuke Goto (Shibaura Institute of Technology, Japan)
[AJBS-063] Addressing the Logistics "2024 Problem" through Advanced Weight-in-Motion Systems: Deep Learning-Based Axle-Weight Estimation and its Practical Application in Japan <i>Yucheng Shang (Shibaura Institute of Technology, Japan)</i> <i>Yusuke Goto (Shibaura Institute of Technology, Japan)</i> [AJBS-064] Modeling Entrepreneurial Decision-Making Dynamics Based on Effectuation and Causation Toward Strategic Hypotheses for the Japanese Entrepreneurial Environment <i>Rokko Saito (Waseda University, Japan)</i> <i>Shingo Takahashi (Waseda University, Japan)</i> [AJBS-065] An Operational Study of Local SNS as Intermediate Communities: Trust Formation and Echo Chamber Steering <i>Hiroyasu Yuhashi (Shizuoka University, Japan)</i> <i>Yoshimasa Ohmoto (Shizuoka University, Japan)</i> <i>Junya Morita (Shizuoka University, Japan)</i> <i>Ryo Yuhashi (Shizuoka University, Japan)</i>	
	Session ID: 3.4 Competitive Session Format: Special Joint Session with the Japan Academic Society for Ventures and Entrepreneurs (JASVE) Session Title: Japanese Venture Research from Diverse Perspectives Session Chair: Tomoki Sekiguchi (Kyoto University, Japan)
[AJBS-062] From Feedback to Action: How Entrepreneurs Recall and Reconstruct Feedback in Business Planning <i>Hiroko Nakajima (Graduate School of Management, Kyoto University, Japan)</i> <i>Tomoki Sekiguchi (Kyoto University, Japan)</i> [AJBS-059] Broadening the Base of Entrepreneurial Intention: Evidence from a Cross-University Entrepreneurship Education Programme in Japan <i>Shuichi Murakawa (Fujita Health University, Japan)</i> <i>Junko Ishiguro (Toyo Gakuen University, Japan)</i> [AJBS-060] Sense of Belonging, Work Engagement, and Growth Expectations among SME Owner-Managers in Japan: Evidence from Two-Wave Panel Data <i>Satoshi Yamamoto (TOYO University, Japan)</i>	

**[AJBS-061] “Effects of Government Subsidies on Entrepreneurial Firm Performance” -Testing
Moderating Effects of Subsidies on Entrepreneurial Effectuation and Causation Behaviors-**

Nobuhiko Hibara (Waseda Business School, Japan)

Atsushi Nagashima (Waseda University, Japan)

A Hybrid Longitudinal Analysis of Subsidiary General Manager Staffing: Evidence from 30 Years of Japanese MNEs

Jong Min Lee (Yonsei University, Korea, South)

Liang (Arthur) Li (Toronto Metropolitan University, Canada)

Andreas P.J. Schotter (Western University & WU Vienna, Canada)

Shige Makino (Kyoto University, Japan)

ABSTRACT

Multinational enterprises (MNEs) frequently appoint parent-country nationals (PCNs) as subsidiary general managers (GMs) to transfer and safeguard firm-specific advantages. Although prior studies associate higher R&D intensity with greater PCN use, these findings rely primarily on between-firm comparisons and overlook how firms adjust staffing as their own knowledge profiles evolve. There is also limited evidence on how international R&D experience shapes staffing and on the GM's role as a boundary-spanning knowledge orchestrator. Integrating transaction cost economics with a dynamic, evolutionary perspective, we argue that rising R&D intensity increases reliance on PCN GMs, whereas accumulated international R&D experience reduces it by enabling firms to substitute organizational routines for PCN-based governance. Using a hybrid longitudinal model on a 30-year panel of 549 Japanese manufacturing MNEs in 47 countries, we find that GM staffing responds to within-firm changes, while between-firm effects disappear once dynamic endogeneity is addressed. These findings reframe subsidiary GM staffing as a dynamic internal governance choice shaped by evolving innovation and global learning.

Keyword: Human Resource Management, Management, Strategy, Subsidiary General Managers, Staffing Strategies, Transaction Cost Economics, Value Maximization, R&D Intensity, International R&D Experience

Home and Work Alone: Skilled Migrants' Loneliness in Japan

Vesa Peltokorpi (Hiroshima University, Japan)

ABSTRACT

While loneliness affects all individuals, migrants are particularly vulnerable due to the loss of established social relationships in their home countries and the challenges of forming new ones in host countries. This paper examines the causes and consequences of loneliness among skilled migrants in Japan, a country with a low proportion of foreign residents and a growing demand for skilled foreign labor. The findings of narrative interviews with 160 skilled migrants suggest that social rigidity, characterized by cultural and linguistic uniformity, and social categorization contributed to host country national-initiated and self-initiated social isolation, which intensified skilled migrants' loneliness. These feelings of loneliness eroded their sense of belongingness in the host country. This paper contributes to the literature by (1) examining work-related loneliness among skilled migrants and showing that host country national-initiated and self-initiated social isolation contribute to loneliness in work- and non-work domains; (2) advancing belongingness theory by showing how structural and societal factors shape loneliness through skilled migrants' ability to develop and sustain social relationships with host country nationals; and (3) that local language proficiency alone does not ensure acceptance or social integration in countries with low migrant populations.

Keyword: Organizational Behavior, Management, Human Resource Management, Loneliness

Voice Norms in Context: How Cultural Values Influence Team Voice Norms on Employee Behavior in Japan

Ranxin Liao (Hitotsubashi University, Japan)

Xiji Zhu (Hitotsubashi University, Japan)

Ran Li (Beijing Normal University, China)

ABSTRACT

Drawing on social influence theory and role congruity theory, this study examines how team promotive and prohibitive voice norms influence employee voice behavior through norm acceptance, and these were moderated by gender, parenthood, and their intersection. Using three-wave survey data from 592 Japanese employees, this study found that both team voice norms positively related to corresponding voice behaviors, but only promotive voice norms operated through norm acceptance. The indirect effect of promotive voice path via norm acceptance was stronger for males than females, and stronger for employees with children than those without children. A three-way interaction revealed this indirect effect was significant only for fathers. These findings extend voice research by demonstrating that promotive and prohibitive voice norms may operate through different mechanisms, and that the effectiveness of the former varies across different gender and parental status groups. Our findings suggest Japanese enterprises that voice management practices should account for strong team norm influences and traditional gender role expectations prevalent in Japan.

Keyword: Promotive And Prohibitive Voice, Voice Norms, Norm Acceptance, Gender, Parenthood, Intersectionality

INTRODUCTION

Employee voice, the discretionary communication of ideas, suggestions, and concerns, represents a fundamental challenge for organizations worldwide, yet one whose dynamics are deeply embedded in local social contexts (Morrison, 2011, 2014). Recognizing that voice serves different functions and carries different interpersonal risks, Liang et al. (2012) distinguished between promotive voice (expressing suggestions for improving procedures and practices) and prohibitive voice (pointing out harmful practices and problems). Conceptually, promotive voice is driven by a promotion focus on achieving positive outcomes and ideal states, whereas prohibitive voice is driven by a prevention focus on avoiding negative outcomes and maintaining standards (Liang et al., 2012; Lin & Johnson, 2015). Empirically, research has demonstrated that these two types of voice have distinct antecedents—including different regulatory foci (Lin & Johnson, 2015), dispositional orientations (Kakkar et al., 2016), and leader behaviors (Wei et al., 2015)—and distinct consequences, including different effects on ego depletion (Lin & Johnson, 2015), leader emergence (McClellan et al., 2018), job performance (Chamberlin et al., 2017), and team productivity (Li et al., 2017).

Despite substantial progress in understanding individual-level antecedents and consequences of promotive and prohibitive voice, research examining how employees' voice behavior is influenced by others within their teams remains limited. As fundamentally social beings, employees' behaviors are inevitably shaped by those around them, particularly their team members (Chen & Treviño, 2022; Lam et al., 2024; Lin et al., 2025). This social influence may be particularly pronounced in Japan characterized by high collectivism, where group harmony and conformity to social norms carry greater weight in shaping individual behavior (Hofstede, 2001). Recent research has begun to recognize this social dimension, revealing that employees react to observing coworkers' voice (Chen & Treviño, 2022; Lin et al., 2025), respond differently when they are recipients of coworker voice (Liu et al., 2022; Zhou et al., 2024), adjust their own voice based on how leaders respond to colleagues' voice attempts (Snoep-Delleman et al., 2025), and are influenced by team members' voice behaviors (Lam et al., 2024). These studies have primarily explained such social influences through mechanisms such as vicarious learning, emotional contagion, and social exchange dynamics. However, when employees

perceive voice behavior as a team norm, how they are influenced by the norm, which subsequently affects their voice behavior still remains unexplored. Understanding this gap is consequential because team norms represent one of the most powerful forms of social influence in organizations (Cialdini & Trost, 1998).

Furthermore, most of the studies treat employees as homogeneous in their responses to team norms, neglecting the role of social identities in affecting norm acceptance. However, social influence theory recognizes that individuals' susceptibility to normative influence varies based on their social roles and the role expectations associated with these roles (Cialdini & Goldstein, 2004; Deutsch & Gerard, 1955; Eagly & Wood, 2012). The strength of these role-based influences may be salient in Japan where role differentiation and conformity to role expectations are more pronounced. Gender and parenthood represent two particularly influential social roles because they create distinct or even competing expectations that employees must navigate in accepting workplace behavioral norms (Abele & Spurk, 2011; Bria et al., 2026; Eagly & Karau, 2002). When these social roles intersect, they may create qualitatively distinct patterns of role congruity that alter how employees accept and respond to team voice norms.

Integrating social influence theory and role congruity theory, this study addresses these gaps by examining how team promotive and prohibitive voice norms influence individual promotive and prohibitive voice behavior separately through norm acceptance, and how this relationship varies across employees with different gender and parenthood statuses. Understanding voice dynamics in Japan, where similar patterns of strong team norms and pronounced gender role expectations are prevalent, has important practical implications for Japanese enterprises.

Social influence theory suggests that norms influence individual behaviors through three mechanisms—informational influence (signaling effectiveness), normative influence (creating conformity pressure), and referent informational influence (maintaining positive self-concept through defining team member identity) (Bamberger & Biron, 2007; Cialdini & Trost, 1998). Furthermore, social influence theory emphasizes that lasting behavioral change requires not mere compliance with external pressures but genuine acceptance of group standards as personally meaningful and

appropriate (Kelman, 2006). This is a process through which individuals internalize norms as congruent with their own values and beliefs. Drawing on social influence theory, this study proposes that team voice norms are positively related to employee voice behaviors, and norm acceptance (i.e., compliance with team norms and rules; Bai et al., 2020; Jackson et al., 2006) mediates these positive relationships. Taking into account the higher interpersonal risks of prohibitive voice (Liang et al., 2012), this study argues that the indirect effects through norm acceptance should be stronger in promotive voice contexts than in prohibitive voice contexts.

Integrating role congruity theory, suggesting that individuals experience favorable outcomes when their characteristics and behaviors align with the expectations associated with their social roles (Eagly & Karau, 2002), this study further proposes that gender and parenthood moderate the norm acceptance process separately. Gender creates differential role congruity for voice behavior, as voice aligns more closely with masculine than feminine role expectations. Also, parenthood introduces salient family roles that enhance work centrality and commitment, as parents view workplace success as instrumental to fulfilling family obligations. Therefore, this study proposes that the relationships between team voice norms and voice behaviors via norm acceptance are stronger for males than females, and for employees with children than those without children. Adopting an intersectionality lens, this study proposes that gender and parenthood jointly moderate the indirect effects.

Intersectionality theory posits that multiple social identities do not simply add together but create compound effects (Crenshaw, 1989, 1997). This study argues that parenthood introduces salient family roles that shape work centrality differently for men (breadwinner identity enhancing workplace engagement) versus women (caregiver identity creating work-family conflict). Thus, the indirect effects are the strongest for fathers while the weakest for mothers.

This research makes three theoretical contributions. First, this study extends voice literature by introducing social influence theory as a fundamental lens for understanding how perceived team voice norms promote individual voice behavior. While recent research has begun to examine how employees are influenced by others in their teams (Chen & Treviño, 2022; Liu et al., 2022; Lam et al., 2024; Snoep-Delleman et al., 2025), voice research has not yet applied social influence theory to understand

how perceived team voice norms shape individual behavior. This study theorizes that perceived team voice norms serve as critical antecedents that influence employee voice behavior through norm acceptance. This study contributes to voice literature by introducing this theoretical lens and identifying norm acceptance as a novel mechanism.

Second, this study integrates role congruity theory and intersectionality theory into voice research by theorizing how gender and parenthood independently and jointly moderate the relationship between team voice norms and individual voice. While prior research has examined gender as an important boundary condition for the effects on voice behavior (Ng & Feldman, 2015; Taiyi Yan et al., 2022), no research has examined the roles of parenthood and their intersection in the process of affecting voice. This study theorizes that women demonstrate weaker norm acceptance than men due to role incongruity between voice behavior and feminine role expectations, while parenthood with a salient work role may generally enhance acceptance of team voice norms. However, when gender and parenthood intersect, they create compound rather than additive effects. Fathers, as breadwinners, display the strongest while mothers, as caregivers, display the weakest norm acceptance. This study contributes to voice literature by revealing that employees' acceptance of team voice norms is shaped not only by single identity-based role congruity but critically by how multiple role congruities interact when gender and parenthood intersect.

Third, this study advances voice research by examining how the established distinction between promotive and prohibitive voice manifests at the perceived team norm level through norm acceptance. Extensive research has demonstrated that promotive and prohibitive voice differ in their antecedents and consequences (Chamberlin et al., 2017; Kakkar et al., 2016; Lam et al., 2024; Lin & Johnson, 2015; McClean et al., 2018). However, research has not examined the differences of the social influence mechanism. This study contributes to voice literature by revealing that promotive voice norms more effectively promote norm acceptance than prohibitive voice norms, demonstrating that different types of voice norms operate through the same mechanism but with varying effectiveness in promoting individual voice behavior.

THEORETICAL BACKGROUND

Team Voice Norm

Social norms refer to “rules and standards that are understood by members of a group, and that guide and/or constrain social behavior without the force of law” (Cialdini & Trost, 1998: 152). In organizational settings, team norms represent “guidelines for acceptable and unacceptable behavior that develop through interactions among group members and are informally agreed on by group members” (Ehrhart & Naumann, 2004: 961). Organizational researchers have demonstrated that norms can develop around various behaviors, including organizational citizenship behavior (Ehrhart & Naumann, 2004), helping behavior (Raver et al., 2012), and drinking behavior (Wang et al., 2010). These norms serve as informal but powerful behavioral guides, shaping team members’ understanding of “how we do things here.” Building on this foundation, this study proposes that team voice norm represents the shared perception among team members regarding the typical frequency and acceptability of voice behavior within their team.

Recently, researchers have paid increasing attention to how employees observe and respond to coworkers’ voice behavior. Research has revealed that observing coworkers’ voice can have both positive effects such as inspiration and emotions-elevation and negative effects such as threat and distress (Chen & Treviño, 2022; Lin et al., 2025). Additionally, Ng et al. (2022) revealed that when voice quality is low, coworkers may respond with ostracism, highlighting potential relational costs of poor voice quality. Beyond mere observers, Zhou et al. (2024) have examined how employees respond when they are direct recipients of coworker voice, by finding that constructive (destructive) coworker voice leads to recipients’ adaptive (maladaptive) reactions. Besides, Lam et al. (2024) examined how team voice influences individual voice behavior. Drawing on social facilitation and social loafing theories, they found that team mean promotive voice combined with high similarity stimulates individual promotive voice through the belief that promotive voice is worthy. However, they found the opposite pattern for prohibitive voice, that team consensus in prohibitive voice actually inhibits individual prohibitive voice. These efforts initially demonstrate that team voice behavior patterns can influence individual voice.

Despite these important advances, prior research examining how team members influence

individual voice has predominantly focused on psychological mechanisms such as emotional contagion (Chen & Treviño, 2022), vicarious learning (Snoep-Delleman et al., 2025), and motivational beliefs about voice worthiness (Lam et al., 2024). However, these studies have not examined voice behavior through the lens of social influence theory. Unlike emotional reactions or efficacy beliefs, these social influence mechanisms operate through individuals' genuine acceptance and internalization of voice as appropriate and valuable behavior based on perceived team norms. Furthermore, while Lam et al. (2024) used aggregated leader-rate employee voice behavior as team voice, the current study focuses on individual employees' perceptions of team voice norms, which may be more proximal predictors of their own voice behavior. Therefore, understanding how perceived team voice norms influence individual voice through social influence mechanisms, particularly norm acceptance, remains an important gap in voice research.

Promotive and Prohibitive Voice

This study further distinguishes between two distinct forms of voice behavior: promotive voice and prohibitive voice (Liang et al., 2012). This distinction reflects fundamental differences in their nature and interpersonal implications. Promotive voice, which involves expressing suggestions or ideas for improving current procedures and practices, is inherently constructive and improvement-oriented, focusing on positive contributions to organizational functioning (Liang et al., 2012). In contrast, prohibitive voice, which involves pointing out harmful practices and challenging dysfunctional procedures, is inherently critical and problem-focused, emphasizing the identification and prevention of potential harm (Liang et al., 2012).

Research has demonstrated that these fundamental differences manifest in distinct consequences. Promotive voice tends to generate positive outcomes such as social status while reducing psychological costs such as ego depletion (Lin & Johnson, 2015; McClean et al., 2018). The constructive and future-oriented nature of promotive voice aligns with individuals' desires to be seen as positive contributors to their organizations. In contrast, prohibitive voice, despite its constructive intent, carries greater interpersonal risks and psychological costs (Heydarifard & Krasikova, 2023). Because prohibitive voice inherently involves challenging the status quo and potentially criticizing

existing practices or others' work, it creates interpersonal friction and increases psychological depletion even when it is well-intentioned and organizationally beneficial (Heydarifard & Krasikova, 2023; Lin & Johnson, 2015; Wei et al., 2015). This critical stance may conflict with employees' desires to maintain harmonious relationships and avoid creating friction in the workplace. Given these fundamental differences, this study examines promotive and prohibitive voice norms separately to capture their differential effectiveness in promoting individual voice behavior.

Social Influence Theory

Social influence theory provides a comprehensive framework for understanding how individuals' attitudes, beliefs, and behaviors are shaped by the social context in which they are embedded (Cialdini & Goldstein, 2004; Deutsch & Gerard, 1955). At its core, social influence theory posits that people are fundamentally responsive to what others around them think, say, and do, and that this responsiveness operates through multiple psychological pathways. Recent organizational research has demonstrated the pervasive role of social influence processes across diverse contexts, including leadership transitions (Yi et al., 2020), corporate social responsibility perceptions (Vlachos et al., 2017), and entrepreneurial opportunity processes (McAllister et al., 2018).

Social influence theory distinguishes between three primary pathways through which social contexts shape individual responses: informational influence, normative influence, and referent informational influence (Bamberger & Biron, 2007; Cialdini & Trost, 1998; Deutsch & Gerard, 1955). Informational influence occurs when individuals conform to group standards because they believe the group possesses accurate information about reality or appropriate behavior—when uncertain about how to behave or what to believe, people look to others as sources of valid information, assuming that the consensus of the group reflects objective truth or effectiveness (Cialdini & Goldstein, 2004). Normative influence occurs when individuals conform to gain social approval, maintain positive relationships, or avoid social sanctions, regardless of their private beliefs about the validity of the behavior, reflecting the fundamental human need for social acceptance and the desire to avoid the costs of deviance from group standards (Deutsch & Gerard, 1955; Cialdini & Trost, 1998). Referent informational influence, grounded in social identity and self-categorization theory, recognizes that

group norms can influence behavior not simply because they provide information about reality or create conformity pressure, but because they define who we are as group members (Abrams & Hogg, 1990; Tajfel & Turner, 1986; Turner et al., 1989). When a particular reference group is central to one's identity, individuals internalize group norms as their own, aiming to maintain internal-external compatibility and construct a positive self-image as a valued group member.

HYPOTHESES DEVELOPMENT

Team Voice Norm and Employee Voice Behavior

Applying social influence theory, this study proposes that team voice norms influence individual voice behavior through three mechanisms: informational influence, normative influence, and referent informational influence. First, when team members perceive that voice behavior is frequent and typical in their team, this provides credible informational cues that “speaking up is effective here” (Cialdini & Goldstein, 2004; Deutsch & Gerard, 1955). Strong team voice norms signal that voice leads to positive outcomes in this particular work context—that suggestions are taken seriously, problems identified through voice are addressed, and those whose voice are not punished. This informational evidence reduces uncertainty about the expected consequences of voice behavior and shapes employees' assessments of whether voice will be effective in achieving desired outcomes (Bamberger & Biron, 2007). When team voice norms are strong, employees infer that voice is a validated and effective behavior in their work environment, increasing their likelihood of engaging in voice themselves.

Second, strong team voice norms create social expectations that “speaking up is expected of team members” (Cialdini & Goldstein, 2004). Employees are motivated to align their behavior with team behavioral standards in order to gain acceptance, maintain positive relationships with colleagues, and avoid being perceived as deviant or uncommitted team members (Hogg & Terry, 2000). When voice is normative within a team, remaining silent may be viewed as failing to contribute to team functioning, whereas voicing becomes a means of demonstrating membership and commitment to team values. This normative pressure compels employees to conform to the prevalent voice patterns in their teams,

particularly when they desire affiliation and approval from their colleagues.

Third, when employees identify strongly with their team, they internalize team voice norms as part of their self-concept to maintain a positive identity as valued team members (Abrams & Hogg, 1990; Turner et al., 1989). Team voice norms define what a prototypical or “good” team member does—when voice is normative, voicing becomes part of the definition of being a committed team member in this particular context (Hogg & Terry, 2000). Employees then engage in actual voice behaviors to maintain internal-external coherence (Bamberger & Biron, 2007). Therefore, this study proposes that:

Hypothesis 1a Team promotive voice norm is positively related to employee promotive behavior.

Hypothesis 1b Team prohibitive voice norm is positively related to employee prohibitive behavior.

While both promotive and prohibitive voice norms should influence individual voice behavior through these three mechanisms, the strength of these influence processes should differ between the two types of norms.

Based on the differences between promotive and prohibitive voice, promotive voice path is stronger through all three influence mechanisms. Informationally, promotive voice norms provide more encouraging evidence about voice effectiveness—employees observe that offering constructive suggestions leads to positive outcomes without the interpersonal risks inherent in prohibitive voice (Lin & Johnson, 2015). Even when prohibitive voice is normative, it still carries inherent interpersonal risks that may attenuate employees’ confidence in its effectiveness. Normatively, promotive voice norms create clearer conformity expectations because they align with employees’ natural desires to contribute positively, whereas prohibitive voice norms may conflict with desires to avoid creating friction (Liang et al., 2012). Through referent informational influence, promotive voice norms are more readily internalized because they align more naturally with most individuals’ self-concepts as constructive contributors, whereas prohibitive voice may require adopting a more critical stance that feels less comfortable (Heydarifard & Krasikova, 2023). Therefore, even when team norms are equally strong for both types of voice, the translation of norms into individual behavior should be stronger for promotive voice than for prohibitive voice across all three influence mechanisms. Thus, this study

proposes that:

Hypothesis 1c The positive relationship between team promotive voice norm and promotive behavior is stronger than the positive relationship between team prohibitive voice norm and prohibitive voice.

The Mediating Role of Norm Acceptance

Researchers argue that social influence is not merely about behavioral conformity, but fundamentally involves psychological acceptance and internalization of group standards (Kelman, 1958, 2006). Norm acceptance is particularly critical for voice behavior due to its discretionary and risk-taking nature (Morrison, 2011). It depends on employees' internalized motivation rather than mere compliance with external pressures.

Drawing on this perspective, this study proposes that norm acceptance mediates the relationship between team voice norms and individual voice behavior. The three influence mechanisms promote norm acceptance through distinct psychological processes. Informational influence promotes norm acceptance by providing credible evidence that voice is effective in the team context, reducing uncertainty and building employees' confidence in voice as a valuable behavior, thereby facilitating cognitive internalization beyond mere calculated compliance (Bamberger & Biron, 2007). Normative influence promotes norm acceptance by transforming initial compliance into genuine commitment—as employees repeatedly conform to team voice expectations, they develop self-perceptions that they value voice and come to genuinely accept the norms that unite valued social relationships (Bem, 1972; Kelman, 2006). Referent informational influence promotes norm acceptance most directly through identity-based internalization—employees accept team voice norms because these norms define what it means to be a good team member, and accepting them maintains internal-external coherence between their self-concept as team members and their behavior, thereby maintaining a positive self-concept as valued group members (Abrams & Hogg, 1990; Turner et al., 1989).

Once employees accept voice norms through these processes, this acceptance directly facilitates voice behavior by providing internalized motivation to speak up. Employees view voicing as consistent with their own values and identity, possessing the intrinsic motivation necessary to overcome psychological barriers such as fear of negative consequences or uncertainty about

effectiveness. Therefore, this study proposes that:

Hypothesis 2a Norm acceptance mediates the relationship between team promotive voice norm and employee promotive behavior.

Hypothesis 2b Norm acceptance mediates the relationship between team prohibitive voice norm and employee prohibitive behavior.

Hypothesis 2c Consistent with Hypothesis 1c, the mediating effect of norm acceptance is stronger in the promotive voice context than in the prohibitive voice context.

The Moderating Roles of Gender, Parenthood, and Their Intersection

Furthermore, integrating with role congruity theory, this study proposes that the effectiveness of team norms in promoting norm acceptance will be influenced by individuals' social roles and identities. Role congruity theory posits that individuals experience favorable outcomes when their characteristics and behaviors align with the expectations associated with their social roles, while incongruity between characteristics and role expectations leads to negative evaluations and diminished outcomes (Eagly & Karau, 2002; Eagly & Wood, 2012). This study argues that gender and parenthood independently and interactively moderate the relationship between team voice norms and norm acceptance, thereby affecting the indirect effect of team voice norms on voice behavior. Gender creates differential role congruity for voice behavior, as assertive voice aligns more closely with masculine than feminine role expectations (Ng & Feldman, 2015; Taiyi Yan et al., 2022). Parenthood may increase work effort and involvement, as heightened family responsibilities enhance the importance of sustained work investment and work-related identity (Pinho & Gaunt, 2023). In academic settings, where scholarly productivity constitutes a core indicator of work effort, parenthood has been found to be associated with increased work output (Tattarini et al., 2024). Higher levels of work engagement, in turn, are likely to foster stronger identification with organizational values and behavioral standards (Rich et al., 2010). When gender and parenthood intersect, they create qualitatively distinct role configurations—fathers embody congruity between family breadwinner roles and workplace commitment, while mothers face compounded incongruity between caregiving responsibilities and organizational dedication (Bria et al., 2026; Correll et al., 2007). These differential role configurations

should systematically influence the extent to which the three influence mechanisms successfully promote norm acceptance.

Gender moderates the extent to which the three influence mechanisms promote norm acceptance. First, even when team voice norms signal that “speaking up is effective here,” female employees have reasons to doubt whether this effectiveness applies equally to them. Research consistently demonstrates that women face backlash and penalties for assertive behaviors that men do not encounter (Rudman et al., 2012). When women speak up, they risk being perceived as violating feminine role expectations, leading to negative evaluations and social sanctions (Heilman, 2012). As McClean et al. (2018) found, the same voice behavior enhances males’ status rather than females. Consequently, even when observing that voice produces positive outcomes for others in their team, female employees may rationally infer that this effectiveness is contingent on the speaker’s gender.

Second, even when team voice norms communicate that “speaking up is expected of team members,” female employees may perceive these expectations as less personally applicable or legitimate. Voice behavior requires assertiveness and exhibits stronger congruence with masculine than feminine gender roles (Heilman, 2012; Taiyi Yan et al., 2022). Such gender role expectations provide differential behavioral standards (Eagly & Karau, 2002), which directly contradict voice norm expectations for females. These competing normative pressures from gendered behavioral expectations reduce the psychological compulsion to accept team voice norms.

Third, the role incongruity between voice behavior and feminine gender roles also creates psychological conflict in how voice norms relate to female employees’ self-concepts. Accepting voice norms as part of one’s self-concept requires embracing behaviors viewed as gender-inappropriate, which threatens the maintenance of a positive self-concept as a woman (Rudman et al., 2012). For male employees, accepting voice norms as defining what it means to be a good team member reinforces both their team member identity and their gender identity, as voice aligns with masculine agency. For female employees, however, this creates identity conflict—internalizing voice norms to maintain a positive self-concept as a committed team member may simultaneously threaten their positive self-concept as someone who fulfills feminine role expectations. This identity conflict

attenuates the extent to which voice norms are accepted as part of female employees' self-definition.

Therefore, this study proposes that:

Hypothesis 3a Gender moderates the indirect effect of team promotive voice norm on employee promotive behavior via norm acceptance, such that the relationship is weaker for female employees than male employees.

Hypothesis 3b Gender moderates the indirect effect of team prohibitive voice norm on employee prohibitive behavior via norm acceptance, such that the relationship is weaker for female employees than male employees.

Parenthood moderates the extent to which the three influence mechanisms promote norm acceptance. First, employees who have children demonstrate heightened work centrality (Pinho & Gaunt, 2023). They pay closer attention to workplace dynamics and are more motivated to identify effective behaviors that enhance their standing and performance. When these employees observe team voice norms signaling that "speaking up is effective here," they are more likely to invest greater effort in such effective behaviors that contribute to their career.

Second, because parenthood heightens employees' work centrality, employees with children are more strongly motivated to align with team behavioral expectations and gain acceptance as valued team members (Hogg & Terry, 2000; Pinho & Gaunt, 2023). When team voice norms communicate that "speaking up is expected of team members," employees with children experience stronger normative pressure to conform, as meeting role expectations in the workplace has heightened significance.

Third, parenthood intensifies the extent to which team voice norms shape employees' self-concepts by increasing the centrality of the work role. As work success becomes more consequential for employees with children, their identity as competent and valued team members assumes greater importance within their overall self-concept (Bamberger & Biron, 2007; Tattarini et al., 2024). Employees with children are therefore more motivated to accept and internalize voice norms as part of their self-concept. Therefore, this study proposes that:

Hypothesis 4a Parenthood moderates the indirect effect of team promotive voice norm on employee

promotive behavior via norm acceptance, such that the relationship is stronger for those with children than those without children.

Hypothesis 4b Parenthood moderates the indirect effect of team prohibitive voice norm on employee prohibitive behavior via norm acceptance, such that the relationship is stronger for those with children than those without children.

Role congruity theory suggests that parenthood effect on work role centrality is fundamentally gendered (Bear & Glick, 2017; Correll et al., 2007). Therefore, this study proposes that the “breadwinner” versus “caregiver” distinction operates differently for men versus women, creating opposite effects of parenthood on norm acceptance through three influence mechanisms.

For men, fatherhood activates and reinforces the breadwinner role, which is also a traditional masculine expectation that men should provide financially for their families (Bear & Glick, 2017). This breadwinner identity creates strong congruity between family responsibilities and workplace commitment, as being a good father means being successful at work. Research consistently shows that fatherhood enhances men’s work centrality, career motivation, and organizational attachment (Bear & Glick, 2017; Tattarini et al., 2024). Both masculine gender roles (emphasizing agency and achievement) and breadwinner family roles (emphasizing provision and success) create reinforced congruity, so that all three influence mechanisms to promote norm acceptance are the strongest.

In contrast, for women, motherhood typically activates caregiving role expectations that create incongruity with workplace commitment (Abele & Spurk, 2011; Correll et al., 2007). Despite evolving gender norms, mothers continue to shoulder disproportionate childcare and household responsibilities across most societies and are culturally expected to prioritize caregiving over career (Craig & Mullan, 2011). These caregiving demands create constraints that weaken mothers’ workplace role identification (Cinamon & Rich, 2002). Both feminine gender roles (emphasizing communality over agency) and caregiver family roles (emphasizing family over work) lead to compounded incongruity, thus creating the weakest possible conditions for all three influence mechanisms to promote norm acceptance. Therefore, this study proposes that:

Hypothesis 5a Parenthood moderates the two-way interaction effect of gender and team promotive

voice norm on employee promotive behavior via norm acceptance, such that the positive relationship is weakest for females with children. Also, the relationships for females without children and males without children are stronger but weaker than that of males with children.

Hypothesis 5b Parenthood moderates the two-way interaction effect of gender and team prohibitive voice norm on employee prohibitive behavior via norm acceptance, such that the positive relationship is weakest for females with children. Also, the relationships for females without children and males without children are stronger but weaker than that of males with children.

The theoretical model is shown in Figure 1.

Figure 1 goes about here.

METHODS

Participants and Procedure

To examine the relationship between two types of voice norms and two types of voice behavior via norm acceptance, the moderating effects of gender, parenthood, and their intersection, this study recruited participants from Freeasy platform which was widely used in Japan for both social survey and academic research (Imai, 2024). A three-wave survey was conducted. The platform provides the participants' gender, age, and parenthood. At Time 1, employees were asked to report their perception of team promotive and prohibitive voice norms, education level and organizational tenure. One week later (at Time 2), employees were asked to evaluate their perception of norm acceptance. Another one week later (at Time 3), they were asked to report their frequencies of engaging in promotive and prohibitive voice behavior.

This study set gender and age quotas for the sample of 1,000 participants based on the proportions reported in the 2024 Labor Force Survey by the Statistics Bureau of Japan to ensure demographic representativeness (Statistics Bureau of Japan, 2024). The response rate was 59.2% of 1000 participants. The final data included 592 employees. Among those, 43.75% were female. 36.99% of participants were parents. Their average age was 45.32 years old (SD = 13.80) and mean

organizational tenure was 13.62 years ($SD = 11.33$). 60.30% of participants held a degree from a college or university.

Measures

Team promotive and prohibitive voice norms, their own promotive and prohibitive voice behavior were measured with 5-point Likert scales ranging from 1 (never) to 5 (always). Norm acceptance was measured with 5-point Likert scales ranging from 1 (strongly disagree) to 5 (strongly agree). The original English survey items were translated into Japanese and also back-translated into English according to translation and back-translation procedures (Brislin, 1980).

Team promotive and prohibitive voice norms. Following the adaptation of Raver et al.'s (2012) team helping norms, this study used Liang et al.'s (2012) 10-item scale to capture team members' promotive and prohibitive voice norms (five items for each dimension) by asking participants "Please indicate how frequently the following behaviors are observed among your team members." One sample item of promotive voice was "proactively develop and make suggestions for issues that may influence the team." One sample item of prohibitive voice was "dare to voice out opinions on things that might affect efficiency in the team, even if that would embarrass others." The Cronbach's alpha of two voice norms was both 0.94.

Norm acceptance. This study measured norm acceptance using 3-item scale from Jackson et al. (2006), one dimension of psychological collectivism. "My workplace" was adapted to "those groups" to better reflect participants' psychological norm acceptance of their own working team. A sample item is "I followed the norms of my workplace." The Cronbach's alpha was 0.88.

Gender. Employees' gender was recorded using dummy variable, with 0 representing male and 1 representing female.

Parenthood. The parenthood was recorded using dummy variable, with 0 representing non-parenthood and 1 representing parenthood.

Promotive and prohibitive voice behavior. Participants were asked to rate the frequency with which they engage in promotive and prohibitive voice behavior using Liang et al.'s (2012) scale. The Cronbach's alpha of promotive voice behavior was 0.95. The Cronbach's alpha of prohibitive voice

behavior was 0.93.

Control variables. Employees' age, education level, and organizational tenure were controlled for their impacts on voice behavior (Liang et al., 2012; Taiyi Yan et al., 2022).

Confirmatory Factor Analyses

A series of confirmatory factor analyses (CFAs) were performed using Mplus Version 8.3. These analyses aimed to confirm the distinctiveness of the conceptual model and establish discriminant validity by specifying team promotive and prohibitive voice norms, norm acceptance, and employee promotive and prohibitive voice behaviors as separate constructs.

Four alternative models were compared to determine the optimal factor structure. The hypothesized five-factor model, which distinguished between promotive voice norm, prohibitive voice norm, norm acceptance, promotive voice behavior, and prohibitive voice behavior, demonstrated excellent fit to the data ($\chi^2 (220) = 578.92$, RMSEA = 0.05, CFI = 0.97, TLI = 0.97, SRMR = 0.02). In contrast, a three-factor model that combined the two voice norms and behaviors showed acceptable but inferior fit ($\chi^2 (227) = 1071.15$, RMSEA = 0.08, CFI = 0.94, TLI = 0.93, SRMR = 0.03). Finally, a one-factor model combining all variables showed the worst fit ($\chi^2 (230) = 4778.21$, RMSEA = 0.18, CFI = 0.67, TLI = 0.64, SRMR = 0.12). These results provided strong evidence for the discriminant validity of the five constructs and supported the decision to distinguish between promotive and prohibitive voice at both the norm and behavior levels.

Analytic Strategy

All hypotheses were tested using path analysis in Mplus Version 8.3 with maximum likelihood estimation. Given that the hypotheses specified distinct mechanisms for promotive and prohibitive voice, separate analyses were conducted for each voice type to facilitate clear interpretation of the results. All analyses controlled for age, education, and tenure. Hypotheses were tested separately for promotive and prohibitive paths using structural equation modeling (SEM).

RESULTS

The means, standard deviations, and bivariate correlations of the variables are presented in Table

1. Both team promotive voice norm and prohibitive voice norm were positively correlated with norm acceptance and corresponding voice behavior, initially supporting the hypotheses. Also, team promotive voice norm was highly positively correlated with team prohibitive voice norm ($r = 0.86$), and employee promotive voice behavior was highly positively correlated with their prohibitive voice behavior ($r = 0.87$). These high correlations supported the analytical approach of examining the two voice mechanisms separately to avoid multicollinearity concerns.

Table 1 goes about here.

Hypothesis 1a predicted the positive relationship between team promotive voice norm and employee promotive voice behavior. Table 2 presents path analytic results of promotive voice model. As shown, the direct effect of team promotive voice norm on promotive voice behavior was significantly positive ($\beta = 0.67$, $p < 0.001$), confirming Hypothesis 1a. Hypothesis 1b predicted the positive relationship between team prohibitive voice norm and employee prohibitive voice behavior. As shown in Table 3 where path analytic results of prohibitive voice model were shown, the direct effect of team prohibitive voice norm on prohibitive voice behavior was significantly positive ($\beta = 0.65$, $p < 0.001$), confirming Hypothesis 1b.

Table 2 goes about here.

Hypothesis 1c proposed that the positive relationship between team promotive voice norm and promotive behavior is stronger than the positive relationship between team prohibitive voice norm and prohibitive voice. The SEM results revealed that team promotive voice norm had a significant positive effect on promotive voice behavior ($\beta = 0.50$, $p < 0.001$), and team prohibitive voice norm had a significant positive effect on prohibitive voice behavior ($\beta = 0.49$, $p < 0.001$). The difference between the two paths was not significant at the 95% confidence level (difference = 0.012, 95% CI [-0.038, 0.063]), indicating that the strength of the two relationships did not differ. These results provided further support for Hypotheses 1a and 1b. However, Hypothesis 1c was not supported.

Hypothesis 2a and Hypothesis 2b suggested the mediating roles of norm acceptance. As shown in

Table 2, the direct effect of team promotive voice norm on norm acceptance was positive and significant ($\beta = 0.26$, $p < 0.001$), and that of norm acceptance on promotive voice behavior was also positive and significant ($\beta = 0.09$, $p < 0.05$). Table 4 presents the indirect effects. As shown, the indirect effect of promotive voice path was significant (estimate = 0.024, 95% CI = [0.004, 0.044]), demonstrating that Hypothesis 2a was supported. Because the direct effect between team promotive voice norm and promotive voice was still significant, norm acceptance partially mediated this relationship. Regarding Hypothesis 2b, as shown in Table 3, the direct effect of team prohibitive voice norm on norm acceptance was positive and significant ($\beta = 0.21$, $p < 0.001$), and that of norm acceptance on prohibitive voice behavior was positive but insignificant ($\beta = 0.06$, $p > 0.05$). As shown in Table 4, the indirect mediating effect of prohibitive voice path was insignificant (estimate = 0.013, 95% CI = [-0.002, 0.029]). Thus, Hypothesis 2b was not supported.

Table 3 goes about here.

Hypothesis 2c proposed that the mediating effect of norm acceptance is stronger in the promotive voice path than in the prohibitive voice path. The SEM results showed that the indirect effect of team promotive voice norm on promotive voice behavior via norm acceptance was positive and significant (indirect effect = 0.036, 95% CI [0.009, 0.064]). In contrast, the indirect effect of prohibitive voice path was not significant (indirect effect = -0.001, 95% CI [-0.015, 0.013]). The difference between the two indirect effects was significant at the 90% confidence level (difference = .037, 90% CI [0.005, 0.070]), but did not reach significance at the conventional 95% confidence level (95% CI [-0.001, 0.076]). These results provided additional support for Hypotheses 2a and 2b, but Hypothesis 2c was not supported. As a supplementary analysis, following McClean et al. (2018), a relative importance analysis was conducted in R to examine the relative importance of team promotive and prohibitive voice norms in predicting norm acceptance (Tonidandel & LeBreton, 2011). This analysis produced Img values of .04 and .02 for promotive and prohibitive voice norms, respectively, and the two variables together accounted for approximately 6.16% of the variance in norm acceptance. Using bootstrap procedures with 1,000 resamples, the difference in relative importance was significant at the

95% confidence level (difference = 0.019, 95% CI [0.004, 0.039]), indicating that team promotive voice norm had significantly greater relative importance in predicting norm acceptance compared to team prohibitive voice norm.

Hypotheses 3 predicted that gender moderated the indirect effects of Hypotheses 2a and 2b, with weaker positive relationships for women. The interaction between team promotive voice norm and gender on norm acceptance was negative and significant ($\beta = -0.22$, $p < 0.01$) in Table 2. Figure 2a presents moderated mediation with gender. As shown in Table 4, the indirect effect was positive and significant for males (estimate = 0.033; 95% CI = [0.006, 0.060]) but insignificant for females (estimate = 0.013; 95% CI = [-0.002, 0.027]). Hence, H3a was supported. To further understand the moderating effect of gender, the moderating effect was plotted in Figure 2b. As plotted, when team promotive voice norm was weak, women perceived higher norm acceptance. Regarding Hypothesis 3b, the interaction between team prohibitive voice norm and gender on norm acceptance was negative and significant ($\beta = -0.23$, $p < 0.05$) in Table 3. However, as shown in Table 4, the indirect relationship was positive but insignificant for both males (estimate = 0.020; 95% CI = [-0.003, 0.042]) and females (estimate = 0.005; 95% CI = [-0.004, 0.015]). Hence, Hypothesis 3b was not supported.

Table 4, Figure 2a & 2b go about here.

Hypotheses 4 predicted that parenthood moderated the indirect effects of Hypotheses 2a and 2b, with both stronger positive relationships for those with children. The interaction between team promotive voice norm and parenthood on norm acceptance was negative and significant ($\beta = 0.21$, $p < 0.01$) in Table 2. Figure 3a presents moderated mediation with parenthood. As shown in Table 4, the indirect effect was positive and significant for both those with children (estimate = 0.036; 95% CI = [0.006, 0.065]) and those without children (estimate = 0.016; 95% CI = [0.001, 0.032]). Hence, H4a was supported. To further understand the moderating effect of parenthood, the moderating effect was plotted in Figure 3b. Surprisingly, when team promotive voice norm was at a low level, employees without children perceived higher norm acceptance. Regarding Hypothesis 4b, the interaction between team prohibitive voice norm and gender on norm acceptance was negative and significant ($\beta = 0.18$, p

< 0.05) in Table 3. However, as shown in Table 4, the indirect relationship was positive but insignificant for both those with children (estimate = 0.020; 95% CI = [-0.004, 0.043]) and those without children (estimate = 0.009; 95% CI = [-0.003, 0.020]). Hence, Hypothesis 4b was not supported.

Figure 3a & 3b go about here.

Hypothesis 5 predicted that parenthood moderated the two-way interaction effect of gender and team voice norm on employee voice behavior via norm acceptance. The three-way interaction on norm acceptance was negative but marginally significant ($\beta = -0.28$, $p < 0.10$) shown in Table 2. Figure 4a shows the 3-way moderated mediation. Furthermore, as shown in Table 4, the indirect effects were insignificant for females with children (estimate = 0.012, 95% CI = [-0.010, 0.035]), females without children (estimate = 0.013, 95% CI = [-0.003, 0.029]), and males without children (estimate = .020, 95% CI = [.000, .041]), while the indirect effect was significantly positive for males with children (estimate = 0.046, 95% CI = [0.009, 0.084]). Thus, Hypothesis 5a was partially supported. Figure 4b depicts these relationships across four groups. The positive relationship between team promotive voice norm and norm acceptance is strongest for males with children. Regarding the Hypothesis 5b, the three-way interaction on norm acceptance was negative but insignificant ($\beta = -0.08$, $p > 0.05$) shown in Table 3. The indirect effects were also insignificant for four groups, females with children (estimate = 0.009, 95% CI = [-0.008 0.025]), females without children (estimate = 0.004, 95% CI = [-0.006, 0.013]), and males with children (estimate = 0.024, 95% CI = [-0.004, 0.052]), males without children (estimate = 0.014, 95% CI = [-0.004, 0.033]) in Table 4. Thus, Hypothesis 5b was not supported.

Figure 4a & 4b go about here.

DISCUSSION

Drawing on social influence theory and role congruity theory, this study examined how team promotive and prohibitive voice norms influence individual voice behavior through norm acceptance,

and how gender, parenthood, and their intersection shape this relationship. The findings reveal that both voice norms positively relate to corresponding voice behavior. However, only team promotive voice norms operate through norm acceptance, and their effectiveness varies substantially across employees' intersecting social roles. Both gender and parenthood moderate the indirect effect, such that this relationship is stronger for males but not females, for employees with children than those without children. Critically, the three-way interaction reveals that the indirect effect through norm acceptance is significant only for fathers. Team prohibitive voice norm directly predicts individual prohibitive voice behavior, while the mediating effect of norm acceptance and the moderating effects are all insignificant. These findings advance voice theory by revealing the critical role of social influence processes and demonstrating how its effectiveness fundamentally shaped by employees' intersecting identities.

Theoretical Contributions

This study makes three theoretical contributions. First, this study advances understanding of voice behavior by introducing social influence theory as a fundamental theoretical lens for identifying team voice norms as a critical antecedent and norm acceptance as the underlying mechanism. Recent research has begun to examine how employees are influenced by others in their teams through multiple theoretical perspectives (e.g., affective events, social learning, social facilitation and loafing theories etc.) to understand voice antecedents and processes (Chen & Treviño, 2022; Lam et al., 2024; Lin et al., 2025; Liu et al., 2022; Snoep-Delleman et al., 2025). An important theoretical lens for understanding coworkers' influence (i.e., social influence theory) has not yet been applied to voice behavior, leaving horizontal peer influence processes largely unexplored. The findings reveal that both team promotive and prohibitive voice norms directly predict promotive and prohibitive voice behavior separately, confirming that collective behavioral patterns serve as powerful guides for individual action. Also, norm acceptance can mediate the relationship between team promotive voice norms and promotive voice behavior through other mechanisms. These findings extend voice research by establishing social influence theory as a fundamental lens that have been largely absent from how coworkers' voice behavior influences that of the focal employee.

Second, this study advances understanding of voice behavior by integrating role congruity theory to examine the independent and joint effects of gender and parenthood on the relationship between team promotive voice norm and promotive voice behavior. Prior voice research has examined gender effects on the process of influencing voice behavior, but parenthood's role and their intersection in voice behavior remains unexplored (Harlos, 2010; Ng & Feldman, 2015; Taiyi Yan et al., 2022). The findings reveal significant moderating effects for both gender and parenthood, with stronger effects for males than females, and for those with children than those without children. However, parenthood creates opposite effects for men and women. The indirect effect was strongest and statistically significant for fatherhood, consistent with their breadwinner role, whereas it was weakest and non-significant for mothers, who are typically associated with caregiving (Coltrane, 2000). These findings reveal that team voice norms are not universally effective but rather require specific alignment between employees' intersecting social roles and corresponding behavioral expectations to successfully influence behavior through genuine psychological norm internalization. This provides empirical support for intersectionality theory's application to organizational voice research, demonstrating that examining single identity in isolation may obscure critical dynamics that only emerge when multiple identities intersect.

Third, this study advances voice research by identifying different mechanisms between promotive and prohibitive voice norms, and their different functions in norm acceptance. Prior research has established that promotive and prohibitive voice differ in their motivational orientations and consequences (Chamberlin et al., 2017; Liang et al., 2012; Lin & Johnson, 2015). The findings show that only team promotive voice norms operate through the norm acceptance pathway. Furthermore, team promotive voice norm has significantly greater predictive power for norm acceptance compared to team prohibitive voice norm. The divergent patterns regarding norm acceptance suggest that promotive and prohibitive voice norms may operate through fundamentally different psychological processes. Promotive voice norms appear to influence behavior through genuine psychological acceptance. Employees internalize promotive voice as appropriate and valuable, which then motivates their behavior. In contrast, prohibitive voice norms may operate through other mechanisms that do not

require internalized commitment. It means that while employees may engage in prohibitive voice when they observe it as normative, they may comply without genuine belief in its appropriateness and value, potentially affecting the quality, persistence, and intrinsic motivation underlying such behavior. By revealing the differences between promotive and prohibitive voice, this study advances voice research by demonstrating that norm acceptance is not a uniform mechanism but is contingent on the type of voice norm.

Practical Implications

The findings offer several practical implications for managers and organizations seeking to foster voice behavior. First, the findings provide clear evidence that team voice norms function as effective levers for promoting employee voice but meanwhile highlight the need to distinguish two forms of voice. Both team promotive voice norms and team prohibitive voice norms were directly and positively related to their corresponding forms of voice, indicating that employees are more likely to engage in voice behaviors that they observe as normative within their teams. Thus, clarifying and reinforcing team voice norms constitutes a relatively low-cost yet effective managerial intervention for increasing employee voice, as employees tend to align their behavior with what is perceived as normative in their teams.

Second, for promotive voice, this relationship operated through employees' acceptance of the norm. When teams clearly signaled that promotive voice was valued and expected, employees were more likely to internalize such expectations as legitimate and appropriate, which in turn translated into higher levels of promotive voice behavior. In contrast, although prohibitive voice norms also exerted a positive direct effect on prohibitive voice, this effect did not depend on norm acceptance. This asymmetry suggests that while employees may engage in prohibitive voice in response to normative cues, such behavior may be driven more by compliance than by internalized commitment. As a result, prohibitive voice encouraged through norms alone may be more situational and less sustained, with potential implications for the depth, persistence, and intrinsic motivation underlying such behavior. Accordingly, managers should recognize that norm-based interventions are likely to be more effective and durable for fostering promotive voice, whereas encouraging prohibitive voice may require

additional supports beyond norm signaling, such as explicit endorsement, role clarity, and protection from negative consequences.

Third, organizations should recognize the potential unintended consequences of emphasizing team voice norms without considering social roles of different employees. The findings suggest that strong team voice norms may inadvertently widen voice gaps between different employee groups (i.e., men and women, those with children and without children, fathers and mothers). As men, those with children, and fathers become increasingly responsive while women, those without children, and mothers remain constrained. It suggests that traditional “one-size-fits-all” approaches to voice encouragement are insufficient. Organizations committed to inclusive voice norms must pair norm-building efforts with structural changes that reduce role incongruity for disadvantaged groups, such as redistributing caregiving burdens, challenging stereotypical expectations about women’s and mothers’ workplace commitment, and recognizing that employees without children may have fewer role-based incentives to internalize team norms. Additionally, the higher baseline acceptance among women, childless employees, and mothers when norms are weak may reflect these groups’ greater intrinsic motivation for voice or lower threshold for engagement. In contrast, low acceptance of men, employees with children, and fathers under weak norm conditions suggests they may require stronger environmental signals to overcome potential barriers (such as traditional breadwinner role expectations that prioritize job security over risk-taking voice behaviors).

Limitations and Future Research

This study has several limitations that suggest directions for future research. First, while norm acceptance was identified as a critical mechanism linking promotive voice norms and promotive voice, the mediation was partial rather than complete. This indicates that, beyond internalized acceptance of team norms, additional mechanisms may contribute to how promotive voice norms translate into individual behavior. Future research could explore complementary processes, such as perceived instrumental value or legitimacy of voice, conformity pressure etc. Moreover, norm acceptance did not mediate the relationship between team prohibitive voice norms and employee prohibitive voice. Despite a significant direct effect, the absence of mediation suggests that other psychological

mechanisms may explain how prohibitive voice norms influence behavior. Potential mechanisms could include fear of negative consequences (employees engage in prohibitive voice to avoid being seen as neglectful of problems), impression management (speaking up about problems to demonstrate vigilance), or simple behavioral mimicry without genuine psychological internalization. Future research should explore these alternative mechanisms to provide a more complete understanding of how different types of voice norms operate.

Second, this study measured team voice norms through individual perceptions rather than aggregating team member reports. While this approach has precedent in norms research and can capture individuals' subjective interpretations of team norms (which may be most proximal to their behavior), it raises questions about whether the findings reflect shared team-level phenomena or individual-level perceptions. Lam et al. (2024) have employed leader-rated measurement approaches to capture team voice, but aggregated team member reports of voice norms remain relatively underexplored. Future research could measure team voice norms using aggregated team member reports or more objective indicators to establish whether team-level voice climate has similar effects beyond individual perceptions.

Third, this study focuses on the frequency of prohibitive voice rather than its quality or sustainability. Although prohibitive voice norms were found to directly predict prohibitive voice behavior, and this effect did not operate through norm acceptance, the present design does not allow us to assess whether such voice differs in quality, depth, or persistence depending on whether it is driven by internalized acceptance or normative compliance. Future research should therefore examine qualitative and longitudinal dimensions of prohibitive voice to determine whether voice expressed without norm internalization is more episodic, surface-level, or less likely to be sustained over time.

Forth, future research could examine whether the implications of norm internalization differ across types of workplace behaviors beyond voice. While strong norm acceptance appears beneficial for encouraging promotive voice, it may not uniformly advantage all employees or all behavioral domains. For example, in contexts involving ethical judgment, rule bending, or resistance to questionable practices, weaker norm internalization may afford greater flexibility and autonomy. This

raises the possibility that women and mothers who may be less likely to internalize dominant team norms under norm strengthening, could exhibit advantages in behaviors that require moral independence, critical distance, or principled nonconformity.

Fifth, this study was conducted in Japan, a context characterized by relatively high collectivism and gender traditionalism compared to Western contexts. This cultural context may have amplified the strength of team norm influences (as collectivistic cultures emphasize conformity to group standards) and the magnitude of gender and parenthood effects (as traditional gender roles remain more pronounced). While this context can observe clear patterns, it also raises questions about generalizability to other cultural settings. Future research should examine this theoretical model in diverse cultural contexts to assess whether the phenomena are similar across cultures or whether cultural values moderate the relationships between team voice norms, norm acceptance, and individual voice behavior.

CONCLUSION

The work extends theory on voice outcomes by articulating how team voice norms impact individual voice through norm acceptance, and demonstrating that not all voice norms operate equally in this process. While team voice norms may facilitate voice behavior directly, norm acceptance depends critically on voice type and alignment between voice expectations and employees' social roles. Promotive voice norms promote norm acceptance and subsequent voice, but prohibitive voice norms do not operate through this mechanism. Males benefit from team promotive voice norms in norm acceptance while females do not, and though parenthood enhances this process, only fathers experience the full benefit. Understanding how employees with different intersecting identities accept and internalize voice-related team norms requires further investigation.

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Table 1

Means, standard deviations, and correlations

Variables	Mean	SD	1	2	3	4	5	6	7	8	9
1 Age	45.32	13.90									
2 Tenure	13.62	11.33	0.55***								
3 Education	3.17	1.33	-0.04	0.05							
4 Team promotive voice norm	2.81	0.88	0.03	0.14***	0.18***						
5 Team prohibitive voice norm	2.73	0.88	0.01	0.13**	0.14***	0.86***					
6 Gender	0.44	0.50	-0.05	-0.22***	-0.14***	-0.14***	-0.15***				
7 Parenthood	0.37	0.48	0.24***	0.18***	0.09*	0.20***	0.18***	-0.15***			
8 Norm acceptance	3.68	0.87	0.22***	0.13**	0.05	0.25***	0.21***	0.02	0.07		
9 Promotive voice	2.79	0.95	0.02	0.09*	0.19***	0.64***	0.60***	-0.10*	0.14***	0.24***	
10 Prohibitive voice	2.71	0.93	-0.02	0.08	0.15***	0.61***	0.63***	-0.13**	0.15***	0.18***	0.87***

Notes. N = 592. Education coded as 1 = high school or below, 2 = vocational/technical school, 3 = junior college/associate degree, 4 = bachelor's degree, 5 = master's degree, 6 = doctoral degree. Gender coded as 0 = male, 1 = female. Parenthood coded as 0 = without children, 1 = with children. * p < 0.05, ** p < 0.01, *** p < 0.001.

Table 2

Path analytic results of the main effects for promotive voice from the estimated multilevel model

Variables	Norm acceptance				Promotive voice							
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Age	0.01***	0.00	0.01***	0.00	0.01***	0.00	0.01***	0.00	0.00	0.00	-0.00	0.00
Tenure	-0.00	0.00	-0.00	0.00	-0.00	0.00	-0.00	0.00	0.00	0.00	0.00	0.00
Education	0.01	0.03	0.01	0.03	0.01	0.03	0.02	0.03	0.06*	0.02	0.06*	0.02
TMVN	0.26***	0.04	0.35***	0.05	0.17**	0.05	0.21**	0.08	0.67***	0.04	0.64***	0.04
Gender	0.11	0.07	0.71**	0.23	0.11	0.07	0.32	0.28	0.01	0.06	0.00	0.06
Parenthood	-0.05	0.07	-0.06	0.07	-0.65**	0.24	-0.89**	0.32	0.02	0.07	0.02	0.07
TMVN × Gender			-0.22**	0.08			-0.08	0.10				
TMVN × Parenthood					0.21**	0.08	0.28**	0.11				
Gender × Parenthood							0.87	0.50				
TMVN × Gender × Parenthood							-0.28 [†]	0.17				
Norm acceptance											0.09*	0.04

Notes. N = 592. TMVN = team promotive voice norm. Education coded as 1 = high school or below, 2 = vocational/technical school, 3 = junior college/associate degree, 4 = bachelor's degree, 5 = master's degree, 6 = doctoral degree. Gender coded as 0 = male, 1 = female. Parenthood coded as 0 = without children, 1 = with children. [†] p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001.

Table 3

Path analytic results of the main effects for prohibitive voice from the estimated multilevel model

Variables	Norm acceptance				Prohibitive voice							
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Age	0.01***	0.00	0.01***	0.00	0.01***	0.00	0.01***	0.00	-0.00	0.00	-0.00	0.00
Tenure	-0.00	0.00	-0.00	0.00	-0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Education	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.04	0.02	0.03	0.02
THVN	0.21***	0.04	0.31***	0.05	0.14**	0.05	0.23**	0.08	0.65***	0.04	0.63***	0.04
Gender	0.11	0.07	0.73**	0.22	0.11	0.07	0.55	0.29	-0.05	0.06	-0.06	0.06
Parenthood	-0.03	0.07	-0.03	0.07	-0.52*	0.23	-0.49	0.32	0.07	0.07	0.07	0.07
THVN × Gender			-0.23*	0.08			-0.17	0.11				
THVN × Parenthood					0.18*	0.08	0.16	0.11				
Gender × Parenthood							0.26	0.49				
THVN × Gender × Parenthood							-0.08	0.17				
Norm acceptance											0.06	0.04

Notes. N = 592. THVN = team prohibitive voice norm. Education coded as 1 = high school or below, 2 = vocational/technical school, 3 = junior college/associate degree, 4 = bachelor's degree, 5 = master's degree, 6 = doctoral degree. Gender coded as 0 = male, 1 = female. Parenthood coded as 0 = without children, 1 = with children. * p < 0.05, ** p < 0.01, *** p < 0.001.

Table 4

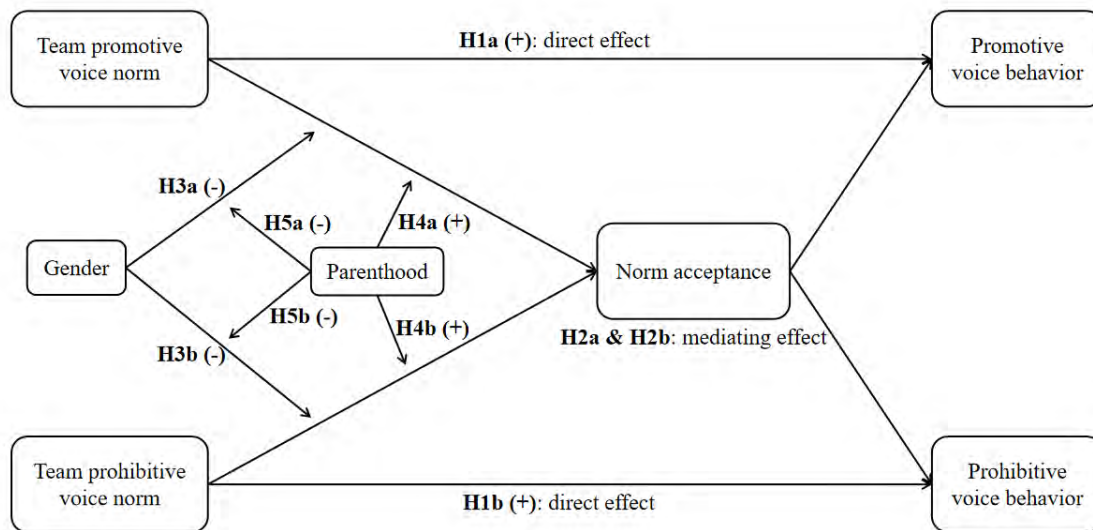
The conditional indirect effects at gender, parenthood, and their interaction

Main effect	Mediator	Moderator	Indirect effect	95% CI	
				Lower	Upper
Team promotive voice norm → Promotive voice	Norm acceptance	/	0.024	0.004	0.044
		Gender			
		Females (= 1)	0.013	-0.002	0.027
		Males (= 0)	0.033	0.006	0.060
		Parenthood			
		With children (= 1)	0.036	0.006	0.065
		Without children (= 0)	0.016	0.001	0.032
		Gender × Parenthood			
		Females, with children (= 1, 1)	0.012	-0.010	0.035
		Females, without children (= 1, 0)	0.013	-0.003	0.029
Team prohibitive voice norm → Prohibitive voice	Norm acceptance	Males, with children (= 0, 1)	0.046	0.009	0.084
		Males, without children (= 0, 0)	0.020	0.000	0.041
		/	0.013	-0.002	0.029
		Gender			
		Females (= 1)	0.005	-0.004	0.015
		Males (= 0)	0.020	-0.003	0.042
		Parenthood			
		With children (= 1)	0.020	-0.004	0.043
		Without children (= 0)	0.009	-0.003	0.020
		Gender × Parenthood			
		Females, with children (= 1, 1)	0.009	-0.008	0.025
		Females, without children (= 1, 0)	0.004	-0.006	0.013
		Males, with children (= 0, 1)	0.024	-0.004	0.052
		Males, without children (= 0, 0)	0.014	-0.004	0.033

Notes. N = 592. Gender coded as 0 = male, 1 = female. Parenthood coded as 0 = without children, 1 = with children.

Figure 1

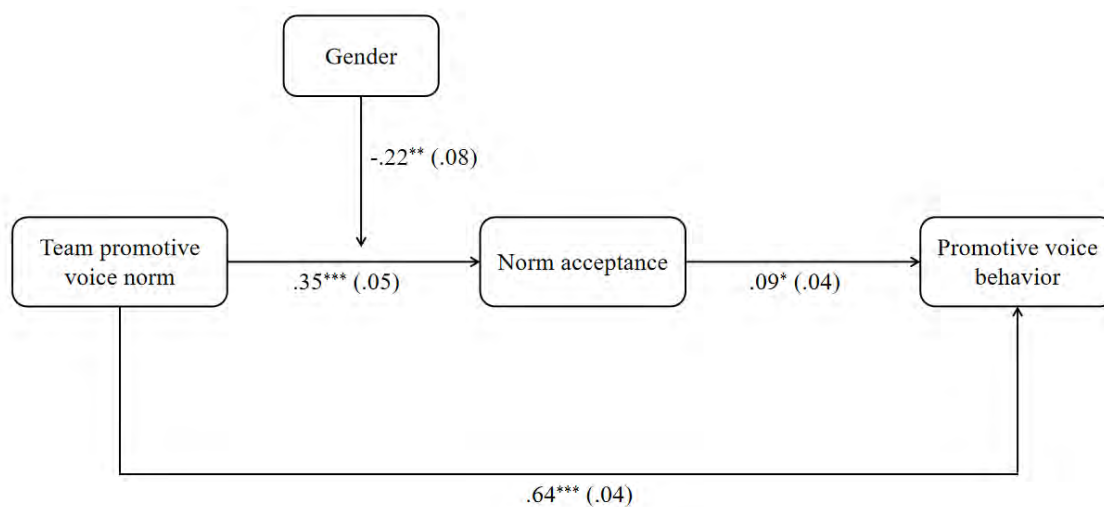
Theoretical model



Notes: Gender coded as 0 = male, 1 = female. Parenthood coded as 0 = without children, 1 = with children.

Figure 2a

Moderated mediation for gender on promotive voice



Notes. N = 592. Gender coded as 0 = male, 1 = female. Coefficients are unstandardized. Standard errors were reported in parentheses. The dashed lines represented that the direct effects were not significant. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Figure 2b

The moderating effect of gender on the relationship between team promotive voice norm and norm acceptance

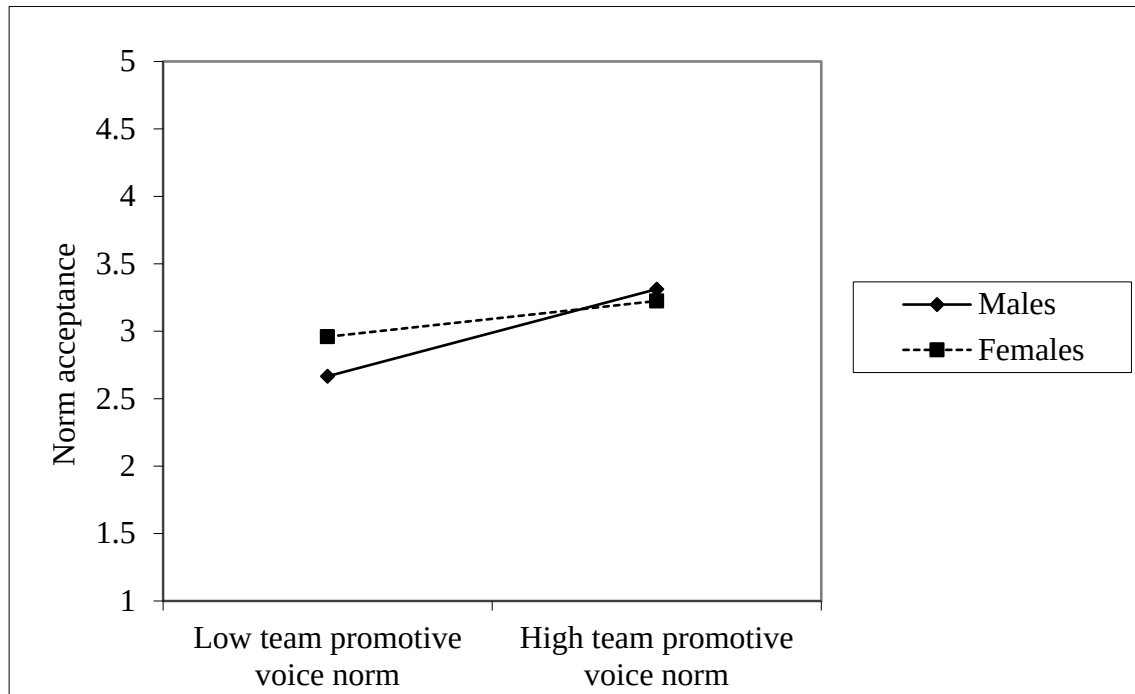
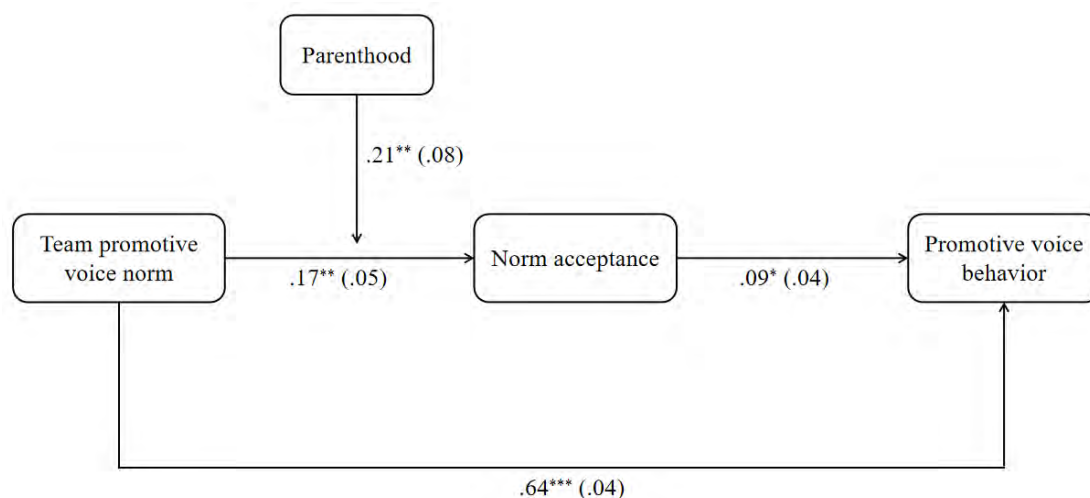


Figure 3a

Moderated mediation for parenthood on promotive voice



Notes. N = 592. Parenthood coded as 0 = without children, 1 = with children. Coefficients are unstandardized. Standard errors were reported in parentheses. The dashed lines represented that the direct effects were not significant. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Figure 3b

The moderating effect of parenthood on the relationship between team promotive voice norm and norm acceptance

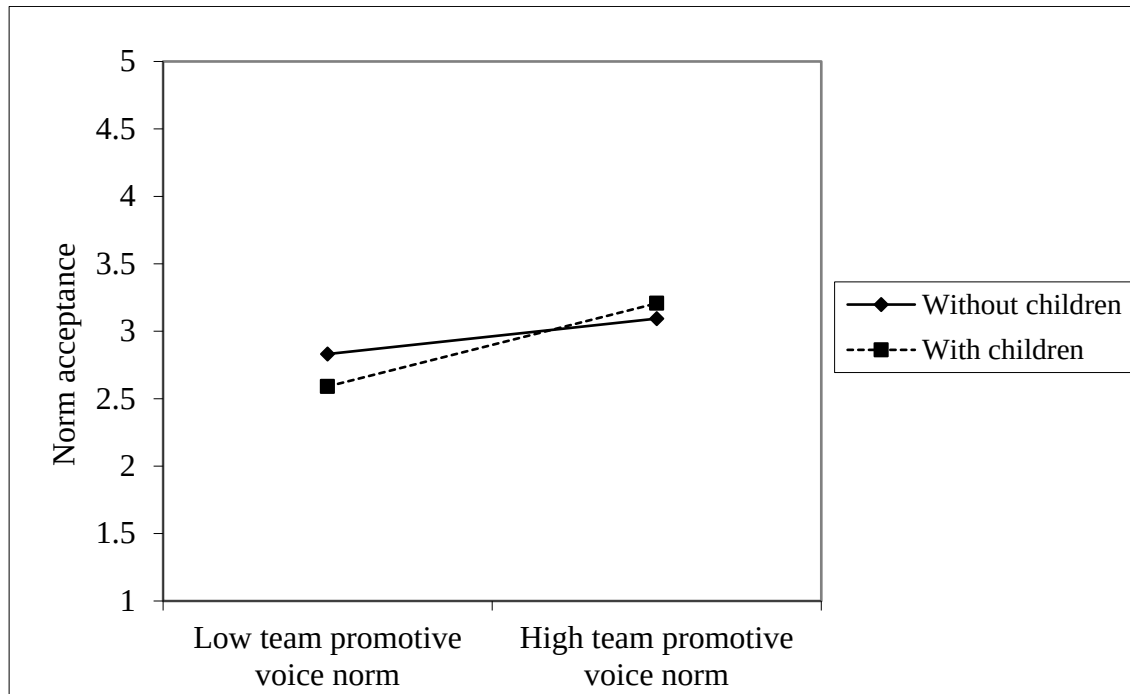
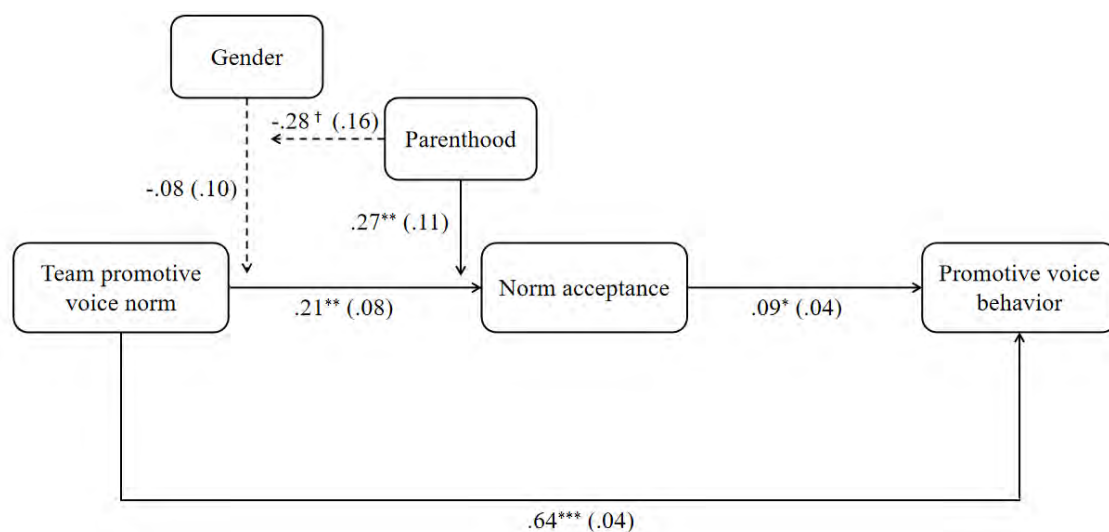


Figure 4a

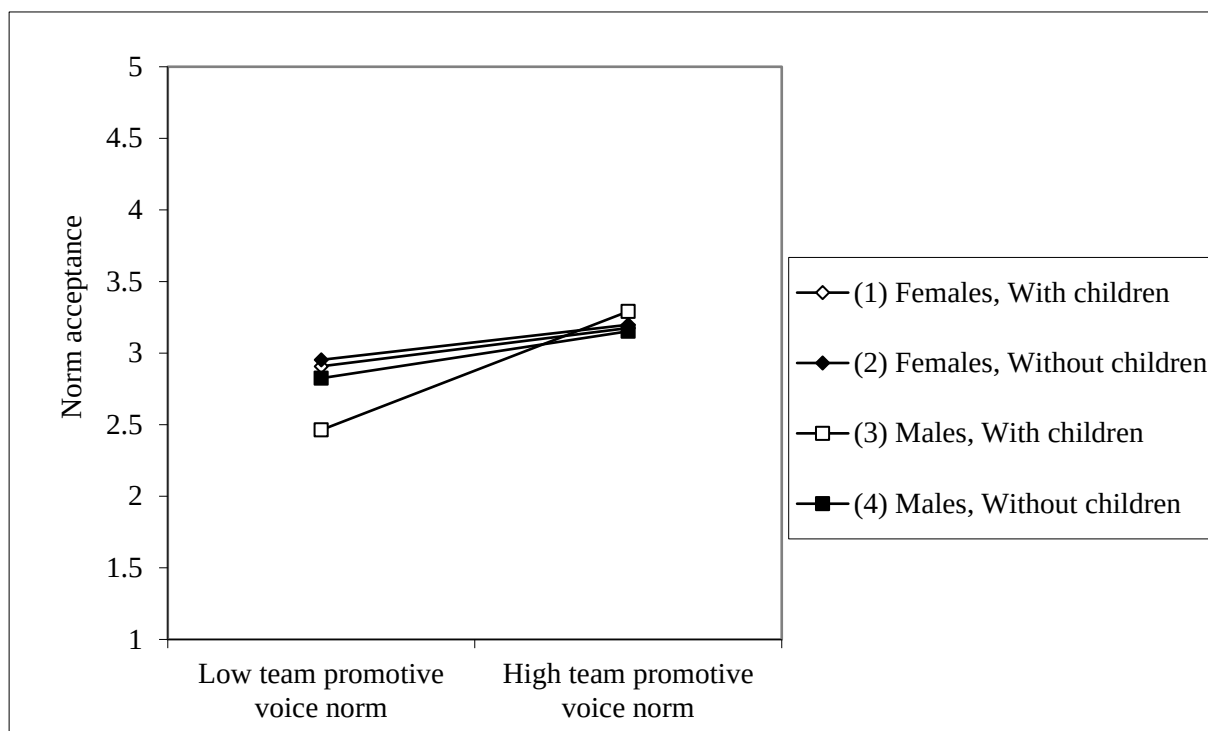
Moderated mediation for the interaction of gender and parenthood



Notes. N = 592. Gender coded as 0 = male, 1 = female. Parenthood coded as 0 = without children, 1 = with children. Coefficients are unstandardized. Standard errors were reported in parentheses. The dashed lines represented that the direct effects were not significant. [†] p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001.

Figure 4b

The three-way interaction of team promotive voice norm, gender, and parenthood



Achieving Optimal Distinctiveness under the Condition of Dual Embeddedness: How Japanese CPA-Led firms in Thailand Balance Differentiation and Homogenization in the Market and Profession

Nobuko Nishiwaki (Nihon University, Japan)

Junnosuke Kurachi (BizWings, Thailand)

ABSTRACT

This study examines how professional service firms (PSFs) achieve optimal distinctiveness while embedded in both professional and market environments. Specifically, we address two questions: first, how CPAs who founded their businesses overseas have balanced differentiation and conformity of their business models from founding to the present; and second, how the strategic challenges of pursuing optimal distinctiveness relate to PSF profitability and growth. We use a comparative case study of Japanese CPA-led firms in Thailand and applies process study and grounded theory methods to analyze qualitative data from these cases. Findings show that entrepreneurs achieve balance by simultaneously adjusting differentiation and conformity during business model execution. These strategic actions significantly affect PSFs' performance. Theoretically, this study incorporates dual embeddedness into optimal distinctiveness theory, advancing the entrepreneurship literature. In practice, it demonstrates that the ongoing combination of conformity and differentiation is essential for competitive advantage and provides specific implementation measures. These measures include embedding process differentiation, such as standardization and the use of IT/AI, into organizational operations.

Keyword: Optimal distinctiveness, Professional service firms (PSFs), Profession, Certified Public Accountants (CPAs), Business model

INTRODUCTION

Certified Public Accountants (CPAs) are traditionally characterized as professionals who offer professional services based on highly specialized knowledge (Abbott, 1988; Schön, 1983) and follow an “up-or-out” career path, either advancing within an organization or exiting to other organizations for their career development (Malhotra et al., 2010). Some who choose to leave their organizations become entrepreneurs to start new businesses of professional service firms (PSFs) in a foreign country. As founders and executives of PSFs, they design business models, which are mechanisms for creating value through business opportunities (Amit & Zott, 2001; Breunig et al., 2014). When they implement business models in environments that differ from their home country for the firms’ growth and success, they encounter the challenge of achieving optimal distinctiveness, defined as simultaneously incorporating both differences and similarities within their business model to establish the uniqueness of the firm. (e.g., Ashforth et al., 2011; Demetry & Doern, 2025; McDonald & Eisenhardt, 2020; Pinkse et al., 2022; Zhao et al., 2017).

For CPAs who found and manage start-up PSFs in a foreign country, achieving optimal distinctiveness is associated with both the strategic positioning of their firms and business models—specifically, how they make the firms competitive in the market by implementing the business models (e.g., Porter, 1985)—as well as with the establishment of a professional identity, that is, how they seek to be perceived by other PSFs and clients across two distinct environments: the professional community, consisting of members who share a common knowledge base, and the market (e.g., Ashforth et al., 2011; Eutsler & Kaszak, 2025; Livengood & Reger, 2010). Start-up companies are typically small and possess fewer resources than large organizations. The qualifications the CPAs have earned in their home country often receive limited recognition locally. Because achieving optimal distinctiveness under these constraints is a critical and challenging task for operation of the CPA-led PSFs, this study formulates two research questions.

Research Question 1: How have CPAs who founded their businesses overseas achieved optimal distinctiveness by balancing differentiation and conformity in their business models from founding to the present?

Research Question 2: How do the strategic challenges of achieving optimal distinctiveness relate to the profitability and growth of their PSFs?

To answer the two research questions, we conducted a comparative case study of PSFs founded by Japanese CPAs in Thailand that remain active. The results show, first, that entrepreneurs adjust multiple differentiation and conformity strategies at the same time during business model execution to achieve optimal distinctiveness. Second, strategic challenges in achieving optimal distinctiveness are related to PSF profitability and scale expansion. This study's theoretical contribution is that it provides a theoretical foundation for optimal distinctiveness in PSFs by combining dual embeddedness in the profession and the market, and offers insights for professional entrepreneurship research. The practical contribution is that it demonstrates the importance of continuously combining differentiation and conformity to establish PSF advantages and presents specific measures for achieving this.

THEORETICAL BACKGROUND

Optimal Distinctiveness

An organization's growth and development depend on designing and executing its business model while achieving optimal distinctiveness (Domínguez et al., 2023; Taeuscher et al., 2022).

"Distinctive" refers to the extent to which observers perceive an entity as differentiated and unique (Bouncken & Fredrich, 2025). Optimal distinctiveness means that this perceived uniqueness reaches a desirable level and is considered legitimate by many actors in the relevant environment (Suchman, 1995; Taeuscher et al., 2021). A business model is a system that optimizes the elements and connections that make up organizational activities (Martins et al., 2015), and it relies on the environmental cognition and interpretation of the managers who organize and execute it (Csaszar &

Levinthal, 2016; Garaus et al., 2025). In startup PSFs, professionals who become entrepreneurs design their company's business model. To achieve optimal distinctiveness, the entrepreneurs must first define the company's operating environment and determine where to place points of differentiation and similarity within the business model relative to that environment.

Differentiation is a strategy that companies use to gain a competitive advantage by positioning themselves as unique in ways that buyers value (Porter, 1985). The situation that companies lose their uniqueness due to homogenization can be understood as competitive parity, which is defined as the process of adopting the distinctive features of other firms in order to erode the advantages those firms have established (Bowers et al., 2014). Companies can pursue differentiation across all organizational activities, including inputs (materials), outputs (products, services), and the processes that transform inputs into outputs, such as manufacturing, development, training, and marketing (Porter, 1985). Marketing differentiation involves actions a company takes to make its products or services recognizable to potential customers. This includes explaining the product's functions, features, and distinctions from competitors' offerings, as well as highlighting the company's core values that influenced the product's creation (e.g., being ethical), and communicating this information to customers through various channels (Fluhrer & Brahm, 2023).

Core values express an organization's fundamental beliefs and align with its organizational identity. Organization members construct organizational identity by identifying aspects of both the internal organizational environment and the external competitive environment that they perceive as central, salient, and enduring for their firm (Livengood & Reger, 2010). Organizational identity formation is critical for entrepreneurs who pursue two goals that are typically not expected to be combined (Cornelissen et al., 2021). The organization's ability to achieve optimal distinctiveness depends on its capacity to deliver outputs to the market and on the organizational identity that supports this capacity.

Optimal Distinctiveness Trade-off for PSFs

PSFs operate primarily within the profession and the market. Achieving optimal distinctiveness depends on how their business models gain legitimacy in each environment. The profession is a stable

institutional environment that justifies PSFs' knowledge, skills, work, and outcomes (Abbott, 1988; DiMaggio & Powell, 1983). The market is a competitive environment where organizations compete for resources and must justify their competitive advantage (Porter, 1985). PSFs are responsible to stakeholders as corporate managers and, as members of the profession, must comply with professional ethics and laws while providing public-minded, high-quality professional services (e.g., Anderson-Gough et al., 2001).

PSF operations can be divided into "activities within the professional framework," where the profession defines the nature of work, execution processes, outcomes, and evaluation methods, and "activities outside the professional framework," which PSFs determine independently. For CPAs, activities within the professional framework include auditing and tax services, while activities outside this framework include advisory and consulting services (Eutsler & Kaszak, 2025). The former represents professional services in a strict sense. PSFs must pursue both public interest and profit through the design and execution of their business models, adapting to two distinct environments: the profession and the market. In this context, PSFs encounter an optimal distinctiveness trade-off.

When PSFs prioritize public value, their business models focus on activities within the profession's framework. By implementing these models, PSFs become closely integrated into the professional environment (DiMaggio & Powell, 1983). As a result, PSFs gain benefits such as high credibility and status as official knowledge-intensive firms defined by the profession, and clear differentiation from non-professional knowledge-intensive firms (e.g., Abbott, 1988). However, their ability to pursue profits is somewhat limited. When PSFs prioritize profit responsibility, their business models focus on activities outside the profession's framework. This approach gives PSFs greater freedom to pursue profits and increases their revenue (Eutsler & Kaszak, 2025). However, because these activities mainly occur outside the profession's framework, disadvantages also appear: although these PSFs have the same qualifications as those operating within the profession, they may not achieve sufficient status; they also face competition in the market with knowledge-intensive firms and quasi-PSFs.

For PSFs, optimal distinctiveness requires achieving legitimacy in both the profession and the market by designing and implementing a business model that balances their public role as

professional service providers with the pursuit of profit. For startup PSFs, achieving optimal distinctiveness defines their competitive framework and revenue structure (Eutsler & Kaszak, 2025). It also presents an organizational identity issue, specifically in determining whether to position themselves as a PSF or as a knowledge-intensive firm.

METHODS

Research Setting

This paper presents a comparative case study of PSF, a firm managed by a Japanese CPA who established an independent business in Thailand, and addresses the following two research questions.

Research Question 1: How have CPAs who founded their businesses overseas achieved optimal distinctiveness by balancing differentiation and conformity in their business models from founding to the present?

Research Question 2: How do the strategic challenges of achieving optimal distinctiveness relate to the profitability and growth of their PSFs?

The subjects of this study are valid research subjects and present theoretically relevant conditions for several reasons. First, in an overseas context, specifically Thailand, the Japanese CPA qualification does not provide an institutional competitive advantage. In Japan, CPAs have a monopoly on financial statement audit services under the Certified Public Accountants Act, and the qualification signals expertise even in non-audit services. However, Thailand does not have a reciprocity system with the Japanese CPA qualification, and financial statement audits in Thailand require Thai nationality, which excludes Japanese practitioners. As a result, Japanese CPAs must develop their practices in Thailand without relying on institutional protections associated with their qualification.

Second, this study focuses specifically on CPAs operating as independent professionals, not large firms. Thailand hosts foreign professional firms, including the Big 4, and local subsidiaries of Japanese accounting firms. These organizations differentiate themselves through global or corporate branding. In contrast, independent practitioners cannot rely on organizational brands and must build differentiation based on their own business offerings and the value they provide.

Third, the market environment for Japanese companies in Thailand has changed in recent years. Since the late 1980s, many Japanese companies entered Thailand, which increased demand for specialized services from Japanese CPAs. However, growth among Japanese companies in Thailand has slowed in recent years, and some companies have declined (Japanese Chamber of Commerce, Bangkok, 2023). This trend suggests that business models based on traditional "standardized services for Japanese companies" are becoming less sustainable. These market changes require Japanese CPAs to achieve clearer business differentiation than before.

Given these points, Japanese CPAs who have established independent practices in Thailand operate in an environment without traditional supports, such as legitimacy based on professional qualifications, organizational brand, and market stability. Business model differentiation is therefore not a choice but an unavoidable management challenge. In addition, Thailand's institutional framework requires the disclosure of basic corporate financial information. This requirement enables researchers to cross-reference narratives from interviews with external indicators, such as business scale and growth trajectories, which complement the contextual understanding gained from qualitative case analysis.

This study used a comparative case study approach, applying the process study method (Langley, 1999) and grounded theory methods (Corbin & Strauss, 2015). Comparative case studies are a qualitative research method designed to reveal complex interconnections and mechanisms among elements related to a phenomenon. This approach is appropriate for exploring the perspectives of research subjects, identifying variables for future quantitative research, capturing the processes through which a phenomenon emerges and changes, and providing holistic and comparative explanations of phenomena (Corbin & Strauss, 2015).

The purpose of this study is to clarify the content and design objectives of the business model established at founding, the motivations and content of subsequent differentiation efforts, and the impact of PSF on management. To achieve this, it is necessary to document, in chronological order, the key events related to business model differentiation experienced by the interviewee from founding to the present, as well as the interactions among the various elements involved, and to identify the

universal characteristics that emerge. We will collect and analyze interview data using grounded theory methods (Corbin & Strauss, 2015) and conduct comparative analysis between cases based on the process study method (Langley, 1999). Through reliable qualitative analysis, we will present both theoretical and practical contributions.

Data Source

The data set includes interview data, financial data, information from the official websites of the PSFs managed by the interviewees, and other archival data. Interview data were collected from 10 individuals selected according to the procedure described below. This sample represents a near-complete extraction of all surveyable subjects, effectively constituting a census. Financial data include balance sheets and income statements from 2016 to 2024, obtained from the public database, “DBD Data Warehouse”, operated by the Department of Business Development (DBD). For interviewees whose businesses began after 2016, data from the founding year were used. Information from company websites was used for management (interviewee) profiles, company introductions, and business activities. Because the primary clients of the research subjects are Japanese companies expanding into Thailand, the trend in the total number of Japanese companies registered with the JCC (Japanese Chamber of Commerce, Bangkok) was used as data representing the local market size for Japanese entrepreneur accountants.

Interview Setting

Interviews were conducted in two stages: a pilot survey and the main survey through which interviewers and interviewees used Japanese. First, a pilot study was conducted with two Japanese CPAs who had started businesses in Japan. The pilot study aimed to develop and validate the questions for the semi-structured interviews used in the main study. The first interview was a 3-hour, free-form, face-to-face interview conducted by both authors with one pilot participant in July 2025. The authors recorded notes during the interview and then reviewed and revised the questions. The second interview was a 1.5-hour, online, semi-structured interview conducted by both authors via

Microsoft Teams with the other participant in August 2025. This interview was recorded and transcribed into text data. The first author analyzed the transcribed data using in-vivo coding with Nvivo 14. Based on the analysis, both authors discussed the validity of the questions and developed the questionnaire for the semi-structured interviews used in the main study.

The second author selected interviewees for the main survey using the following method.

First, using the professional directory published in Thailand (Comm Bangkok Co., Ltd., 2025), 187 corporations registered in Thailand as "Accounting Firms," "Consultants," "BPO Services," and "Business Coordinators," along with their representatives, were identified.

Second, using Japan's Certified Public Accountant search system, 26 companies from the 187 were identified as having representatives with Japanese CPA qualifications.

Third, after reviewing the official websites of these 26 companies, corporations were excluded if the representative could not be confirmed as substantially involved in management activities in Thailand or was judged to be an employee without owner-manager discretion, resulting in 17 companies.

Fourth, the second author emailed survey requests to the representatives of 14 companies, excluding one company where the second author was involved in management activities and two companies where email contact information could not be obtained. The first author prepared the survey request text.

Fifth, of the 14 individuals contacted, 10 agreed to participate and were selected as subjects for the main survey.

The two authors conducted online semi-structured interviews using Microsoft Teams with each of the 10 individuals between November and December 2025. The first author who was in Japan served as the interviewer, the second author who was in Thailand or Japan observed and took notes, and the interviewees in Thailand answered the questions. Each interview lasted 45–60 minutes. The interviews were recorded via Microsoft Teams and transcribed into text data. All interview data used for analysis was reviewed and approved for use by the interviewees, ensuring compliance with research ethics.

Data Analysis

The analysis followed three steps: within-case analysis, between-case analysis, and generalization. In the within-case analysis, the first author organized information on the business model content at founding, design objectives, and events related to the timing, motivation, and content of differentiation, if present, for the 10 cases. This information was extracted using in-vivo coding. The 10 cases were then compared using axis coding.

Following prior research, the key factors for achieving optimal distinctiveness are PSF organizational capabilities and organizational identity. Axis coding organized differences in differentiation points according to Porter's (1985) differentiation framework (inputs, internal processes, outputs) and the professional identity of the subjects, extracting these as aggregated themes. The first and second authors discussed the validity of the classification and interpretation of these results. The content agreed upon by both authors was finalized as the aggregated theme. Based on the coding results, we provided an answer to RQ1.

To address RQ2, we combined the finalized aggregated themes with the financial data of each surveyed company to analyze the impact of optimal distinctiveness on PSF performance. Two of the ten interviewees had operated their businesses for less than two years. Interview data indicated that these interviewees might have included profits from other PSFs they owned outside Thailand. For these two individuals, we limited our analysis to their business model and type of differentiation, and did not analyze the relationship between differentiation and revenue. The first author prepared the analysis results, which were then discussed with the second author to review both the findings and the validity of the analytical process.

FINDINGS

Overview

Table 1 presents the interviewees. From left to right, it displays: Interviewee ID (alphabetical notation), year of business establishment, PSF's primary business activity, business establishment

type, number of staff at the managed PSF (including the interviewee), whether the interviewee manages multiple companies domestically or internationally, and the average profit margin during the period. Information on primary business activities, number of employees, and whether multiple companies are managed was referenced from each PSF's official website. Items not published were obtained by directly asking the interviewee during the interview. The classification of primary business activities follows Thailand's qualification categories. Audit (CPA) and bookkeeping (CPD) were classified as activities within the professional framework; all other activities were classified as outside the professional framework. The average profit margin refers to the average from 2016 to 2024 for PSFs founded in 2016 or earlier, and the average from founding to 2024 for PSFs founded in 2017 or later.

Among the 10 surveyed firms, two specialize in auditing, six in accounting, and two in other services. Five managers oversee multiple firms, and five are dedicated only to the surveyed firm. Organizational size ranges from 1 to 60 employees, including those surveyed. Two companies are relatively large, with 30 or more employees; three are medium-sized, with 10 to 30 employees; and five are small, with fewer than 10 employees.

Table 2 presents the coding results. The coding identified conformity, professional identity, and the interviewee's environmental perception as factors that influence business model type, differentiation methods, and the design of differentiation and business models. These factors were consolidated under the concept of optimal distinctiveness.

Table 3 presents the relationship between coding results and PSF performance. The rows indicate the presence and type of business model, and the columns indicate the type of differentiation. Each cell displays the corresponding PSF ID. Differentiation points were classified into four types: inputs, organizational processes, and outputs, as defined by Porter (1985), and professional identity, which reflects professional ethics and sense of norms (Abbott, 1988). Corporate performance was classified into three categories using the following method. Because the companies surveyed varied in organizational size, the average profit margin on sales was used as the corporate performance indicator. Available financial data covered 2016 to 2024. For PSFs founded before 2016, the average

from 2016 to 2024 was used; for PSFs founded in 2016 or later, the average from the founding year to 2024 was used. The four companies in the high-profit group (average gross profit margin $\geq 10\%$ during the relevant period) are indicated in black text with two asterisks. The mid-range group (0% to $<10\%$) is shown in regular black text with an asterisk, and the low-profit group (negative average gross profit margin) is shown regular black text.

• • • • Insert Tables 1, 2, 3 • • • • •

Balance Between Similarity and Difference

The coding results in Table 2 showed that business model differentiation occurs through inputs, outputs, and internal organizational processes. Input differentiation mainly involves recruiting different types of talent. Differentiation in internal organizational processes includes teamwork, organizational structure, manualization, and systematization. Output differentiation refers to customization, such as offering distinct services or combining several standard services.

Factors that hinder business model differentiation exist within the profession, employees, and customers. These challenges result from the high standardization of audit and accounting services. When a PSF defines its business model as accounting or auditing, further differentiation is difficult. Because of service standardization, employees cannot distinguish themselves by skill level. Differentiation through service requires managing employees' attitudes toward their work. Customers also expect standardized service delivery, so if PSFs attempt to provide unique services, there is a risk that these offerings will not meet customer needs. These factors limit business model differentiation and increase pressure toward conformity.

Relation Between Optimal Distinctiveness and Financial Performance

Characteristics of the top-performing group (PSFb, PSFc, PSFg, PSFh).

The top four firms include two large organizations focused on accounting (PSFb, PSF_H), one small organization focused on auditing (PSFc), and one small organization offering other services

(PSFg). All except PSFg are managed by full-time executives from the companies surveyed. Each firm differentiates itself, regardless of whether its business model aligns with the traditional professional services framework. Most differentiation occurs in business processes, which primarily aim to improve operational efficiency and speed.

PSFb differentiates itself in three areas: input, by limiting recruitment to CPD holders; organizational processes, by streamlining and accelerating operations through systematization; and output, by proposing customized business offerings. PSFc differentiates itself and its business through a business model specialized in audit and consulting, combined with organizational control based on a strong professional identity. PSFg's business model focuses on financial advisory for M&A, which is defined outside the traditional professional services framework. By combining input differentiation, through targeting specific talent for recruitment, with organizational process differentiation, through speed-focused sales activities and detailed financial advisory preparation, PSFg has established a competitive advantage over knowledge-intensive firms in the same market for client acquisition. PSFh proactively and continuously differentiates its operational processes by promoting efficiency through manual standardization, system development, and efficiency gains from AI implementation. The other three firms view their business environments negatively, citing declining client bases, limited future potential, and intense competition. Although PSFh shares some negative perceptions with these companies, it also recognizes positive aspects, such as new business opportunities resulting from the introduction of AI.

High-profit group companies have PSF leaders who make strategic decisions about the company's future direction based on a clear understanding of the environment, considering either a sense of crisis or business opportunities. These leaders seek to achieve optimal distinctiveness in the business model to implement this strategy.

Characteristics of the mid-profit group (PSFd, PSFe, PSFf).

The three companies in the moderate profitability group are all medium-sized organizations. One company (PSFf) primarily handles auditing, while two (PSFd, PSFf) focus on accounting. PSFd and PSFf distinguish themselves from the third company through their organizational processes.

PSFd lacks a clear business model. Instead of pursuing efficiency gains through standardization and systematization, as seen in the high-profit group, it prioritizes agile organizational management by promoting a sense of unity among staff. PSFd shows greater fluctuations in its sales profit margin than other surveyed companies, with negative sales profit margins since 2022. PSFf implements organizational process differentiation to deliver services tailored to customer needs. Unlike the high-profit group, which proactively differentiates in anticipation of future business expansion, PSFf differentiates reactively, responding after receiving customer feedback and requests.

PSFe aims to generate consistent profits at its current business scale and does not see a need for differentiation. It provides three reasons: the Thai market remains promising, customers do not request differentiation, and the company does not seek business expansion. PSFe's market perception differs from the high-profit group's negative view of Thailand's competitive landscape and future prospects. This finding is consistent with previous research (Csaszar & Levinthal, 2016; Garaus et al., 2025), which shows that managers' environmental perception is central to the business model.

Characteristics of the low-profit group (PSFa).

PSFa was established before any other PSF included in this review and operates efficiently as a one-person business. Its business model centers on providing information in response to customer inquiries about Thailand's tax system and laws. Although this is a professional service, the model involves several professions (accounting, taxation, and law), so it does not align with the accounting profession's framework. This suggests that PSFa's business model is vulnerable to competition from non-professionals who offer similar services. Furthermore, technological developments such as the internet and AI have enabled clients to access necessary information directly, which may reduce demand for the professional services PSFa provides. As a result, PSFa has experienced declines in both sales and profits since 2016.

DISCUSSION

The main finding of this study is that Japanese CPAs who independently started businesses in Thailand managed differentiation and conformity by assigning them to separate dimensions: scope of services and method of delivery. Their practices maintained a high degree of conformity in the "what to do" dimension (scope of services) while deliberately introducing heterogeneity in the "how to deliver" dimension (method of delivery). In nearly all cases analyzed, the core business model consistently focused on the expected CPA service areas (accounting, taxation, and auditing) from startup to the present, with no significant changes in the services offered. This approach relies on the specialized experience and knowledge gained in previous positions. From the perspective of conformity, these services are considered "work performed by CPAs based on prior experience." Therefore, the differentiation observed in this study does not result from new service content.

On the other hand, differentiation was achieved primarily in the dimension of "how services are delivered," specifically through inputs (selection of hired personnel), organizational processes (standardization, efficiency, and speed improvements of tasks), and outputs (methods of service delivery and customization). Differentiation in organizational processes was confirmed in many cases. This indicates an intent to create customer value, such as speed and reliability, by redesigning the delivery process rather than changing the content of the professional services themselves.

More importantly, these differentiations did not occur as one-time strategic decisions at a specific moment, but as ongoing processes. The data from this study did not reveal a clear, single turning point indicating when differentiation occurred. Instead, CPAs who become entrepreneurs continuously reassessed the content and intensity of differentiation based on managerial judgments, such as whether their business was self-sustainable or had reached the desired growth level.

In response to RQ1, this study shows that overseas startup PSFs achieve optimal distinctiveness through a process-oriented approach: first, they maintain conformity in professional services based on the profession; second, they introduce heterogeneity in delivery methods; third, they iteratively adjust these elements according to the entrepreneur's perceptions of growth and assessments of

sustainability. RQ2 asks how the strategic challenges of achieving optimal distinctiveness relate to the profitability and growth of their PSFs.

The second finding of this study is that the strategic challenges related to achieving optimal distinctiveness among the CPAs who manage PSFs are connected to the profitability and growth of their firms. The analysis indicates that, even in a homogeneous professional market, businesses that address needs consistent with current trends and environmental changes are more likely to maintain a relatively stable revenue structure.

All surveyed PSFs operate within the expected CPA service domains of accounting, taxation, and auditing, showing high conformity in service content. However, differences in profitability and growth trajectories depend on their choice of core market needs. For example, businesses that address needs such as supporting forward-looking decision-making and management judgments, or that provide comprehensive support across multiple service areas, tend to build more enduring client relationships. This reduces demand fluctuations and results in a more sustainable revenue structure. In contrast, businesses that focus on providing information about systems and rules or executing standardized tasks, although requiring expertise, are more likely to experience standardization of work content and external substitution. Without conscious differentiation, these businesses are more vulnerable to competition and technological advances.

Significant differences in profitability were observed based on how distinctiveness was developed. In the high-profitability group of PSFs, differentiation was not ad hoc or reactive; instead, it was explicitly and systematically integrated into the business process and proactively updated. Differentiation in delivery methods, such as standardization, manualization, and the use of IT/AI, enabled more efficient and stable service provision with consistent quality. This approach supported higher profit margins and the scale expansion targeted by management.

In contrast, in the medium- and low-profitability groups, differentiation was present but often applied reactively to customer requests or was not fully integrated into organizational processes. These groups showed greater revenue volatility. This indicates that the degree to which differentiation

is embedded in organizational operations as part of the business model, rather than its simple presence or absence, can affect the revenue structure.

Thus, in response to RQ2, this study shows that differences in PSF profitability and growth trajectories can occur within homogeneous professional markets when firms both select market needs that align with changing times and environments and systematically and continuously develop heterogeneity in delivery methods.

CONCLUSION

Contributions

This study conducted a comparative case study of PSF, a company founded in Thailand by a Japanese CPA, and identified solutions to the two research questions. The findings show that PSF strategically seeks optimal distinctiveness in its business model to achieve survival and growth. These results do not claim a direct causal relationship between differentiation and high profitability. However, the significance of the findings is in illustrating, through comparative case study, the specific pathways that connect the challenges of achieving optimal distinctiveness to PSF's profit structure.

This study makes two theoretical contributions. First, by combining optimal distinction and dual-embeddedness, it demonstrates the mechanism and strategic importance of achieving optimal distinction specific to PSFs. Optimal distinction refers to strategic positioning behaviors and the recognition and establishment of organizational identity. Previous research has examined optimal distinctiveness achieved by actors within the same market or industry through conformity and differentiation, as well as its significance (Demetry and Doern, 2025; McDonald and Eisenhardt, 2020; Pinkse et al., 2022; Zhao et al., 2017). Although optimal distinctiveness, which assumes a single environment, is effective for explaining firms' strategic behavior mechanisms, it does not fully explain the behavior of actors such as PSFs, who require dual-embeddedness in both the profession and the market. For PSFs, dual-embeddedness is a defining condition, and optimal distinction must be achieved within each environment or across both. Pursuing optimal distinction under dual-

embeddedness increases the range of strategies available to PSF top management and makes the top management's perception of the environment more influential on the PSF's success or failure. This study finds a relationship between the variety of specific strategies adopted by PSFs and their profitability. Therefore, the relationship between optimal distinction under dual-embeddedness and performance requires further investigation, considering multiple factors, such as the leadership of PSF top management.

Second, this study contributes to professional entrepreneurship research. PSF research mainly examines PSFs without a defined profession, such as consulting firms, and large-scale PSFs, such as the Big Four. In contrast, entrepreneurship research focuses on general corporate entrepreneurs and intrapreneurs who establish businesses through corporate spin-offs. As a result, although research on professional entrepreneurs is emerging as a distinct domain (Stewart, 2018), relevant studies are still limited. This comparative case study of PSFs led by overseas-based CPA entrepreneurs fits within this domain, showing how globalizing CPAs manage their firms as both entrepreneurs and PSF leaders within institutional environments and markets.

The practical contributions are threefold. First, the CPAs who establish PSFs overseas should prioritize maintaining professional conformity and identifying profitable opportunities, rather than seeking immediate differentiation. In international contexts, where institutional protection of home-country qualifications is often limited, it is essential to demonstrate value through quality, ethics, and procedural compliance in core services such as accounting, tax, and auditing to build client trust. However, this study shows that even in homogeneous professional markets, market demand varies. Therefore, the CPAs should identify areas within their market that have high demand and offer sustainable profitability at a given time, while remaining within the scope of services an accountant can provide based on prior experience. Because these profitable areas may change over time, maintaining conformity should be viewed as a flexible approach that allows for adaptation within the established professional scope.

Second, building differentiation is more effective when organizations focus on "how to deliver" the service rather than solely on the content, or "what to deliver." High-profit groups show that

differentiating business processes through standardization, manualization, speed improvements, and the use of IT/AI can increase customer value and improve profit margins. For PSFs that depend heavily on human resources, integrating process differentiation into organizational operations early, using layered combinations of multiple initiatives rather than isolated improvements, supports reproducibility and scalability.

Third, both maintaining conformity in business domain selection and introducing heterogeneity in delivery method design are ongoing management challenges that require continuous updates rather than one-time decisions. The case studies in this research show that PSFs that proactively anticipate differentiation and regularly update their strategies tend to achieve more stable profitability. This result aligns with the observation that the CPAs, in their managerial roles, continually assess which aspects of their business model should remain homogeneous and which should be differentiated. They review these aspects regularly, considering whether the firm is self-sustaining and has reached its targeted growth. Therefore, the CPAs need to engage in an iterative design process that combines re-evaluating domain selection (pivoting) within the homogeneous scope with ongoing improvement and experimentation in delivery methods.

Overall, this study shows that Japanese CPAs who start businesses overseas need to achieve optimal distinctiveness in their field. This requires practices that do not depend on external factors such as "qualifications," "brand," or "market growth." Instead, they should (1) continuously select profitable domains within areas of conformity, (2) integrate differentiation in delivery methods into the organization in a multi-layered and rapid way, and (3) update these practices on an ongoing basis.

Limitations

A limitation of this study is its focus on Japanese CPAs who started businesses in Thailand, excluding entrepreneurs in other Asian countries. As a result, two key issues remain unaddressed. First, the study does not examine how to achieve optimal distinctiveness at the global level. As PSFs expand internationally, CPA careers are also becoming global. Some participants in this study have established multiple PSFs across Asian countries, including Japan, beyond Thailand, and co-manage

them with other CPAs. Thailand and other Asian countries differ in institutional environments, such as laws and market conditions. For professionals starting businesses in multiple countries, achieving optimal distinctiveness for their business model requires doing so across borders, not only within each country. This situation involves achieving optimal distinctiveness based on multiple embeddedness, which requires analysis from a broader perspective.

Second, the small sample size limits generalizability. This study interviewed 10 of the 14 eligible participants, analyzed the interview content, and conducted comparative case studies on 8 individuals. Although including about half of the eligible participants adds value, the small sample size makes it difficult to assess whether the findings apply to PSFs who started businesses in other countries.

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Table 1 List of interviewees.

ID	Year of foundation	Major business 1.audit, 2.accounting, 3.other	Methods of foundation. 1.Starting business, 2.Capital contribution through succession, 3.Acquisition	Number of staff including interviewee	Management of multiple companies 1.Yes, 0.No	Average gross profit margin* (2016–2024)
PSFa	1992	3	1	1	0	-3.02%
PSFb	2006	2	1	60	0	10.99%
PSFc	2008	1	1	5	0	14.45%
PSFd	2013	2	1	10	0	6.54%
PSFe	2015	2	3	16	1	3.06%
PSFf	2017	1	1	24	1	9.29%
PSFg	2019	3	1	9	1	19.85%
PSFh	2021	2	2	33	0	16.46%
PSFi	2022	2	1	4	1	na
PSFj	2024	2	1	6	1	na

*The average gross profit margin for PSFs founded before 2016 uses the average value from 2016 to 2024. For PSFs founded in 2017 or later, the average value from the year of founding to 2024 is used. PSFi and PSFj may not have obtained accurate financial data.

Table 2 Coding results

1st (in-vivo coding)	2nd (axial coding)	Aggregated theme
Input differentiation	Differentiation	Optimal distinctiveness
Organization process differentiation		
Output differentiation		
Recognition of necessity of differentiation		
Difficulty of differentiation: profession matter	Pressure toward conformity	
Difficulty of differentiation: employee matter		
Difficulty of differentiation: customer matter		
Professional ethics	Professional identity	
Attachment to profession		
Commitment to professionalism		
Negative recognition of business environment	Recognition of business environment	
Positive recognition of business environment		
Defining business models within profession	Business model definition	
Defining business models out of profession		
No clear business models		

Table 3 The relationship between coding results and PSF performance

		Point of differentiation				No differentiation
		Professional identity	Input	Organization process	Output (service)	
Business model	Profession (audit, accounting)	PSFc**	PSFb**	PSFb**, PSFh**, PSFf*	PSFb**	PSFe*
	Other	PSFa	PSFg**	PSFg**	PSFa	
No clear business model				PSFd*		

** 2016-2024 average sales profit margin of 10% or higher (for companies founded after 2016, average since founding date)

* 2016-2024 average sales profit margin of 0% to less than 10% (for companies founded after 2016, average since founding date)

no asterisk 2016-2024 average sales profit margin negative (for companies founded after 2016, average since founding date)

Entrepreneurs' Religiousness as a Control Mechanism in Reducing Moral Disengagement and Unethical Decision Making: A Multi Country Study

Saddam Khalid (University of Hyogo, Japan)

Hassan Imam (Roehampton Business School, United Kingdom)

Alexis Sandes (Kyoto University, Japan)

Tomoki Sekiguchi (Kyoto University, Japan)

Jie Li (Xi'an Jiaotong-Liverpool University, China)

Shehnaz Tehseen (Sunway University, Malaysia, Malaysia)

Adriana Bonomo-Odizzio, (Universidad Católica de Uruguay, Uruguay)

Catherine Krauss-Delorme (Universidad Católica de Uruguay, Uruguay)

Margie Faith (Tecnológico de Costa Rica, Costa Rica)

Leslie Bridshaw Araya (Universidad de Valparaíso, Chile)

Lizbeth González Tamayo (Universidad de Monterrey, Mexico)

Mónica Blanco-Jiménez (Universidad Autónoma de Nuevo León, Mexico)

Carolina Ortiz Riaga (Universidad Militar Nueva Granada, Colombia)

ABSTRACT

Past research raised serious concerns over entrepreneurs' desire for financial gains that lead them engage in moral disengagement and unethical decision making. The current study introduces the construct of religiousness as an explanatory variable in understanding entrepreneurs' ethics. Using Social Cognitive Theory, we examine how intrinsic and extrinsic religiousness affect empathic concern, moral disengagement, and unethical decision-making among entrepreneurs. Data collected from 1,042 entrepreneurs across nine countries of two continents reveal that intrinsic religiousness fosters empathic concern and diminishes moral disengagement. Conversely, extrinsic religiousness, which is driven by self-serving motives, correlates with lower empathic concern and higher moral disengagement, leading to unethical decision making of entrepreneurs. Our findings contribute to the entrepreneurship literature by revealing how different types of religiousness can influence entrepreneurial decision-making, offering insights into the complex interplay of cognitive and emotional mechanisms that shape entrepreneurial behavior. This invites further research into the nuanced relationship between religious beliefs and entrepreneurial processes

Keyword: Entrepreneurship, Management, Organizational Behavior

Organizational Decision-Making as Inference Under Top-Down and Japanese Consensus-Based Decision Architectures

K. Skylar Powell (Westen Washington University, United States of America)

ABSTRACT

This study addresses a lack of formal cognitive processes and mechanisms, that can scale across levels of analysis, in the micro-foundations research on organizational decision-making. Specifically, this study applies the Free Energy Principle (FEP) to model belief dynamics and decision making to reduce perceived uncertainty and risk in the future. Specifically, decision-making is cast as active inference, where actors in organizations minimize future surprise, or free energy. Using a nested Monte Carlo simulation, two distinct inference regimes are contrasted/compared, a top-down architecture and a traditional Japanese consensus-oriented model. While top-down structures prioritize rapid risk reduction through short decision latency, more traditional Japanese consensus-oriented regimes prioritize comprehensive ambiguity reduction via collective belief alignment. By identifying these trade-offs, this study demonstrates a micro-foundations framework at the individual level that can be applied within different meso-level organizational architectures which structure processes for organizational decision-making.

Keyword: Management, Organizational Behavior, Strategy,

Rethinking Global Mobility in Asia: Gender, Digitalization, and the Future of International Knowledge Work

Hina Mehreen (Adelaide University, Australia)

Tomoki Sekiguchi (Kyoto University, Japan)

ABSTRACT

This panel examines how women's global mobility in Asia is being reshaped by digitalization, organizational change, and evolving talent management practices, with a particular focus on insights from Japanese multinational corporations (MNCs). Global mobility has traditionally relied on physical expatriation as a key mechanism for knowledge transfer and leadership development. However, these systems have been persistently gendered, resulting in the underrepresentation of women, especially women originating from Asia, in international assignments. The first panel contribution explores women's global mobility from Asia in the digital era. Drawing on metanational theory, it discusses how virtual expatriation and digitally mediated global roles may expand access to international knowledge networks while also risking new forms of invisibility, unequal recognition, and intensified work–family tensions. The second contribution focuses on women's global mobility within Japanese MNCs. As Japanese firms seek to increase gender diversity and develop female talent, they face growing challenges in identifying candidates willing and able to undertake overseas assignments. This discussion examines how internal mobility systems, organizational expectations, and talent development practices shape women's participation in global roles. Together, the panel offers an interactive, discussion-led exploration of continuity and change in women's global mobility in Asia, highlighting theoretical, organizational, and practical implications for international business scholarship.

Keyword: Management, Women's Global Mobility, Japanese Multinational Corporations, Digital Global Work, Gender and International Careers, Metanational Theory

Digital transformation and Green economy readiness: Unveiling the underlying motives of Japanese MNE digital and green economy sector investment intent

H Richard Nakamura (University of Gothenburg, Sweden)

Patrik Ström (Stockholm School of Economics, Sweden)

Åsa Malmström Rognes (Stockholm School of Economics, Sweden)

ABSTRACT

The transition to a green economy has become a central focus for OECD countries, aligning with the UN's SDGs. This shift impacts environmental factors and enhances the capacity of firms and regions to achieve sustainable, long-term economic growth. Traditional industries remain essential, providing jobs and exports at the intersection of technology and production, while services and advanced production are increasingly vital for competitiveness. Japan, with its extensive experience in integrating advanced manufacturing and services, can leverage investments and cross-border acquisitions to facilitate its green economy transition. These investments have the potential to enhance Japan's industrial capabilities. The Green Alliance, following the EU-Japan Economic Partnership Agreement, offers a platform to internationalize green activities and bolster transitions in both domestic and foreign markets for Japanese firms. This transition includes digitalization and service-oriented business models, necessitating a deeper understanding of the interplay between Japanese strategic investments and the green transition. Based on empirical research in both Europe and Japan, this research aims to explore the theoretical and practical implications of green FDIs for firms and regions under the new EU-Japan EPA dynamics. Our findings suggest that the interplay of public and private strategies and policy development is crucial, and the visions and actions of the Japanese government has a strong indicative role for the Japanese business' will to engage in the Green Transformation. Focusing on the green transition can be a viable strategy for firms already active internationally and for those seeking to develop competitive advantages in both home and host markets.

Keyword: Economics, Strategy, Japan, EU, Green Economy, Digital Transformation, Green Transformation, Green Finance

Zen, Wabi-Sabi, and Beyond: What Drives Voluntary Simplicity in Contemporary Markets?

Peeraya Aimimtham (Thammasat Business School, Thammasat University, Thailand)

Sukrit Vinayavekhin (Thammasat Business School, Thammasat University, Thailand)

Kedwadee Sombultawee (Thammasat Business School, Thammasat University, Thailand)

Mariko Watanabe (Tokyo University of Science, Japan)

Akitsu Oe (Tokyo University of Science, Japan)

Sakun Boon-it (Thammasat Business School, Thammasat University, Thailand)

ABSTRACT

Japanese cultural traditions such as Zen, Wabi-Sabi, and Mottainai emphasize moderation, sufficiency, and respect for material resources. These principles align closely with Voluntary Simplicity (VS), a consumption orientation that has emerged in both Western and Japanese societies and reflects a deliberate shift toward more intentionally restrained consumption. While existing literature in Japanese contexts extensively focus on the measurement of VS and its impacts, this paper takes a step back to understand what drives VS. Reflecting on the existing literature, this paper finds that VS can be shaped by: (1) personal value-based orientations; (2) critiques of capitalism and social acceleration; (3) psychological discomfort and existential motivation; and (4) socialization, family, and cultural transmission. This paper advances Japanese business research, especially in the fields of marketing and consumer behavior, by clarifying how different motivations give rise to simplicity-oriented consumption and by offering practical insights for firms navigating changing consumer values and market expectations.

Keyword: Management, Marketing, Voluntary Simplicity, Sustainable Consumption

The Internationalization of Emerging Market Multinationals in Advanced Economies: Comparative Case Studies of Thai Hospitality Multinationals in Japan

Rapeeporn Rungsithong (Chulalongkorn Business School, Chulalongkorn University, Thailand)

Akiko Sato (Kyushu University Business School, Kyushu University, Japan)

ABSTRACT

Emerging market multinational enterprises (EMNEs) have become increasingly active investors in advanced economies, yet existing research remains heavily concentrated on manufacturing firms from large emerging countries, offering limited insight into service sector EMNEs from smaller economies. This study addresses this research gap by examining the internationalization of Thai hospitality multinational enterprises entering Japan, one of the world's most institutionalized and culturally demanding tourism markets. Drawing on the OLI paradigm, firm-specific advantages (FSAs) perspective, institutional theory, Resource-based view (RBV) and Dynamic capabilities, Internationalization Process Model (IPM), and the springboard framework, the study adopts a comparative qualitative case design focusing on leading Thai hotel groups, including Dusit, Minor, Centara, and Erawan. The research investigates three interrelated questions: which theories best explain Thai MNEs' internationalization into Japan, which entry modes they adopt, and how these entry modes are leveraged to establish and manage operations successfully in an advanced economy. Preliminary analysis suggests that Thai hospitality MNEs internationalize through learning-oriented and path-dependent processes that combine incremental commitment with selective, strategically motivated non-linear entries. In particular, the four selected case firms, including Minor Group, Centara, Dusit, and Erawan, demonstrate that Japan does not merely function as a scale-driven market for Thai MNEs; rather, it emerges as a capability-upgrading and experiential learning context in which service-based firm-specific advantages are developed through deep institutional embeddedness and network-based collaboration. As a work in progress, the study aims to advance internationalization theory by integrating process-based learning, service-sector dynamics, and underrepresented emerging-market origins into the analysis of EMNE expansion into advanced economies.

Keyword: Management, Strategy, Emerging Multinational Enterprises (EMNEs), Internationalization, FDI, Hospitality, Thailand, Japan

Corporate Participation in Standard-Setting Organizations: A Review and Agenda for Performance Effects

Yukako Sugiura (Tokyo University of Science, Japan)

Mariko Watanabe (Tokyo University of Science, Japan)

ABSTRACT

International standards have increasingly served as strategic tools in recent years, shaping market access conditions and competition rules for companies by linking them to regulations and certifications, rather than merely standardizing technical specifications. As major countries accelerate their standardization policies, Japanese companies face not only the risk of unfavorable rule-making in key areas, but also greater exposure to sensitive supply chain information and governance risks stemming from expanding certification requirements. Against this backdrop, this study conceptualizes participation in Standard-Setting Organizations (SSOs) in ISO/IEC-type de jure international standardization through activities such as committee work, working groups (WGs), national balloting and commenting procedures through national bodies in the standards development process as a proactive rule-shaping strategy. It reviews prior research on the impact of SSO participation on corporate performance (financial results, innovation, market valuation, legitimacy, and reputation) and synthesizes the underlying mechanisms and boundary conditions. It then presents hypotheses on the impact of SSO participation and the conditions under which firms participate in corporate performance, outlines a future research agenda incorporating an international comparative perspective, and derives implications for Japanese firms.

Keyword: Strategy, Management, Finance, ISO/IEC, De Jure Standardization, Standard-Setting Organizations (Ssos), Nonmarket Strategy, Corporate Performance, Japanese Firms

Japanese Firms' Human Capital Strategies in Middle-Income ASEAN Economies: Education, Institutional Constraints, and Long-Term Competitiveness

Masatoshi Hara (Business Breakthrough University, Japan)

ABSTRACT

This study examines how Japanese firms' human capital strategies are shaped and constrained within middle-income ASEAN economies, and how these dynamics affect long-term competitiveness and skill outcomes. While Japanese multinational enterprises are known for firm-specific skill formation, on-the-job training (OJT), and long-term employment practices, their transferability to host-country contexts cannot be assumed. In many ASEAN economies, uneven education systems, fluid labor markets, and institutional fragmentation condition firm-level human capital development. Based on qualitative document analysis of twenty academic studies, policy reports, and institutional publications, this study applies a theory-driven coding approach using ATLAS.ti. The results show that institutional constraints represent the dominant conditioning factor influencing firm-level human capital outcomes. Labor mobility and turnover function as a key transmission mechanism through which institutional conditions undermine skill retention and training returns. Consequently, firm-level practices such as OJT and internal skill development are necessary but insufficient without supportive institutional environments. By refining an existing firm-level human capital framework, this study demonstrates the institutional contingency of human capital strategies in middle-income ASEAN economies.

Keyword: Japanese Multinational Enterprises; Firm-Level Human Capital Strategies; Middle-Income Asean Economies; Institutional Constraints; Labor Mobility; Long-Term Competitiveness

1. Introduction

Despite years of positive economic growth and integration into a global value chain, many middle-income economies in Association of Southeast Asian Nations (ASEAN), including the Philippines, Thailand, Indonesia, and Vietnam have not yet made considerable progress in their transitions to higher value-added activities. This has been referred to as the "middle-income trap", whereby economies that are subject to this middle-income trap are held back by their historical structural limitations (such as low-quality educational systems, ineffective labor markets, and lack of institutional capability) that will hinder their ability to create products and/or services with a higher value-added than what currently exists in their respective markets.

As a response to these issues, many economies have looked to foreign multinational corporations to fill in the gaps and support human capital development and industrial upgrading of host economies. In particular, the multinationals from Japan (Japanese multinationals) have a uniquely situated role in ASEAN countries. For many years, Japanese multinationals have been able to create and maintain relationships with ASEAN-based workers by providing them with high-quality job training, a focus on the concept of lifetime employment, and developing firm-specific skills through an extensive and intensive on-the-job-training (OJT) program. Historically, these practices resulted in an increase in the productivity and competitiveness of the Japanese economy and provided an opportunity for the potential growth of human capital in host economies by providing access to an increased level of skill development than what would normally occur within an ASEAN economy.

The transferability of Japanese firms' strategies for human capital to middle-income ASEAN countries is not guaranteed. Human capital is not developed in a vacuum but is embedded within the country's education system, the labor market and government policies. In many middle-income ASEAN countries, there are significant variances in education quality; a lack of vocational education systems; and high levels of worker mobility and mismatches between skills and jobs. All these features may limit, change or even negate companies' efforts to find, enhance and keep skilled workers.

Most of the literature regarding Japanese companies' presence in ASEAN focuses on in-company training practices, localising skills to the Japan context and the establishment of internal labor markets. However, much of the existing research implies that Japanese companies' models of human capital may be transferred to countries

outside of Japan with minimal changes. There has not been sufficient research on how Japanese companies adapt their human capital strategies to the unique aspects of middle-income ASEAN countries and what those adaptations mean for both the firm's competitiveness and for development outcomes in the host country.

This paper seeks to fill a gap in existing literature by analysing the human capital strategies employed by Japanese firms and the constraints placed upon them by their local environment through an institutional and developmental lens. The principal research question directing the study is: ***How are Japanese firms' human capital strategies adapted and constrained within middle-income ASEAN economies, and what are the implications for long-term competitiveness and human capital development?*** In doing so, this paper looks at how firm-level HR practices and host country institutions interact with one another to shape the environment in which the human capital strategy exists, thus moving beyond purely firm-based explanations.

The paper has three objectives. First, it will analyse the key components of the human capital strategy of Japanese firms in middle-income ASEAN countries. Second, it will determine how the HR strategy of Japanese firms is constrained and shaped by the institutional context within which they are operating (primarily through education systems and labour market conditions). Third, it will identify how these relationships may be used to understand the potential for longer-term industry competitiveness and broader human capital development in those host markets.

The paper, along with an assemblage of valuable management studies framed around human capital theory and development-oriented institutional analysis, serves as a linkage unto the works on international business and development in the ASEAN. It does this by providing a conceptual framework for understanding the role of Japanese firms in the human capital formation process in middle-income economies and lays the path for future research linking firm-level strategy to macro-level characteristics of development outcomes.

2. Literature Review and Theoretical Positioning

2.1 Human Capital Theory and Firm Strategy

The purpose of this article is to evaluate the basic principles of human capital theory with a focus on firm-specific and general skill development, which is fundamental to developing competitive advantage at the firm level.

Previous research suggests that the ability to develop, utilize, and retain a qualified workforce is one of the keys to sustaining competitiveness for firms—along with technological and capital investment management (Do et al., 2019).

In an increasingly globalized and competitive marketplace, such as the ASEAN countries, organizations must align their HRM policies with their overall corporate strategy in order to remain competitive and grow. Furthermore, creating and maintaining this alignment is especially challenging for MNEs because they must operate in multiple types of institutional environments. In addition to the education systems, laws on labor relations, and regulatory requirements of those countries, MNEs must also develop their skills using a combination of local policies and practices as well as utilizing a certain level of global standardization (Krzywdzinski & Jo, 2020). To accomplish these dual objectives, it is common for MNEs to implement hybrid strategies for managing human capital using a combination of global best practices and local adaptations (Do et al., 2019).

Japanese multinational companies are trying to adapt their traditional ways of creating and developing skills for their employees and their long-term practices of keeping employees in a company for a long period of time (Lee & Nahm, 2024; Makino & Lehmberg, 2019) to the different needs and institutions of countries where they are expanding. Understanding how FDI impacts a local area's development of human capital allows us to move beyond the general finding and potential explanations of labor market outcomes and provide more specific and context-dependent results (Ibarra-Olivo et al., 2024)

From a broad international business perspective, the human capital strategies formulated by MNEs will also be influenced by the transfer of knowledge across borders; the creation of local capability to build knowledge; and the processes of organizational learning. Global talent management practices, which are different than the definition of human capital, help organizations convert their investment in human capital to create competitive advantage, especially when examining global talent management from a contingency approach that accounts for firm specific competitive strategies (Collings et al., 2018). The success or failure of these strategies is closely dependent upon the institutional conditions in the host country. This includes the level of flexibility of the labor market as well as the quality of the educational infrastructure (Ibarra-Olivo et al., 2024; Teixeira, 2023).

Therefore, to understand how to sustain a company's competitive advantage in a multinational environment, firms must understand how to combine the best of the global HR management practices with the local institutions to develop the competencies of the organization (Minbaeva et al., 2024).

2.2 ASEAN Middle-Income Economies as a Developmental Context

2.2.1 ASEAN's Transition toward Middle-Income Status and Changing Growth Models

The economies of ASEAN countries are transitioning from a growth model based on accumulation of production factors, to more sophisticated models based on productivity. As ASEAN countries move towards higher productivity growth, the need for revised human capital development strategies has arisen, requiring focus on the development of more sophisticated skill sets, continuous learning, and adaptability to maintain long-term growth and global competitiveness (Ibarra-Olivo et al., 2024). As a result of the increased complexity associated with operating in these new environments, human resource management will be impacted by institutional environments that are characterized by numerous competing influences, including opportunities and constraints, which may provide firms with the ability to manage their human resources effectively (Do et al., 2019). In addition, as capital-intensive and low-wage growth models have been found to be limited, the drive toward innovation and the need for highly skilled workers who are able to respond to both technological changes and changes in consumer preferences is becoming increasingly evident (Ahmed & Akaak, 2024). Thus, in order to enable organizations to adapt to these evolving environments, the paradigms through which human resource management has traditionally been approached are in need of revision in order to establish a more effective alignment of the strategies of organizations with the broader objectives of national development (Do et al., 2019). There is mounting evidence demonstrating that the complexity of advanced manufacturing sectors in ASEAN nations can be viewed as a driver for the urgent demand for systematic human capital creation to enable both Export-Led Growth and the Diversification of Product Offerings (Andersen et al, 2023). Thus, the quality of Institutions and the quality of Human Capital Development are viewed as fundamental drivers of continuing growth in Middle Income Countries (Ibarra-Olivo et al, 2024). Increasingly, strong Educational Systems and ongoing Human Resource Development are being recognised as critical for developing flexibly

adaptive and innovative Workforces, especially in ASEAN countries at risk of being caught in the Middle-income Trap (Hara, 2025). To escape this trap, sustained human resource development, investments in Science and Technology, and synchronised policy initiatives to improve human capital and healthcare systems, and build up infrastructure are required (Hara, 2024). Investments are necessary to prepare a Workforce for the changing demands of a globally integrated economy and the evolving World of Work (Galas & Ysla, 2024; Mabaso & Ontong, 2025).

2.2.2 Service Sector Expansion and Shifting Skill Demand

The structural change occurring in ASEAN has increasingly integrated the growth of the service sector (services) and the manufacturing sector (manufacturing). The dual transformation requires a diversified skilled workforce that will operate within multiple economic sectors, which is creating increased demand for targeted human capital development programs to support both industrial skills and service sector skills. Regional economic integration strategies, including the ASEAN Economic Community (AEC), are enhancing this dynamic by enabling labor mobility as well as introducing new issues around cross border human resource management (Dary et al., 2019). Therefore, this issue is an indication that developing a comprehensive policy framework for skills acquisition, quality of education and employee well-being is a necessity in the ASEAN context (Galas & Ysla, 2024).

As the service sector continues to expand, and countries become increasingly integrated into the global value chain, this also creates additional demand for higher value-added, knowledge-intensive and service related skills. Through digitalization and technological advances, many Industries are going through a transformation of the types of skills needed; as a result, the demand for medium-skilled labor has decreased while there has been an increase in the demand for high-skilled professionals (Mendoza et al., 2023; Human Capital Development in South Asia, 2017). By having an overall transformation of this nature, it puts significant increasing pressure on the need to upskill the current workforce while continuously improving professional development and reforming education (Hara, 2023).

As a firm-based approach to increasing skills through OJT, firm OJT has become significantly more relevant as both a theoretical and practical foundation for developing skills that address company-specific skills needs, as

well as providing for ongoing workplace learning capabilities, and to address emerging new skills needs in light of changing workforce trends, i.e., skills needed for the future of work (Human Capital Development in South Asia, 2017). In addition, as products become increasingly complex and as the intensity of global competition increases, strategic investing in human capital will be critical to the future of both national and firm competitiveness in ASEAN nations (Mendoza et al., 2023). While strategic investments in human capital have become more critical to developing economic resilience in ASEAN as well as to maintaining competitive advantage at the firm level, these investments are also being tested by the ongoing challenge of retaining talent and the mobility of labor; this highlights the need for a more integrated approach to developing skills ((Fairman et al., 2022)).

2.2.3 Education and TVET Gaps in Middle-Income ASEAN Economies

Despite increasing access to educational training and development across the ASEAN region, there are still many challenges and limitations on the quality of education within this region. This quality imbalance is a significant factor in the growing mismatch between what the educational system produces as outputs, and what those industries require in terms of job-specific skills, particularly within the high-growth and technology-intensive sectors of the global economy (Ibarra-Olivo et al., 2024). These skill gaps present barriers to economic development for many countries attempting to move beyond the middle-income stage through industrial upgrading and technological advancement (Hara, 2023).

The lower secondary education systems in many ASEAN member states focus on building the foundational competencies required for continuing education, while higher secondary and tertiary education systems throughout the ASEAN member states are struggling to provide the analytical, problem-solving, and entrepreneurial skills needed by advanced industries and the global digital economy (Hara, 2023; Mendoza et al., 2023). In response to these challenges, a number of governments have promoted the use of vocational education, reskilling, and upskilling initiatives; however, aligning those initiatives and programs with the current and future needs of rapidly evolving labour markets has proven to be a persistent challenge (Mendoza et al., 2023).

The disparities identified in previous paragraphs stem from structural issues, which include fragmented policy implementation; differences between urban and rural populations; and weak connections between education systems and economic development strategies (Hara, 2025). Examples of current initiatives to strengthen the ties between industry and academia, such as Indonesia's *Kampus Merdeka* initiative, show promise, but they also demonstrate the barriers created by differences in the distribution of educational infrastructure and faculty capacity (Hara, 2025). As a consequence of these factors, businesses are increasingly taking on the responsibility for developing skilled workers by investing directly in training and reskilling to address the misalignment of external education systems (Mendoza et al., 2023; *Asian Development Outlook*, 2018). This is indicative of the challenges involved in relying upon the traditional forms of education to adapt quickly enough to the rapid rate of innovation associated with the impact of technology and the changing landscape of industry structures (Intaratat, 2021; Yoto et al., 2024; *The Paradox of Education Spending and Economic Growth*, 2025).

2.2.4 Labor Mobility in ASEAN: Domestic and Cross-Border Dynamics

High levels of domestic mobility across sectors and across the country are characterised by the highly mobile labour force that forms part of the ASEAN Economic Community (AEC), demonstrating significant efficiencies in assigning labour across the region. However, much of this migration takes place informally and regularly results from significant differences in economic opportunity between regions or sectors, creating a higher level of vulnerability for workers and limiting the potential for skill development (Bruni, 2013; Fairman et al., 2022). A further consideration is that all mobility often occurs without social protection for individuals, reinforcing the cycle of unemployment from unstable sources of work.

In addition, the cross-border movement of labour between ASEAN Member States presents further challenges to the continued development of skilled workers in ASEAN and the assignment of skilled labour where and when it is needed. Most of the flow of labour to and from ASEAN Member States is considered unskilled labour migration flow, with employees migrating from less developed countries such as Cambodia, Laos, and Myanmar to develop labour in the more economically developed ASEAN Member States (Bruni, 2013; Susilo and Subchanifa, 2016). The lack of harmonised labour standards and mutual recognition of credentials prevent skilled

workers from effectively utilising their skills and increase the vulnerability of migrant workers (Fairman et al., 2022; Chia, 2013).

The mobility patterns discussed above illustrate how the movement of labour can be understood as a concrete manifestation of institutional barriers to retaining skilled workers and stabilising the workforce. The differences in regulatory frameworks of different countries in ASEAN and limited portability of social security have made it difficult for businesses to retain trained employees as the costs involved to train those workers outstrip the returns on human capital (Basir, 2020; Adhisti, 2018). To overcome these challenges, there needs to be coordinated efforts at the regional level to develop and implement regional frameworks to provide support for the development of skills, protect workers, and allow for fair mobility within ASEAN.

2.2.5 Linking the ASEAN Context to the Middle-Income Trap Debate

Economic growth is defined as a country reaching its middle-income level and moving from a factor-driven to an innovation-driven economic model (Gentile, 2019). Countries must invest in human capital, technology, and institutions to sustain their productivity and competitiveness (Tran, 2013). Without these investments, economies will experience prolonged periods of stagnation while being unable to compete with low-wage and high-innovation economies.

In ASEAN, the difficulty of transitioning from a low-income to a middle-income economy is further complicated by the threat of falling into a "middle-technology trap" as a result of limited domestic innovation capabilities, which impede structural transformation and the upgrade of technology (Ke, 2024). The acquisition and development of human capital, in tandem with institutional development, are vital in providing a path for economies to elevate their level of value creation (Adhisti, 2018; Basir, 2020). However, many ASEAN nations face a significant barrier to the development of their economies because of the acute shortage of skilled workers who are ready to be employed in industry, particularly in areas of science and engineering (Basir, 2020).

Given the above information, we have developed an analytical perspective that links the middle-income context of ASEAN to firm-level human capital strategies, which are constrained by institutional environments. To escape from both the middle-income and the middle-technology traps, coordinated policy action must be taken to

stimulate investments in high-quality educational systems, research and development (R&D) facilities, and industrial upgrades to be reflective of the structure of each country's economy (Ke, 2024; Kumagai, 2018; Tran, 2013).

These strategies will also take into consideration the integration of ASEAN countries into larger regional and global production networks, as well as the extent of reliance on other large economies (Hara, 2024). With these factors in mind, this framework for human capital development in the case of middle-income countries is set against an analytical backdrop that examines how firms operating in middle-income ASEAN countries have to design and implement human capital strategies based upon the learning opportunities provided by their local institutional environment and the structure of their local economic environment (Hara, 2024; Ogawa et al, 2018). Based upon the characteristics of the middle-income ASEAN context, it can be assumed that the ability of ASEAN firm-level human capital strategies to be successful will depend on the institutional quality, labor market governance and linkages between business and education within the individual nations in which those firms are located. In order to better understand the particular policy actions needed to support the successful design and implementation of firm-level human capital strategies in middle-income ASEAN countries, the following section will examine the institutional constraints associated with this category of economies as they relate to understanding firm strategy in ASEAN.

2.3 Institutional Constraints in Middle-Income Economies

In their research on the status of middle-income economies, Gill and Kharas (2007) argue that such economies are often characterised by a combination of the structural challenges associated with the so-called "middle-income trap", wherein a country experiences stagnation in its economy for an extended period of time following its achievement of "middle income" status. At this point in a country's economic development, the advantages which were initially afforded to the country by virtue of low labour costs and capital accumulation are diminishing, and yet the ability for countries to transition to a higher value-added, knowledge-intensive economy has not yet been attained. Within the ASEAN region, a number of economies face the same plight as described above by Gill and Kharas; thus, the region's ability to successfully upgrade productivity is no longer solely reliant on the availability

or pooling of capital and/or worker labour, but instead upon the presence of skilled workers as well as the existence of supportive institutional frameworks (Tran, 2016).

Most studies to date thus far, have identified institutional structural weaknesses as one of the main issues contributing to the failure of many ASEAN economies to upgrade their productive capacity. Specifically, the existence of an imperfect and underdeveloped vocational training system, an inconsistent educational system, and fragmented labour market institutions, especially in the manufacturing and service sectors, have rendered ineffective many of the firm level training initiatives aimed at upgrading worker skills in many ASEAN countries and contributed to the creation of continuing mismatches in the types of skills available to the manufacturing and service sectors and the types of skills required by these sectors' production systems. In addition, the failure to adequately and comprehensively invest in, develop and maintain TVET systems throughout the region have created significant constraints and limitations in the workforce's capacity to successfully engage in technology absorption and technological innovation, even when foreign direct investment is present within a country (Ibarra-Olivo et al., 2024). Despite the perceived importance of vocational training as a contributor to the development of Human Capital in Middle Income Economies, it has been neglected or undervalued in a number of ASEAN Countries (Ibarra-Olivo et al 2024).

Institutions according to the institutional theory is that firms must develop their strategies in accordance with local regulatory conditions, educational systems and labour markets rather than copying what they do in their home country, this is particularly the case for the member countries that comprise ASEAN, as there exists an unusual amount of institutional heterogeneity between Members, thus leading to different conditions for human capital development (Tasane & Srun 2023). Multinational corporations are thus presented with many challenges in aligning their Human Resource Management (HRM) practices with the institutional frameworks that exist within the host country, while at the same time attempting to minimize instances of skills mismatch and workforce instability (Hara, 2025).

The impact of the historical legacy of institutions on human capital results can be demonstrated through empirical data. For example, in Cambodia, the impact of large-scale conflict has led to a reliance on low skilled labour and a centralized personnel management system, therefore limiting the spread of modern HRM practices and also

limiting the Resources invested into skill formation (Do et al., 2019). A similar set of institutional constraints and the presence of dual labour markets throughout ASEAN, supports the development of more flexible and task-oriented TVET systems that can meet the varied needs of the different industries and sectors within ASEAN (Ibarra-Olivo et al., 2024; Tran, 2013). The structures of the Institutions also demonstrate the Limits to Firm Level Interventions, without supporting changes to the Institutions.

Japanese MNEs operating in middle-income ASEAN countries will need to implement human capital strategies that allow for continued firm competitiveness despite having to navigate long-term institutional constraints imposed by the educational and labour market institutions within these countries. This topic has not been adequately addressed or integrated into any previous studies that have focused on this area.

2.4 Japanese Firms and Human Capital Development Abroad

Research on Japanese companies in Association of Southeast Asian Nations (ASEAN) has generally led to conclusions that Japanese companies are committed to training, gradual localisation, and internal labour markets. However, the majority of existing studies adopt an implicit premise that the human capital framework of Japan can also be effectively transferred to the host country context. This generally overlooks the significant cultural and institutional differences that exist in the middle-income ASEAN economies, which may hinder the full utilisation of Japanese style human capital models in those markets (Ibarra-Olivo et al., 2024). In particular, the role of FDI in shaping TVET outcomes has been largely unexplored in the scholarly literature, especially with regards to how FDI types and positions in GVC manifold affect skill formation processes (Ibarra-Olivo et al., 2024). Therefore, while the effectiveness of Japanese company human capital initiatives may be dictated by firm-level practices, these initiatives must also be compatible with local education and training systems, as well as local macroeconomic characteristics.

While these studies identify that Japanese-style human capital models must be further investigated, they do so within a framework that identifies differences between Japan and host countries, with particular attention to the impact of structural constraints, development level, and the local policy landscape on both the available opportunities and constraints faced by Japanese companies regarding firm-led human capital development

(Bozkurt et al., 2024). Consequently, this has important implications for policymakers regarding the need for more adaptable education systems and for greater connectivity between companies and their respective educational institutions to facilitate the upgrading of skills and prevent a longer-term stagnation in middle-income countries (Ibarra-Olivo et al., 2024).

This research adds to the body of literature that examines how MNEs (multinational enterprises) can contribute to the development of human capital and remain competitive within middle-income ASEAN countries through both the firm's strategic alignment with the host country's institution, and the alignment of the host country's institution with the firm's strategic goals (Mustafa & Komalasari, 2024).

2.5 Integrating Firm Strategy and Institutional Contexts: Research Gaps

From the previous sections, we can summarize the major components of the literature review related to our study about: (1) the relationship between firm strategy and human capital through the lens of human capital theory, (2) how institutional constraints impact business functions in middle-income economies, and (3) what types of practices firms use for managing human capital in Japan when they operate outside of Japan.

While all three components of literature offer insights, existing research on these three topics has been fragmented and provides limited explanations regarding the relationship between firm-level human capital strategies and their interactions within the institutional environment of a particular middle-income ASEAN economy.

The first area, human capital and international business, in terms of research, has primarily concentrated on assessing firm-level strategy as a predictor/correlate of firm performance and competitive advantage through the examination of the impact of training, development of skills, and the management of talent; on how firms gain, maintain, and utilize their competitive advantage. In the second area, there has been significant research conducted regarding the development of middle-income economies. Such research highlights the importance of improving the institutional capacities of middle-income economies by addressing the difficulties associated with the existing weak institutional infrastructure, specifically as a result of: (1) uneven quality of education, (2) the lack of a developed vocational training system, and (3) the presence of fragmented labour markets that prohibit the development of a skilled workforce, all of which cause middle-income economies to remain in a continual

state of stagnation. However, the connection or links between firm-level human capital strategies and their interactions with the institutional capacity of the ASEAN country have been relatively unexplored in the literature.

Also, institutional conditions are typically viewed as second order, providing context for firm behaviour in many of the studies already completed. The assumption is that education systems, regulations in the labour market, and policy structures are external factors for organisations. Treating these variables in this way can lead to incorrect evaluations of how much institutional constraints shape the formation, effectiveness, and sustainability of human-capital strategies developed and utilised by MNEs. The ASEAN region, which is made up of many middle-income economies, has a high degree of institutional variance. Given this variance, firms have to constantly adapt their strategies to the existing mismatches between skill supply and demand in the factories.

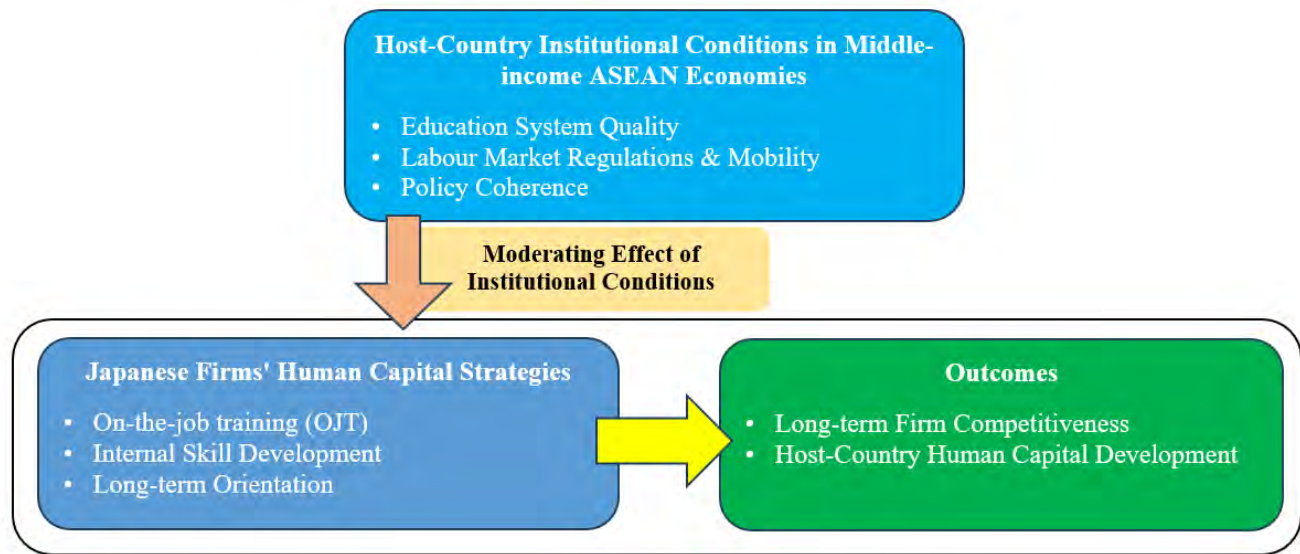
Japanese firms are usually researched with a strong focus on organisational practices, localisation processes and internal labour markets; in most studies, attention is primarily directed toward how these practices result in higher operational efficiency and/ or superior performance levels for the firm. There is limited focus in these studies upon the important role that Japanese firm's human-capital strategies are playing in host countries regarding long-term development trajectories, workforce-retraining, and the establishment of skill-development systems.

Taken together, these gaps point to the need for an integrative analytical framework that simultaneously considers firm-level human capital strategies, host-country institutional constraints, and the developmental context of middle-income ASEAN economies. This study addresses this need by examining how Japanese firms adapt their human capital strategies within specific institutional environments and by exploring the implications of these adaptations for long-term competitiveness and human capital development. By bridging firm strategy and institutional perspectives, the paper provides a foundation for understanding the role of Japanese firms in shaping human capital outcomes beyond firm boundaries, thereby contributing to both international business and development-oriented research. Accordingly, the study develops an integrative framework and examines how Japanese firms' human capital strategies interact with institutional constraints and labor mobility dynamics to shape competitiveness and skill outcomes in middle-income ASEAN economies.

3. Proposed Conceptual Framework

This study adopts a conceptual framework that links firm-level human capital strategies with host-country institutional conditions in middle-income ASEAN economies. As illustrated in Figure 1, the framework is designed to explain how Japanese firms' human capital practices are shaped by, and respond to, the institutional environments in which they operate, and how these interactions influence long-term firm competitiveness as well as broader human capital outcomes in host economies. In doing so, the framework integrates insights from human capital theory, institutional theory, and research on multinational enterprises operating within global value chains. At the firm level, Japanese multinational enterprises are characterized by distinctive human capital strategies, including intensive on-the-job training (OJT), internal skill development systems, and a long-term orientation toward employee development. These practices reflect a strategic emphasis on firm-specific skill formation and organizational learning, which have historically supported sustained competitiveness in the Japanese context. From a human capital theory perspective, such firm-specific investments generate productivity-enhancing skills that are difficult to replicate externally and therefore constitute a source of competitive advantage. However, the transferability of these practices to diverse institutional settings in middle-income ASEAN economies is not guaranteed and requires careful consideration of local labor market dynamics and educational infrastructure (Ibarra-Olivo et al., 2024). Institutional conditions are conceptualized as moderating the relationship between firm-level human capital strategies and long-term competitiveness.

Figure 1. Conceptual framework linking Japanese firms' human capital strategies, host-country institutional conditions, and outcomes in middle-income ASEAN economies.



Source: Based on Ibarra-Olivo et al. (2024), Lee & Nahm (2024), and Busemeyer (2009), author designed.

Importantly, the effectiveness of firm-level human capital strategies is not determined solely by internal organizational practices. Rather, the effectiveness of these strategies is moderated by host-country institutional conditions, including the quality and relevance of education systems, labor market regulations and mobility, and the coherence of public policies related to human capital development. Institutional theory suggests that firms must adapt their strategies in response to these external conditions, which shape the effectiveness of firm-level human capital practices. In middle-income ASEAN economies, where education and training systems often remain uneven and labor markets are characterized by varying degrees of flexibility and informality, institutional conditions can either reinforce or constrain firms' efforts to develop and retain skilled labor.

Comparative research on skill formation systems further highlights these institutional differences. For example, coordinated and firm-centered skill formation systems, such as those observed in Japan, enable continuous employee skill development and long-term employment relationships. In contrast, more liberal or emerging systems often rely on state-led interventions and public employment policies to address skill gaps and labor market volatility (Lee & Nahm, 2024). These contrasts underscore the challenges faced by Japanese firms operating in ASEAN contexts, where institutional arrangements for education, training, and labor regulation differ markedly from those in their home country.

The conceptual framework therefore emphasizes the interactive relationship between firm strategies and institutional conditions. Japanese firms may seek to adapt their human capital practices by expanding internal training to compensate for deficiencies in external skill supply, while simultaneously facing constraints related to employee turnover, labor mobility, and limited coordination with public training systems. These interactions shape not only firms' long-term competitiveness but also their potential contributions to host-country human capital development. By moving beyond simplistic technology transfer or best-practice diffusion models, the framework highlights the complexity of embedding sophisticated human resource practices within heterogeneous institutional ecosystems (Busemeyer, 2009).

By explicitly linking firm-level human capital strategies with institutional constraints and outcomes, this conceptual framework provides a structured basis for analyzing how Japanese firms operate within middle-income ASEAN economies. It also serves as an analytical bridge between the literature on human capital strategy and development-oriented institutional analysis, setting the stage for the subsequent discussion of empirical and conceptual implications. While national-level institutions constrain and enable firms' responses to economic challenges, the framework acknowledges that firms can still creatively leverage local institutional resources to enhance the scope and quality of firm-level training and skill formation (Allen et al., 2017).

4. Methodology

This study adopts a qualitative-dominant, integrative research design to examine how Japanese firms' human capital strategies interact with host-country institutional conditions in middle-income ASEAN economies. Given the conceptual and comparative nature of the research question, the study does not aim to test causal relationships through econometric modeling. Instead, it seeks to generate analytically grounded insights by synthesizing multiple sources of empirical evidence across countries and institutional contexts.

4.1 Research Design

The research employs a comparative and interpretive analytical approach, integrating prior empirical studies, policy documents, and illustrative firm-level evidence. This design is particularly suitable for exploring complex

interactions between firm-level strategies and institutional environments, where quantitative indicators alone may fail to capture contextual variation and institutional nuance. By focusing on comparative insights across selected ASEAN economies, the study highlights common patterns as well as context-specific differences in human capital development. It underscores the potential for institutional case studies to both validate and enrich theoretical frameworks, thereby opening avenues for future primary data collection and more rigorous cross-country comparisons (Hara, 2025).

4.2 Data Sources

Data for this study are drawn from three primary sources. First, the analysis incorporates findings from existing empirical studies on Japanese multinational enterprises operating in ASEAN, with particular attention to research on human capital practices, skill formation, and labor management. Second, policy documents and reports from international organizations and national governments are examined to capture the institutional characteristics of education systems, labor markets, and human capital policies in middle-income ASEAN economies. Third, illustrative firm-level evidence reported in prior case studies and industry analyses is used to contextualize how Japanese firms adapt their human capital strategies to local institutional conditions. Finally, the methodological approach also integrates insights from early research on analytical techniques for literature reviews, ensuring a robust and systematic analysis (Do et al., 2019).

The use of multiple data sources enables triangulation and enhances the robustness of the analysis by reducing reliance on any single type of evidence. This multi-dimensional approach to data collection provides a comprehensive understanding of HR practices and their evolution within varying institutional and economic landscapes (Al-Hamad et al., 2023).

In terms of data coverage, the study does not rely on a fixed numerical dataset but instead draws on a broad and diverse body of secondary materials accumulated across multiple economies and sectors. The analytical focus is placed on the depth and relevance of institutional and firm-level evidence rather than on sample size. This approach is consistent with qualitative and integrative research designs, where analytical saturation is achieved

through recurring patterns observed across multiple sources and contexts rather than through numerical representativeness.

4.3 Analytical Strategy

The analytical strategy follows a thematic and theory-informed approach. Drawing on the conceptual framework outlined in Section 3, the analysis focuses on identifying how firm-level human capital strategies are mediated by host-country institutional conditions. Key themes include the adaptation of training practices, responses to skill shortages, and challenges related to labor mobility and employee retention. The synthesis of diverse qualitative methodologies within an intra-paradigm research configuration was employed to achieve this depth of analysis, ensuring a rich interpretation of the intricate interplay between corporate strategies and the broader socio-economic context (Hara, 2023).

The analysis is guided by a theory-driven coding logic derived from the conceptual framework presented in Section 3. Rather than employing open-ended inductive coding, the study adopts a structured thematic approach that focuses on theoretically salient dimensions, including firm-level skill formation strategies, institutional constraints, and outcome-related implications for competitiveness and human capital development.

Comparative analysis is conducted across selected middle-income ASEAN economies to identify both shared institutional constraints and country-specific variations. Rather than treating national institutions as static background conditions, the analysis examines how institutional arrangements actively shape firm behavior and strategic choices. This dynamic perspective allows for a more nuanced understanding of how institutional environments not only constrain but also enable strategic human resource management practices within multinational enterprises (Do et al., 2019).

The empirical analysis is based on qualitative document analysis combined with comparative thematic synthesis. The study systematically analyzes peer-reviewed academic articles, policy reports issued by international organizations, and publicly available firm-level case studies related to Japanese multinational enterprises operating in ASEAN economies. These documents were selected based on their relevance to human capital strategies, skill formation practices, and institutional conditions in middle-income contexts.

The analysis involved iterative coding guided by the conceptual framework presented in Section 3. Key analytical categories included firm-level training practices (e.g., OJT and internal skill development), labor market constraints, institutional mediation mechanisms, and outcome-related implications for competitiveness and human capital development. Patterns were identified through cross-document comparison and cross-country synthesis rather than through frequency-based counting.

4.4 Scope and Limitations

The scope of the study is limited to seven middle-income ASEAN economies (Cambodia, Lao PDR, Myanmar, Indonesia, Philippines, Thailand, and Vietnam) where Japanese multinational enterprises maintain a significant operational presence. While this focus enhances contextual relevance, it also implies that findings may not be directly generalizable to high-income or low-income economies outside the ASEAN region. Furthermore, the reliance on secondary data, while providing a broad overview, may limit the depth of insight into specific firm-level decision-making processes and the immediate impact of institutional changes on HR strategies. Furthermore, as the study relies on secondary data and illustrative evidence, it does not claim to provide exhaustive firm-level coverage. Instead, the objective is to develop analytically grounded insights that can inform future empirical research, including large-scale quantitative or mixed-methods studies. Additionally, the generalizability of the findings might be limited by the focus on South Korean and Japanese MNEs, as well as the potential for variations in data availability across different geographical regions (Al-Hamad et al., 2023; Chung & Sparrow, 2024).

4.5 Trustworthiness and Methodological Rigor

To enhance the trustworthiness of the qualitative analysis, the study follows established criteria for methodological rigor, including credibility, dependability, and transparency. Credibility is strengthened through data triangulation, as the analysis integrates multiple sources such as prior empirical studies, policy documents, and firm-level evidence. Dependability is addressed by maintaining a clear and consistent analytical framework that guides data interpretation across different country contexts.

In addition, analytical transparency is ensured by explicitly linking empirical insights to the conceptual framework and relevant theoretical perspectives. While the study does not claim statistical generalizability, it aims to achieve analytical generalization by identifying patterns that are theoretically meaningful and applicable to similar institutional contexts. This approach is consistent with qualitative research standards in international business and management studies.

5. Results

5.1 Procedure of Data-Collection and Analysis

Before presenting the analytical findings, this section briefly outlines the rationale for document selection, classification, and analytical procedures. A total of twenty documents were selected for qualitative document analysis. In theory-driven qualitative research, analytical adequacy is determined not by numerical representativeness but by the recurrence of meaningful patterns across diverse sources and contexts. During the analysis process, key themes related to firm-level human capital strategies, institutional constraints, and developmental outcomes consistently emerged across multiple documents, indicating that the selected corpus provided sufficient analytical coverage.

The documents were purposefully selected to capture diversity and complementarity in analytical perspectives and to enable triangulation across different types of evidence. To facilitate systematic comparison, the documents were classified into four analytical categories aligned with the conceptual framework. Category A consists of institutional and macro-level studies that provide contextual grounding on education systems, labor markets, and institutional environments in ASEAN economies. Category B includes theoretical and development-oriented studies addressing human capital formation, skill development, and middle-income dynamics. Category C comprises firm-level studies focusing on Japanese multinational enterprises and their human capital practices in ASEAN, forming the core empirical basis of the analysis. Category D consists of policy-oriented and international organization reports linking labor market dynamics, skills policies, and human capital outcomes.

This classification structure enables a theory-informed synthesis of evidence across documents and supports the identification of recurring patterns and interactions between firm strategies and institutional contexts. The analytical results presented in Sections 5.2 to 5.4 are organized in line with this structure.

The qualitative analysis was conducted using ATLAS.ti. Five theory-driven codes were developed based on the analytical framework: *On-the-Job Training (OJT)*, *Internal Skill Development*, *Institutional Constraint*, *Labor Mobility / Turnover*, and *Outcome (Competitiveness / Skills)*. These codes were applied consistently across all documents to identify cross-cutting patterns and relationships within and across the four literature categories.

5.2 Overview of Coding Results

The coding results reveal a highly uneven distribution across the five analytical codes. As shown in Table 1, *Institutional Constraint* emerged as the most dominant theme, with 1,490 coded references, followed by *Outcome (Competitiveness / Skills)* with 1,156 references and *Labor Mobility / Turnover* with 476 references. In contrast, firm-level human capital practices such as *Internal Skill Development* (161 references) and *On-the-Job Training (OJT)* (36 references) were coded substantially less frequently.

Table 1 further illustrates the distribution of theory-driven codes across the four document categories. Across all categories, *Institutional Constraint* consistently appears as the most frequently coded theme, indicating its central role in shaping firm-level human capital strategies in middle-income ASEAN contexts. *Outcome (Competitiveness / Skills)* is also widely observed across categories, suggesting that firm strategies and performance outcomes are closely intertwined with broader institutional conditions.

Table 1: Theory-driven Codes across the Four-Type Document Categories

No	Codes (Gr)	Category-A Gr=238; GS=5	Category-B Gr=786; GS=5	Category-C Gr=272; GS=5	Category-D Gr=245; GS=5	Totals
1	Institutional Constraint (Gr=1,490)	236	751	258	245	1,490
2	Labor Mobility / Turnover (Gr=476)	0	395	49	32	476
3	Internal Skill Development (Gr=161)	0	0	161	0	161
4	OJT (Gr=36)	0	0	36	0	36

5	Outcome (Competitiveness / Skills) (Gr=1,156)	223	711	29	193	1,156

*1: Gr= Groundedness of codes (number of quotations coded by a code) or documents (quotations created in a document)

*2: Gs=Number of documents in a document group or number of codes in a code group

Source: ATLAS.ti Output

By contrast, *Labor Mobility / Turnover* exhibits a more uneven distribution, with a pronounced concentration in Category B (theoretical and development-oriented studies) and Category C (firm-level studies). This pattern highlights labor mobility as a mediating mechanism through which institutional conditions affect firm-level human capital strategies, rather than as a uniform contextual factor. Codes related to *Internal Skill Development* and *On-the-Job Training (OJT)* are primarily concentrated in firm-level studies, reflecting the importance of internal training mechanisms as corporate responses to institutional constraints.

This uneven distribution is analytically meaningful, as it reflects how discussions of firm performance and skill outcomes are embedded within broader structural and institutional narratives rather than being treated as isolated firm-level phenomena. This distribution suggests that while firm-level training and skill development are recognized in the literature, discussions of competitiveness and skill outcomes are overwhelmingly framed within broader institutional and labor market contexts rather than being attributed solely to internal firm practices.

5.2.1. Dominance of Institutional Constraints

A closer examination of the code–document table indicates that high-groundedness institutional constraint codes are not confined to a single category of literature. Instead, they appear consistently across all four categories, including macro-institutional analyses, theoretical discussions, firm-level studies of Japanese companies, and policy-oriented reports.

This pattern indicates that institutional constraints are not merely a contextual backdrop introduced in macro-level or policy-oriented studies, but a central analytical concern that permeates multiple levels of inquiry.

This cross-category presence demonstrates that institutional constraints function as a pervasive conditioning factor rather than a background contextual variable. The literature consistently emphasizes regulatory frameworks, labor market rigidities, education systems, and policy coherence as structural conditions that shape firm behavior and human capital outcomes. Importantly, this pattern holds even in firm-level studies, indicating

that institutional constraints are not external to firm strategies but are deeply embedded in their operational environments.

5.2.2. Labor Mobility as a Transmission Mechanism

The analysis further identifies labor mobility and turnover as a key mechanism through which institutional constraints affect firm behavior. The code co-occurrence analysis shows 433 co-occurrences between *Institutional Constraint* and *Labor Mobility / Turnover*, highlighting a strong and systematic linkage between institutional environments and labor market dynamics.

Rather than operating as an independent issue, labor mobility appears repeatedly in conjunction with institutional factors, suggesting that worker movement and retention are shaped by structural conditions beyond firm control. Sub-code analysis reveals that labor mobility issues—such as turnover, skill loss, workforce instability, and brain drain—are especially prominent in theoretical, firm-level, and policy-oriented literatures. In studies of Japanese firms in particular, labor mobility is frequently discussed as a practical challenge that undermines training investments and long-term skill accumulation. These findings suggest that institutional constraints materialize through labor market mechanisms, translating abstract institutional conditions into concrete firm-level challenges.

5.2.3. Conditional Nature of Firm-Level Outcomes

Firm-level outcomes related to competitiveness and skill formation are also shown to be highly conditional on institutional contexts. The co-occurrence analysis identifies 1,151 instances where *Outcome (Competitiveness / Skills)* appears alongside *Institutional Constraint*, indicating that performance outcomes are rarely discussed independently of institutional conditions.

This pattern suggests that firm performance is commonly interpreted in the literature as contingent upon external institutional and labor market environments rather than as the direct result of internal managerial choices alone. While *OJT* and *Internal Skill Development* are consistently present in the literature, their relatively low coding density compared to institutional and mobility-related codes suggests that internal firm efforts alone are insufficient to guarantee favorable outcomes. Instead, the effectiveness of such efforts depends heavily on labor

market stability, regulatory environments, and broader institutional support structures. Outcomes, therefore, should be interpreted as institutionally contingent rather than purely firm-driven.

5.3 Synthesis of the Results

Taken together, the results reveal three key patterns. First, institutional constraints emerge as the dominant and cross-cutting factor shaping discussions of human capital development and firm performance. Second, labor mobility and turnover function as a critical transmission mechanism linking institutional environments to firm-level challenges, particularly in the context of Japanese firms operating in middle-income economies. Third, firm-level outcomes related to competitiveness and skills are conditional on institutional and labor market contexts, with internal training efforts playing a necessary but insufficient role.

By integrating these patterns, the results highlight a coherent analytical structure in which institutional environments shape firm behavior indirectly through labor market dynamics, thereby conditioning the effectiveness of firm-level human capital strategies. These findings underscore the importance of moving beyond firm-centric explanations and highlight the central role of institutional conditions in shaping the effectiveness of human capital strategies.

5.4 Firm-Level Human Capital Strategies in Practice

Based on the qualitative document analysis, this section summarizes recurring patterns in firm-level human capital strategies adopted by Japanese multinational enterprises operating in middle-income ASEAN economies. Drawing on peer-reviewed empirical studies and policy-oriented reports, the analysis focuses on how firms organize skill formation and training practices under institutionally constrained labor market conditions. The results indicate that on-the-job training (OJT) constitutes a central component of Japanese firms' human capital strategies across host-country contexts. The analyzed documents consistently report that Japanese firms rely on workplace-based learning mechanisms, including mentoring, task rotation, and incremental skill accumulation, to address skill mismatches between formal education systems and firm-specific skill requirements.

Rather than serving as a supplementary practice, OJT is integrated into routine production processes, enabling firms to develop context-specific skills aligned with operational needs.

In addition to OJT, the findings highlight the continued use of internal skill development mechanisms within Japanese firms' overseas subsidiaries. These mechanisms include firm-specific training programs, internal certification schemes, and promotion pathways linked to skill accumulation. The document analysis suggests that such internal systems are designed to stabilize skill formation in environments characterized by high labor mobility. However, the extent to which these systems function effectively varies across host-country contexts, reflecting differences in labor market stability and institutional support for long-term employment relationships. Furthermore, the results show that Japanese firms maintain a long-term orientation toward employee development, albeit in an adapted form. While long-term skill investment remains an underlying principle, high employee turnover and flexible labor markets limit the full implementation of long-term employment practices observed in the home country. As a result, firms often concentrate training investments on core employees, while adopting more flexible arrangements for peripheral workers.

Overall, the results indicate that firm-level human capital strategies in middle-income ASEAN economies are characterized by selective adaptation rather than direct replication of home-country models. Japanese firms combine internally oriented skill formation practices with adjustments to local institutional and labor market conditions, allowing them to sustain skill development efforts under institutional constraints.

6. Discussion

6.1 Adaptation of Japanese Human Capital Strategies

The findings of this study indicate that Japanese firms operating in middle-income ASEAN economies rarely transfer their domestic human capital models wholesale to host-country contexts. Instead, they adopt a selective and adaptive approach to training and skill formation that reflects local institutional and labor market conditions. This pattern supports prior arguments that firm-level practices are shaped by contextual constraints rather than being universally applicable across national settings.

In particular, Japanese firms tend to expand on-the-job training (OJT) and internal skill development systems as compensatory mechanisms for gaps in local education and vocational training systems. By embedding skill formation within daily production processes, firms are able to generate firm-specific competencies aligned with operational requirements. However, the analysis also shows that these adaptive strategies entail significant costs. Expanded internal training increases firms' exposure to employee turnover, especially in labor markets characterized by high mobility and weak employment protection.

These findings suggest that adaptation, rather than replication, defines Japanese firms' human capital strategies in ASEAN. While core principles such as firm-specific skill formation and long-term investment in human resources remain influential, their implementation is necessarily modified to accommodate institutional realities in host economies. As a result, adaptation emerges as a pragmatic response to institutional constraints rather than as a strategic choice driven solely by firm preferences.

6.2 Institutional Mismatch and Firm-Level Constraints

A central theme emerging from the analysis is the persistent mismatch between firm-level skill requirements and host-country institutional arrangements. Across the reviewed literature, limitations in education systems, vocational training infrastructure, and policy coordination repeatedly constrain firms' ability to secure and retain skilled labor. These mismatches are further intensified by short-term policy orientations and limited collaboration between governments, educational institutions, and firms.

This can be explained by structural misalignments between firm-level training systems and host-country institutional environments. In many middle-income ASEAN economies, education systems often fail to provide industry-relevant skills, while high labor mobility reduces firms' incentives to invest in long-term training due to uncertainty in skill retention.

The results indicate that such institutional mismatches transform labor mobility from a peripheral concern into a structural constraint. High employee turnover, skill leakage, and workforce instability undermine firms' training investments, reducing the returns to internal skill development efforts. Importantly, these challenges are not

confined to macro-level or policy-oriented analyses; they are equally salient in firm-level studies of Japanese enterprises, underscoring the embedded nature of institutional constraints in day-to-day business operations. This discussion highlights the limits of firm-centric explanations of human capital development. Even when firms actively invest in training and skill formation, institutional misalignment can significantly weaken the effectiveness of these efforts. Consequently, firm-level strategies alone are insufficient to overcome structural human capital bottlenecks without complementary institutional support.

6.3 Implications for Long-Term Competitiveness

Despite the constraints identified above, the analysis suggests that Japanese firms' long-term orientation toward human capital development remains a critical source of competitive resilience. Rather than abandoning long-term investment logics, firms selectively preserve elements of long-term skill formation, particularly for core employees, while adopting more flexible arrangements for peripheral workers. This differentiated approach allows firms to balance stability and flexibility under institutionally constrained conditions.

However, the findings also emphasize that long-term competitiveness is highly contingent on institutional environments. Firm-level outcomes related to competitiveness and skill accumulation are rarely discussed independently of institutional conditions, indicating that sustained performance depends on factors beyond managerial control. Labor market stability, regulatory coherence, and education–industry linkages play decisive roles in determining whether firm-level human capital strategies translate into durable competitive advantages. This can be explained by structural mismatches between firm-level training systems and host-country institutional environments. In many middle-income ASEAN economies, education systems often fail to provide industry-relevant skills, while high labor mobility reduces firms' incentives to invest in long-term training due to uncertainty in skill retention. Importantly, even highly sophisticated human capital systems may become less effective under such institutional conditions.

Taken together, this discussion underscores that long-term competitiveness in middle-income ASEAN economies cannot be understood through firm strategies alone. Instead, it emerges from the interaction between firm-level human capital practices and broader institutional contexts. This perspective provides a foundation for the

theoretical and practical implications discussed in the following section. This reinforces that firm-level human capital strategies alone are insufficient to overcome structural constraints.

7. Implications

7.1 Theoretical Implications: Modification of the Proposed Framework

This study offers several theoretical implications by refining the proposed analytical framework presented in the literature review. Rather than introducing an entirely new theoretical model, the findings suggest a meaningful modification of existing firm-level human capital frameworks by clarifying the roles of institutional constraints and labor mobility in shaping firm outcomes.

The original framework conceptualized firm-level human capital strategies—such as on-the-job training and internal skill development—as primary drivers of competitiveness and skill accumulation, operating within a given institutional context. While this perspective remains partially valid, the empirical patterns identified in this study indicate that institutional conditions play a far more central role than previously assumed. Institutional constraints should therefore be repositioned from a background contextual factor to a dominant conditioning force that systematically shapes firm behavior and performance.

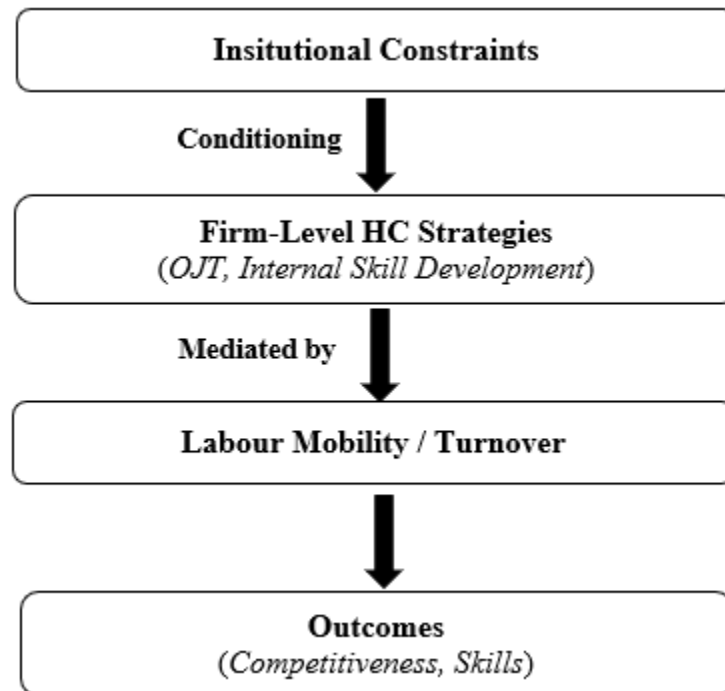
A key theoretical contribution of this study lies in identifying labor mobility and turnover as a critical transmission mechanism linking institutional environments to firm-level outcomes. The results demonstrate that institutional constraints do not affect firm performance directly, but rather materialize through labor market dynamics such as employee turnover, skill leakage, and workforce instability. This mediated relationship refines existing frameworks by explicitly incorporating labor mobility as a central analytical component rather than treating it as a secondary labor market characteristic.

Furthermore, the findings suggest a reconceptualization of firm-level human capital practices. While on-the-job training and internal skill development remain essential elements of firm strategy, their effectiveness is shown to be institutionally contingent. Firm-level practices alone are insufficient to generate sustainable competitive advantages in the absence of supportive labor market and institutional conditions. This challenges firm-centric

interpretations of human capital development and highlights the limits of internal capability-building approaches when institutional misalignment persists.

To clarify how the analytical framework is refined based on the findings, Figure 2 presents the modified framework highlighting the repositioned roles of institutional constraints and labor mobility.

Figure 2. Modified Analytical Framework of Firm-Level Human Capital Strategies under Institutional Constraints



Source: Author Modified.

Figure 2 illustrates the modified analytical framework refined based on the study's findings. Institutional constraints are repositioned as a dominant conditioning force shaping firm-level human capital strategies, including on-the-job training and internal skill development. Labor mobility and turnover are explicitly incorporated as a mediating mechanism through which institutional conditions influence the effectiveness of firm strategies, resulting in institutionally contingent outcomes related to competitiveness and skill formation. Taken together, these modifications result in a refined framework in which firm-level human capital strategies operate within a structure defined by dominant institutional constraints and mediated by labor mobility dynamics. Outcomes related to competitiveness and skill formation emerge not as direct products of managerial choice, but

as conditional results shaped by the interaction between firm strategies and institutional environments. By articulating this conditional and mediated relationship, the study advances the theoretical understanding of human capital development in middle-income economies and contributes to the literature on international business and comparative institutional analysis.

7.2 Managerial Implications

The findings of this study offer several managerial implications for Japanese firms operating in middle-income ASEAN economies. First, the results underscore the importance of recognizing institutional constraints as a core strategic consideration rather than as an external environmental factor. Managers should explicitly incorporate host-country institutional conditions—such as labor market regulations, employment practices, and education system quality—into the design of human capital strategies, rather than assuming that firm-level training investments alone will yield stable returns.

Second, the analysis highlights the need for firms to institutionalize internal training systems in ways that mitigate risks associated with labor mobility. While on-the-job training and internal skill development remain central to Japanese firms' competitive strategies, their effectiveness is vulnerable to high employee turnover. Managers should therefore complement training investments with retention-oriented practices, including clearer career progression pathways, skill-based promotion systems, and incentive structures that align employee interests with long-term skill accumulation. Such measures can help firms protect training investments in environments characterized by fluid labor markets.

Third, the findings suggest that deeper engagement with local educational and training institutions can enhance the effectiveness of firm-level human capital strategies. Rather than relying solely on internal mechanisms, firms may benefit from collaborative arrangements with universities, vocational schools, and training centers to co-develop curricula, internships, and apprenticeship programs. These partnerships can reduce skill mismatches and improve the external supply of job-ready workers, thereby lowering the burden on internal training systems.

Finally, the results imply that Japanese firms should adopt differentiated human capital strategies across employee segments. Given institutional constraints, firms may need to concentrate long-term training investments on core

employees while adopting more flexible arrangements for peripheral workers. Such selective allocation allows firms to balance stability and adaptability, maintaining competitiveness under institutionally constrained conditions.

7.3 Policy Implications

The findings of this study also carry important implications for policymakers in middle-income ASEAN economies. First, the results emphasize the central role of institutional environments in shaping firm-level human capital outcomes. Strengthening higher education and vocational training systems is therefore critical to improving the effectiveness of private-sector training efforts. Policymakers should prioritize curriculum relevance, instructional quality, and alignment with industry needs to reduce persistent skill mismatches. Second, the analysis highlights the importance of policy coherence and coordination in human capital development. Fragmented policy frameworks and short-term skill initiatives limit firms' incentives to invest in long-term training. Governments can enhance the effectiveness of human capital policies by fostering stronger linkages between education ministries, labor authorities, and industrial development agencies, thereby aligning skill formation strategies with long-term economic upgrading objectives. Third, the findings point to the value of public–private partnerships in addressing labor mobility challenges. Policymakers can encourage firm participation in training and skill development by providing institutional support mechanisms such as co-financed training programs, tax incentives for skill investment, and platforms for knowledge sharing between firms and educational institutions. Such measures can help distribute the costs and risks of human capital development more evenly across stakeholders. Finally, the results suggest that labor market institutions play a decisive role in mediating the relationship between firm strategies and outcomes. Policies aimed at improving employment stability, strengthening labor standards, and supporting transparent career pathways can reduce excessive turnover and skill leakage. By creating more stable and predictable labor market environments, policymakers can enhance the returns to firm-level training investments and contribute to sustainable competitiveness in middle-income ASEAN economies.

8. Study Limitations and Directions for Future Research

Despite its contributions, this study has several limitations that should be acknowledged and that also point toward promising directions for future research.

First, this study is based on qualitative document analysis rather than primary empirical data such as interviews or surveys. While this approach is well suited for identifying cross-cutting theoretical patterns and institutional logics across a diverse body of literature, it does not allow for direct observation of firm-level decision-making processes or day-to-day human resource practices. Future research could complement this study by employing firm-level interviews, case studies, or mixed-method approaches to capture micro-level dynamics and managerial perceptions in greater depth.

Second, the scope of the analysis is limited to a purposive sample of twenty documents and focuses primarily on Japanese multinational enterprises operating in middle-income ASEAN economies. Although this focus allows for analytical depth and theoretical coherence, caution is required when generalizing the findings to other national contexts, industries, or types of multinational firms. Comparative studies involving firms from different home countries or across different stages of economic development would help to further test the robustness and transferability of the proposed framework.

Third, the study relies on published documents and therefore reflects institutional conditions and firm strategies as captured at specific points in time. As a result, dynamic changes in labor market institutions, education systems, and human capital strategies—particularly in the context of rapid technological transformation—are not fully captured. Longitudinal research designs could provide valuable insights into how institutional constraints and firm-level human capital strategies evolve over time.

Taken together, these limitations do not undermine the analytical value of the study but instead highlight opportunities for future research to deepen empirical understanding and extend the proposed framework across contexts and methods.

9. Conclusion

This study examined how and under what institutional conditions Japanese firms' human capital strategies contribute to competitiveness and skill development in middle-income ASEAN economies. Drawing on qualitative document analysis using ATLAS.ti, the study synthesized evidence from institutional, theoretical, firm-level, and policy-oriented literatures to clarify the structural relationships between firm practices, institutional constraints, and development outcomes.

The findings demonstrate that institutional constraints constitute the dominant factor shaping firm-level human capital outcomes across the literature. Rather than functioning as a passive background condition, institutional environments actively condition the effectiveness of firm strategies. In particular, labor mobility and turnover emerge as a central transmission mechanism through which institutional constraints influence firms' ability to retain skills and realize returns on training investments. As a result, firm-level outcomes related to competitiveness and skill formation are best understood as institutionally contingent rather than as direct products of managerial choice alone.

The study further shows that Japanese firms respond to these constraints through selective adaptation of their human capital strategies. While on-the-job training and internal skill development remain core practices, their implementation is modified to accommodate local labor market conditions. Long-term skill investment logics are preserved in differentiated forms, often concentrated on core employees, highlighting the limits of wholesale transfer of home-country employment models to host-country contexts.

By refining an existing firm-level human capital framework, this study contributes to the literature by explicitly repositioning institutional constraints as a dominant conditioning force and labor mobility as a key mediating mechanism. This theoretical refinement advances understanding of how firm strategies and institutional environments interact in middle-income economies and offers a more nuanced explanation of why similar firm practices yield divergent outcomes across national contexts.

Several limitations should be acknowledged. First, the analysis relies on secondary documents rather than primary firm-level data, which constrains the ability to capture micro-level managerial decision-making processes.

Second, while the study focuses on Japanese firms in ASEAN economies, institutional dynamics may vary across regions and firm types. Future research could extend this framework through comparative firm-level case studies,

mixed-method approaches, or longitudinal analyses to further examine the dynamic interaction between institutions, labor markets, and human capital strategies.

Overall, this study underscores the importance of integrating institutional perspectives into analyses of firm-level human capital development. For both scholars and practitioners, the findings highlight that sustainable competitiveness in middle-income economies depends not only on firm initiative, but also on the institutional contexts within which firms operate.

Declarations

- **Funding:**

No funding was received for conducting this study.

- **Ethics Declaration:**

No ethical concerns can be applicable.

- **Consent to Participate:**

Not applicable.

- **Consent to Publish:**

Not applicable.

- **Clinical trial number:**

Not applicable.

- **Use of Artificial Intelligence**

AI-assisted tools were used exclusively to improve language clarity, grammar, and readability.

No AI tools were used to generate research ideas, data analysis, interpretations, or conclusions.

The authors retain full responsibility for the content of this manuscript.

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Paradoxical Gains and Losses in Boundary Spanning: Locally Hired Parent Country Nationals in Emerging Market Multinational Corporations

Xin Lu (Hiroshima University, Japan)

Vesa Peltokorpi (Hiroshima University, Japan)

ABSTRACT

While boundary spanning provides both gains and losses to employees, previous research has focused on either gains or losses. This study provides an integrated account of interlinked gains and losses by drawing on boundary spanning and paradox theories, and interview evidence from 73 parent country nationals in various foreign subsidiaries of Chinese multinational corporations in Japan. Our analysis shows four boundary-spanning roles—coordinative link-pin, trust broker, institutional buffer, and knowledge facilitator—that provide gains to locally hired parent country nationals in the forms of structural power, identity capital, entrepreneurial agency, and cognitive intelligence. Furthermore, our analysis reveals paradoxical tensions in the interlinked gains and losses, manifested in role entrapment, identity fragmentation, managed precarity, and adaptive strain. This study contributes to the literature by offering an integrated account of the gains and losses of boundary spanning, extending research on boundary spanning to locally hired parent country nationals and emerging market multinational corporations.

Keyword: Human Resource Management, Organizational Behavior, Management, Boundary Spanning

Strategic Ambiguity and Talent Signals in Global Talent Management: Insights from U.S. and Asian Multinationals

Tamiko Kasahara (Waseda University, Japan)

ABSTRACT

This study examines how strategic ambiguity in talent communication shapes dual identification in multinational corporations (MNCs). Using signaling theory and social identity theory, it analyzes how perceived global talent management (GTM) practices influence identification with both the local unit and the MNC through the mediating role of talent climate. Two-wave survey data were collected from individuals in U.S. headquarters and U.S. subsidiaries of Japanese, South Korean, and Chinese MNCs. Results show that GTM practices enhance talent climate, which in turn strengthens dual identification. Strategic ambiguity amplifies the positive effect of GTM on talent climate for individuals who perceive themselves as talented, whereas it weakens this relationship for non-talented individuals. These findings reveal the paradoxical value of ambiguity in talent communication and highlight the role of subjective sensemaking in interpreting talent signals. The study offers insights into how U.S. and Asian MNCs shape identification across diverse organizational contexts.

Keyword: Human Resource Management, Global Talent Management, Strategic Ambiguity, Signaling Theory, Social Identity Theory, Talent Climate, Dual Identification

Intraregional Institutional Diversity and the Staffing of Foreign Subsidiaries

Naoki Ando (Hosei University, Japan)

ABSTRACT

Studies on international business have investigated how multinational enterprises (MNEs) staff foreign subsidiaries, focusing on subsidiary-level, host-country-level, and parent-firm-level determinants of subsidiary staffing. This study extends the determinants of foreign subsidiary staffing to the regional level by incorporating the perspective of MNEs' intraregional geographic expansion. The effect of region-level factors on foreign subsidiary staffing is examined using the panel dataset of MNEs' investments in three geographic regions. This study finds that intraregional institutional diversity exhibits a U-shaped relationship with the proportion of parent country nationals (PCNs) in foreign subsidiaries. In addition, it shows that when a region is institutionally distant from the MNE's home country, the slope of the U-shaped curve becomes steep. This study implies that a more comprehensive understanding of how MNEs staff foreign subsidiaries necessitates accounting for intraregional attributes and MNEs' activities within the region, and incorporates the region-level factors into the research framework.

Keyword: Human Resource Management, Strategy, Foreign Subsidiary Staffing, Institutional Distance, Intraregional Geographic Expansion, Intraregional Institutional Diversity, Regional Experience, Regionalization

Building and Utilizing HR Department's Social Capital with Line Managers for Effective HRM Implementation: Evidence from Japanese Firms

Shuichi Moritani (Kwansei Gakuin University, Japan)

Arjan Keizer (Alliance Manchester Business School, University of Manchester, United Kingdom)

ABSTRACT

This study focuses on human resource management (HRM) implementation by examining how human resource department (HRD) can build social capital in their interactions with line managers and how it contributes with HRM implementation behavior by line managers. Based on qualitative data from both HR staff and line managers in Japanese firms, this study finds that two types of communication, namely, framing and guiding communication, play a particular role in establishing social capital consisting of shared understanding, trust, and social tie, ultimately leading to collaborative and cooperative way of HRM implementation by line managers as information and knowledge sharing. The findings suggest that social capital enables HRD to encourage line managers to enact HRM practices that interactively share information and knowledge, leading them to problem-solve and optimize the practice collaboratively. Also, the study clarifies how the partnership is achieved through HRD's efforts in response to the overlooked significance of communication between them.

Keyword: Human Resource Management, Organizational Behavior, Strategy

How Market-Level Knowledge Diversity Shapes Innovation: Market Entry in the Japanese Chemical Industry

Ryota Hamasaki (Tokyo University of Science, Japan)

Akitsu Oe (Tokyo University of Science, Japan)

ABSTRACT

This study investigates which markets firms should enter. The objective is to examine how knowledge diversity in a firm's existing and entry market affects firm innovation performance. Using an unbalanced panel of 303 observations for 176 firms in the Japanese chemical industry from 2000 to 2010, this study employs a fixed effects model. The analysis measures market-level knowledge diversity and using 942,279 patent records and the Rao-Stirling index, which scientometrics research widely uses (e.g., Rafols and Meyer 2010). The results show that market entry into high knowledge diversity markets with high knowledge diversity negatively affects firm innovation performance, while high knowledge diversity in the existing market mitigates this negative effect. This study contributes theoretically to market entry research by clarifying the mechanism through which market entry affects firm innovation performance and by introducing the Rao-Stirling index as a measure of knowledge diversity. The findings also provide strategic guidance for firms seeking to enhance firm innovation performance.

Keyword: Strategy, Organizational Behavior, Management, Market Entry, Knowledge Diversity, Innovation Performance

Strategic ESG Signaling by Japanese Firms: The Timing and Consequences of Green Patenting in Europe

Shuhei Chiba (Tokyo University of Science, Japan)

Akitsu Oe (Tokyo University of Science, Japan)

Sukrit Vinayavekhin (Thammasat Business School, Thammasat University, Thailand)

Mariko Watanabe (Tokyo University of Science, Japan)

ABSTRACT

While firms face increasing pressure to improve ESG standing, the global divergence in ESG ratings creates a strategic dilemma regarding which actions effectively communicate sustainability commitment. This study investigates how firms strategically utilize Europe as a mechanism to enhance their Environmental, Social, and Governance (ESG) reputation. Using an unbalanced panel dataset of 308 publicly listed Japanese firms with 1,809 firm-year observations from 2018 to 2023, we employ survival analysis and a Difference-in-Differences approach. Our results reveal a two-stage strategic process. First, a lower initial ESG reputation functions as external pressure, prompting firms to take early strategic action (i.e., filing green-related patents with the European Patent Office). Second, this strategic action serves as a credible signal to third-party rating agencies, leading to a statistically significant improvement in subsequent global ESG reputation. This study contributes to ESG research by integrating attention-based view theory and signaling theory. Our findings show that when firms experience low ESG reputation, the attention of the top management team is reallocated toward actions that are highly observable to external audiences. At the same time, the adoption of a shared institutional language (e.g., the CPC Y02 taxonomy) is essential for the formation of organizational prominence and perceived quality.

Keyword: Strategy, Organizational Behavior, Management, Attention-Based View, Signaling Theory, ESG, Reputation, EPO, Patent

The Cultural Configuration of the MNE Subsidiary and its Change Trajectory: The Cases of UK-Based Japanese Companies

Takashi Sakikawa (Chuo university, Japan)

Anh Hoang (Cardiff Business School, Viet Nam)

ABSTRACT

The association between societal cultures and organisational cultures is not as simple as believed when one observes cultural complexities and interactions within the multinational enterprise (MNE) subsidiary. Although prior research on cross-cultural management and organisational culture has examined the connection between societal and organisational culture, they have not focused on the MNE, its subsidiaries or the cultural complexities within these organisations. Our research thus aims to fill this gap by building a framework that helps one better understand the sophisticated interactions between societal and organisational culture within the MNE subsidiary. Based on the ontological approach, our work examined the cultural configuration with cultural complexities and interactions within the MNE subsidiary from an individual level, embracing Japanese expats' and their host country counterpart managers' perception. We conducted case study research at UK-based Japanese companies in Wales and a Birmingham area, England. Our findings revealed the presence of a mainstream culture, or a tension or fusion between the host-country societal culture and the home-country societal and organisational culture. We also outlined the trajectory of change in such a cultural configuration.

Keyword: Organisational Culture, Multinational Enterprise, Ontology, Cultural Configuration

Introduction

As organisations operate in, and are nested within, a nation or a society, their organisational cultures tend to be influenced by and connected to the national or societal culture. This is because organisations are exposed to their cultural environments as well as to their economic, industrial, technological, and other environments (Kast & Rosenzweig, 1985). However, Hofstede (2001) argued, there is no association between societal and organisational culture as he denied the existence of organisational culture itself. As the histories of business organisations since their founding are generally not as long and rich as national histories are, Hofstede argued that these organisations do not have the cultural values, beliefs, and knowledge like those developed and upheld in nations. On the contrary, House et al. (2004) studied culture in terms of values and practices, and found that societal culture could have an impact on the homologous dimensions of an organisational culture (for instance, national power distance values and practices are related to organisational power distance values and practices).

Dickson et al. (2014) argued that the idea that national and organisational cultures are unrelated seems to be unlikely. They went on to argue that the association between societal and organisational cultures is not as simple as believed. When does national culture affect organisational culture? Given the association between societal and organisational culture, one may wonder how much effect societal culture has on organisational culture. The conditions under which and the extent to which societal/national culture can impact organisational culture still remain baffled with continuous debates. Such a complex connection perhaps is best illustrated in the case of multinational enterprises (MNEs) and their subsidiaries: They operate in different cultural settings. As the contingency approach assumes, the MNE subsidiary can receive cultural influences from the host country since it is exposed to its

outside environment. An MNE subsidiary may accept local cultural elements in an effort to become part of the local community and win support from that community as the organisation and its expats are afraid of suffering the liability of foreignness (Zaheer, 1995).

In addition to these cultural influences, the MNE subsidiary receives organisational culture from the home country's headquarters (HQ) when it is controlled and influenced by the HQ (Bartlett & Ghoshal, 1989; Jaeger, 1983). The MNC subsidiary may also have an organisational culture that embraces the home country's cultural elements, since the HQ organisational culture is likely to reflect the home-country's societal culture (Schein & Schein, 2017). Because an MNC subsidiary may be a place where different national cultures meet, the examination of MNC subsidiaries' organisational culture will give a glimpse into a likely tension and fusion between home-country-based organisational culture and the host-country societal culture within MNE. In order to better understand the link between organisational culture and national/societal culture, this research looks deeply into the cultural complexities and interactions within the MNE subsidiary and seeks to answer the following questions: What is organisational culture like within the multinational enterprise's (MNE) subsidiary? How does it relate to its headquarters organisational culture and the culture of the host country where it operates?

What is known so far on the cultural reality within MNEs' subsidiaries suggests an inconsistent picture. On the one hand, the culture at MNEs' subsidiaries is thought to be bound by the nation they operate in. In the earlier and abridged edition of his book, *Culture's consequences*, Hofstede (1980) offered the implication of his work to MNEs. MNE subsidiaries operate more under the influence of the host-country culture rather than that of the home-country culture. Expatriate managers are required to be "bicultural" and learn local languages to connect their subsidiaries and parent companies and play a "linking pin" roles between them (Hofstede, 1980, p. 272). While his arguments suggest that MNE subsidiaries

are a place where different cultures meet, he only found societal culture in MNE subsidiaries and did not see organisational culture in these subsidiaries. Hofstede (1980; 2001), during his examination of IBM, a US-based MNE where he used to work for, discovered boundaries of cultural values between different nations, not between organisations or IBM subsidiaries. He (Hofstede, 1980; 2001) thus concluded that different countries have different cultures and organisations are culturally bound within their nations. Since he did not find organizational culture and denied its existence, he did not delve into organizational culture within IBM subsidiaries around the world, let alone how organizational culture and the host-country culture interact, and other issues involving the MNE-subsidary culture. Under Hofstede's perspective, MNE-headquarters organisations may have their home and national culture as a dominant culture. Such a phenomenon is likely to take place since organisations are open to cultural influences as the contingency theory assumes (Kast & Rosenzweig, 1985). MNE subsidiaries are also open to their immediate culture, that is, the host-country's cultural influences, resulting in the dominance of the host-country culture within these foreign subsidiaries (Hofstede, 1980, p. 272). Other cross-cultural management and organisational-culture researchers have argued that organisational culture is bound by and is connected to societal culture (e.g., Adler & Jelinek, 1986; Dickson et al., 2014; Laurent, 1986; Sackmann, 2021; Schein & Schein, 2017; Schneider, 1988; Trompenaars & Hampden-Turner, 2012). Still, when these studies discuss the effect of societal culture on organisational culture, they are implicitly focused on non-MNEs. House et al. (2004), nevertheless, examined and found different cultural values and practices between both countries and organisations. However, they did not explore the possible complexities of organisational culture within MNE subsidiaries that may have cultural influences from the host- and home-country. These authors examined organisations and their organisational culture within uni-cultural context

rather than cross-cultural context where the organisations have a dual connection with their home-country and host-country.

On the other hand, it is argued that the immediate effect of the host-country culture is not the only factor shaping the culture at MNEs' subsidiaries. MNE subsidiaries can receive the distant effect of the home-country societal and organisational culture. This is because these MNE-subsidaries have a relationship with their home-country headquarters organisations (Kostova et al., 2016); These organisations are subjective to the “country-of-origin effect” through the headquarters organisations (Pudelko & Harzing, 2007). For instance, MNEs integrate and control their subsidiaries dispersed around the world by the use of organisational culture (Bartlett & Ghoshal, 1989; Jaeger, 1993)—which is when the country-of-origin effect has taken place. Since organisational culture may reflect the home-country societal culture, the home-country culture may accompany organisational culture when the latter has been transferred to overseas subsidiaries. The home-country culture may be transferred to MNE subsidiaries indirectly through not only organisational culture but also expats—who are culture bearers (Hayashi, 1985). Considering both the cultural effect of the host- and home-country, one may thus see what Sackmann (1997; 2021) called “cultural complexity” within MNE subsidiaries.

Given cultural complexity within MNE subsidiaries, how the host-country culture and the home-country societal and organisational culture interact within these subsidiaries is under-researched. Hofstede (1980) pointed out the importance of shared organisational culture to any organisation in general and MNEs in particular (p. 271). Shared organisational values are effective in promoting communication among people from different cultural backgrounds and uniting them together in MNE subsidiaries. However, one may wonder how organisational culture interacts with the host country's culture. Prior cultural studies have discussed the connection between societal and organisational culture as we have noted

earlier. Although organisational and societal culture can be connected, such connection may not be necessarily consistent when it comes to MNE-subsidary organisational culture. Weber et al. (1996) pointed out the cultural clash in international joint ventures or international mergers and acquisitions in terms of societal and organisational culture. It is likely that when organisational culture and organisational and management practices established into the home-country culture are exported from the parent company to MNE subsidiaries, they could have a cultural tension with the host-country culture as well as a cultural fusion. Meanwhile, studies on Japanese foreign “transplant” factories (Abo, 2015; Adler, 1999) documented some of these factories as adapting their home-country manufacturing or human resource management practices to their host-countries, calling such phenomenon “hybridization.” MNEs subsidiaries may be able to blend the host-country culture and the home-country societal and organisational culture. They may even integrate different cultures and build organisational culture that is neither the host-country culture nor the home-country culture (Nakagawa et al., 2017; Sasaki & Yoshikawa, 2014). We can speculate these cultural complexities and interactions within the MNE-subsidary.

The examination of the interaction between MNE-subsidary organisational culture and societal culture, however, is not easy. Such cultural complexities and interactions within the MNE subsidiary may be subjective to, and be determined by, the views, perceptions, interpretations, and frame-of-reference of its observers, namely expats assigned to the subsidiary and their host-country counterpart workers and managers. Martin (2002) argued that in order to understand organisational culture that may exist in theory but not in reality, one requires a philosophical field of *ontology*, an inquiry into the nature of reality or how things are. Researchers may describe organisational culture by using common dimensions and measure it by using common measurement indications, assuming organisational culture is real. There is no agreement on what organisational culture is, with numerous definitions of

organisational culture such as values and assumptions shared by organisational members and a way of doing things “around here”, as we will discuss later. Different organisational members may have different things in their minds when they refer to organisational culture. Therefore, when one considers the ontology of organisational culture, she or he would recognize that the nature and existence of organisational culture is subjective to, and determined by, the views and perceptions of organisational members. The invisible and intangible elements of organisational culture – its values, may be more subjective to the views of organisational members than its visible, tangible elements that can be observed or counted such as practices.

The presence of a mainstream culture, and a tension and/or fusion between the home-country societal and organisational culture and the host-country culture—which we refer to as the cultural configuration—may be more subjective to the view and perspectives of managers and workers within MNE subsidiaries than organisational culture itself. The configuration, or contour of organisational culture within the MNE subsidiary is complicated as it blends the host- and home-country culture that may sometimes permeate each other—which makes the boundary between these cultures blurred. Thus, it is likely that the description of such cultural complexities and interactions reflects the views of expats and their local counterparts within the MNE subsidiary. As to the cultural configuration within the MNE subsidiary, the question remains: Is what one observes as the dominant culture within her or his MNE subsidiary the host-country culture or the home-country societal and organisational culture or neither in her or his view? Does the person see the division and tension or the similarity and fusion between the host-country culture and the home-country societal and organisation culture through the view of the observer?

It should also be noted that while organisational culture is stable by nature (Schein, 1985), the cultural configuration or contour within the MNE subsidiary, the presence and

absence of a prevailing mainstream culture or a cultural tension and fusion, may change over the course of the subsidiary's operation, with cultural influences from the host- and home-country. For instance, the host-country culture may predominate within an MNE subsidiary in the early period of its operation in that country. The home-country societal and organisation culture may prevail over the host-country culture somewhere after the early period. Abo (2015) and Adler (1999) explored Japanese overseas factories or “transplants” and found their adaptation to foreign nations such as the US and hybridization between US and Japanese management practices. Similarly, MNE subsidiaries may have a blend of the host-country societal culture and the home-country societal and organisational culture (Nakagawa et al., 2017; Sasaki & Yoshikawa, 2014). In other words, the cultural configuration of MNE subsidiaries may change over the course of their operations, taking different trajectories of change in the cultural configuration.

As we have discussed, cultural complexities and interactions within the MNE subsidiary and the trajectory of change in the cultural configuration within the MNE subsidiary have been under-researched. Against such a backdrop, our research was set to examine these cultural complexities/interactions and the change trajectory in the cultural configuration within the MNE subsidiary to fill such a gap. We have conducted case study at three UK-based Japanese companies. Two companies operate in Wales, and one company is based in Birmingham. This selection was inspired by Dore (1973) and White and Trevor (1983) who compared British and Japanese companies and documented differences in management styles between them. We also had an interest in Japanese companies in Wales where Japanese companies straddle Welsh and British culture as they may receive cultural influence from UK, Wales, and Japan. Therefore, we chose these three Japanese companies as cases of our research. As mentioned before, the cultural configuration within the MNE subsidiary may be subjective to the view of expats and their local counterparts. In order to

learn their insiders' perspective, we chose to take the emic approach with ethnographic field work and in-depth interviews, instead of the etic approach that adopts outsiders' perspective and common dimensions of societal culture.

Our research will make theoretical contributions to the studies of cross-cultural management and organisational culture threefold. First of all, it delved into the connection between societal and organisational culture, which is not as simple as believed (Dickson et al., 2014). Our research will provide deep insights into these cultural complexities by focusing on MNE subsidiaries. Secondly, our work goes beyond the depiction of complicated cultural reality in MNE subsidiaries and provide a theoretical framework that explain the different cultural configurations with a cultural tension and fusion, and how cultural reality at the subsidiary might evolve. This advances our understanding of organisational culture's development in MNEs. Finally, this research will make a contribution to Japanese management studies as we explored and documented organisational culture of UK-based Japanese companies. Such research on UK-based Japanese companies and their organisations and management has been lacking for a long time since the studies of Morris et al. (1993) and White and Trevor (1983) that appeared many years ago.

The Literature Review and Research Questions

Societal and Organisational Culture

A society, or a nation is the breeding ground of culture (Dressler, 1969). Organisational culture researchers believe that organisations can also play that role. Organisational culture research has indeed developed based on the assumption that organisations have their own culture. Different organisational culture researchers have different definitions of organisational culture. Ott (1989) once suggested there is no agreement on what organisational culture is. There are various definitions of organisational culture: values, beliefs,

philosophy, ideologies, norms, meaning, ethos, mind-set, visions, a way of doing things, climate, ceremonies rituals, rituals, symbols, narratives, jargons, myths, assumptions, heroes, management practices, physical arrangements, and worldview (p. 53).

Regardless of the development of organisational culture research, Hofstede (2001) denied existence of organisational culture, arguing that a national culture is by its nature different from an organisational culture. The culture of a society has a long and rich history, whereas the culture of an organisation does not. Hofstede (2001) found in his research that organisations are differentiated more by organisational practices than by organisational values. Hofstede and Peterson (2000) argued that the dimensions of national cultures do not have a strong relationship with the dimensions of organisational cultures, even though some level of a relationship exists. Such arguments against the strong connection between national and organisational cultures are labeled as the “no-effect” perspective. Another group of researchers, however, take on a contrasting view which recognizes the interdependence between these two cultures, also known as the “culture-affecting-culture” perspective (Dickson et al., 2014). House et al. (2004), for instance, found that societal cultural values and practices were related to organisational cultural values and practices in such a way that a dimension of societal culture as values and practices was associated with an identical dimension of organisational cultural values and practices.

Recognizing these competing views on the association between societal and organisational culture, we take the culture-affecting-culture perspective. Given the influence of societal culture, one may wonder why organisational culture reflects societal culture. One theoretical explanation is that an organisational founder can play a mediation role in the relation between national and organisational cultures (Dickson et al., 2014). Individuals learn societal values, expectations, attitudes, and norms as they grow up in a particular society. When they grow up and decide to create a business, they create organisational goals, policies, and a culture

in a way that is congruent with values, expectations, attitudes, and norms accepted within that society.

Organisational Culture in Ontology

Martin (2002) stressed the philosophy of ontology in organisational culture research, defining ontology as “a set of assumptions about the nature of reality—how things are” (p. 30). Chia (1996), by whom Martin (2002) was inspired when she made her philosophical arguments, proposed two aspects of ontology: being-realism and becoming-realism. Being-realism is “a fundamental ontological posture which asserts that reality pre-exists independent of observation and *as static, discrete and identifiable ‘things,’ ‘entities,’ ‘events,’ ‘generative mechanisms,’* etc.” (Chia, 1996, p. 33). Events, objects, phenomena or things out there exist when the volume of empirical evidence supports their existence in ontology of being-realism. Meanwhile, the becoming-realism ontology refers to a processual view of reality, stressing the process in which reality is subjectively constructed. “Being” or existence is constituted by how ones, e.g., organisational members and researchers, view it. Martin views culture as both objectively and subjectively constrained, implicitly taking being- and becoming-realism ontological approach. In order to understand and describe organisational culture that may exist in theory but not in reality, one requires an ontological inquiry into the nature of reality or how things such as organisational culture may be subjectively and socially constructed.

A company has a complexity of cultures that are attributed to not only the organisation itself, including its sections and hierarchical levels, but also to industries, national cultures, and other potential sources of organisational culture (Sackmann, 1997; 2021). Such a cultural complexity may be subjective to perceptions, interpretations or views of organisational members within the organisation. MNEs’ their overseas subsidiaries within the cross-cultural context may have more complicated cultural contours inside them than domestic organisations

within the uni-cultural context. As discussed earlier, MNE subsidiaries are open to their external forces such as cultural environments and are affected by the host country culture (Hofstede, 1980; Kast & Rosenzweig, 1985). In addition to the effect of the host-country societal culture, the MNE subsidiary will be under an influence of the home-country societal and organisational culture because of the country-of-origin effect it will have (Pudelko & Harzing, 2007). The phenomenon of the country-of-origin effect will take place within the MNE subsidiary and therefor the home-country societal and organisational culture is transferred to the MNE subsidiary, often in two ways: Expats as cultural bearers bring the home-country societal culture to the MNE subsidiaries (Hayashi, 1985); or headquarters organisational culture is shared among foreign subsidiaries (Bartlett & Ghoshal, 1989; Jaeger, 1983).

The Cultural Configuration Within the MNE Subsidiary

Given a complexity of cultures within the MNE subsidiary, Sasaki and Yoshikawa (2014) offered a framework to understand such a cultural complexity. They theorized the interactions between MNE subsidiaries and the local regional culture and summarized such interactions into the four categories: integration, separation, assimilation, and marginalization. As those authors mentioned, their focus was on intraregional culture, and they did not address issues related to an organisational culture itself. Even so, their research helps to understand MNE foreign subsidiaries' organisational cultures.

Sasaki and Yoshikawa (2014) presented the four types of interactions that reflect an MNE's cultural identity versus its relation to the regional or intraregional culture. In what Sasaki and Yoshikawa called the cultural interaction of *assimilation*, in which an MNE subsidiary assimilates into the host country and its culture, it is expected that the MNE organisational culture will strongly reflect the host-country culture. In the cultural interaction

of *separation* from the host-country culture, an MNE subsidiary will not be connected to the host country and its societal culture. Instead, the MNE subsidiary's culture will be strongly influenced by its HQ organisational culture, with the MNE subsidiary organisation being under strong control of home-country, HQ organisation. In this situation, organisational culture is shared and even standardized over the MNE subsidiary organisation by the MNE HQ organisation. In the cultural interaction of what Sasaki and Yoshikawa call *integration*, an MNE subsidiary maintains a cultural identity at the same time that it is under the control of the MNE HQ, and the MNE subsidiary will be integrated under, or will integrate, its unique organisational culture connected with the host-country culture and its HQ organisational culture. We will later discuss the last type of interaction—which these researchers called marginalization although they did not discuss it so much as they did other types of interaction.

Considering the connection of the MNE subsidiary with the host-country culture and the influence of its headquarters organisation and the parent company culture, we build upon the framework proposed by Sasaki and Yoshikawa (2014) to develop a model for understanding and describing the cultural complexities and interactions of the MNE-subsidiary. The framework consists of two dimensions, with the vertical dimension being the connection of the MNE subsidiary to the host-country culture or the influence of the host-country culture, while the horizontal dimension is the influence of its headquarters organisation and the parent company culture. We have developed our framework of cultural configuration to delineate the shape of the MNE-subsidiary culture formed with a mix of different cultures and a tension and fusion between them as well as a dominant and mainstream culture. Taking the ontological approach, the cultural configuration of the MNE subsidiary is affected and determined by the views of its members. Figure 1 presents the framework for the cultural configuration of the MNC subsidiary under the perspectives of organisational members. They may view their organization's mainstream culture as the host-country culture, or the home-country societal and

organisational culture, or a blend, or conflict of these two cultures, or even nothing of the two.

Insert Figure 1 here

When the influence of the headquarters organisation and its organisational culture is strong while the influence of host-country culture is weak, the home-country societal and organisational culture predominates within the MNE subsidiary (3rd quadrant). This is when the country-of-origin effect has taken place. When the connection of the MNE subsidiary with the host-country and the influences of the host-country culture is strong while the influence of parent company culture is weak, the host-country societal culture predominates within the MNE subsidiary (1st quadrant).

When both the influence of the home-country societal and organisational culture and that of the connection of the MNE subsidiary with the host-country culture are strong, both the host-country culture and the home-country societal and organisational culture are present within the MNE subsidiary (2nd quadrant). This is similar to what Sakaki and Yoshikawa refer to as *integration*. However, in this circumstance, there may instead be a process, not of, but toward integration, because there would be no complete integration between the host-country culture and the home-country societal and organisational culture unless and until there is no tension between the two cultures. We thus propose three stages through which the two cultures become integrated: *tension*, *fusion*, and *integration*. The tension stage is a period during which the home-country societal and organisational culture is not congruent with the host-country societal culture, and the two cultures do not coexist. Instead, the home-country societal and organisational culture and the host-country societal culture may compete. The fusion stage is perhaps the next period, in which the home-country societal and organisational culture and the host-country societal culture coexist. One can observe a blend of the home-country societal and organisational culture and the host-country societal culture at the fusion stage. The integration stage is the final period, in which a new organisational culture develops within the

MNC subsidiary. Cultural integration is a high-order cultural fusion in the sense that emerging organisational culture are neither the host-country societal culture nor the home-country societal culture.

The last cultural configuration exists when neither the influence of the home-country HQ nor that of the host-country societal culture is strong. This configuration refers to the absence of culture—societal and organisational culture—within the MNE subsidiary (4th quadrant). This configuration is similar to what Sasaki and Yoshikawa (2014) called *marginalization*. However, in our framework, this configuration refers to the stage when MNE subsidiaries have not yet developed any organisational culture for some reasons: For instance, they may be at the early stage of their operations; Their expatriate and local managers are simply struggling to create organisational culture. The MNE subsidiaries have not yet built any connection with the local communities, resulting in even the absence of the host-country societal culture in the stage.

Such cultural configuration is subjective to the perceptions and views of expats and their counterpart local workers and managers as we have discussed. As our study focuses on UK-based Japanese companies, we will ask the following research question:

Research question 1: How do Japanese expats and British managers view the cultural configuration of their MNE subsidiaries?

The Trajectory of Change in the Cultural Configuration

As argued above, the MNE subsidiary holds a cultural configuration in which a mainstream organisational culture may be the host-country societal culture, or the home-country societal and organisational culture, or a tension, or fusion, or even an integration between these different cultures. Since organisational culture is stable by nature, a change in organisational culture will take a lot of time (Schein, 1985). Changing organisational culture

entails dealing with resistance from within the organisation, making it difficult. However, the cultural configuration—but not the nature of the MNE-subsidary organisational culture itself—may change over the course of the subsidiary's operations. It may be that a mainstream and dominant culture may be replaced by another culture. It may be also that a culture fusion has taken place after a cultural clash broke out. How the cultural configuration within the MNE subsidiary will change is unknown. Although change in the cultural configuration may not be often, it would be worthwhile to examine the trajectory of change in the cultural configuration in our effort to increase our understanding of how cultural realities at MNEs' subsidiaries shifted across their development.

As shown in Figure 1 above, we have characterized the right and lower quadrant in our framework of cultural configuration as the absence of societal or organisational culture. However, organisational culture matters when companies go global and multinational (Bartlett & Ghoshal, 1989; Jaeger, 1983). Organisational culture can play a crucial role by connecting and integrating foreign subsidiaries around the world when companies carry out these MNE strategies in general and transnational strategy in particular (Bartlett & Ghoshal, 1989). Manufacturing companies who are planning to go overseas will transfer or “transplant” their production equipment to their overseas sites as their manufacturing operations are performed with such tangible sets of production tools (Liker et al., 1999). Organisational culture can be a source of competitive advantage to the extent that it is valuable, rare, and inimitable (Barney, 1986). Some of these companies who view their organisational culture as necessary for and in support of their manufacturing activities will also attempt to transport the organisational culture to their overseas units or subsidiaries. Therefore, MNEs possibly tend and endeavor to transport to and establish in their foreign subsidiaries their parental companies' organisational culture in the early stage of their foreign operations.

In many cases, organisational culture may have tension with the host-country culture when MNEs attempt to transfer and establish its idiosyncratic organisational culture reflective of home country culture in overseas sites. As noted earlier, Weber et al. (1996) pointed out the cultural clash in international joint ventures or international mergers and acquisitions. As the cultural clash in international joint ventures or alliances suggests, such a clash may also take place within MNE subsidiaries. In order to avoid the cultural tensions, MNEs and their expatriate managers may attempt to accept the influence of the host country and local culture and fit their organisational culture to local culture. MNEs and expats may be concerned that these local people view them as strange, resulting in what is called a liability of foreignness they will suffer (Zaheer, 1995). Then, the effort to blend the host-country culture and the home-country societal and organisational culture will matter when MNEs and expats go global and multinational.

As such, MNE subsidiaries and their members may see a change in the cultural configuration within the organisations over the course of their operations. However, it is not known how the trajectory in the cultural configuration will happen. Such a trajectory will also be subjective to the views of expats and their local counterparts at UK-based Japanese companies as we take the ontological approach. Therefore, we will ask the following research question:

Research question 2: What is the trajectory of change in the cultural configuration within the MNE subsidiary like in the views of Japanese expats and British managers?

Methods

We chose to conduct case study to address our research questions. since there was no existing literature clarifying the MNE subsidiary organisational culture and its interaction with the host-country culture and its changing process, case study research fits our research in

which we will try to find facts inductively (Eisenhardt, 1989; Yin, 2003). We also attempted to examine the organisational culture of the MNE subsidiary from their insiders' perspective by taking the emic approach, not from outsiders' perspective by taking the etic approach and adopting common dimensions of societal culture, such as Hofstede's and the GLOBE project's dimensions of societal culture.

We asked two Japanese companies based in Wales and a Japanese company in Birmingham, England to attend our research and got an agreement from each of the companies. We do not specify the locations of two Japanese companies in Wales and instead use simply the term Wales for a confidentiality reason. The same applies to the company in Birmingham. As mentioned previously, we had an interest in Japanese companies not only in England but also in Wales where Japanese companies straddle Welsh and British culture as they may receive cultural influence from UK, Wales, and Japan. Therefore, we chose these three Japanese companies as cases of our research.

We would have been able to conduct our research in Japan's neighboring countries, such as China and Korea. However, a cultural difference between Japan and UK is larger than that between Japan and the neighboring countries (see Hofstede, 2001 for a cultural difference between Japan and each of these nations). We selected UK-based Japanese companies as our target companies since we wanted to portray the impact of cross-cultural difference on the organisational culture of an MNE subsidiary vividly. We summarize our interview information in Table 1.

Insert Table 1 here

We visited a Japanese manufacturing company in Wales in June of 2025 and another Japanese manufacturing company in Wales in July of the same year. We call the first company Company A and the second company Company B for a confidentiality reason. We interviewed a British managing director and a Japanese manager at Company A for two and

half hours. We also were given an opportunity to be shown around the offices and a factory in Company A. The first author also interviewed a Japanese engineer of Company A outside Company A in February of 2025 for one and half hours. We interviewed a Japanese manager at Company B for one hour. We were also shown around inside its facility. The first author visited to conduct research at a Japanese manufacturing company based in a Birmingham area in January of 2025. He interviewed a Japanese president and a British HR manager for one and half hours. He was shown around the facility. Prior to this trip, he had visited this company in March of 2019. We designate this last company as Company C for a confidentiality reason. The first and second author together conducted interviews online with the president and the HR manager at Company C in January 2026. The three companies have a long history of UK operations as they began operations long before the turn of the 21st century. It is noted that in order to keep confidentiality, we do not give the exact years when three companies began their UK operations so that one will not recognize the real names of the three companies.

We made an interview protocol and used it as overall guidance when conducting interviews. To explore organisational culture, we asked interviewees to tell us about their organisational culture in terms of workplace customs, workplace norms, a way of doing things around here, and use of language. Even though we made an interview protocol, interviews were open-ended. Interviews to British managers were conducted in English. Interviews to Japanese managers and a Japanese engineer were conducted in English or Japanese or both. We made notes during interviews and site visits to record their experiences and perspectives at that time. We requested interviewees at three companies to record our interviews with them and gained permission from them.

After visiting field sites and conducting interviews, we transcribed recordings of interviews and made our field notes while our memories were fresh. We exchanged our

understandings and impressions with each other so that we could agree with each other regarding the organisational culture of the three companies. The first author also shared information gathered from his previous visits to company C with the second author to gain a well-rounded perspective on the company's cultural reality and understand change in trajectory of cultural configuration for company C.

Case Study Research

Company A

Company A is a subsidiary of a long-established global giant dealing in several industries including electronics and services with a vast network of affiliates across the US, EU and Asia. It served as a key manufacturing plant for the parent company and has had a long history on UK's land. We asked the British managing director to describe organisational culture of Company A in three words. He had been working for Company A over 30 years since when he moved to it from a British company the late 80s. He replied:

*“Flexible, innovative....., I want to say engaged but that’s also a challenge yeah?
but definitely we have to be flexible...”*

Flexibility, innovation, and engagement are parts of Company A's organisational culture in the view of the British managing director. He also stressed teamwork, autonomy, openness, and agility several times during our interviews. He mentioned conscious learning and acquisition of the culture from the parental company. His company had learned manufacturing practices from his parental company and Japan, such as *kaizen* improvement activities, a prevention tool of zero defects, 5S activities (sorting, setting in order, shining, standardizing, and self-discipline), and quality control methods. These were deemed very useful for the survival and operation of his subsidiary:

“Innovation comes from Japan to us, and I have learned so much from Japan innovation, robotics and automation. All these things that make us become super competitive. Japan’s culture can teach us the importance of feedback without a doubt...and mono-zukuri ...all embedded in [Japanese] culture”

As he mentioned, people at Company A use the manufacturing terms embedded in the Japanese context, such as *Kazien* improvement and *mono-zukuri* craftsmanship (see Fujimoto, 2012 for the concept of *mono-zukuri*), and carry out daily these manufacturing practices. Such concepts and practices were transferred through the channel commonly used by multinational companies-expatriates. When Company A was established, around 70 to 80 Japanese people came from the parental company and worked at Company A. Non-Japanese workers and managers at Company A learned advanced manufacturing and engineering technology and practices from these Japanese expats. The British managing director recalled the early time of Company A, saying:

“Yeah, it [Company A’s management styles] used to be predominantly Japanese management. And I would say the culture then was supportive but accurate...”

He suggested that organisational culture of Company A was Japanese in that everyone was supported by his or her colleagues at the early time of Company A. At the same time, the organisational culture of Company A was accurate as people stressed precision and reliability in work products and processes.

We also asked the British manager about a tension and fusion between British culture and the parental company culture or Japanese culture. He replied that he can see only a cultural difference between Company A and its parental company in “not-invented-here” attitude held by the parental company, saying:

“So, this is why Japan [the parental company] will always believe they can do better. And in many cases, they can! But not all cases... “

He went on to say about the cultural fusion:

“Most people that come to visit ○○○[Company A] don't want to go back to Japan because of course there's so much to explore. So, there's also that outside of work, so there's the workplace and there's the social. I feel that the two are joined. Many people [British managers and workers and Japanese expats] meet in ○○○[the centre of a city after work] to have some activities. So, I feel that the fusion of the culture outside of work is also strong. That is so important. We actually go out of our ways to make sure we meet up for dinner or activities, which brings down barriers, and release stress as well.”

He indicated social culture as well as work culture when it comes to organisational culture. His remarks suggest that British workers and managers accept work practices established in Japanese culture, such as teamwork, *Kaizen*, and *mono-zukuri*, while Japanese expats accept and enjoy British lifestyles. The British manager also viewed a cultural fusion in British decision-making styles into alignment with Japanese work and manufacturing practices, saying:

“Japan may take a long time to make a decision. We have to be very agile. This is probably one of the benefits that we can feedback to Japan, which is how to make decisions fast. But maybe Japan culture is not to make the decision fast.... our flexibility which we get from our UK management, that speed decision-making. So, I think the two balance, they have come together and that fusion is allowed to start. And we are quite unique in this.”

The British manager stressed the connection of Company A not only with Japan but also with Wales, saying:

“So yeah so, we are very proud to be in Wales. We in Wales have a brand. This can differentiate us from others in Europe. So, we will use the Japanese flag and the

Welsh flag. We do this on purpose because we could differentiate ourselves and the flag is such a visual dragon [that symbolizes the country of Wales]. It is such a good visual [that says] you are not in England, you are Welsh.”

We asked him about benefits of a cultural fusion. He replied:

“I think the benefit is that we do have a brand, an association to ○○○[the parental company] as something that we feel proud of..... We're part of this bigger culture. And I think that's really important. I think that gives us our identity, and that identity will work for our retention.”

Company A has what is called “Bridge Program” to connect Company A and its parental company and other foreign subsidiaries. For instance, Japanese people visit Company A for three to four months on the bridge program. Since it would be difficult to learn skills over a short period of time, participants would learn about different cultures rather than technology.

Company A has corporate philosophy of the parental company that is exactly translated from Japanese into English. He was concerned that the number of Japanese expats had dwindled in recent years; As a result, it had become difficult for younger generation of Company A to learn Japanese culture and the parental company’s culture. Nevertheless, the British manager viewed a cultural fusion between UK or Wales and Japan inside Company A as he stressed Japanese culture and management consistently over our interviews with him.

Sharing the same perspective with him was our second participant, the Japanese manager. He was assigned to Company A two years and three months ago at a time when we interviewed him. As mentioned earlier, around 70-80 Japanese people were working at Company A in the past. When we visited Company A, just four Japanese including the Japanese manager and the Japanese engineer the first author interviewed were working for Company A. He replied:

“Company A stressed teamwork and its culture is team oriented. I am a production person. Teamwork is essential to my job in the field of production. Company A is not hierarchical. We do not call bosses and our superior employees here using their job titles such section managers (kacyo) and department managers (bucyo) [even though it is common that people call managers and bosses with their job titles in Japan and at the parent company]. UK culture is more autonomous than Japanese culture. UK culture is also more agile and speedier than Japanese culture. UK decision-making styles are top-down and one-way from bosses to their subordinates since speed is important in UK.”

The Japanese manager and his boss, the British managing director, had generally an agreement on their views regarding the organisational culture of Company A. When we asked him about cultural differences and cultural tension and fusion, he replied:

“UK culture is family first. Even a department manager leaves the office at 5:00 pm.... when I was assigned to Company A, I felt that working style here was completely different from Japanese working styles. Working hours are flexible here. Going for a drink after work ...although it not so often. Feeling no cultural barriers here...”

He often left the office at past 10:00 pm when he was working for the parent company of Company A in Japan before he came to UK. He mentioned that working hours in Company A is around 2/3 of working hours at the parental company. Therefore, it seemed to the Japanese manager that working styles between UK and at Company A were totally different. Still, he accepted and enjoyed British working styles. However, a cultural barrier is not absent as he said:

“I have cultural barriers with local staff [when I communicate with them in English]. My subordinates do not sometimes perform the tasks I asked them to do. I struggle

with and have more difficulties with local vendors when I do business with them. I think there is a cultural fusion within Company A.”

He went on to share with us his view on why there is a culture fusion, saying:

“We have a long history operating here in UK and Wales. I support MDs [managing directors] and the president. ○○○[company A] has a close relation with the local and Welsh government and central and UK government while our headquarters does not. I think that the long-term operation itself has brought a benefit to us, that is, a cultural fusion between UK culture and Japanese culture. All MDs are British and that is another reason why there is a fusion [we have achieved] MDs have Japanese mindset because they interacted with Japanese MDs when they were employed.”

Similar to the British director, this Japanese manager also showed a concern with younger generations at Company A who did not know Japanese culture. He noted that “younger generations” had not interacted with Japanese MDs since they started their employment.

Finally, the third participant from Company A was interviewed outside of the company site by the first author. He noted how the use of language in the subsidiary reflected an emphasis on Japanese culture while recognizing his organisation’s effort to embrace also Welsh culture.

“Basically, we use English at Company A. Corporate philosophy, 5S activities, and so on are interpreted from Japanese into English. Still, we use the Japanese terms, such as Kaizen (improvement), furiko (pendulum), and mono-zukuri (manufacturing craftsmanship). The use of Welsh language is encouraged at Company A as it endeavors to establish itself in Wales and Welsh culture. The use of Welsh language is part of our corporate responsibility here, I feel.”

In sum, the British managing director and the Japanese manager viewed the cultural configuration of Company A as the cultural fusion between the parent company and the host-country culture. Similarly, they did not see much difference between Japanese culture and UK culture. Company A had managed to connect itself with its parent company and introduce work and manufacturing practices from the parental company and Japan. This is because at the time of the interview, it had a long history of operations in UK and Wales being founded long before the turn of new millennium. As the British managing director suggested, organisational culture may have two aspects, i.e., work culture and social culture. When we conducted survey, work culture of Company A was dominated by culture of the parent company and Japan even though Company A remained British styles of flexible and quick decisions. Japanese language was used regarding some of the work and manufacturing practices such *Kaizen* and *Mono-zukuri*. Meanwhile, British or Welsh culture prevailed against Japanese culture in the realm of social culture. Family was first at company A. People left the office at 5:00 or 5:30 pm, in contrast to long-working hours at the parent company and in Japan. Although Japanese expats accepted British lifestyles, there was sometimes a cultural barrier when it came to the use of English.

Company A managed to introduce the parent company's culture and Japanese culture for a practical reason: It is effective. The connection of Company A with the parent company was necessary to the creation of identity and brand for Company A. Meanwhile, the use of Welsh language had to do with social responsibility that Company A should assume as a Welsh company. Company A had the connection not only with Japan but also with Wales. Company A may have a blend of British, Welsh, and Japanese culture in the view of the British manager. Concerning the trajectory of the cultural configuration for Company A, Japanese management and work practices predominated in the early time of Company A's UK operations when around 70-80 Japanese people were working and interacting with British

and non-Japanese people at Company A. We felt that Japanese culture and the parent company culture became fused into British culture as Company A operated in UK and Wales. We can summarize interviews at Company A in the table 2.

Insert Table 2 here

Company B

Similar to company A, company B is also the subsidiary of a large multinational group headquartered in Japan. Its business also focuses on electronics manufacturing, though with a more practical mindset. Since its establishment, company B has been a significant part of its parent organisation's operation in Europe.

We only managed to get access to one participant who was a Japanese manager and had been on his assignment for four years at a time this research was conducted. Company B also has a long history of operations in the UK and Wales like Company A. There was a total of three Japanese expats including the Japanese manager we interviewed. He prepared the interview responses in paper in advance of the meeting. His prepared answers were helpful to us when we reviewed his remarks after the interview.

We asked a question "What would you think of the term "localization"? in advance of the interview meeting. This is because when Japanese researchers and managers use it, they often mean the adaptation to the host country by modifying aspects of the host-country management system (see Abo, 2015 for more details). He referred to it as respecting different cultures and mixing the host country culture with the home country culture. When asked to describe the organisational culture of Company B, this participant replied:

"Our company culture centres around diversity, equity and inclusion, which is reflected in our management style. Our management styles are employee- and team-oriented as we try to encourage employees to attend the decision-making process regardless of their ranks and job titles at our organisation. Everyone is responsible

for their decisions. In that sense, our organisational culture is autonomous and responsible.”

He also characterized his company culture as collectivist as it values participation, consensus and unity—which he viewed as quite typical of Japanese culture. He also highlighted standardization, discipline, and rules as common at Company B as they are necessary for Company B to operate in UK as a manufacturing company. It seemed that Company B’s culture is quite Japanese and came from its parent company culture. Its corporate philosophy puts people first and focuses on building workforce rather than profits. He remarked:

“Local staff [non-Japanese members] understand and adopt our corporate philosophy from our parent company. It is our DNA. We understand and share our corporate philosophy through software. All employees of our group company around the world learn it annually or biennially through an education app—which was developed by an HRM team at the parent company.”

He also mentioned that there was no cultural tension at Company B, attributing this to the link Company B built with local staff and the common understanding of its business’s history and strategies among local managers and workers:

“Basically, we have a good relationship with local members, resulting in practically no cultural tension. All our employees learn history of our company and its parent company and its founder, ○○○[the name of the founder]. We share company history. We all know the growth our company has achieved. We understand our business strategies—which are essential aspect of our company.”

He, however, did identify a cultural difference, though in the past, between the “UK style” and “Japanese style” at work:

“I have heard that Japanese expats in this company struggled a lot with cultural and customary differences when it was founded. They were upset that local employees went home at 5:00 pm, leaving work and going straight back home. I guess the first generation of Japanese expats were surprised at such cultural differences.”

Apart from this, he did not see cultural differences or barriers between Japanese expats and British or non-Japanese members at Company B. Meanwhile he mentioned tensions with organisations outside of Company B such as regional vendors or suppliers. He felt that they demanded Company B too much and that Japanese vendors or suppliers are not so assertive.

He also believed that while Company B had Japanese culture, it also adopted UK culture:

“UK culture is not hierarchical and is more egalitarian between managers and workers here than at the parent company [...] Here our company invites everyone to join projects [...] They do not hesitate to say no to bosses. They can thus be honest and say truth. This is one of the differences between Company B and Japan or the parent company.”

In sum, the Japanese manager at Company B viewed its organisational culture as quite Japanese; He viewed no tension between Company B culture and British culture. In his perspective, this is because people there understood the parent company’s philosophy and founder. He also captured cultural localization as respecting different cultures and blending the home-country culture with the host-country culture. It seemed to us that the Japanese manager viewed the cultural configuration of Company B as a cultural fusion between its parent company and the home-country culture, and the host-country culture. It should also be noted that while there was no obvious cultural barrier among employees in the recent years,

Japanese expats struggled at British culture in the early days of Company B. We can summarize interviews at Company B in the table 3.

Insert Table 3 here

Company C

Unlike the previous two companies, company C belongs to a smaller multinational organisation that deal mostly in the B2B market of electronics components. Company C was established in the UK about a decade later than the other two companies and now serve as a manufacturing hub for its parent organisation.

The first author visited Company C based in a Birmingham area, England in March of 2019. He revisited to interview the president and the HR manager there in January of 2025. People from Eastern Europe countries, such as Poland and Romania, were working when the first author visited Company C in 2019. When he revisited Company C, people from India, Middle Eastern nations as well as the aforementioned nations were working at Company C. Both authors then conducted online interview with both of them a year later in January of 2026.

Production volume had decreased around 70% since the British government left the European Union and Company C's main corporate customer got out of UK. It seemed that the number of employees at Company C had also significantly reduced over past five years. The president mentioned:

"We can cut the number of employees and make redundancies in UK if we pay compensation. However, it would be difficult to lay off employees in Germany and France."

He suggested that Company C made redundancies over the past years as he knew laws and regulations regarding employment in France and Germany. It seemed that Company C

took advantage of UK laws and regulations and made then redundancies—which is in contrast to traditional Japanese companies’ policy—namely, job security policy—and organisational culture stressing employees as an asset.

There were four Japanese expats, including the Japanese president, worked at Company C. Apart from the Japanese president, these Japanese people were assigned to Company C largely for an educational reason that they will be able to learn about UK and different nations outside of their home country Japan. It seemed that they did not want to go back to Japan.

The British HR manager stressed discipline and teamwork—which he viewed as deeply embedded in Japanese culture—and its importance in the manufacturing business when the first author alone visited Company C in 2019. In our online interview survey, thus, we asked him to describe the company culture in three words.

“The three words would be: teamwork, it’s very team-orientated business, people do work together, and that’s an expectation; very focused on getting the job done, so focused; and I have to say, not quite the same thing, but it’s about achievement, so everything is about getting it finished, getting it over the line.”

He also identified no or little differences between British and Japanese culture:

“When I came to this company, there was nothing sticking out as very very different. I think the only difference is the, obviously, the expats we have at the business.... I was so used to doing the normal behaviour of good companies: the collaborative nature, the teamwork, the working together, all these things, the quality [management], etc. So for a lot of people in the UK, these are nothing new to them because these things have been adopted in the manufacturing industry.”

He looked back on the time when he joined Company C and its organisational culture at that time.

“Between the culture when I joined and the culture today, there has been an evolution, from very strong Japanese culture, to a melt of the two. So that will happen naturally, because cultures are a natural phenomenon...None of those directors [managing directors] in my experience have pushed one culture over another. So time changes, people change, societies change, the expectation changes.”

The parent company of Company C have transported its organisational culture to its UK subsidiary, Company C. Company C stressed values of honesty, integrity, innovation, and quality as parts of its corporate philosophy within the facility. The president of Company C mentioned that its organisational culture is unwritten in its corporate philosophy as it is implicit. Still, it has been carried over generations in Company C and is effective for the manufacturing business in his view. He viewed organisational culture as not Japanese nor British. He offered several interesting remarks regarding its company culture.

“We [our culture] are not integrating Japanese and UK culture. I think values are converging in globalized world these days. I feel a gap between generations (Gen Z and older generations) rather than among nations. Still, we keep and stress ○○[the name of company]culture.”

“We stress values of Gu-cyoku [a Japanese term literally translated into Gu meaning foolish and Cyoku meaning straightforward] in our daily operations. It is difficult to translate Gu-cyoku into English. It is constituted of hard work, honesty, sincerity, integrity, and so on. Everyone at Company C is expected to work sincerely to the extent to which they have gone foolish.”

“Our values, such as discipline, hard work, honesty, teamwork, efficiency, customer first and so on are universal, not Japanese nor British. We have built these values in our company [Company C] and we are trying to share these values among our group companies around the world.”

He also commented on localization.

“Localization [letting local counterpart to do anything] without shared values will be a problem. In that case, locals do whatever they want, damaging foreign operations. They deviate from the course of their operations. Actually, our group company failed due to the lack of shared values like ○○ company [he referred to a failed Japanese company in its foreign operations]. It would be almost impossible to get detracted operations back to the normal course. Shared values should be prioritized in international business.”

In sum, it seemed to the Japanese president and the British HR manager that Company C was dominated by Japanese culture and its parental company’s organisational culture when the first author visited alone and the first and second author together revisited Company C. This is because disciple and teamwork, deeply established in Japanese culture, are effective in the manufacturing industry and companies in that industry like Company C. Its organisational culture is neither Japanese nor British and is universally effective in the manufacturing industry across borders. We can summarize interviews at Company C in table 4.

Insert Table 4 here

Discussion and Conclusion

Ontology is a philosophical branch exploring the nature of existence. There are two ontological approaches to the understating of reality: being-realism and becoming-realism (Chia, 1996), as discussed earlier. The latter approach assumes that reality is subjectively constructed. How things are or reality is determined by people who encounter it and how they view and interpret it. We have taken the ontological, becoming-realism approach and explored organisational culture and cultural configuration—recognising the subjectivism that

cultural reality at MNE subsidiary can entails the presence of a mainstream culture, a cultural tension, fusion or even the absence of cultures in the views of organizational members. This research has looked into how Japanese expats and British or non-Japanese managers view the cultural configuration within their MNE subsidiaries as well as the trajectory of change in the cultural configuration in their views.

By studying the cases of three UK-based Japanese companies, we have found three different cultural realities—through the views of Japanese managers and their counterpart British managers. Participants from Company A viewed their cultural configuration as the cultural fusion between the home-country societal and organisational culture and the host-country societal culture. The Japanese manager at Company B viewed its organisational culture as leaning more toward home country's culture but observed no tension between Company B's subsidiary culture and British culture. This is because, he explained, people there understood the parent company's philosophy and founder. Participants at Company C believed that their company was dominated by Japanese culture and its parental company's organisational culture in its early period of UK operations during the several conversations we had over the years. This is because discipline and teamwork, deeply established in Japanese culture, are effective in the manufacturing industry and companies in that industry like Company C. The president viewed its organisational culture as neither Japanese nor British and being effective in the manufacturing industry across nations and cultures. Company C has built its organisational culture that overarches Japanese and British culture. Such an effort of Company C is characterized as cultural integration—a high order of cultural fusion—in a sense that organisational culture, neither the host-country culture nor the home-country culture, has emerged.

We have documented these cultural configurations in the views of Japanese expats and the host-country managers, assuming the cultural configuration is determined by how

observers view it. Researchers, e.g., Abo (2015) and Adler (1999), have measured “hybridization” or adaptation of management practices within Japanese “transplants” or foreign subsidiaries, assuming the phenomenon of hybridization in management practices is real and can be objectively measured. There are diverse definitions of organisational culture without an agreement on what is organisational culture. Different people may have different answers to what is organisational culture. Similar, when it comes to a cultural tension and fusion between the home-country societal and organisational culture and the host-country societal culture within the MNE subsidiary, different expats and host-country managers may think of different cultural configurations within their MNE subsidiaries. They may see a cultural fusion within the realm of work culture, such as management and manufacturing practices and societal culture associated with these practices, and within the realm of social culture, such as putting life or work first and the use of Welsh and other local languages, or within both cultures. Past studies, such as Abo (2015), Adler (1999), Sasaki and Yoshikawa (2014), and Nakagawa et al., (2017), focused on work practices or culture in their studies of management or cultural localization and hybridization, theorizing and documenting MNE subsidiaries’ management practices or organisational culture. We have found and learned from our research that expats and the host-country managers may assess and view a cultural tension or fusion by focusing on both work and social cultures. We also have learned that they may view no cultural barriers as equal to cultural fusion with their MNE subsidiaries.

We have further learned from our research the trajectory of change in the cultural configuration within the MNE subsidiary as well as such configuration itself. We can summarize the trajectory of change in the cultural configurations for Company A, B and C, respectively, in Figure 2. Company A seemed to move from the 2nd quadrant, without any culture, through the 3rd quadrant where home culture dominates, then to 2nd quadrant with a fusion of both cultures exists. Company B has moved from the 1st quadrant where host

country's culture dominates to the 2nd quadrant where a fusion of both cultures of the host- and home-country. Company C started as a blank slate (2nd quadrant) and had gradually gravitated towards 3rd quadrant where home culture was emphasised due to its effectiveness and competitiveness. Company C has reached the 2nd quadrant as it has built organisational culture—which, neither Japanese nor British, embraces the host- and home-country culture.

Insert Figure 2 here

Company A endeavoured to learn work practices and culture from its parent company and through Japanese expats in the early time of UK operations. The effort for Company A and its members to learn work practices and culture from Japan was necessary as it desired to be part of the parent company and increase its corporate brand. Company A had achieved a blend of British, Welsh, and Japanese culture over the course of operations in UK and Wales as Company A and the British managing director viewed such a cultural fusion as its own identity. Japanese expats accepted and liked British life work, adapting to the host-country culture.

The trajectory for Company B is slightly different from that for Company A. Company B struggled to learn the parent company's culture at the early time when the influence of the host-country culture seemed quite strong. Later, it managed to learn work practices and culture from the parent company, achieving a cultural fusion within it. Company A and B seemed to move towards the configuration where home and host culture both exists. This once again confirmed the significance of both cultures on MNE subsidiaries.

The trajectory for Company C is also different from that for Company A and B. It endeavoured to learn work practices and culture from the parent company in Japan in the early time like Company A. Since the cultural influence of the parent company was strong, its parent company culture was predominant. Company C stressed Japanese culture and the parent company culture since these practices and culture were effective for the manufacturing

industry. Japanese culture is not at odds with British culture in the views of the president and the HR manager at Company. Company C has built an organisational culture—which is neither Japanese nor British and embraces the host- and home-country culture through cultural integration.

Organizations are exposed to and are influenced by external cultural environments as the contingency theory stresses (Kast & Rosenzweig, 1985). Organisations have organisational culture relevant to the societal culture as their founders are grown up in the society; They are then pressed to be similar under a cultural environment (Dickson et al., 2014). In addition to cultural contingency and institutional pressure, organisations simply need to accept and learn culture from the home-country and their parent company for a practical reason. Three Japanese companies stress their home-country of Japan as our interviewees simply viewed it as effective for their manufacturing operations.

Our research has explored and documented the cultural configuration within the MNE subsidiary and the trajectory of its change by conducting case study research at Japanese companies in UK, specifically Wales and a Birmingham region, England. Our findings will make a theoretical contribution to the studies of cross-cultural management and organisational culture as we have explored cultural complexities and interactions, and configurations—that include these complexities and interactions—inside the MNE subsidiary where different cultures meet and the trajectory of change in the cultural contour. Although there have been efforts to examine the connection between societal and organisational culture, they have not focused on the MNE and its subsidiaries and have not explored complicated cultural realities with cultural interactions and evolutions within the MNE subsidiary from individual perspectives. Our research can make a theoretical contribution to the literature of cross-cultural management and organizational culture by filling such a gap. I will also contribute to Japanese management studies. Dore's (1973) research is one of the

brilliant studies on comparative management focusing on British and Japanese companies and their management system. Morris et al. (1993) and White and Trevor (1983) are another research keen to study Japanese business in UK. Those studies were conducted over 30 years ago or more. In our research, we examined Japanese companies in UK and their recent organizations and cultures possibly for the first time since those early Japanese management studies keen to explore Japanese management in relation to UK business or the UK context.

Despite our theoretical contributions, we do not think we have fully answered our research questions. First, we had interviews with only the Japanese manager at Company B. We did not learn the view of its host-country counterpart manager regarding Company B's organisational culture. Second, even though we learned the trajectory of change in the cultural configurations of the MNE from three companies, we could learn different trajectories by learning different organisational cultures from other different MNE subsidiaries. Third, our results may not be universal since we examined manufacturing companies where elements of Japanese culture, such as teamwork, discipline, and the value of hard work, are essential. These elements of Japanese culture may not have a cultural clash in the manufacturing industry. However, that may not be the case for other industries. Notwithstanding these limitations above, our research has advanced knowledge on organisational culture as, focusing on Japanese MNE-subsidaries in UK, we have theorized and documented the connection between societal and organisational culture that is not as simple as believed (Dickson et al., 2014).

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Table 1. Interviewee information					
Company	Participant no.	Role	Employee type	Tenure	Interview length
A	1	Managing Director	Local	30 years	1.5 hour
	2	Manager	Expat	2.5 years	1 hour
	3	Engineer	Expat	2 years	1.5 hour
B	4	Manager	Expat	4 years	1 hour
C	5	President	Expat	6 years	1 hour
	6	HR Manager	Local	18 years	1 hour

Table 2. Cultural configuration of Company A

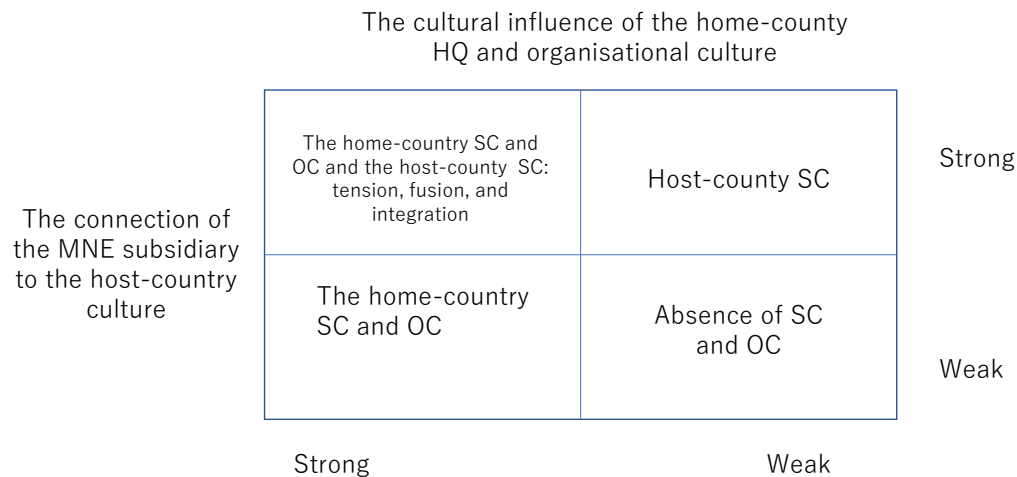
Company	Cultural Characteristics	Dominating culture	Current Cultural Configuration
A	Work culture:	Mainly Japanese culture with a blend of British and Welsh culture	Fusion of both cultures
	Teamwork, kaizen improvement, 5S activities, monozukuri manufacturing craftsmanship, and other work and manufacturing practices from Japan		
	Corporate philosophy that was exactly translated from English into Japanese		
	Maintaining British styles of flexible and nimble decisions		
	Social culture:		
	Life is first. Not long-working hours. Leaving the office at 5:00 or 5:30 pm.		
	Featuring a blend of British, Welsh, and Japanese culture. Usage of English language sometimes considered a barrier that separated Japanese expats		

Table 3. Cultural configuration of Company B

Company	Cultural Characteristics	Dominating culture	Current Cultural Configuration
B	Japanese expats struggled with strong British culture at the early time	Japanese culture with a blend of British culture	Fusion of both culture
	At present, no cultural tension between British staff and Japanese expats as leaders understood the parent company's history and founder's philosophy		
	Japanese corporate philosophy with less hierarchical/more equal workplace relationship		

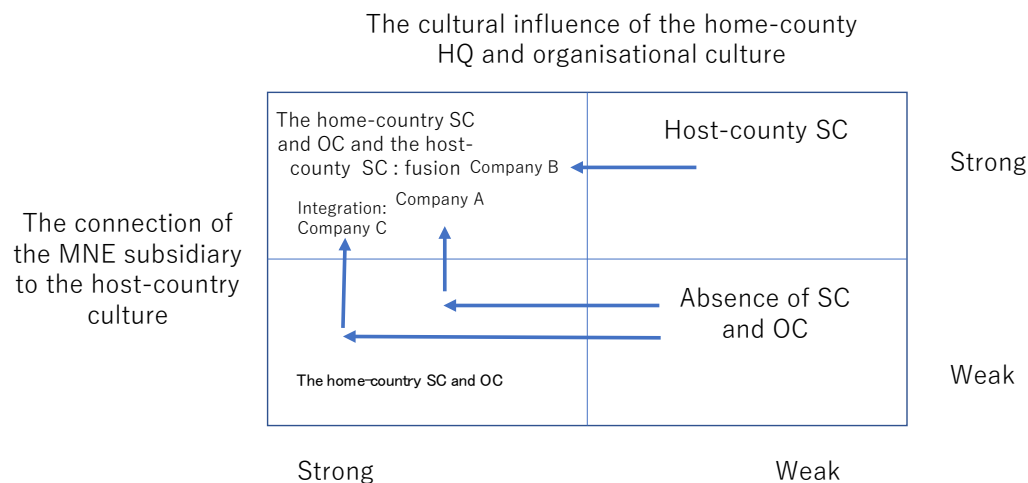
Table 4. Cultural configuration of Company C

Company	Cultural Characteristics	Dominating culture	Current Cultural Configuration
C	Dominated by the parent company culture across multiple visit points	Unique blend of culture	Integration of cultures
	The discipline established in Japanese culture was considered as necessary for manufacturing companies and Japanese culture as effective in the manufacturing industry		
	Making redundancies—which are traditionally unusual among Japanese companies—as a rational response to dwindling production-volume		
	The president viewed management by the host-country workers and managers as localization of management.		



Notes: HQ stands for headquarters. SC stands for societal culture. OC stands for organisational culture. Culture(s) in each quadrant represents the mainstream culture(s).

Figure 1 A Framework for the Cultural Configuration within the Multinational Enterprise (MNE) Foreign Subsidiary



Notes: : HQ stands for headquarters. SC stands for societal culture. OC stands for organisational culture. Culture(s) in each quadrant represents the mainstream culture(s). Arrows represent the trajectories of change in the cultural configuration within the MNE subsidiaries: Company A, B, and C.

Figure 2 The Trajectories of change in the Cultural Configuration within the Multinational Enterprise (MNE) Foreign Subsidiary

University-Based Entrepreneurial Innovation: Comparing Academic Innovation Systems in Sweden and Japan

Emilene Leite (University of Vaasa, Finland)

Mariko Nakagawa (Sophia University, Japan)

Agata Kapturkiewicz (Sophia University, Japan)

Genjiro Kosaka (Waseda University, Japan)

ABSTRACT

Knowledge transfer and technology commercialization are increasingly central to universities' missions as they evolve into key actors within national knowledge production systems. To support these activities, universities rely on a variety of institutional arrangements and governance mechanisms designed to facilitate collaboration with industry. However, the structure, coordination, and accessibility of these arrangements vary across national contexts, shaping how academic knowledge is translated into practical applications. Drawing on an innovation systems perspective combined with institutional logics; this study compares academic entrepreneurial ecosystems in Sweden and Japan. We raise the following research question: How do structural and institutional characteristics in academic innovation systems influence knowledge transfer processes? Preliminary findings reveal that language barriers for international researchers limit access to entrepreneurial resources, as many materials and support programs are available only in Swedish or Japanese. Additionally, universities balance multiple institutional objectives, crossing both nonprofit educational missions and profit-oriented commercialization goals. We also observe a disconnect between internationalization efforts and language accessibility, limitations in collaboration with big companies, and internal bureaucratic barriers that contrast with universities' stated desire for collaboration. Differences in governance and accessibility across Swedish and Japanese academic innovation systems influence the ways academics engage with knowledge transfer activities. Some systems emphasize a "soft push" (opportunity provision), while others adopt "hard push" (semi-mandatory participation) approaches. These governance modes, which varies across universities and programs, shape not only the degree but also the form of academic participation in knowledge transfer. This paper contributes to research on academic entrepreneurship by demonstrating the role of institutional configurations in shaping conditions for effective knowledge transfer. This study concludes by suggesting directions for future research and implications for both research and practice.

Keyword: Entrepreneurship, Innovation, Academic Entrepreneurial Ecosystems, University-Industry Collaboration, Sweden, Japan, Comparative Case Study

Innovative Capability and the Choice of Full versus Partial Ownership in Cross-Border Acquisitions: Evidence from Japan

Niyata Kawewong (Chiang Mai University Business School, Thailand)

Piman Limpaphayom (Portland State University; Sasin School of Management of Chulalongkorn University, United States of America)

Napitiporn Manoli (Chiang Mai University Business School, Thailand)

Natdanai Homkong (Big Data Agency Co., Ltd., Thailand)

ABSTRACT

This study examines how acquirers' innovative capabilities shape ownership structure choices in cross-border mergers and acquisitions. While prior research explains full versus partial acquisition primarily through transaction costs, institutional constraints, and environmental uncertainty, it has paid limited attention to firm-level learning capabilities. Drawing on March's (1991) exploration–exploitation framework, we conceptualize ownership structure as a governance choice reflecting firms' learning orientation. Using a sample of cross-border acquisitions undertaken by Japanese multinational enterprises, we find that firms with stronger innovative capabilities, measured by accumulated patent stock, are more likely to pursue full ownership rather than partial acquisition. This relationship is robust across alternative ownership thresholds and specifications controlling for firm, deal, and host-country characteristics. The findings highlight innovative capability as a key internal determinant of acquisition governance and extend learning-based explanations of ownership structure in international business.

Keyword: Strategy, Finance, M&A

Navigating Contradictions and Catalyzing Change: Leadership, Legacy, and Economic Institutions in Japan

Minoru Shimamoto (Hitotsubashi University, Japan)

Xiji Zhu (Hitotsubashi University, Japan)

Sanghoon Cho (Hitotsubashi University, Japan)

Miduki Miyatake (Hitotsubashi University, Japan)

Yeqin Yu (Hitotsubashi University, Japan)

Yiming Xu (Hitotsubashi University, Japan)

Luqing Qi (Hitotsubashi University, Japan)

Jiacheng Cai (Hitotsubashi University, Japan)

ABSTRACT

Amidst the urgent need for structural transformation in Japan's economy, the role of leadership has evolved beyond traditional hierarchical control to become a critical catalyst for both innovation and employee well-being. This interdisciplinary panel explores the unique contours of Japanese management practices through four empirically grounded studies. Drawing from paradox theory, institutional logics, behavioral perspectives, and emerging work on crowdfunding, the panel addresses how Japanese organizations and leaders navigate competing demands in environments shaped by tradition, demographic pressures, and global competition. From the traditional leadership of Kazuo Inamori in rebuilding Japan Airlines to the behavioral microfoundations of strategic flexibility in top management teams, and from the potential negative effects of self-sacrificial leadership on employees to crowdfunding-based leadership narratives, the panel highlights how leaders in Japanese firms balance historical legacy with new economic institutions, transforming traditional styles to meet emergent leadership requirements in the new era. The panel integrates Macro-Organizational (Presentation 1), Strategic-Cognitive (Presentation 2), Micro-Behavioral (Presentation 3), and External-Market (Presentation 4) perspectives. This multi-layered approach ensures that the discussion covers not only the "Top-Down" leadership actions but also the "Bottom-Up" follower responses and the "Outside-In" public perceptions.

Keyword: Management, Organizational Behavior, Human Resource Management, Leadership

Purpose of the Panel

The panel offers a multi-layered and balanced view on Japanese leadership that spans from the perspectives of both leader and follower within the organizations, as well as the perspective of public audience such as crowdfunding investor. The panel aims to contribute both to theoretical advancement in contextualized leadership and practical insight for revitalizing innovation through human-centric management practices in contemporary Japan.

Its primary objectives are to:

1. Re-evaluating the Paradoxes of Traditional Japanese Leadership:

To analyze the dualistic nature of leadership practices, such as the "strictness" of cost-discipline and the "kindness" of communal bonding, as demonstrated in the structural transformation of legacy firms. This objective examines how leaders synthesize traditional relational values with market-driven accountability to navigate institutional crises and facilitate organizational rebirth (Presentation 1).

2. Identifying Emergent Leadership Strategies in the Global Era:

To examine how modern Japanese leaders utilize paradoxical behaviors and temporal focus to reconcile entrenched traditions with the urgent need for global efficiency and strategic flexibility. This involves unpacking the cognitive and team-level mechanisms that allow firms to absorb contradictory signals and remain adaptable in a volatile economic environment (Presentation 2).

3. Investigating the Behavioral and Social Boundaries of Leadership:

To critically evaluate the "double-edged" impact of traditional leadership ideals, such as self-sacrifice and charismatic rhetoric, on employee well-being and external resource acquisition. By looking at the psychological costs to followers (Presentation 3) and the status-contingent

effectiveness of leader narratives in crowdfunding (Presentation 4), this objective highlights the evolving boundaries and potential risks of leadership in Japan's new era.

Overview of Panel Presentations

We explore how Japanese organizations manage the tension between tradition and transformation. Our session follows a logical arc: we begin with a macro-historical case of leadership in crisis (JAL), move to the cognitive and team-level mechanisms of strategic flexibility, shift to the interpersonal psychological costs of leadership ideals like self-sacrifice, and finally examine how these cultural expectations of status and rhetoric play out in the digital age of scientific crowdfunding.

Presentation # 1 : Reform Actions of a Company Leader in Japan: Kazuo Inamori and the Rebuilding of JAL

Abstract:

This study investigates the leadership characteristics of Kazuo Inamori during the successful restructuring of Japan Airlines (JAL) following its 2010 bankruptcy. By analyzing primary interviews and secondary media records, the research identifies a distinct "paradoxical leadership" style that reconciled traditional Japanese management with modern performance logic. Inamori simultaneously employed "kindness" toward frontline staff to rebuild emotional bonding and "strictness" toward executives through the introduction of the Amoeba Management system and rigid cost visualization. Furthermore, the study highlights how Inamori's "self-sacrificing leadership"—exemplified by his refusal of compensation—served as a catalyst for transforming a complacent corporate culture into one of individual accountability. This case

provides a foundational model for how leaders can navigate the tension between humanistic philosophy and rigorous economic restructuring.

While Presentation 1 illustrated how a single leader's paradoxical style can save a collapsing giant like JAL, Presentation 2 takes a broader empirical look at the cognitive roots of this behavior. It asks: What specific mindsets allow Japanese CEOs to embrace these contradictions, and how do their teams support or hinder that flexibility?

Presentation # 2: Navigating Organizational Paradoxes in Japan: Unpacking the Relationship Between CEO Cognition, Leadership Behavior, and Team Processes

Abstract:

As Japanese firms face persistent tensions between long-term social responsibilities and immediate global competitive pressures, the ability to manage paradox has become a strategic necessity. Grounded in Upper Echelons Theory (UET), this study examines how a CEO's temporal focus—specifically a future-oriented perspective—drives Paradoxical Leadership Behavior (PLB) and organizational strategic flexibility. Results from a survey of 305 employees in Japanese firms indicate that future-focused executives are more likely to adopt "both-and" logic. However, this relationship is critically moderated by Team Decision-making Comprehensiveness (TDC). The findings suggest that PLB only translates into strategic flexibility when the top management team possesses the collective capacity to integrate contradictory signals, highlighting the boundary conditions of paradoxical leadership in hierarchical contexts.

Presentation 2 highlighted the strategic benefits of paradoxical leadership, but leadership is not without its human costs. Presentation 3 shifts our focus to the psychological impact on employees. Specifically, it examines how the 'self-sacrificial' ideal we saw in the JAL case can inadvertently pressure employees into the dysfunctional behavior of presenteeism.

Presentation # 3: How Leader Presenteeism influences Employees Presenteeism: The Amplifying Role of Self-Sacrificial Leadership in Japan

Abstract:

Presenteeism, the act of working while ill, is a prevalent phenomenon in Japan, often viewed through the lens of collective expectation and social support. Drawing on Self-Determination Theory (SDT), this study explores how leader presenteeism serves as a behavioral script that activates two distinct motivational pathways in employees: approach motivation (proactive coping) and avoidance motivation (defensive coping). Using a three-wave survey of 634 employees, the research finds that while leader presenteeism increases both motivations, the cultural ideal of "Self-Sacrificial Leadership" (SSL) acts as a contextual amplifier. Specifically, SSL strengthens the avoidance-based pathway, suggesting that a leader's visible sacrifice can inadvertently intensify normative pressure on subordinates to prioritize work over health. This study underscores the "double-edged" nature of sacrificial leadership in the Japanese workplace.

Finally, we have seen how leadership behavior and sacrifice operate within established firms.

Presentation 4 moves this discussion into the modern innovation landscape. It explores the 'Status-Rhetoric Paradox,' revealing that the very cultural expectations of leadership we've discussed must be carefully calibrated to a leader's formal status to be effective in the world of

crowdfunding.

Presentation # 4: Navigating the Status-Rhetoric Paradox: How Signal Portfolios Shape Scientific Crowdfunding Performance in Japan

Abstract:

Scientific Crowdfunding (SCF) represents a shift from expert peer review to non-expert evaluation, creating a market defined by extreme information asymmetry. This study investigates the "Status-Rhetoric Paradox" by examining how signal portfolios—comprising substantive signals (academic rank/affiliation) and rhetorical signals (charismatic leadership language)—affect funding success on Japan's Academist platform. Utilizing Generative Large Language Models (GLLMs) for nuanced rhetorical coding, the analysis reveals a significant "status-rhetoric incongruence." For junior researchers (low status), collective identity rhetoric serves as a powerful substitute for authority, building psychological bonds with supporters. Conversely, for senior professors (high status), excessive communal rhetoric violates agentic social expectations in Japan, yielding diminishing returns. The findings advance Signaling Theory by demonstrating how the effectiveness of a leader's "soft" rhetoric is strictly contingent upon their "hard" institutional status.

To conclude, these papers collectively challenge the "one-size-fits-all" view of Japanese management. They show that Self-Sacrifice and Paradoxical Leadership are powerful tools, but their success is strictly contingent on Team Decision-Making Comprehensiveness (Presentation 2), Employee Motivation (Presentation 3), and Social Status (Presentation 4).

The Process of Human Resource Localization in Japanese Overseas Subsidiaries: The Role of Headquarters-Led International Human Resource Management Practices

Shiho Nakamura (Ritsumeikan University, Japan)

ABSTRACT

This study examines the localization of human resources in Japanese overseas subsidiaries by conceptualizing it not as the outcome of a single human resource practice, but as a process through which headquarters-led international human resource management (IHRM) practices are developed in a phased and cumulative manner over time. While prior research has accumulated substantial knowledge regarding the outcomes and effects of localization, systematic analyses of how and why localization began to progress after a prolonged period of stagnation remain limited. To address this gap, this study adopts an IHRM perspective and conducts an in-depth single case study of Panasonic to analyze how headquarters-led HR system reforms implemented since the early 2010s have shaped the progression of localization at the top of overseas subsidiaries. The findings indicate that IHRM practices related to human resource development, global staffing and mobility, and evaluation and reward systems were established sequentially and interacted in a complementary manner, thereby facilitating localization over time. By conceptualizing localization as a process of organizational change, this study advances process-oriented theorizing in IHRM and extends prior frameworks by incorporating recent developments in global HR infrastructures and the transformation of Japanese employment practices based on long-term internal development in Japanese multinational enterprises.

Keyword: Human Resource Localization, International Human Resource Management (IHRM), Japanese Overseas Subsidiaries, Headquarters-Led HRM Practices, Process Perspective

1. Introduction

Over the past several decades, Japanese multinational enterprises (MNEs) have significantly expanded their overseas operations. As a result, overseas subsidiaries have come to occupy an increasingly important position in Japanese firms' sales, production, and employment. Against the backdrop of a declining domestic labor force, the acquisition and retention of global talent have emerged as critical managerial challenges for Japanese firms. Among various categories of global talent—parent-country nationals (PCNs), host-country nationals (HCNs), and third-country nationals (TCNs)—the effective utilization of HCNs in overseas subsidiaries has long attracted attention in both academic and practical discussions.

Prior research has consistently argued that Japanese firms have been reluctant to promote HCNs to managerial and executive positions in overseas subsidiaries, maintaining ethnocentric control structures dominated by PCNs (Yoshihara, 1979; Kobayashi, 1980; United Nations, 1992; Rosenzweig, 1994). This phenomenon has been discussed in the context of human resource localization and has been emphasized as a structural weakness of Japanese firms, particularly in comparison with Western counterparts. More recent aggregate evidence, however, suggests that this view no longer fully captures current realities.

According to surveys conducted by the Japan Overseas Enterprises Association, among Japanese overseas subsidiaries as a whole, the proportion of subsidiaries led by foreign presidents, that is, non-Japanese presidents, increased from 16.4 percent in 2008 to 50.0 percent in 2024, representing an increase of 33.6 percentage points. In the manufacturing sector, the proportion increased from 19.6 percent in 2008 to 52.0 percent in 2024, representing an increase of 32.4 percentage points. In particular, a sharp increase in the proportion of foreign presidents was observed between 2014 and 2016 (Japan Overseas Enterprises Association, 2009, 2010, 2012, 2014, 2016, 2018, 2020, 2023, 2025). These

aggregate data indicate that localization at the top of overseas subsidiaries has accelerated among Japanese firms in general.

However, these aggregate data should be distinguished from the Panasonic case analyzed in this paper. At Panasonic, the proportion of foreign presidents increased from 24 percent in 2002 to 29 percent in 2012, representing a limited increase of 5 percentage points over the first decade. It then rose to 43 percent in 2022, representing a more substantial increase of 14 percentage points between 2012 and 2022. In other words, the proportion of foreign presidents at Panasonic increased by 19 percentage points over the twenty-year period from 2002 to 2022, with the increase becoming more pronounced after 2012.

This increase in the latter period is consistent with the aggregate data reported by the Japan Overseas Enterprises Association, which indicate that the localization ratio of presidents in Japanese overseas subsidiaries began to rise more markedly from the mid-2010s onward. Accordingly, Panasonic is positioned not as a case that had already exceeded the 50 percent level, but as a theoretically informative case in which localization accelerated after a long period of gradual and incremental change.

Despite this observable shift, existing research has not sufficiently explained why and how such localization has progressed. Much of the international human resource management (hereafter, IHRM) literature has focused on the outcomes of localization—such as subsidiary performance, knowledge transfer, and HCN motivation—while paying limited attention to the process through which localization unfolds. Moreover, studies conducted primarily in Western contexts tend to assume well-developed external labor markets and explain managerial appointments through external hiring or lateral mobility. Consequently, these approaches are not well suited to analyzing localization in Japanese firms, whose employment practices have historically been characterized by long-term employment, internal labor markets, and firm-specific human resource development.

Research on IHRM and overseas subsidiaries in Japan has also been relatively limited since the 2000s. Although studies have revisited localization and global talent management, much of this literature has focused on expatriate management or specific HR systems. Few studies have systematically examined how headquarters-level HR practices have influenced the localization of human resources in overseas subsidiaries over time. As a result, it remains unclear how Japanese firms have moved away from ethnocentric management and whether such changes reflect a broader shift in international management orientation.

In response to these research gaps, this study analyzes the localization of human resources in Japanese overseas subsidiaries from an IHRM perspective, with a particular focus on the role of headquarters-led HR practices. Accordingly, this study asks how headquarters-led IHRM practices interact over time to promote the localization of human resources in Japanese overseas subsidiaries. As an analytical framework, the study adopts the IHRM framework proposed by Nakamura (2004), which conceptualizes localization as being promoted through the interaction of four HR practices: development of PCNs, development of HCNs, global staffing and mobility systems, and global evaluation and reward systems. In addition, the study draws on the EPG model proposed by Perlmutter (1969) to examine whether Japanese firms' international management orientation is shifting from an ethnocentric orientation to a polycentric orientation and potentially toward a more geocentric orientation.

Empirically, this study conducts an in-depth case study of Panasonic. Panasonic represents a theoretically informative case because it experienced a severe management crisis in the early 2010s, which triggered comprehensive HR reforms, and because it has introduced a series of headquarters-led IHRM practices in a phased manner. Alongside these reforms, the localization of human resources at the top of overseas subsidiaries has progressed markedly,

making Panasonic an appropriate case for examining the relationship between HR reforms and localization.

This study makes four theoretical contributions to the literature on international human resource management and the localization of human resources in Japanese multinational enterprises. First, whereas prior research has primarily focused on why localization failed to progress in Japanese overseas subsidiaries, this study shifts attention to the period since the mid-2010s, when localization at the top of overseas subsidiaries began to advance more visibly, and examines how this change occurred. Second, prior studies have tended to analyze localization at a single point in time, often treating it as a static outcome or a staffing decision. In contrast, this study conceptualizes localization as a process unfolding over time and demonstrates how localization emerges through the phased and cumulative interaction of multiple headquarters-led IHRM practices. Third, while earlier studies have paid limited attention to the role of headquarters-level HR practices in promoting localization, this study explicitly adopts a headquarters-led IHRM perspective, showing how localization can be facilitated without undermining organizational control. Fourth, this study contributes to debates on Japanese employment systems by demonstrating that practices centered on long-term internal development can be transformed and mobilized for localization through their integration with global grading and role-based evaluation systems, thereby reconceptualizing Japanese employment practices as evolving rather than declining in a global context.

The remainder of this paper is structured as follows. Section 2 reviews prior research on the localization of human resources and IHRM. Section 3 outlines the analytical framework. Section 4 explains the research methodology, case selection, and data. Section 5 presents an overview of Panasonic's international operations and IHRM practices. Section 6 reports the findings. Section 7 discusses the theoretical implications. Section 8 concludes the paper.

2. Literature Review

2.1 Localization of Human Resources in Multinational Enterprises

The localization of human resources in Japanese overseas subsidiaries generally refers to the promotion of host-country nationals to managerial and executive positions in overseas subsidiaries and has been a central theme in Japanese international business and IHRM research. Early studies focusing on Japanese overseas subsidiaries consistently highlighted the dominance of parent-country nationals and the persistence of ethnocentric control structures (Yoshihara, 1979; Kobayashi, 1980; United Nations, 1992; Rosenzweig, 1994). In comparison with Western firms, Japanese firms were widely perceived as lagging in the localization of overseas subsidiary management, and localization was positioned as a persistent weakness.

Recent international research has shifted its focus from the process of localization per se to the outcomes generated by localization. For example, the effects of localization do not depend solely on whether host country nationals (HCNs) are employed or promoted, but rather on the extent to which headquarters' human resource management practices are implemented, internalized, and integrated into other organizational processes within foreign subsidiaries. Björkman and Lervik (2007) conceptualize the transfer of HR practices as a social process and demonstrate that successful implementation, internalisation, and integration of HR practices generate positive attitudinal and behavioral outcomes among HCNs. In contrast, studies such as Hsu et al. (2022) and Peltokorpi et al. (2021a, 2021b) focus on the relationships between HCNs and expatriates, as well as the supportive role of HCNs in knowledge transfer processes. While these studies primarily emphasize spillover effects such as enhanced motivation and reduced turnover intentions among HCNs, they do

not place central analytical emphasis on how localization progresses through specific combinations of human resource management practices or through particular organizational processes.

The difference between Japanese and Western contexts is especially important because localization depends not only on the nationality of the appointed manager but also on the labor market through which managerial candidates are identified, developed, and allocated. Many studies in Western contexts implicitly assume relatively fluid external labor markets and therefore treat localization as a result of external hiring or cross-firm mobility. Under such conditions, the replacement of expatriates by local managers can be analyzed as a staffing decision supported by external managerial labor markets. By contrast, Japanese firms have historically relied more heavily on long-term employment, internal labor markets, and firm-specific skill formation. In such firms, managerial candidates are less likely to be recruited externally for specific top positions and more likely to be developed internally through cumulative career experiences. This difference is consistent with prior studies on Japanese multinational enterprises that emphasize multinational internal labor markets and the continued importance of firm-specific development (Shiraki, 2006; Furusawa, 2018).

Consequently, localization based on long-term internal development and internal promotion, which is characteristic of many Japanese firms, has not been sufficiently incorporated into prevailing analytical frameworks. Existing studies have rarely distinguished whether localization has been achieved through external recruitment or through internal development and promotion. As a result, the mechanisms through which Japanese firms promote localization via internal labor markets remain insufficiently explained.

Thus, in much of the existing literature, localization has been treated either as an explanatory variable or as an outcome variable, while its evolution as an organizational process unfolding over time has received limited attention. As a result, how localization

progresses through the configuration and evolution of human resource management practices over time remains insufficiently understood, particularly in firms characterized by long-term internal labor markets.

2.2 IHRM and Headquarters Control

By contrast, several important studies have examined IHRM in the context of Japanese firms. Shiraki (2006) emphasizes the necessity of constructing multinational internal labor markets within Japanese firms. Furusawa (2018) demonstrates that localization has begun to progress as overseas operating experience accumulates. Oki (2018) analyzes the relationship between the localization of decision-making authority and overseas subsidiary performance, showing that performance improves when HCNs participate in decision-making at the subsidiary level, while PCNs play a more prominent role at the plant level.

Other studies have focused on expatriates. Yamao (2021) reviews expatriate research in international journals and discusses implications for Japanese firms. More recently, research on global talent management has emerged. Kasahara (2021) highlights asymmetries in talent between headquarters and subsidiaries and emphasizes the role of regional headquarters. Moriya (2020) attempts to integrate discussions on global talent acquisition and talent management, while also noting that Japanese firms tend to be cautious in adopting global talent management practices due to their emphasis on selective approaches (Kakinuma, 2023).

At the same time, the broader IHRM literature has emphasized the importance of headquarters-led HR practices as key control mechanisms in multinational enterprises operating globally (Dowling et al., 1999). Prior research has examined various aspects of global HRM, including expatriate management, global staffing, performance evaluation, and reward systems. However, many studies focus on individual HR practices or on subsidiary

autonomy, while paying limited attention to how HR systems evolve over time. In particular, empirical research on globally standardized evaluation and reward systems-such as global grading-remains limited in studies of Japanese firms, reflecting the long-standing dominance of seniority-based and function-based grading systems in Japan.

An exception is Nakamura (2004), who proposes an IHRM framework to explain the localization of human resources in Japanese overseas subsidiaries. This framework conceptualizes localization as a process driven by the interaction of four HR practices: development of PCNs, development of HCNs, global staffing and mobility systems, and global evaluation and reward systems. These four practices are particularly important because they correspond to the core organizational conditions required for localization: the development of candidates, the cross-border allocation of candidates to positions, and the institutional evaluation and reward of managerial roles. Other IHRM practices may support localization indirectly, but these four mechanisms directly shape whether HCNs can be developed, identified, appointed, and retained in top subsidiary positions. However, when the study was conducted in the early 2000s, global grading and digital HR infrastructures were largely underdeveloped in Japanese firms, limiting the empirical conditions under which the framework could be fully examined. Accordingly, there is a need for research that revisits this framework under contemporary organizational and technological conditions and examines how headquarters-led IHRM practices contribute to localization as a process over time.

2.3 Research Question

Based on the preceding review, two key issues remain unresolved. First, although substantial knowledge has accumulated regarding the outcomes of localization, there is limited understanding of how localization progresses as a process, particularly in firms

characterized by long-term employment and internal labor markets. Second, while IHRM research has recognized the importance of headquarters-led HR practices, it has not sufficiently examined how changes in institutional conditions—such as digital HR infrastructures and global grading—shape the trajectory of localization.

Accordingly, research that links headquarters-led IHRM practices with the localization of human resources in overseas subsidiaries as a temporal and cumulative process remains limited, particularly in the context of Japanese firms. To address this gap, this study revisits the framework proposed by Nakamura (2004) and examines how developments in IHRM practices in contemporary Japanese firms contribute to the localization of human resources over time.

3. Theoretical Framework

3.1 IHRM and the Localization of Human Resources

As demonstrated in the preceding literature review, prior research has accumulated substantial knowledge regarding the outcomes of localization, while theoretical frameworks that systematically capture the process through which localization unfolds remain insufficiently developed. IHRM emphasizes the strategic role of headquarters-led human resource practices in coordinating and controlling multinational enterprises (MNEs) operating across national borders (Dowling et al., 1999). Unlike domestic HRM, IHRM addresses the management of diverse categories of employees—parent-country nationals (PCNs), host-

country nationals (HCNs), and third-country nationals (TCNs)—whose careers and mobility span multiple institutional contexts. Within IHRM research, the localization of human resources—namely, the promotion of HCNs to managerial and executive positions in overseas subsidiaries—has long been recognized as a persistent challenge, particularly in the context of Japanese firms.

Early discussions often conceptualized localization as a staffing issue, focusing primarily on the replacement of expatriates with local managers. However, such an approach tends to treat managerial appointments as isolated decisions. From an IHRM perspective, localization is more appropriately understood as a process shaped by the interaction of multiple human resource mechanisms designed and coordinated by headquarters. Analyzing localization as a process is particularly relevant in Japanese firms, where long-term employment, internal labor markets, and firm-specific skill formation remain salient organizational characteristics.

3.2 Nakamura (2004) IHRM Framework

Building on this perspective, Nakamura (2004) proposed an IHRM framework to explain how the localization of human resources may progress in Japanese overseas subsidiaries. This framework consists of four interrelated human resource mechanisms: (1) development of PCNs, (2) development of HCNs, (3) global staffing and mobility systems, and (4) global evaluation and reward systems. Nakamura (2004) conceptualized localization not as the outcome of a single HR practice, but as a process that unfolds through the staged and cumulative interaction of these mechanisms.

In the empirical context of the early 2000s, Japanese firms relied primarily on the first two mechanisms—development of PCNs and HCNs—while facing substantial constraints in implementing global staffing systems and globally standardized evaluation and reward

systems. These constraints stemmed from the dominance of seniority-based and function-based grading systems in Japan, which reduced cross-border comparability and hindered the global integration of HR systems. As a result, even firms actively engaged in internal development tended to achieve only partial localization, and many Japanese firms were understood to be closer to a polycentric orientation than to a geocentric orientation.

3.3 Reexamining the Framework: A Process Perspective

Approximately two decades later, the organizational and technological conditions surrounding IHRM have changed significantly. Role-based grading systems have become more prevalent in Japanese firms, and digital HR platforms now enable the integration and visualization of global talent data. These developments suggest that the third and fourth mechanisms identified by Nakamura (2004) can operate under conditions substantially different from those of the early 2000s.

Against this backdrop, this study reexamines the framework proposed by Nakamura (2004) from a perspective that conceptualizes localization as a dynamic and cumulative process. Long-term internal development contributes to the formation of a talent pool of both PCNs and HCNs endowed with firm-specific knowledge and managerial capabilities, thereby establishing a foundation for localization. The institutionalization of global staffing and mobility systems enhances flexibility in cross-border personnel assignments. Furthermore, the introduction of globally standardized evaluation and reward systems increases transparency and comparability across positions, facilitating the visualization of managerial roles and career paths across overseas subsidiaries. Through their interaction over time, these mechanisms may gradually promote the localization of human resources.

This process is not assumed to be linear or uniform. Localization is shaped by firms' historical employment practices and their capacity to adapt HR systems to changing strategic

and technological environments, resulting in path-dependent dynamics. Accordingly, localization is understood not merely as the outcome of HR reforms, but as an organizational capability that evolves over time.

3.4 IHRM and the EPG Model

To situate these dynamics within a broader framework of international management orientation, this study draws on the EPG model proposed by Perlmutter (1969), which distinguishes among ethnocentric, polycentric, and geocentric orientations. While the EPG model has often been applied as a static typology, this study adopts a process-oriented interpretation that conceptualizes shifts in orientation as gradual and cumulative.

By linking the IHRM framework proposed by Nakamura (2004) with the EPG model, this study suggests that the maturation of global staffing and mobility systems and globally standardized evaluation and reward systems may enable a transition from a polycentric orientation toward a more geocentric orientation. In the context of Japanese firms, where long-term employment practices coexist with standardized global HR systems, such a transition may take a distinctive form. This configuration provides a theoretically meaningful context for reexamining the localization of human resources in Japanese overseas subsidiaries.

3.5 Analytical Model

Based on the foregoing discussion, this study proposes an analytical model that conceptualizes headquarters-led IHRM practices as being associated with the progression of localization of human resources in overseas subsidiaries through a temporal and cumulative process. Although IHRM includes a wide range of activities, this study focuses on three interrelated mechanisms because they directly address the central requirements for

localization at the top of overseas subsidiaries: (a) long-term internal development creates a pool of candidates with firm-specific knowledge and managerial capabilities, (b) global staffing and mobility systems connect this talent pool to actual cross-border managerial positions, and (c) globally standardized evaluation and reward systems clarify, compare, and legitimate managerial roles across countries. Rather than operating independently, these mechanisms are expected to interact in a complementary manner over time, shaping the progression of localization.

In the empirical analysis, the study examines how these mechanisms have evolved in a Japanese firm since the early 2010s and how their interaction is associated with changes in the localization of human resources at the top of overseas subsidiaries. By focusing on this process, the study aims to clarify how headquarters-level HR practices enable the localization of human resources in Japanese overseas subsidiaries.

— Figure 1 about here —

Figure 1 presents an analytical model illustrating how headquarters-led IHRM practices shape the localization of human resources in Japanese overseas subsidiaries through a temporal and cumulative process. The model focuses on three interrelated HRM mechanisms—internal development based on long-term employment, global staffing and mobility systems, and globally standardized performance evaluation and compensation systems—and highlights how these mechanisms interact with one another over time.

4. Methodology

4.1 Analytical Approach

Based on the theoretical framework developed in Section 3, this study adopts a single case study approach to examine how the localization of human resources in Japanese overseas subsidiaries has progressed as a process over time (Yin, 1994). From an IHRM perspective, localization is conceptualized not as the outcome of short-term initiatives, but as a gradual and cumulative process. Accordingly, the study closely examines changes in headquarters-led HR practices within a focal firm, as well as the contextual conditions surrounding these changes.

The analysis draws on the IHRM framework proposed by Nakamura (2004) as its theoretical foundation. Specifically, the study examines how four human resource practices—development of PCNs, development of HCNs, global staffing and mobility systems, and global evaluation and reward systems—have been introduced and developed over time, and how their interaction has contributed to the progression of localization.

4.2 Case Selection

This study focuses on Panasonic as the case firm. The selection of this case is justified for three reasons.

First, Panasonic is a representative Japanese multinational enterprise with a large number of overseas subsidiaries, making it a theoretically informative case for examining the localization of human resources in Japanese overseas subsidiaries.

Second, the firm experienced a severe management crisis in the early 2010s, which triggered a series of headquarters-led HR reforms implemented in a phased manner. This

enables an analysis of the relationship between changes in HR practices and the progression of localization along a temporal dimension.

Third, the localization of human resources at the top of Panasonic's overseas subsidiaries has progressed markedly in recent years. The proportion of foreign presidents at Panasonic increased from 24 percent in 2002 to 29 percent in 2012, representing a limited increase of 5 percentage points over the first decade. It then rose to 43 percent in 2022, representing a more substantial increase of 14 percentage points between 2012 and 2022. In other words, the proportion of foreign presidents increased by 19 percentage points over the twenty-year period from 2002 to 2022, with the progression of localization becoming more pronounced after 2012.

However, the Panasonic case is not presented as a firm that had already exceeded the aggregate localization rate for Japanese firms as a whole. Rather, it is positioned as a case in which localization accelerated after a long period of gradual and incremental change, while remaining below the national aggregate level. This makes Panasonic an appropriate case for examining how headquarters-led HR reforms are associated with a gradual and cumulative localization process.

4.3 Data and Analytical Methods

This study draws on three primary sources of data. First, publicly available materials—including annual securities reports, integrated reports, official corporate websites, corporate HR-related disclosures, and newspaper and magazine articles—were collected and analyzed to trace changes in headquarters-led IHRM practices over time. Newspaper and magazine articles were searched and collected through Nikkei Telecom, a database provided by the university library, including relevant articles published in the Nikkei, Nikkei Business, and Toyo Keizai. Materials were selected when they contained information on Panasonic's global

HR policies, talent management, executive development, role-based grading, global grading, evaluation and reward systems, overseas assignment systems, or global HR platforms. The information obtained from these materials was cross-checked across multiple public sources wherever possible. It was also compared with the interview data and follow-up email correspondence in order to enhance the validity of the interpretation.

Second, data from *Kaigai shinshutsu kigyo soran: Kaisha-betsu hen*, published by Toyo Keizai Inc., were used to collect information on changes in the localization ratio of presidents in overseas subsidiaries. Publicly available data that allow the localization ratio of top subsidiary positions to be traced over time are limited. For aggregate trends among Japanese firms as a whole, survey data from the Japan Overseas Enterprises Association are available; however, the earliest publicly available data used in this study date back to 2008. By contrast, examining firm-level changes requires manually coding the localization status of subsidiary presidents based on the overseas subsidiary information reported in Toyo Keizai's *Kaigai shinshutsu kigyo soran: Kaisha-betsu hen*.

Accordingly, this study refers to the aggregate data from the Japan Overseas Enterprises Association to capture long-term trends among Japanese firms as a whole, while manually compiling the localization status of subsidiary presidents for Panasonic using *Kaigai shinshutsu kigyo soran: Kaisha-betsu hen*. The first interview for this study was conducted on September 8, 2023. At that time, the most recent available edition of *Kaigai shinshutsu kigyo soran* was the 2023 edition, in which the relevant company-level data corresponded to the 2022 data year. Therefore, this study compares three benchmark years—2002, 2012, and 2022—to examine Panasonic's localization trajectory over an approximately twenty-year period.

The years shown in Figure 2 refer to the data years used for comparison: 2002, 2012, and 2022. The ratio was calculated by using, as the denominator, the total number of overseas

subsidiaries for which information on the president could be identified in the Toyo Keizai entries, and, as the numerator, the number of those subsidiaries whose president was identified as non-Japanese.

In this study, “localization at the top of overseas subsidiaries” refers to the appointment of non-Japanese personnel to the position of subsidiary president. The Toyo Keizai data allow us to identify whether the president was Japanese or non-Japanese, but do not necessarily allow a strict distinction between HCNs and TCNs. Therefore, this study uses the proportion of foreign presidents—or, more precisely, the proportion of non-Japanese presidents—as a proxy indicator of the progression of localization at the top of overseas subsidiaries, mainly involving HCNs.

For Panasonic, the ratios were 63 out of 263 subsidiaries in 2002, 39 out of 136 subsidiaries in 2012, and 109 out of 252 subsidiaries in 2022, corresponding to approximately 24 percent, 29 percent, and 43 percent, respectively. These figures indicate that, at Panasonic, the increase in the proportion of foreign presidents was limited between 2002 and 2012, whereas it became more pronounced between 2012 and 2022. Accordingly, the Toyo Keizai data were used to capture long-term trends in the localization of top subsidiary positions and to complement the qualitative analysis of headquarters-led HR reforms.

Third, semi-structured interviews were conducted with the head of an organizational and human resource development unit at Panasonic Operational Excellence Co., Ltd. on September 8, 2023, March 21, 2025, and March 28, 2025. The interview on September 8, 2023 was conducted face-to-face at Ritsumeikan University Osaka Umeda Campus and lasted approximately two hours. It was audio-recorded using an IC recorder and subsequently transcribed. The interviews on March 21, 2025 and March 28, 2025 were conducted online. The March 21 interview lasted approximately 40 minutes, and the March 28 interview lasted

approximately one hour; both were recorded via Zoom. These interviews focused on the background and intentions underlying the introduction and operation of headquarters-led IHRM practices, as well as their relationship to the localization of human resources in overseas subsidiaries. Following the interviews, additional quantitative data were provided by email, and the accuracy and interpretation of the information were verified through several rounds of email correspondence. The interview data and follow-up correspondence were reviewed alongside documentary data and used to complement publicly available information and to enhance the validity of the interpretation, rather than to establish direct causal relationships.

The analysis proceeded in three steps. First, the public documents were coded chronologically to identify major changes in headquarters-led HR practices, including development, staffing and mobility, and evaluation and reward systems. Second, the Toyo Keizai data were used to trace changes in the localization ratio of presidents in Panasonic's overseas subsidiaries across the three benchmark years. Third, the interview material was used to interpret the background, sequencing, and intended functions of the HR practices identified from public documents. These sources were triangulated by comparing whether the timing and content of HR reforms identified in public documents were consistent with the trends observed in the Toyo Keizai data and with the interviewee's explanation. In the analysis, no direct causal relationship between specific HR practices and localization is assumed. Instead, the study focuses on the process through which multiple IHRM practices have evolved and interacted over time. Accordingly, localization is conceptualized not as the sum of isolated policy effects, but as a cumulative process shaped by the configuration and evolution of headquarters-led IHRM practices.

5. Panasonic's International Operations and IHRM

This section outlines Panasonic's international operations and provides an overview of its headquarters-led IHRM practices. The discussion in this section is limited to factual descriptions, and no evaluative interpretation is offered.

5.1 Overview of International Operations

This subsection reviews Panasonic's recent international operations. As of April 2024, Panasonic operates 102 major overseas subsidiaries. In terms of geographic distribution, China and Northeast Asia account for the largest number with 39 subsidiaries, followed by Southeast Asia and Oceania with 33 subsidiaries, Europe with 13, Latin America with 9, North America with 5, and ISAMEA (India, South Asia, Middle East, and Africa) with 3 subsidiaries. Taken together, China and Northeast Asia and Southeast Asia and Oceania comprise 72 subsidiaries, indicating that more than 70 percent of Panasonic's overseas subsidiaries are concentrated in Asia and Oceania.

With regard to workforce composition, Panasonic employs 233,391 employees worldwide (as of March 2023). By nationality, Japanese employees account for 36.9 percent, while non-Japanese employees represent 60.1 percent of the total workforce. Among non-Japanese employees, those based in Southeast Asia and Oceania account for 18.9 percent, and those in China and Northeast Asia account for 18.2 percent, totaling approximately 37.1 percent. This indicates that a substantial proportion of Panasonic's non-Japanese employees are based in Asian regions.

Turning to sales, Panasonic's global revenue in fiscal year 2023 amounted to 8.3798 trillion yen. By region, Japan accounted for 3.2793 trillion yen (39.1 percent), the Americas for 1.9845 trillion yen (23.7 percent), Asia for 1.2219 trillion yen (14.6 percent), Europe for 0.9285 trillion yen (11.0 percent), and China for 0.9647 trillion yen (11.5 percent). Overseas sales accounted for more than 60 percent of total revenue. Within this figure, Asia (14.6 percent) and China (11.5 percent) together accounted for 26.1 percent, indicating that Asia is one of the most important regions for Panasonic's overseas sales, alongside the Americas.

5.2 Headquarters-led HR Reforms after the Management Crisis

Panasonic experienced a major management crisis between 2012 and 2013, which served as a turning point for the phased implementation of headquarters-led HR reforms.

In 2012, the company established the Talent Management Committee and formally introduced talent management practices. In this context, talent management refers to a set of initiatives encompassing recruitment, development, assignment, and evaluation, aimed at maximizing employees' skills and capabilities and enhancing overall organizational performance. In particular, the Global Executive Development Program was introduced for executive candidate development, covering approximately 500 executive positions (later reorganized to around 50 division-head-level positions following the transition to a holding company structure). This program emphasized diverse career experiences, including assignments across multiple business units, work experience in multiple countries including the home country, and experience across different functional roles.

In 2014, Panasonic revised its compensation and grading system, shifting from a seniority-based qualification system to a role-based grading system that emphasizes roles and performance. This reform contributed to clarifying the roles associated with executive positions in overseas subsidiaries.

In addition, Panasonic developed a global HR platform, marking a shift from Japan-centered HR management focused on the domestic market to HR management encompassing employees worldwide, including those in overseas markets. This platform includes the introduction of global grading, which standardizes roles and evaluation criteria for managerial positions globally. Alongside this initiative, efforts were made to reinforce corporate philosophy, develop a global talent database, and introduce a global internal job posting system.

5.3 IHRM Practices for Expatriates

With the introduction of the Global Executive Development Program, overseas assignments came to be positioned as one of the requirements for appointment to executive positions. This subsection reviews IHRM practices targeting Japanese expatriates.

Regarding language requirements, until the early 2000s Panasonic imposed TOEIC score thresholds as promotion criteria based on job function and qualification level. Employees scheduled for overseas assignments were required to obtain a TOEIC score of at least 650 prior to departure. However, in 2021, following the introduction of the role-based grading system, uniform language requirements for promotion and overseas assignments were abolished. This change aimed to enable role-based placement without reliance on standardized language scores. Nonetheless, language requirements continue to be specified on an individual basis when deemed necessary for specific positions or roles.

In terms of development, Panasonic has established training programs both prior to and during overseas assignments. Before departure, expatriates participate in Overseas Assignment Training, which covers topics such as corporate philosophy, safety management, HR management, cross-cultural adaptation, and health and medical issues. In addition, the Global Common Core Knowledge Structure has been developed, allowing all group

employees scheduled for overseas assignments—not limited to Japanese employees—to participate in training programs offered in Japanese, English, and Chinese.

During overseas assignments, expatriates are provided with e-learning programs covering risk management, fundamentals of corporate management, and organizational operations.

With respect to performance evaluation, overseas assignees are evaluated annually based on the same framework applied to domestic employees. Assignees are evaluated based on their roles and performance in local subsidiaries, while trainees are subject to a two-stage evaluation process, with initial evaluation by supervisors in the host subsidiary followed by final evaluation by supervisors in the home organization. Compensation is paid by the local subsidiary for assignees and by headquarters for trainees.

5.4 Progression of the Localization of Human Resources at the Top of Overseas Subsidiaries

This subsection examines trends in the localization of human resources at the top of Panasonic's overseas subsidiaries. Figure 2 presents changes in the proportion of foreign presidents in overseas subsidiaries, based on Toyo Keizai's Kaigai shinshutsu kigyo soran: Kaisha-betsu hen. As shown in Figure 2, the proportion of foreign presidents increased from 24 percent in 2002 to 43 percent in 2022, representing an increase of 19 percentage points over the 20-year period. These figures should be interpreted as Panasonic-specific data and should not be conflated with the aggregate figures for Japanese overseas subsidiaries reported by the Japan Overseas Enterprises Association.

— Figure 2 about here —

Dividing the period into two phases reveals that the increase was limited to approximately 5 percentage points between 2002 and 2012, whereas a more pronounced increase of approximately 14 percentage points occurred between 2012 and 2022. This indicates that localization progressed more substantially during the latter decade, although the Panasonic ratio remained below the Japan-wide aggregate level reported in recent survey evidence.

These results indicate that the localization of human resources at Panasonic did not occur abruptly over a short period, but rather progressed in a gradual and incremental manner over time. The acceleration since the early 2010s is therefore interpreted as a Panasonic-specific process of progression, not as evidence that the firm had already exceeded the 50 percent level. This distinction clarifies the role of Panasonic as a case for examining how headquarters-led IHRM practices relate to the progression of localization over time.

6. Findings

6.1 Phased Development of Headquarters-led IHRM Practices

Analysis of the Panasonic case indicates that headquarters-led IHRM practices have been developed in a phased manner since the early 2010s. These practices were not introduced as a single, comprehensive reform, but were gradually implemented and reorganized over time.

First, HR development practices were restructured following the management crisis. In particular, development programs targeting executive candidates were enhanced, with greater

emphasis placed on overseas assignment experience as well as experience across multiple business units and functional areas. Through these initiatives, a pool of potential managers capable of assuming leadership roles in overseas subsidiaries was gradually accumulated among both PCNs and HCNs.

Second, global staffing and mobility systems were institutionalized. Personnel mobility between overseas subsidiaries, as well as between headquarters and overseas subsidiaries, was formalized, creating an environment in which cross-border assignments could be more systematically implemented. At this stage, the talent pool formed through development initiatives became connected to actual managerial positions in overseas subsidiaries through institutionalized staffing mechanisms.

Third, evaluation and reward systems were revised to incorporate role- and job-based perspectives. These revisions clarified the positioning of managerial roles in overseas subsidiaries and enhanced the visibility of career paths. In this sense, the development of evaluation and reward systems served to institutionalize managerial roles in overseas subsidiaries.

Overall, Panasonic's IHRM practices were developed in a phased manner across multiple domains, including development, staffing and mobility, and evaluation and reward.

6.2 Interaction of IHRM Practices and the Progression of Localization

The findings indicate that localization was not promoted by any single IHRM practice in isolation. Rather, multiple practices evolved in an interrelated manner over time.

The talent pool of managerial candidates formed through development initiatives became connected to managerial positions in overseas subsidiaries through the institutionalization of staffing and mobility systems. Furthermore, revisions to evaluation and reward systems

clarified the roles and positioning of managers in overseas subsidiaries, allowing these appointments to be sustained rather than treated as temporary measures.

These practices did not function independently; instead, they complemented one another in a manner that gradually promoted the localization of human resources. Specifically, development initiatives established a supply base of qualified personnel, staffing and mobility systems linked these personnel to actual positions, and evaluation and reward systems legitimized these roles institutionally. This configuration emerged progressively over time.

This process is consistent with the analytical model presented in Figure 1 and supports the validity of conceptualizing localization not as the sum of individual policy effects, but as a cumulative process shaped by the configuration and evolution of headquarters-led IHRM practices.

6.3 Summary: Localization as a Process

The findings demonstrate that the localization of human resources at Panasonic was not achieved through a single HR initiative, but through a process in which headquarters-led IHRM practices were developed in a phased manner and interacted over time.

The increase in the proportion of non-Japanese presidents identified in Section 5 can be interpreted as one outcome of this process. In other words, localization did not occur as a short-term response, but progressed as multiple HR practices—development, staffing and mobility, and evaluation and reward—were cumulatively established.

These findings suggest that a process-oriented perspective is effective for understanding the localization of human resources in Japanese overseas subsidiaries and provide a foundation for the theoretical discussion in the following section.

7. Discussion

7.1 Theoretical Positioning of the Findings

This study is distinguished by its conceptualization of the localization of human resources in Japanese overseas subsidiaries not as the outcome of a single human resource practice, but as a process through which headquarters-led IHRM practices are developed in a phased and cumulative manner over time. The findings from the Panasonic case indicate that multiple IHRM practices—namely human resource development, staffing and mobility, and evaluation and reward systems—were established in an interrelated manner and progressed in alignment with the localization of human resources.

These findings challenge earlier discussions that tended to treat localization as a static staffing issue. Rather than viewing localization as the aggregation of discrete managerial appointment decisions at a particular point in time, this study demonstrates that localization can be more appropriately understood as an organizational change process shaped by the cumulative interaction of headquarters-led HR practices. This process-oriented perspective is particularly relevant in the context of Japanese firms, where long-term employment, internal labor markets, and firm-specific skill formation remain salient organizational characteristics.

7.2 Reexamining the IHRM Framework Proposed by Nakamura (2004)

The findings of this study provide important insights for reexamining a prior IHRM framework in the context of contemporary Japanese firms. Nakamura (2004) suggested that the interaction of four HR practices—development of parent-country nationals (PCNs), development of host-country nationals (HCNs), global staffing and mobility systems, and

global evaluation and reward systems—could facilitate the localization of human resources. However, in the empirical context of the early 2000s, the latter two practices were not sufficiently developed in many Japanese firms.

In contrast, the Panasonic case shows that since the 2010s, staffing and mobility systems as well as evaluation and reward systems have been gradually institutionalized and linked with human resource development practices. Through this linkage, localization progressed in a more systematic manner. These findings suggest that the theoretical potential identified by Nakamura (2004) can be realized in organizational practice when institutional and technological conditions evolve, thereby extending the applicability of the original framework.

7.3 The EPG Model and Changes in International Management Orientation

This study also offers implications in relation to Perlmutter's (1969) EPG model. The findings indicate that the localization of human resources at Panasonic progressed within a broader process through which cross-border human resource management frameworks were gradually developed via headquarters-led IHRM practices.

From the perspective of the EPG model, Panasonic can be positioned as a firm that exhibits geocentric characteristics. Although Panasonic was already regarded as a geocentric-oriented firm among Japanese companies in the early 2000s, key practices such as global grading and role-based grading systems had not yet been fully implemented at that time. Subsequently, against the backdrop of domestic performance-based HR reforms, Panasonic and other Japanese firms began to introduce globally standardized evaluation and reward systems.

In this regard, the case of Panasonic suggests that while the firm had already displayed geocentric characteristics, the substance of its international management orientation has

become more fully developed through the introduction and refinement of headquarters-led IHRM practices. More broadly, these findings imply that changes in international management orientation should be understood not as a static categorical shift, but as a process shaped by the accumulation and reconfiguration of IHRM practices over time.

7.4 Implications for IHRM Research

This study makes four theoretical contributions to the literature on IHRM and the localization of human resources in Japanese multinational enterprises.

First, whereas prior research has primarily focused on why localization did not progress in Japanese overseas subsidiaries, this study shifts the analytical focus to the period after localization began to advance more visibly. Since around the period between 2014 and 2016, the localization of top management positions in overseas subsidiaries has accelerated; however, the reasons for this change have not been sufficiently examined. By focusing not on why localization stagnated but on how it progressed, this study offers a new perspective that captures recent empirical developments in Japanese firms.

Second, much of the existing literature has analyzed localization at a specific point in time, treating it as a static outcome variable or as a staffing decision. In contrast, this study conceptualizes localization as a process that unfolds over time. By adopting a process perspective, it clarifies how localization progresses through the phased and cumulative interaction of multiple headquarters-led IHRM practices, thereby extending static approaches to the study of localization.

Third, while prior studies have paid limited attention to the role of headquarters-level HR practices in promoting localization, this study explicitly adopts the perspective of headquarters-led IHRM. In doing so, it responds to recent discussions emphasizing the importance of the headquarters HR function in shaping subsidiary-level outcomes and

demonstrates that headquarters-led HR system reforms can facilitate localization without undermining organizational control.

Fourth, this study contributes to debates on the Japanese employment system. In recent years, Japanese-style employment practices have often been viewed negatively, particularly with respect to seniority-based pay and slow promotion. However, this study shows that Japanese firms are transforming and utilizing these practices by emphasizing long-term human resource development while introducing global grading and role-based evaluation systems. The findings suggest that the combination of long-term employment, internal development, and globally standardized HR systems can constitute a distinctive and advantageous foundation for achieving localization in overseas subsidiaries. In this sense, this study demonstrates that Japanese employment practices are not merely declining but are evolving within a global context.

8. Conclusion and Future Research

This study examined the localization of human resources in Japanese overseas subsidiaries by conceptualizing it as a process through which headquarters-led IHRM practices are developed in a phased and cumulative manner over time. While prior research has accumulated knowledge regarding the outcomes of localization, systematic theoretical and empirical analyses of its progression as a process have remained limited. By adopting an IHRM perspective and conducting a single case study, this research addressed this gap and clarified how localization unfolded in practice.

The case analysis of Panasonic revealed that multiple IHRM practices—human resource development, staffing and mobility, and evaluation and reward systems—were gradually

established and interacted with one another over time. These practices did not independently promote localization; rather, their cumulative and complementary interaction formed an institutional foundation that enabled the localization of managerial positions in overseas subsidiaries. Accordingly, this study demonstrates the usefulness of a process-oriented perspective that views localization as an organizational change rather than as a static staffing outcome. More broadly, this study suggests that localization should be understood as an evolving organizational capability shaped by the cumulative configuration of headquarters-led IHRM practices over time.

From a theoretical standpoint, this study contributes by reexamining and extending the IHRM framework proposed by Nakamura (2004) in the context of contemporary Japanese firms. It shows that HR practices that were not fully operational in the early 2000s—particularly global staffing and mobility systems and globally standardized evaluation and reward systems—can play an important role in promoting localization when organizational and technological conditions evolve. In relation to Perlmutter's (1969) EPG model, the findings suggest that changes in international management orientation are better understood as a gradual process shaped by the accumulation and reconfiguration of IHRM practices rather than as a discrete categorical transition.

Despite these contributions, this study has several limitations. First, it is based on a single case study, and caution is required in generalizing the findings to Japanese overseas subsidiaries more broadly. Second, the analysis primarily focuses on headquarters-led IHRM practices and does not sufficiently capture the perspectives of overseas subsidiaries or host-country nationals themselves. Third, this study was unable to provide a detailed examination of host-country national development systems within the focal firm.

Future research could address these limitations by conducting comparative case studies across multiple firms to examine variation in the localization process. While this study

focused on Panasonic, case studies of other Japanese firms—including Astemo, Nitto Denko, and Shimadzu Corporation—were conducted but could not be included in the present analysis. Incorporating such cases in future research would enable more systematic comparison and theory refinement. In addition, interviews and surveys targeting host-country nationals could provide a more nuanced understanding of how IHRM practices are perceived and how they influence retention and commitment. Finally, further research could examine how the localization of human resources relates to subsidiary performance, organizational commitment, and knowledge creation from a process-oriented perspective.

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Appendix: Profile of Interviewees (Respondent titles are the positions at the time of the interviews)

1. Panasonic Operational Excellence Co., Ltd.

Interview date: September 8, 2023

Location: Ritsumeikan University Osaka Umeda Campus

Respondent: Mr. H, General Manager, L&D Solutions Department, Organization and Talent Development Center

Recording method: The interview was recorded using an IC recorder and subsequently transcribed.

Duration: Approximately two hours.

2. Panasonic Operational Excellence Co., Ltd.

Interview date: March 21, 2025

Location: Online

Respondent: Mr. H, General Manager, L&D Solutions Department, Organization and Talent Development Center

Recording method: The interview was recorded via Zoom.

Duration: Approximately 40 minutes.

3. Panasonic Operational Excellence Co., Ltd.

Interview date: March 28, 2025

Location: Online

Respondent: Mr. H, General Manager, L&D Solutions Department, Organization and Talent Development Center

Recording method: The interview was recorded via Zoom.

Duration: Approximately one hour.

Following these interviews, the interview respondent provided additional quantitative data by email, and the author verified the accuracy and interpretation of the information through several rounds of email correspondence with the respondent.

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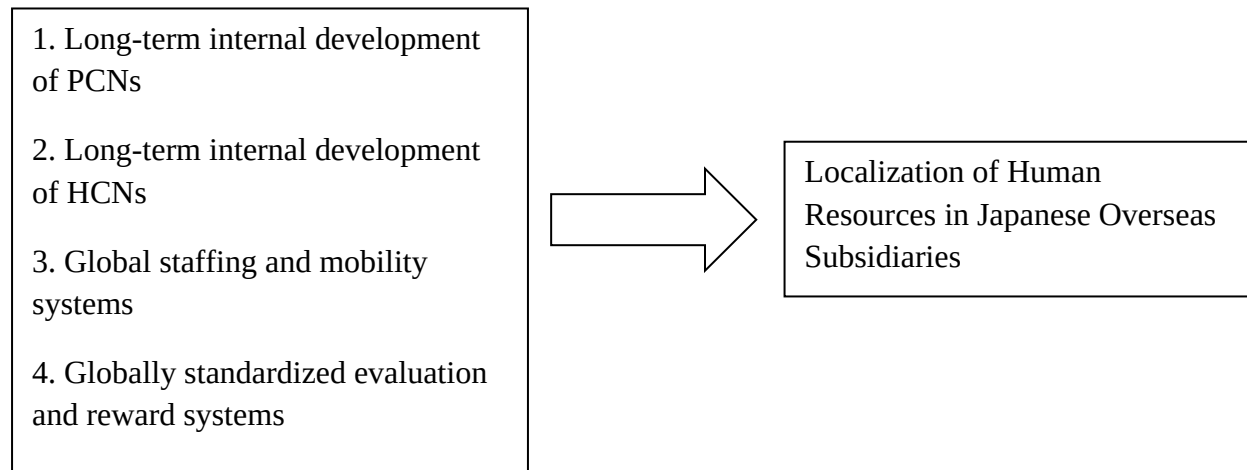
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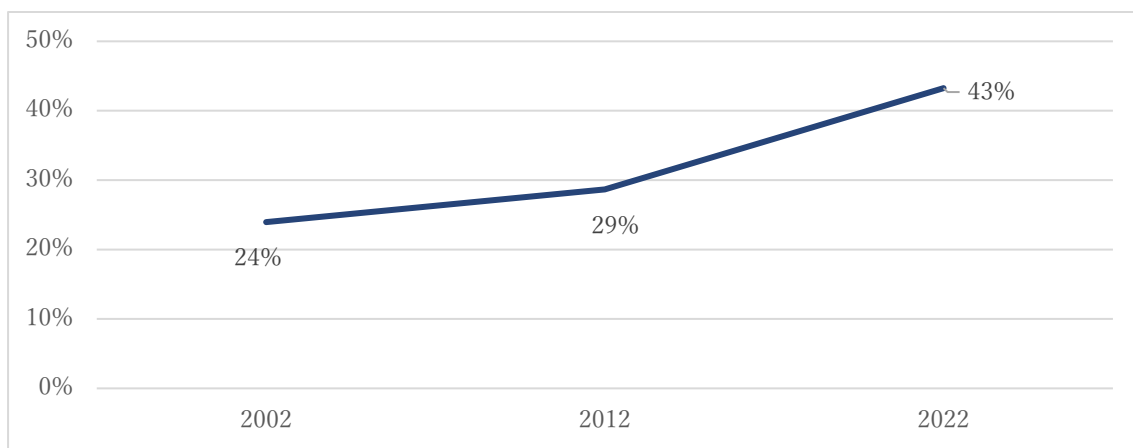
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Figure 1. Process model of localization through headquarters-led IHRM practices



Source: Authors' own elaboration.

Figure 2. Trends in the proportion of foreign presidents at Panasonic overseas subsidiaries



Source: Authors' own calculation based on Toyo Keizai Inc. (2003, 2013, 2023), *Kaigai shinshutsu kigyo soran: Kaisha-betsu hen* [Overseas Expansion of Japanese Companies: Company-level Edition]. The labels 2002, 2012, and 2022 in the figure refer to the data years used for comparison.

From Activation to Value Capture: How Governance Structures Shape Alumni Network Dynamics and Post-Separation Value Creation

Tatsuyuki Takahashi (Chuo University, Japan)

Tomonori Inukai (Chuo University, Japan)

ABSTRACT

Corporate alumni networks have attracted growing attention as firms seek to maintain relationships with former employees and mobilize post-employment ties for recruitment, collaboration, knowledge access, and business development. Prior research on Post-Separation Value (PSV)—the value firms and former employees may derive after employment separation—shows that alumni can continue to generate economic, social, and emotional value. However, less is known about why some alumni networks become active while others remain dormant, or why active networks do not always generate firm-side value. This study addresses these questions through a comparative case analysis of seven corporate alumni network cases across six Japanese general trading companies. It develops a process framework that distinguishes two interdependent mechanisms: activation loops, through which alumni interaction becomes self-reinforcing, and institutional connection blocks, through which network-generated outcomes become connected to firm-side processes. The findings show that firm-led networks may have formal structure and strategic intent but struggle to generate activation when alumni-side ownership remains weak. Alumni-led networks tend to generate stronger interaction and alumni-side value, but their outcomes remain weakly connected to firm-side processes. The hybrid case combines activation with emerging institutional connection, suggesting that firm-side PSV is more likely when alumni-side initiative and firm-side access coexist.

Keyword: Corporate Alumni Networks; Post-Separation Value (PSV); Alumni Network Governance; Activation Loops; Institutional Connection Blocks; Firm-Side Value Capture; Organizational Boundaries; Japan

1. Introduction

In recent years, corporate alumni networks have attracted growing attention in both management practice and academic research as potential sources of Post-Separation Value (PSV), including rehiring, referrals, business collaboration, knowledge transfer, external talent utilization, and reputational benefits. Whereas firm–individual relationships were often implicitly treated as ending at employment separation, firms have increasingly sought to maintain ties with former employees in order to mobilize externalized human and relational capital (Makarius et al., 2017; Fulmer et al., 2024).

Prior research has shown that alumni relationships can generate multiple forms of value for firms (Makarius et al., 2017; Dachner & Makarius, 2022; Fulmer et al., 2024). However, it has focused mainly on what kinds of value may arise from alumni relationships, while offering less explanation of how such value emerges, how alumni networks become activated, and how network-generated outcomes become connected to firm-side PSV.

These issues are particularly salient in Japan. Many Japanese firms have recently launched formal alumni initiatives, including official alumni organizations, dedicated digital platforms, boomerang hiring or side-job schemes, and collaboration programs. Corporate alumni networks in Japan are therefore increasingly positioned not merely as reunion-like social groups, but as components of human capital strategies and open innovation initiatives. At the same time, Japanese firms have historically operated under long-term employment systems and firm-centered career structures, in which former employees were often treated as outside the organizational boundary (Dore, 1973; Aoki, 1988; Hamaguchi, 2011). Maintaining alumni ties therefore requires firms to manage relationships across a boundary that has traditionally separated insiders from outsiders.

The cases examined in this study illustrate this puzzle. Some alumni networks formally register large numbers of members yet exhibit minimal interaction. Others show strong engagement and

mutual support among alumni, yet produce little observable value for firms. These patterns suggest that creating an alumni program, launching a platform, or registering many members does not by itself guarantee either network activation or firm-side value creation.

This study conceptualizes corporate alumni networks not merely as formal programs, membership lists, or pools of former employees, but as relational systems whose value depends on two linked processes: generating interaction among alumni and connecting the outcomes of that interaction to the firm. Specifically, it develops a process framework centered on two mechanisms. Activation loops explain how ownership, expectation formation, and intervention density generate self-reinforcing cycles of posting, responding, consulting, and referring within alumni networks. Institutional connection blocks explain how network-generated outcomes become connected to relevant firm-side processes. The core argument is that governance structures—firm-led, alumni-led, and hybrid—differ in their ability to establish and combine these two mechanisms.

Using a comparative case analysis of seven alumni network cases across six Japanese general trading companies, this study makes three contributions. First, it extends PSV research by showing that value may emerge among alumni without necessarily becoming captured by the firm. Second, it identifies activation loops and institutional connection blocks as mechanisms explaining this variation. Third, it shows how different governance structures shape the formation and combination of these mechanisms. In doing so, the study offers a process-oriented explanation for why some alumni networks become active without generating firm-side PSV, while others remain inactive despite institutional support.

2. Theoretical Background

2.1 Organizational Boundaries and Externalized Resources

Firms increasingly depend on knowledge, expertise, and opportunities located beyond formal organizational boundaries. Dynamic capability theory emphasizes that sustained advantage in changing environments depends not only on the possession of valuable resources, but also on firms' capacities to sense opportunities, mobilize resources, and reconfigure assets over time (Teece et al., 1997; Teece, 2007). Related research on absorptive capacity, open innovation, and interorganizational networks similarly highlights the importance of accessing and using knowledge outside the firm (Cohen & Levinthal, 1990; Chesbrough, 2003; Gulati et al., 2000).

However, access to external knowledge and relationships is not automatic. It depends on mechanisms that connect internal and external domains. This issue is especially salient in Japan, where firms have historically operated with comparatively strong organizational boundaries associated with long-term employment, seniority-based careers, and firm-centered skill formation (Aoki, 1988; Koike, 1991; Hamaguchi, 2011). Although these arrangements have gradually changed with mid-career hiring and restructuring, post-employment ties remain less institutionally embedded than in many Western contexts (Hori, 2020; Yamamoto, 2013).

Corporate alumni are theoretically important in this context because they occupy a position across the organizational boundary. They are no longer employees, but they may retain firm-specific knowledge, social familiarity, and trust-based ties while also carrying experiences developed outside the firm. Alumni networks may therefore serve as organizational interfaces through which externalized human and relational capital become selectively accessible to firms.

2.2 Corporate Alumni and Post-Separation Value

This boundary-spanning position distinguishes corporate alumni—former employees—from both current employees and ordinary external actors (Dachner & Makarius, 2022; Makarius et al., 2025). Unlike current employees, alumni have moved outside the firm and may acquire new knowledge, networks, and perspectives. Unlike external actors, however, they may retain firm-specific knowledge, social familiarity, and trust-based ties. This dual position makes alumni a potentially important category of boundary-spanning actor.

Prior research has shown that alumni relationships can generate various forms of value, including referrals and boomerang hiring, business collaboration, knowledge transfer, employer branding, and reputational benefits (Corredoira & Rosenkopf, 2010; Shipp et al., 2014; Dachner & Makarius, 2022; Makarius et al., 2025). The concept of Post-Separation Value (PSV) has been especially useful for organizing these benefits by showing that economic, social, and emotional value may continue to emerge after employment separation (Makarius et al., 2025).

However, two limitations remain. First, PSV research has tended to emphasize the value that alumni may provide to firms, while paying less attention to alumni as voluntary actors whose participation and continued engagement cannot be assumed. This leaves underexplained why some alumni networks become active while others remain largely inactive despite formal alumni infrastructure. Second, PSV research has mainly identified categories of value, but has offered less explanation of how value is generated through repeated interaction and how network-generated outcomes become connected to firm-side processes.

These limitations suggest the need to understand alumni networks not merely as pools of former employees, but as interaction systems. What requires explanation is not only what kinds of value alumni may potentially provide, but also how alumni networks become activated and under what conditions their outcomes become connected to firm-side PSV.

2.3 Network Activation and Governance

Network research has long emphasized that networks do not create value simply by existing. Value emerges when members engage in information sharing, consultation, referral, resource exchange, or joint activity (Dhanaraj & Parkhe, 2006). In corporate alumni networks, this means that the critical question is not whether a network is formally established, but whether it becomes activated. Activation depends not only on structural attributes such as size or platform design, but also on relational and cognitive conditions such as trust, shared identity, and reciprocity expectations (Nahapiet & Ghoshal, 1998; Tsai & Ghoshal, 1998).

This point is especially important because alumni participation is voluntary. Firms cannot fully mandate alumni engagement after employment separation. Research on communities of practice and electronic networks of practice suggests that participation is sustained by belonging, peer recognition, identity affirmation, and expectations of mutual support (Wenger, 1998; Wasko & Faraj, 2005). In alumni networks, such social and emotional value may function not only as outcomes, but also as preconditions for activation.

However, activation alone does not explain whether network-generated value becomes connected to firm-side PSV. This depends partly on governance. Network governance shapes participation, coordination, and value creation by allocating decision rights, resources, and coordination mechanisms (Jones et al., 1997; Provan & Kenis, 2008). In corporate alumni networks, governance arrangements may differ in how effectively they support alumni-side ownership, sustain recurrent interaction, and connect network-generated outcomes to firm-side processes. This suggests that the key theoretical issue is not simply whether alumni networks exist, but how governance structures shape both activation and connection.

2.4 Research Questions

Building on these literatures, this study addresses two linked gaps in existing research on corporate alumni networks. First, prior research has not sufficiently explained how alumni

networks become activated as recurrent interaction systems. Second, it has not adequately clarified under what conditions network-generated outcomes become connected to firm-side Post-Separation Value (PSV).

To address these gaps, the study develops a process framework centered on two mechanisms: activation loops and institutional connection blocks. Activation loops explain how alumni-side ownership, expectation formation, and repeated intervention generate self-reinforcing interaction within the network. Institutional connection blocks explain how outcomes generated through such interaction become connected to firm-side processes such as recruitment, collaboration, new business development, or employee learning.

Accordingly, this study addresses two central research questions:

RQ1: How do different governance structures — firm-led, alumni-led, and hybrid — shape activation patterns in corporate alumni networks?

RQ2: Under what conditions are outcomes generated within activated alumni networks connected to firm-side Post-Separation Value (PSV)?

These questions are examined through a comparative case analysis of corporate alumni networks in Japanese general trading companies.

3. Theoretical Framework and Propositions

This study conceptualizes corporate alumni networks as recursive, multi-stage processes rather than as arrangements in which governance structure directly produces network activation and firm-side Post-Separation Value (PSV). The framework distinguishes two analytically separate but interdependent mechanisms: activation loops and institutional connection blocks. Activation loops explain how recurrent interaction is generated and sustained within alumni networks, while institutional connection blocks explain how outcomes generated through such interaction

become connected to firm-side processes such as recruitment, collaboration, new business development, or employee learning.

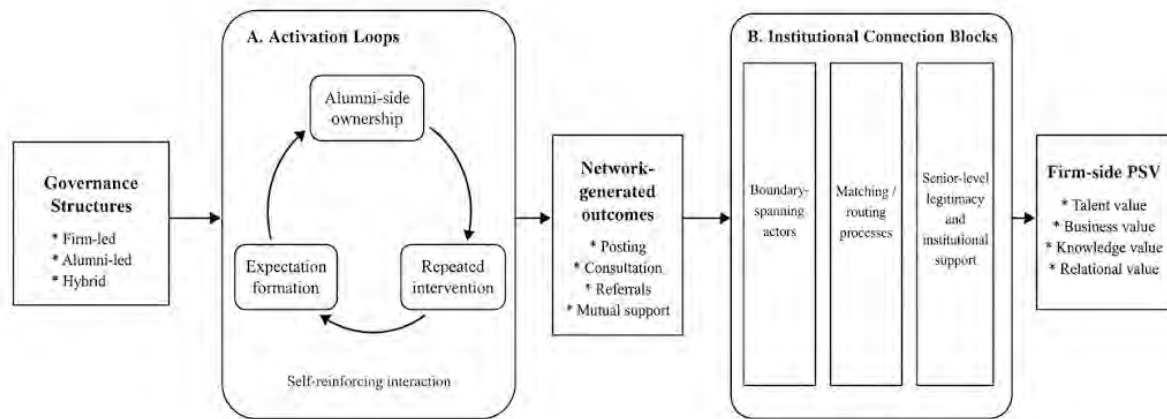
Governance structures are treated as conditions shaping whether and how these two mechanisms emerge and become combined. This framework addresses a central empirical puzzle: some alumni networks become active without generating firm-side value, while others possess formal institutional support but remain inactive. The purpose of this section is therefore to develop propositions explaining how firm-led, alumni-led, and hybrid governance arrangements shape activation and firm-side value capture.

3.1 Conceptual Model

Figure 1 presents the conceptual model guiding this study. The model centers on the relationship among governance structures, activation loops, institutional connection blocks, and firm-side PSV. Governance structures shape the conditions under which activation loops and institutional connection blocks emerge. Firm-led, alumni-led, and hybrid arrangements differ in their ability to foster participant ownership, sustain recurrent interaction, and connect network-generated outcomes to firm-side processes.

The model emphasizes that activation and firm-side PSV are not automatically linked. Activation loops may generate sustained interaction and network-level value, but firm-side PSV emerges only when institutional connection blocks connect such outcomes to organizational action. The framework therefore treats governance not as a direct determinant of outcomes, but as a condition shaping the formation and combination of the two mechanisms.

Figure 1. Conceptual Model of Alumni Network Dynamics



3.2 Core Constructs

3.2.1 Activation Loops

Activation loops refer to self-reinforcing interaction processes through which alumni networks become active. They are built through the mutual reinforcement of three elements: ownership, expectation formation, and repeated intervention. Ownership refers to the extent to which alumni participants experience the network as “their” space rather than as a firm-administered program. Expectation formation refers to participants’ beliefs that interaction will be recognized, understood, and reciprocated. Repeated intervention refers to visible actions by founders, organizers, or core participants, such as posting, inviting responses, connecting members, supporting early exchanges, and planning alumni-facing activities.

Activation emerges when these elements reinforce one another. Initial interventions reduce uncertainty and encourage members to post, consult, respond, or refer others. Successful interaction then strengthens participants’ expectations that others will respond and understand their context, which in turn deepens ownership and makes further interaction more likely. Activation loops are therefore recursive rather than linear. When fulfilled expectations accumulate, interaction can become self-sustaining; when early interventions are weak or expectations remain uncertain, the network may remain inactive despite formal establishment.

3.2.2 Institutional Connection Blocks

Institutional connection blocks refer to organizational interfaces that connect outcomes generated within alumni networks to firm-side processes, such as recruitment, collaboration, new business development, employee learning, or other forms of organizational action. Their role is not to generate network activity itself, but to make network-generated ideas, relationships, and opportunities accessible and actionable for the firm.

Institutional connection blocks are not equivalent to mere organizational presence or symbolic endorsement. To function, they require boundary-spanning actors who link the alumni network to relevant firm-side units, processes through which alumni-generated ideas or opportunities can be brought to those actors, organizational support that legitimizes firm-side use of the network, and value-circulation mechanisms through which outcomes become visible and reinforce future engagement. Without these elements, value generated within the network may remain meaningful for alumni participants yet fail to become connected to firm-side PSV.

3.3 Governance Types

This study distinguishes three governance types: firm-led, alumni-led, and hybrid. These types differ in where operational leadership, decision-making authority, and resource provision are located, and in how they shape the likelihood that activation loops and institutional connection blocks emerge.

In firm-led governance, the firm typically retains decision-making authority, operational control, and resource provision. Such arrangements may provide legitimacy, administrative support, and access to firm-side processes. However, they may also weaken alumni-side ownership if the network is experienced primarily as a firm-administered initiative rather than as a participant-owned space.

In alumni-led governance, decision-making and operational initiative are located primarily on the alumni side. Such arrangements may support ownership, recurrent intervention, and

participant engagement, but they may lack stable organizational pathways through which network-generated outcomes become connected to firm-side processes.

Hybrid governance combines alumni-side initiative in core planning and operation with firm-side legitimacy, support, and access. This arrangement can potentially combine the ownership conditions needed for activation with the organizational interfaces needed for firm-side value capture. However, hybrid governance should not be treated as automatically superior; its effectiveness depends on how alumni-side ownership and firm-side support are coordinated.

3.4 Theoretical Propositions

Based on the foregoing framework, this study formulates two provisional propositions to guide the comparative case analysis.

Proposition 1: Activation Loop Establishment

Alumni-led and hybrid governance arrangements are expected to be more conducive than firm-led arrangements to the establishment of activation loops, because they are more likely to foster alumni-side ownership and recurrent intervention.

Proposition 2: Activation–PSV Non-Simultaneity

Even where activation loops are established, firm-side PSV is not expected to emerge unless institutional connection blocks are also present to connect network-generated outcomes to firm-side processes.

These propositions are intended not as universal hypotheses, but as theoretically informed expectations regarding the conditions under which activation and firm-side value capture may, or may not, coincide.

Taken together, these propositions imply that governance structures shape alumni network outcomes indirectly by conditioning whether activation loops and institutional connection blocks emerge and become combined over time.

4. Research Methodology

This study adopts a theory-building comparative case study design with elements of process tracing (Eisenhardt, 1989; Langley, 1999). The aim is to explain how governance structures shape the processes through which corporate alumni networks become activated and, under certain conditions, generate firm-side Post-Separation Value (PSV). Because the phenomenon involves governance arrangements, participant interaction, firm-side interfaces, and value creation processes that unfold over time, a process-oriented comparative design is more appropriate than a cross-sectional design focused on static variable relationships.

The empirical setting consists of corporate alumni networks at six Japanese general trading companies. Because Company C maintains two parallel networks—a firm-led network, C-1, and an alumni-led network, C-2—the analysis covers seven analytical cases. These cases vary in governance structure, activation, institutional connection, and PSV outcomes. The two propositions developed in Section 3 are used as analytical expectations rather than as universal hypotheses. The purpose is not to determine whether one governance type is universally superior, but to compare how different governance arrangements condition the emergence and combination of activation loops and institutional connection blocks.

4.1 Research Design and Case Selection

The study uses theoretical sampling rather than statistical representativeness. Japanese general trading companies were selected because they retain strong features of the Japanese employment system, operate across broad business domains, and increasingly face issues related to talent mobility, business development, open innovation, and external collaboration. Limiting the analysis to a single industry also helps reduce variation arising from industry-level differences and allows greater analytical focus on governance and internal network processes.

The seven cases are classified into three governance types: firm-led cases (Companies A, B, C-1), alumni-led cases (Companies C-2, D, E), and a hybrid case (Company F). The classification

is based on where operational leadership and decision-making authority reside, who provides resources for network operation, and the degree of formal corporate approval and involvement. Company C is especially useful because its two parallel networks share the same broader organizational context while differing substantially in governance and institutional connection. All cases are anonymized using company codes to protect informants and firms while preserving analytically relevant features.

4.2 Data Collection

Data collection centered on semi-structured interviews, supplemented by documentary materials and publicly available information. Eight interviews were conducted between December 2024 and February 2025, with between one and three informants per company and an average duration of approximately 60 minutes. Most interviews were conducted face-to-face, while some were conducted online depending on informant availability. Informants included alumni founders and organizers, active alumni participants, and, in firm-led or hybrid cases, firm-side actors such as human resources personnel or executive-level stakeholders. Each interview focused on a single case, and no informant discussed more than one company case.

Interviews covered four broad areas: the background of network establishment, governance and operational arrangements, internal interaction dynamics, and the presence or absence of institutional connection to firm-side processes. Interview notes were prepared during or immediately after each interview and shared with informants for factual confirmation. Neither author has been directly involved in the operation of any network included in this study.

Documentary and online materials were used to supplement interviews and verify factual descriptions. These included official alumni network websites, registration pages, event announcements, press releases, public materials on HR or open innovation initiatives, and relevant social media content. The study did not rely on internal-only or confidential company documents. Nor did it conduct systematic participant observation of offline events or closed

online platforms; selected examples of posts, event notices, and reported success cases were used only as supporting evidence where informants permitted.

4.3 Data Analysis

Data analysis combined coding, within-case process reconstruction, pattern matching, and cross-case comparison. First, interview notes and documentary materials were coded for recurrent themes such as governance arrangements, founder interventions, participant ownership, interaction patterns, firm involvement, institutional connection, and PSV-related outcomes. These codes were then organized into higher-order categories corresponding to the theoretical framework: governance structure, activation loops, institutional connection blocks, and firm-side PSV.

Second, each case was reconstructed as a temporally ordered causal story, focusing on establishment conditions, early interaction, activation or non-activation, institutional connection, and observed outcomes. Third, the cases were compared against the proposed framework to examine whether activation loops and institutional connection blocks emerged, failed to emerge, or became partially combined. Finally, cross-case comparison was used to identify recurring patterns across the three governance types.

The analysis did not use qualitative data analysis software. Given the limited number of cases and the importance of preserving temporal and contextual detail, coding lists, case summaries, and comparative causal tables were maintained in spreadsheets and text documents. This approach supported traceability while allowing close engagement with the processual character of the data.

4.4 Validity and Reliability

Several steps were taken to strengthen credibility and traceability. First, informants were selected because they were likely to understand the actual operation and dynamics of each network, such as founders, operators, active participants, firm-side liaisons, or executive-level

participants. Second, triangulation was conducted by comparing interview accounts with documentary and publicly available materials wherever possible. Third, interview notes were shared with informants for factual confirmation. Finally, analytical materials, including interview notes, code lists, case summaries, and comparative tables, were systematically preserved. Although the study relies primarily on interviews rather than full ethnographic observation, these procedures provide a reasonable basis for mechanism-oriented comparative inference.

5. Findings

This section examines how governance structures shape network activation and firm-side Post-Separation Value (PSV) across seven corporate alumni network cases in Japanese general trading companies. The analysis focuses on the two mechanisms developed in the theoretical framework: activation loops and institutional connection blocks. It examines whether these mechanisms emerge, fail to emerge, or become partially combined across firm-led, alumni-led, and hybrid governance arrangements.

The findings show that alumni network outcomes are not explained by formal institutional presence, platform type, or registrant size alone. Rather, the cases differ in whether recurrent interaction becomes self-reinforcing and whether network-generated outcomes become connected to firm-side processes. The central finding is that activation and firm-side value capture follow a conjunctural logic: activation alone does not generate firm-side PSV, and formal connection remains underused without sufficient activation. Firm-side PSV becomes more plausible when activation loops and institutional connection blocks are both present.

The section proceeds as follows. Section 5.1 provides an overview of the seven cases. Sections 5.2 to 5.4 examine firm-led, alumni-led, and hybrid cases respectively. Section 5.5 then integrates the findings through cross-case comparison.

5.1 Overview of Cases

This study examines corporate alumni networks at six Japanese general trading companies. Because Company C maintains two distinct alumni networks in parallel—a firm-led network, C-1, and an alumni-led network, C-2—the analysis covers seven cases in total.

The cases fall into three governance types. The firm-led cases, A, B, and C-1, were initiated and primarily operated by the firm, usually through human resources or related corporate functions. The alumni-led cases, C-2, D, and E, were initiated and operated mainly by alumni themselves, with limited or informal firm involvement. The hybrid case, F, combined alumni-side initiative with formal firm-side approval, resource support, and operational involvement.

Across these cases, three broad outcome patterns are visible. Firm-led cases tended to show weak activation despite formal structure or strategic intent. Alumni-led cases tended to show stronger activation and alumni-side value creation, but limited connection to firm-side processes. The hybrid case most clearly combined relatively strong activation with emerging institutional connection, making firm-side PSV more visible than in the other cases. Table 1 summarizes the seven cases in terms of governance type, purpose, platform and scale, activation, institutional connection, and firm-side PSV.

Table 1. Comparative Overview of Cases

Case	Governance Type	Main Purpose	Platform / Scale	Activation Loops	Institutional Connection Blocks	Firm-side PSV
A	Firm-led	Relationship maintenance	Facebook / 628 alumni	Low	Unclear	Not confirmed

B	Firm-led	Talent and business engagement	Paid platform / 280 alumni + 60 employees	Low	Intended but not established	Limited
C-1	Firm-led	Business collaboration and open innovation	Paid platform / 599 alumni	Low	Nascent	Not confirmed
C-2	Alumni-led	Mutual support among selected alumni	Messenger / approx. 40 alumni	High	Absent	Alumni-side only
D	Alumni-led	Mutual support and alumni association building	Facebook / 810 alumni	High	Limited	Primarily alumni-side
E	Alumni-led	Mutual support and independent career support	Facebook / 205 alumni	High	Limited	Primarily alumni-side
F	Hybrid	Mutual support and business opportunities	Paid platform / 406 alumni + 411 employees	High	Present but nascent	Emerging

5.2 Firm-led Cases: Formal Support with Limited Activation

This section examines the three firm-led cases: Companies C-1, B, and A. These cases differed in strategic intent and operational design, but they shared a common governance pattern: initiation, decision-making, and routine operation were located primarily on the firm side, usually through human resources or related corporate functions. C-1 was the most strategically developed case, with an explicit emphasis on business collaboration and open innovation. B similarly aimed to connect alumni to talent and business engagement. A, by contrast, was closer

to a relationship-maintenance network. Across these differences, however, all three cases were constituted mainly as firm-side initiatives rather than as networks governed by alumni participants themselves.

Across the three cases, internal interaction remained limited. This pattern cannot be explained simply by registrant size or platform type. C-1 and A had relatively large registrant populations, while C-1 and B used paid platforms. Yet none of the three showed high levels of recurrent posting, consultation, or referral. Alumni involvement also tended to remain peripheral rather than central to network governance and operation. The firm-led cases therefore indicate that formal establishment, infrastructure, and strategic intent can support alumni network development, but do not automatically generate activation loops.

Case C-1 had the clearest strategic intent among the firm-led cases. Initiated by an HR executive and designed around business collaboration and open innovation, it showed some nascent institutional connection, such as links to an internal new business challenge program. However, interaction remained limited, and these connections had not developed into stable liaison roles, standard intake procedures, or routinized pathways into firm-side action. The HR-side informant described both the firm's strategic intent and the continuing need for alumni-side initiative:

The purpose of the network was open innovation and value creation, and that has not changed. We want alumni supporters to help energize the network, but we were not able to coordinate with them very much this year. Because this is an alumni network, alumni themselves are the key actors; activities initiated by alumni are more likely to make the network better and more active.

Case B illustrates a similar but less developed pattern. The network was launched by HR on a paid platform and aimed at talent engagement and business collaboration. It also included current employees, suggesting an effort to create a boundary-spanning space between alumni and the firm. However, activation remained limited: around 40–50 percent of registered members logged in, but fewer than 10 percent were active. Cases in which current employees

contacted alumni also remained limited. Thus, platform design and firm-side resources created the possibility of interaction, but did not generate participant ownership or self-reinforcing engagement.

Case A represents the least interventionist firm-led case. Established by HR as a Facebook group, it functioned primarily as a membership-managed alumni contact point. The company did not appear to be actively seeking to use the network as a basis for broader collaboration, and no clear institutional connection blocks or confirmed firm-side PSV outcomes were identified.

Taken together, the firm-led cases suggest a conditional mechanism. Firm-led governance may provide legitimacy, administrative resources, and potential organizational access. However, when alumni-side ownership and expectation formation remain weak, activation loops are difficult to establish, and institutional connection blocks remain formal, aspirational, or underused.

5.3 Alumni-led Cases: Activation without Firm-side Capture

This section examines the three alumni-led cases: Companies D, E, and C-2. These cases were initiated and operated primarily by alumni themselves, often entrepreneurial alumni, without formal corporate delegation, budget allocation, or routine operational support. In contrast to the firm-led cases, decision-making and day-to-day initiative were located mainly on the alumni side.

Across the three cases, recurrent interaction was relatively strong. Members consulted one another, exchanged information, made introductions, and provided encouragement or practical support. These cases therefore show that activation can emerge even without formal firm-side control when alumni experience the network as their own space and expect that others will respond and understand their context.

Case D represents the most established alumni-led case. It was created because mid-career departures had increased while former employees lacked a place to remain connected after exit.

It began as a Facebook group and later developed into a broader alumni association. Its activity was sustained through repeated annual gatherings, organizer continuity, and efforts to involve younger alumni in organizer roles. The founder described the network's origin and persistence as follows:

There was no place for people who had left midway to connect with one another. We decided to hold a gathering once every year and kept doing it. Even when attendance dropped at one point, we agreed that we had to keep it going.

Shared alumni identity also lowered the threshold for consultation and referral. The network offered a comfortable setting for people who had “eaten from the same pot” and shared the same “DNA” to talk quickly and openly. However, its primary orientation remained alumni-side mutual support. The company recognized the network to some extent, for example by including information about it in resignation-related materials, but did not provide financial or routine operational support. Firm-side PSV therefore remained limited and secondary rather than central.

Case E represents a later alumni-led case developed with Case D as a reference point. Established as a Facebook group, it grew mainly through referrals and attracted alumni interested in entrepreneurship, management, independent careers, or new challenges. This relatively coherent participant composition supported consultation, reassurance, and mutual support. Although the company recognized the network to some extent and HR showed interest in learning about it, the network was not formally endorsed or oriented toward contributing to the firm. Matching and support occurred mainly through individual, ad hoc arrangements rather than firm-side pathways.

Case C-2 illustrates focused activation through intentional selectivity. Operating through a Messenger group, the network was kept relatively small, with around 30–40 members, because participants were added selectively through invitations from existing members. Rather than expanding broadly, the group focused on alumni with relevant attributes or interests, such as

entrepreneurs, startup executives, or otherwise highly engaged individuals. This intentional selectivity helped reduce noise and strengthened expectations that other members would understand the sender's background and concerns. At the same time, C-2 showed no formal pathway into firm-side processes. Occasional opportunity referrals occurred, but systematic business matching or firm-side value capture had not developed.

Taken together, the alumni-led cases suggest that ownership, selective participation, shared identity, and repeated intervention can generate strong activation loops. However, they also show a recurring limitation: value may deepen within the alumni network without becoming connected to firm-side PSV. The alumni-led cases therefore illustrate activation without firm-side capture.

5.4 Hybrid Case: Combining Activation and Institutional Connection

This section examines Company F, the sole hybrid governance case. Unlike the other cases, F originated from an alumni-side proposal but developed with top management support, formal firm-side approval, budget support, and shared operational involvement. Decision-making and operation were not concentrated solely on either the firm or alumni side; rather, the network was supported through coordination between an alumni-side board, an alumni-side operator, and firm-side actors, primarily in human resources.

F is important because it shows the clearest combination of activation and institutional connection. The network was launched after an alumni-side actor proposed the initiative to the company and received support from top management. The firm then commissioned an alumni-side organization to plan and operate activities on a contract basis. An informant described this arrangement as follows:

The initiative was proposed by alumni, and the company agreed to support it. Policy is decided jointly by the alumni-side board and HR, while planning and operation are largely handled by the alumni-side operator under a paid arrangement. The company

provides the budget and supports the network, but the activity is not simply run as an ordinary company-administered program.

This arrangement differed from the voluntary supporter-type involvement observed in some firm-led cases. Alumni-side actors were not merely assisting with selected events or platform activity on a peripheral or voluntary basis; they were formally involved in the core governance and contracted operation of the network, including decision-making through the alumni-side board and responsibility for planning and running alumni-facing activities. At the same time, the firm provided formal approval, financial support, and access to internal actors.

Interview materials suggest that activation in F was supported by this hybrid arrangement. Activity was not limited to open posts on the platform; subgroup posts, direct messages, and recurring events also supported interaction. The network therefore appears to have relied less on platform infrastructure alone than on repeated opportunities for conversation and continued organizer intervention. In this sense, F combined a strength of alumni-led governance—alumni-side ownership and relational mobilization—with a strength of firm-led governance—organizational legitimacy, resources, and access.

F also showed stronger institutional connection than the alumni-led cases. The network was connected to an internal new business initiative, suggesting that network-generated opportunities could enter firm-side processes rather than remaining only within alumni interaction. The expected value for the firm was described as including PR, employee satisfaction, employee education, and business creation. The network also provided current employees with opportunities to hear directly from people outside the company, which was described as a valuable learning opportunity.

At the same time, F should not be interpreted as a fully institutionalized or automatically successful model. Although it had clearer interfaces with firm-side actors than the alumni-led cases, the available evidence does not show that network-generated opportunities had yet been routinely processed through standardized evaluation, decision-making, or resource allocation

procedures. F is therefore best understood as an emergent hybrid case in which activation and institutional connection had begun to combine through ongoing coordination among alumni-side core participation, contract-based operation, top management support, and firm-side institutional access.

5.5 Cross-Case Patterns

This section integrates the seven cases through cross-case comparison. The purpose is not to restate each case, but to clarify how activation loops and institutional connection blocks combine differently across governance types and how these combinations shape firm-side PSV.

The first pattern concerns activation. Firm-led cases showed that formal support, platforms, and strategic intent did not by themselves generate recurrent interaction. In C-1 and B, the firm provided strategic direction, infrastructure, and potential access to internal processes, but alumni-side ownership and expectation formation remained limited. In A, the network was formally present but largely administrative. By contrast, alumni-led cases showed stronger activation because alumni themselves initiated, governed, and sustained interaction. D maintained activity through recurring gatherings and organizer continuity; E grew through referral-based participation among alumni with similar interests; and C-2 sustained interaction through intentional selectivity. The hybrid case, F, suggests that activation can also be sustained under firm involvement when alumni-side actors remain central to governance and operation.

The second pattern concerns institutional connection. Alumni-led cases generated meaningful network-side value, including consultation, referral, encouragement, and mutual support, but these outcomes were only weakly connected to firm-side processes. Firm-led cases had greater potential organizational access, but this access remained underused because activation was weak. The hybrid case showed the clearest emerging connection: alumni-side activity was linked to firm-side initiatives, supported by formal approval, budget, top management support, and operational coordination between alumni-side and firm-side actors.

Table 2 summarizes these patterns.

Table 2. Governance Types and Mechanism Patterns

Governance Type	Activation	Institutional Connection	Firm-side PSV Pattern
Firm-led C-1, B, A	Weak / limited	Intended or nascent, but underused	Limited; formal access without sufficient activation
Alumni-led D, E, C-2	Strong / present	Weak or absent	Alumni-side value; limited firm-side capture
Hybrid F	Strong / present	Emerging / partially present	Emerging firm-side PSV

Taken together, the cases suggest a conjunctural rather than additive logic. Activation alone did not produce firm-side PSV, as shown by the alumni-led cases. Institutional access alone also did not produce firm-side PSV, as shown by the firm-led cases where formal support remained underused. Firm-side PSV became plausible only when activation loops and institutional connection blocks were both present, as most clearly illustrated by the hybrid case. Governance structures therefore do not determine outcomes directly; rather, they condition whether activation and connection emerge together.

6. Discussion

This study examined how governance structures shape the activation of corporate alumni networks and the conditions under which network-generated outcomes become connected to firm-side Post-Separation Value (PSV). The findings suggest that alumni networks should not be treated as static repositories of human or relational capital. Rather, they are dynamic

interaction systems whose strategic relevance depends on whether two mechanisms—activation loops and institutional connection blocks—emerge and become combined.

6.1 Theoretical Contributions

The first contribution is to reconceptualize PSV as a processual outcome rather than as a static category of possible benefits. Prior PSV research has been valuable in identifying the economic, social, and emotional value that may arise after employment separation. This study extends that work by showing that such value does not become consequential for firms simply because alumni ties exist. Firm-side PSV depends on whether alumni interaction becomes recurrent through activation loops and whether the outcomes of that interaction are connected to firm-side processes through institutional connection blocks. The distinction between activation and connection therefore explains why some networks remain inactive despite formal establishment, while others become active but generate value mainly among alumni.

The second contribution concerns governance. The findings suggest that governance structures do not determine alumni network outcomes directly. Instead, governance conditions whether activation loops and institutional connection blocks are likely to emerge together. Firm-led governance may provide legitimacy, infrastructure, resources, and potential access to organizational processes, but these do not automatically generate activation when alumni-side ownership and expectation formation remain weak. Alumni-led governance may more readily sustain interaction through ownership, shared identity, and repeated intervention, but such activation does not necessarily become connected to firm-side PSV. Hybrid governance is therefore theoretically important not because it is universally superior, but because it can potentially combine alumni-side ownership with firm-side legitimacy, support, and access.

The third contribution is to clarify the conditions under which corporate alumni can function as boundary-spanning organizational resources. Alumni are potentially valuable because they combine familiarity with the firm and experience gained outside it. However, alumni status alone does not create strategic value. Alumni networks become boundary-spanning

infrastructures when governance arrangements make them active, trusted, and organizationally connected. In this sense, the study contributes to research on organizational boundaries and externalized human capital by showing that value emerges through governance-mediated processes that connect former employees' firm familiarity and external experience to firm-side action.

6.2 Boundary Conditions

The framework developed in this study should be interpreted with clear boundary conditions. First, the findings are most applicable to settings where relational capital, trust-based access, and network-mediated opportunity recognition are economically important. Japanese general trading companies are especially suitable for this analysis because they rely heavily on boundary-spanning knowledge, interpersonal trust, and coordination across diverse business domains. Similar dynamics may be more likely in consulting, professional services, innovation-intensive industries, or other sectors where alumni ties can plausibly support knowledge access, collaboration, business development, or talent-related outcomes.

Second, the framework is most relevant where organizations have some openness to maintaining post-employment relationships. Firm-side PSV is more likely to emerge where alumni initiatives can connect to firm-side actors or processes while retaining alumni-side initiative. Third, the framework depends on the presence of alumni actors with sufficient agency to sustain interaction. Activation loops require founders, organizers, or core participants who continue to invite participation, respond to members, organize activities, and maintain norms of interaction. The study therefore offers analytical generalization rather than statistical generalization: its claims are most relevant to contexts in which post-employment ties remain meaningful, organizational boundaries remain consequential, and governance arrangements shape whether such ties become active and organizationally connected.

6.3 Practical Implications

The findings suggest that firms should not treat alumni networks simply as platforms, contact lists, or official programs. Formal infrastructure may support alumni network development, but it does not by itself produce activation. Similarly, active alumni interaction does not automatically generate firm-side value unless there are institutional pathways through which network-generated outcomes can enter recruitment, collaboration, new business development, employee learning, or other firm-side processes.

For firms, the practical implication is that alumni network design should address both activation and connection. Firm-led initiatives can become more effective by involving alumni not only as participants or occasional supporters, but also in core planning, governance, and the design of alumni-facing activities. Alumni-led initiatives, by contrast, may become more organizationally relevant when firms provide legitimacy, access, and selective support without displacing alumni-side ownership. In both directions, the managerial challenge is not to maximize firm control, but to create a governance arrangement that preserves alumni-side ownership while building enough organizational interface to make network-generated outcomes actionable for the firm.

These implications are especially important in Japan, where many firms have historically maintained strong employment boundaries and less institutionalized post-employment relationships. In such a context, corporate alumni networks may provide a practical mechanism for reconnecting externalized human and relational capital to the firm without simply reproducing traditional internal employment structures.

7. Conclusion

7.1 Summary of Findings

This study examined how governance structures shape corporate alumni network activation and the conditions under which network-generated outcomes become connected to firm-side Post-Separation Value (PSV). Based on a comparative case analysis of seven alumni network cases across six Japanese general trading companies, the study showed that alumni network outcomes cannot be explained by formal establishment, platform type, registrant size, or organizational support alone.

The findings point to two distinct but interdependent mechanisms. Activation loops explain how recurrent interaction emerges through alumni-side ownership, expectation formation, and repeated intervention. Institutional connection blocks explain how network-generated outcomes become connected to firm-side processes such as recruitment, collaboration, new business development, or employee learning. The firm-led cases showed formal support and potential organizational access, but limited activation. The alumni-led cases showed stronger activation and alumni-side value creation, but limited firm-side value capture. The hybrid case most clearly combined activation with emerging institutional connection. Overall, the findings suggest that firm-side PSV becomes more plausible when activation loops and institutional connection blocks are both present.

7.2 Limitations and Future Research

This study has several limitations. First, it is based on a small number of qualitative cases within Japanese general trading companies, which limits the range of organizational and industry conditions observed. Second, the analysis relies primarily on semi-structured interviews, supplemented by documentary materials and limited observational traces, rather than on sustained participant observation or systematic platform-level interaction data. Third, while the study identifies emerging patterns of firm-side PSV connection, the available evidence is

stronger for reconstructing processes than for measuring the scale, frequency, or economic magnitude of outcomes.

Future research should examine corporate alumni networks in other industries and national contexts, including sectors such as consulting, professional services, technology, manufacturing, and finance. Longitudinal studies would also be valuable for examining how activation loops stabilize, decay, or revive over time, and how institutional connection blocks become routinized. In addition, mixed-method or quantitative research could test relationships among alumni ownership, trust, reciprocity expectations, organizational openness, participation, and value creation. Finally, future studies should examine not only positive PSV, but also potential negative effects, such as excessive instrumentalization of alumni, conflicts between alumni autonomy and firm control, or reputational risks arising from poorly governed alumni relationships.

7.3 Concluding Remarks

By distinguishing activation loops from institutional connection blocks, this study provides a process-oriented framework for understanding how corporate alumni networks generate value and how that value may, or may not, become connected to firm-side PSV. Rather than offering a universal governance solution, the study advances a contingent explanation: alumni network outcomes depend on how governance arrangements shape the emergence and combination of activation and institutional connection.

In the Japanese context, where organizational boundaries have historically remained comparatively strong and post-employment ties have been less institutionally embedded, this perspective is especially important. Alumni networks are not simply extensions of past employment relationships. They can become organizational interfaces through which former employees' knowledge, trust, and external relationships are reconnected to the firm, provided that the networks are both actively sustained and institutionally connected.

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Japanese Intellectual Property Rights and the Growth of Asian Home Appliance Firms

Masashi Arai (Asia University, Japan)

ABSTRACT

This study qualitatively analyzes the intellectual property rights strategies of Asian home appliance firms, with a particular focus on patents and trademarks. In recent years, Asian firms have not only pursued technological development within their home countries but have also actively acquired patents and brands through mergers and acquisitions, enabling rapid market entry and product differentiation. Drawing on case studies involving the acquisition of intellectual property from Japanese firms, this study examines how such strategies have contributed to strengthening firm competitiveness. The findings indicate that Asian firms have successfully secured strong market positions, especially in Southeast Asian markets, by leveraging acquired intellectual property. These firms are no longer mere imitators; through acquisitions, they have gained access to technologies, development capabilities, human resources, R&D bases, and established brands. By effectively utilizing these managerial resources, Asian home appliance firms have enhanced brand power and accelerated their market expansion. The study highlights the strategic importance of acquiring Japanese intellectual property as a pathway to organizational learning and competitive growth in international markets.

Keyword: Strategy, Intellectual Property Rights, Patents, Trademarks, Home Appliance Industry, Mergers And Acquisitions, Asian Firms

Sociocultural Challenges to Sustainable Immigrant Entrepreneurship in Japan

Kiril Ivanov (Media University, Germany)

Akitsu Oe (Tokyo University of Science, Japan)

ABSTRACT

Immigrant entrepreneurs play a critical role in advancing sustainable entrepreneurship or the simultaneous creation of economic, environmental and social value. Yet immigrant founders face significant challenges when pursuing sustainable entrepreneurship in restrictive sociocultural contexts. Japan offers an analytically rich, paradoxical setting for examining immigrants' role in sustainable entrepreneurship. The country has committed to supporting immigrant, sustainable entrepreneurship while still retaining restrictive immigration policies and sociocultural norms. This study conducts a systematic literature review to identify sociocultural challenges to immigrants' involvement in sustainable entrepreneurship globally, as well as Japan-specific sociocultural challenges to immigrant entrepreneurship. Based on these results, the paper elicits six theoretical propositions across the micro, meso and macro levels of entrepreneurial activity and offers implications for future studies to validate the propositions through qualitative, ethnographic research.

Keyword: Immigrant Entrepreneurship, Sustainable Entrepreneurship, Sociocultural Challenges, Cultural Tensions, Mixed Embeddedness

1. Introduction

What enables immigrant entrepreneurs to create sustainability-oriented ventures in restrictive sociocultural contexts? This question is motivated by the growing recognition that immigrant entrepreneurship is a driver of cross-cultural knowledge transfer, innovation and sustainable development (Capoani et al., 2024; Li et al., 2023). However, immigrant entrepreneurs—typically perceived as outsiders—face unique sociocultural challenges to legitimate their ventures in environments governed by unfamiliar norms and institutional logics.

Sociocultural challenges are challenges that integrate both social and cultural factors (cf. Light & Dana, 2013). Social factors encompass structural, relational and institutional dimensions of society (Editorial Office, 2024). Cultural factors refer to shared systems of meaning, including values, beliefs, norms, artefacts and practices (Schein, 2004, Breuer & Ivanov, 2026). In the context of immigrant entrepreneurship, sociocultural challenges are often represented by conflicts and tensions that arise when immigrants' personal values, norms and business practices acquired in their home countries intersect with those of the host society (e.g. Azmat & Zutshi, 2012; Hamilton et al., 2008). Such challenges manifest in areas such as decision making, leadership, stakeholder, innovation and HR management, requiring entrepreneurs to reconcile tensions within their own value systems as well as in their interactions with stakeholders and institutions.

This paper addresses the research question: *What are sociocultural challenges for immigrants pursuing sustainable entrepreneurship in Japan?* Sustainable entrepreneurship has been defined as 'innovative, market-oriented and personality driven forms of creating economic and societal value by means of break-through environmentally or socially beneficial market or institutional innovations' (Schaltegger & Wagner, 2011, p. 227). While a growing body of research examines immigrant entrepreneurship and, separately, sustainable entrepreneurship, research on immigrants' involvement in sustainable entrepreneurship remains limited. Sociocultural factors are key determinants of entrepreneurial embeddedness (i.e. "the mechanism whereby an entrepreneur becomes part of the local structure"; Jack & Anderson, 2002, p. 467) but there is a persistent conceptual gap and limited

theorization of how sociocultural challenges shape immigrants' ability to engage in sustainable entrepreneurship.

Japan offers a unique, analytically rich context in which to investigate immigrants' role in sustainable entrepreneurship. On the one hand, Japan's demographic decline and long-term growth pressures have prompted calls for innovation-driven revitalization and sustainability transition, with policy agendas promoting green transformation and entrepreneurship (e.g., national "green growth" and startup strategies) and renewed attention to attracting global talent (Cabinet Office, 2025; METI, 2022). On the other hand, Japan maintains restrictive immigration governance and is characterized by sociocultural patterns emphasizing hierarchy, ethno-nationalism and uncertainty avoidance, which can constrain entry into local networks and slow the diffusion of novel business models (Hof, 2024; Hossain & Yamamoto, 2025; Liu-Farrer, 2020). For immigrant founders, the tasks of trust-building, investment acquisition and ecosystem integration are therefore especially demanding; these tasks can be even more challenging when ventures articulate environmental or social missions that deviate from stakeholder expectations about entrepreneurial performance. Despite the significance of these challenges and the potentials of immigrant entrepreneurship to address demographic decline, economic revitalization and sustainable development goals in Japan, scholarly attention to their role in Japan's economy remains scarce, leaving a critical empirical gap in international business research.

The global literature on immigrants' role in sustainable entrepreneurship has progressed more rapidly in some regions than in Japan, offering potentially transferable insights for the Japanese context. The conceptual gap in international business research literature at the intersection of sustainable immigrant entrepreneurship and sociocultural challenges and the empirical research gap in exploring these phenomena in Japan, suggests the need for a systematic literature review that consolidates dispersed insights into a coherent framework capable of generating testable propositions. Addressing this need, this paper (i) reviews global evidence on sociocultural challenges to immigrant sustainable entrepreneurship along with Japan-specific evidence on sociocultural challenges to immigrant entrepreneurship; (ii) theorizes the most salient sociocultural challenges likely to constrain immigrant sustainable entrepreneurship in Japan through a mixed embeddedness perspective

(Kloosterman & Rath, 2001); and (iii) proposes a research plan to empirically validate and elaborate these propositions using ethnographic methods.

2. Theoretical background

2.1. Relevance of sociocultural challenges for immigrant entrepreneurship

Sociocultural challenges interrelate social and cultural factors that constrain entrepreneurial action (cf. Light & Dana, 2013). A prominent strand of research interprets immigrant entrepreneurship through the lens of capital portfolios (e.g. Kharel, 2016; Suppatkul, 2021; Tan & Lester, 2025). Building on Bourdieu's (2018) Theory of Capitals it posits that immigrant entrepreneurs accumulate and mobilize not only economic capital but also social (network and institutionalized relationships), cultural (knowledge acquired through socialization and education in a given culture) and symbolic (prestige and honor) capitals over time. Bourdieu and Wacquant (1992, p. 119) define social capital as 'the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition'. In this view, social capital consists of the resources, such as norms, networks and trust embedded in informal and institutionalized stakeholder relationships. Social capital and related challenges to leveraging it are crucial for immigrant entrepreneurship because access to networks and trust-building opportunities is often constrained for foreign founders. Furthermore, immigrant networks are shaped not only by stakeholder interaction but also by broader institutional logics and societal attitudes that influence whom immigrants can approach, how they may be perceived and what opportunities they can access.

Cultural capital predetermines the 'cultural embeddedness' of immigrant ventures, which refers to 'the role of shared collective understandings in shaping economic strategies and goals' (Zukin & DiMaggio, 1990, p. 17). Previous research on sustainable innovation and entrepreneurship identifies two types of cultural challenges in organisations: tensions between values and values-action gaps (Breuer & Ivanov, 2024; 2026). Tensions between values arise when different value systems coexist within or around a venture and enter into dynamic relationships of both competition and complementarity (cf. Epstein, 2015). In sustainability-oriented entrepreneurship, these tensions

frequently manifest as conflicts between values that prioritize economic performance vs values that prioritize environmental or social impact (Dyck & Silvestre, 2018). These tensions are not inherently negative; they may produce trade-offs when values are treated as mutually exclusive, or synergies when actors recognize complementarities that can be leveraged. Immigrant entrepreneurs, whose personal value systems are shaped by their countries of origin, may experience intensified tensions when their sustainability values intersect with contradictory stakeholder values and norms within the host country.

Values–action gaps represent a second form of cultural challenges, referring to the discrepancies between the values individuals or organizations espouse and the values they enact through their practices (Breuer & Ivanov, 2026). Values–action gaps emerge when personal or organisational values fail to translate into practices—for example in cases of greenwashing or mission drifts. For immigrant entrepreneurs, such gaps can be exacerbated when attempt to enact sustainability values in corresponding practices may conflict with local norms, stakeholder expectations or institutional requirements. Such discrepancies hinder the realization of sustainable entrepreneurship endeavours by undermining the legitimacy of ventures.

2.2. Mixed embeddedness framework of entrepreneurial research

The mixed embeddedness framework (Kloosterman & Rath, 2001) has become a commonly used analytical lens in studies of immigrant entrepreneurship. It conceptualises immigrant entrepreneurship as the outcome of the interaction between individual capabilities and motivations on the one hand, and the contextual factors of the host society (sociocultural, institutional, market and regulatory environments) on the other. More traditional approaches to immigrant entrepreneurship research have focused primarily on individual capabilities and motivations and examined differences in entrepreneurial intent across immigrant groups, the ways in which ethnicity shapes access to resources and the extent to which immigrant entrepreneurs are embedded in social and ethnic networks (Rath, 2000; Rath & Kloosterman, 2000). While these studies have generated important insights, they have neglected two other essential dimensions of the entrepreneurial process: the demand side of the host country and the mechanisms through which entrepreneurs are matched with potential business opportunities (Kloosterman & Rath, 2001). To address this gap, the mixed embeddedness perspective

emphasises the host-country conditions under which entrepreneurial activities emerge and are sustained. The framework posits that entrepreneurial activity is conditioned by the presence of economically viable opportunities on the demand side and the access to these opportunities which can be constrained by unfeasible requirements for investment or regulatory compliance. Beyond these accessibility requirements, the framework also emphasises the importance of perceiving and seizing business opportunities.

The mixed embeddedness framework further recognises that immigrant entrepreneurs are simultaneously embedded in their society of origin and in their host society. On the one hand, they remain connected to immigrant networks that provide social capital and resources; on the other, they operate within the political and institutional environment of the host country. Thus, the framework recognizes individual variables on the micro level of embeddedness and broader contextual factors on the meso (local markets, networks and communities) and macro (national policies and socio-economic conditions) levels of entrepreneurial activity (Dheer, 2018).

3. Method

This study employed a systematic literature review approach (Tranfield et al., 2003) to capture both global research on immigrants' role in sustainability-oriented entrepreneurship and Japan-specific research on immigrant entrepreneurship. This dual strategy was chosen to enable a comparative perspective and potentially identify gaps relevant to the Japanese context.

The review was carried out using the Web of Science Core Collection and EBSCOhost databases. Web of Science provides consistent citation metadata and strong coverage of peer-reviewed journals, while EBSCOhost includes additional management, entrepreneurship and regional outlets that may not be fully represented in Web of Science. The search strategy applied a topic-based query for peer-reviewed journal articles using the following string:

TS = ("entrepreneur*" AND "Immigra*" AND ("sustainab*" OR "Japan*")).

The keyword *entrepreneur* was truncated to capture both “entrepreneur” and “entrepreneurship,” while *immigra* captured “immigrant” and “immigration.” The keyword *sustainab* was truncated to identify studies related to sustainable, sustainability and sustainability-oriented entrepreneurship,

considering the interchangeable use of these terms, and *Japan* was added to capture research situated in the Japanese context, even if not explicitly focused on sustainability. The search elicited all papers published up to 15 January 2026.

To ensure a consistent quality threshold, we included peer-reviewed journal articles only. The initial search yielded 116 unique publications. The screening process (fig. 1) involved a review of titles and abstracts to determine relevance. Articles were included for in depth review if they explicitly examined immigrant entrepreneurs and their ventures, addressed sustainable entrepreneurship (defined as creating economic, environmental and social value) or focused on immigrant entrepreneurship in Japan. This initial screening excluded 20 papers that did not focus on business entrepreneurship, 9 papers that discussed entrepreneurship in general without a clear immigrant focus and 6 non-English publications. In the next screening, additional exclusion criteria excluded 49 papers that lacked attention to sustainability impacts or Japan-specific challenges, 9 papers that did not address sociocultural challenges and 7 papers that focused on issues common to all entrepreneurs rather than immigrant-specific constraints.

After applying these criteria, 16 papers were selected for full-text review, including one literature review, two quantitative studies, one theoretical article and twelve qualitative studies employing methods such as case studies, interviews and ethnography (table 1).

The analytical procedure involved three steps. First, original findings from each selected paper were extracted and labeled according to the type of sociocultural challenge reported. Second, these findings were categorized into thematic clusters and mapped onto the micro-, meso- and macro-levels of entrepreneurial antecedents (Dheer, 2018). Micro-level challenges included limitations linked to an entrepreneur's personal traits, values and capabilities; meso-level challenges encompassed social networks, community ties and local support structures; and macro-level challenges related to broader political, institutional and regulatory conditions that can hinder the creation and growth of new ventures. This structured approach provided a foundation for theorizing the most salient sociocultural challenges to immigrant sustainable entrepreneurship in Japan.

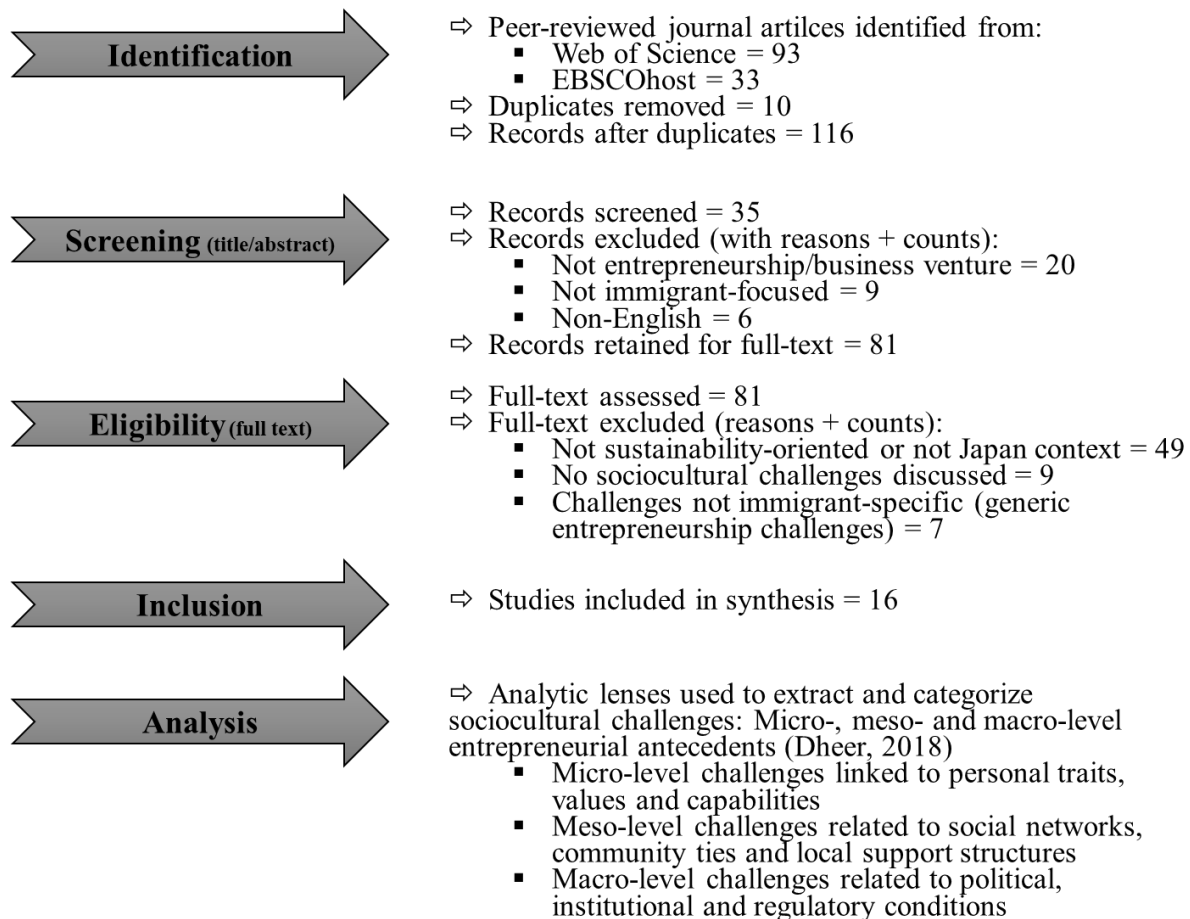


Figure 1. PRISMA-style flow diagram of study selection.

4. Results

The systematic review revealed a notable increase in relevant publications in the last decade. Only two articles were published before 2019, indicating growing scholarly interest in both immigrant sustainable entrepreneurship and immigrant entrepreneurship in Japan. It identified distinct categories of sociocultural entrepreneurship challenges clustered along the micro, meso and macro levels of entrepreneurial activity (see table 1). Below, we synthesize the dominant challenges across the micro-, meso- and macro- embeddedness levels and briefly situate each cited contribution in terms of host country context, the type of evidence and its implications for immigrant entrepreneurs.

Table 1. Overview of sociocultural challenges described in the literature and clustered according to the micro, meso and macro levels of entrepreneurial activity.

Publication reference in alphabetical order	Host countries in sample	Micro-embeddedness sociocultural challenges	Meso-embeddedness sociocultural challenges	Macro-embeddedness sociocultural challenges	Method
Alagarsamy, et al., 2025	UAE	Downplaying feasibility and pragmatic constraints due to ethical idealism			Partial Least Squares Structural Equation Modeling
Billore et al., 2010		Lacking language skills	Discrimination	Uncertainty about local governmental support	Qualitative interview analysis
Evansluong et al., 2024	Sweden	- Gaining language proficiency and cultural understanding - Simultaneously navigating the needs for economic success and social integration	- Implicit and indirect discrimination - Social segregation		Longitudinal and qualitative data from three immigrant family businesses
Falcão et al., 2026	Japan	Gaining language proficiency and cultural understanding			Mixed methods (literature analysis + survey data + documentary analysis)
Kharel, 2016	Japan		Long-term residence and language proficiency as prerequisites to establish social ties and secure local support		Ethnography
Li et al., 2023	33 countries (including Japan)	Limited in-group social identity as predictor of sustainable entrepreneurship among immigrants		Sustainable entrepreneurship is less likely to exist in countries with low institutional collectivism and in-group collectivism	Analysis of variance and hierarchical linear modeling
Mendoza, 2023	Spain			Uncertainty about local governmental support	Qualitative interview analysis

Table 1 continued

Musara & Andrew, 2022	Multiple African countries		Discrimination, xenophobia	Restrictive immigration and international trade laws	Systematic literature review
Morén-Alegret et al., 2021	Spain (Lleida Pyrenees)		- Increase in the ageing population limits customer and employee demand - Scarcity or lack of social venues for networking - Discrimination (racism and classism)	- Scarcity of housing, rising housing prices and lack of social housing - Lack of immigrant involvement in local public institutions	Qualitative interview and documentary analysis
Ramos-Torres, 2025	Argentina and Brazil	Long-term challenge for following generations to sustain social capital of foreign norms and values	Skepticism towards Western and neocolonial business practices	Underestimating informal institutional voids (such as bureaucratic inefficiencies or corruption) prevalent in Global South economies	Qualitative narrative analysis
Salamanca & Alcaraz, 2024	US			Prolonged time needed to have academic credentials and/or experience validated in the host country	Theoretical article
Suppatkul et al., 2021	Japan		Finding a Japanese “hoshonin” guarantor	Navigating immigration policies and the racial and ethnic climate	Qualitative interview analysis
Wessendorf & Farrer, 2021	Japan and England		Need to conform to Japanese norms of informal socialization to gain trust and support from customers		Ethnography
Valdés, 2024	Argentina, Brazil and Chile		Lacking ethnic ties to form partnerships outside the host country		Cross-sectional quantitative analysis of agri-SMEs data

Table 1 continued

Yeasmin & Koivurova, 2019	Finland	Lacking language skills for business communication	Dependence on ethnic capital (e.g. employees and customers from the ethnic community)	Uncertainty about local governmental support (especially during crisis)	Ethnography
Yetkin & Tunçalp, 2024	Turkey		Discrimination and distrust in business	- Limited political support - Rising anti-immigration discourse in politics and media (dependency on the ruling party) - Unclear naturalization process	Qualitative narrative analysis

4.1. Micro-embeddedness sociocultural challenges

A qualitative study in the United Arab Emirates (Alagarsamy et al., 2025) demonstrates that immigrant founders of SMEs whose pursuit of sustainable entrepreneurship is motivated by ethical idealism unintentionally downplay the feasibility of their ventures. Overemphasising their moral commitments to environmental and social value creation leads founders to underestimate cost and capability requirements, thereby hampering implementation.

Gaining language proficiency and cultural understanding emerge as salient challenges for immigrant founders. Case studies of refugee and immigrant family entrepreneurs in Sweden (Evansluong et al., 2024), Finland (Yeasmin & Koivurova, 2019) and Japan (Billore et al., 2010) show how limited language skills and unfamiliarity with local norms undermine both market access and social integration. In the Japanese context, Falcão (2026) examines Brazilian-Japanese reverse diaspora (*dekasseguis*) and highlights that even ethnic Japanese immigrant entrepreneurs are facing difficulties to gain necessary culture and language proficiency in Japan.

Another challenge in Evansluong and colleagues' (2024) research is the balancing of economic survival and social integration. Immigrant family entrepreneurs must continuously reconcile contradictory priorities of economic success versus social integration.

A study spanning thirty-three countries, including Japan, shows that limited in-group social identity ('a person's self-concept which derives from knowledge of her/his membership of a social unit, such as an organization or a country'; Li et al., 2023, p. 1246) among immigrants is associated with lower propensity toward sustainable entrepreneurship (Li et al., 2023). However, in-group social identity among immigrants is significantly lower than that among their native counterparts (Li et al., 2023).

A comparative case study of immigrants in Argentina and Brazil shows from a resource-based perspective that second and subsequent generations of immigrant entrepreneurs face a long-term challenge of sustaining the social capital acquired by their parents in their countries of origin (Ramos-Torres, 2025). As families settle and socialise in the host country, their distinctive social capital of values, norms and practices that are advantageous for sustainable entrepreneurship tends to erode.

4.2. Meso-embeddedness sociocultural challenges

At the meso level, immigrant entrepreneurs face various challenges related to the management of stakeholder relationships and the establishment of legitimacy. Discrimination, segregation and skepticism toward outsiders complicate stakeholder management across several regions. In Sweden, immigrants perceive discrimination as implicit and indirect (Evansluong et al., 2024). Xenophobia and discrimination are systemic obstacles to market access, partnerships and trust formation in Turkey, the Spanish Pyrenees and in multiple African countries (Musara & Andrew, 2022; Morén-Alegret et al., 2021; Yetkin & Tunçalp, 2024). In Argentina and Brazil, immigrant entrepreneurs are also discriminated on the basis of skepticism toward their perceived Western values and neocolonial business practices, which can delegitimize sustainability narratives (Ramos-Torres, 2025).

Demographic and geographic factors also pose meso-level sociocultural challenges. In Lleida, Spain, population aging depresses both customer demand and the available pool of employees, constraining growth options for immigrant-led ventures and limiting the demand for sustainability offerings (Morén-Alegret et al., 2021). In the same region, the scarcity of social venues for networking limits social ties and stakeholder engagement (Morén-Alegret et al., 2021). In Argentina, Brazil and Chile, immigrant founders who lack ethnic ties to form partnerships outside the host countries have less possibilities to leverage transnational investment and demand for sustainability projects (Valdés, 2024). On the other hand, in Finland overreliance on local ethnic capital (e.g., employees or interns

and customers from the ethnic community) limits entrepreneurs' acculturation with mainstream society (Yeasmin & Koivurova, 2019).

Japan-specific studies point to the importance placed on long-term presence and culturally appropriate socialization. Kharel (2016) emphasizes that longer residence and language proficiency are often prerequisites for establishing social ties and mobilizing local support in Japan. Suppatkul (2021) highlights that formal requirements for venture founders—such as obtaining guarantor (*hoshonin*) support—and the role of Japanese spouses in facilitating the process. Conforming to Japanese norms of informal socialization, including after-hours gatherings, is a critical route to customer trust and stakeholder endorsement (Wessendorf and Farrer, 2021). Together, these accounts portray a landscape in Japan where legitimacy is won through culturally legible participation in everyday sociability.

4.3. Macro-embeddedness sociocultural challenges

At the macro level, broader political, institutional and regulatory conditions that hinder the creation and growth of new ventures and create boundary conditions for immigrant involvement in sustainable entrepreneurship. For instance, restrictive immigration and international trade laws in parts of Africa pose macro-level barriers that limit resource mobility, access to markets and the scaling of immigrant ventures (Musara and Andrew, 2022). Foreign entrepreneurs in Turkey face challenges with the rise of an anti-immigration discourse in politics and media, the dependency on the policy stance on party control and the unclear process of naturalization—challenges that discourage long-term sustainability-oriented investments. In Japan, foreign entrepreneurs also face challenges with navigating immigration policies and the local racial and ethnic discourses (Suppatkul, 2021).

The lack of political support for immigrant entrepreneurs to secure housing (Morén-Alegret et al., 2021), validate foreign academic credentials and professional experience (Salamanca and Alcaraz, 2024), receive information about financial aids (Billore et al., 2010; Mendoza, 2023; Yeasmin & Koivurova, 2019; Yetkin & Tunçalp, 2024) and participate in local institutions and policy development (Morén-Alegret et al., 2021) indirectly constrains sustainable entrepreneurship in countries like Japan, Spain, France, Finland, Turkey and the US. In Latin America countries, immigrant entrepreneurs tend

to underestimate informal institutional voids such as bureaucratic inefficiencies or corruption, which complicates the operational execution of their sustainability-oriented ventures (Ramos-Torres, 2025).

Cultural factors also influence macro-embeddedness. In a cross-country analysis covering thirty-three nations (including Japan), Li and colleagues (2023) find that sustainable entrepreneurship is less prevalent in countries characterized by low institutional collectivism (i.e. the organizational and institutional support of collective distribution of resources and action) and low in-group collectivism (i.e. perceived in-group pride, loyalty and cohesiveness). Their findings imply that when cultural values and norms of collectivism are weak in a host country, immigrants are less likely to develop in-group identities within these cultures, which is linked with weaker sustainability orientation, i.e. entrepreneurial intent to pursue positive impact on sustainability.

5. Discussion

In this section we offer six theoretical propositions regarding the most salient challenges to immigrant sustainable entrepreneurship in Japan. We present how these propositions are derived from the literature review results and discuss them against the background of other related literature.

The tension between ethical idealism concerning what ought to be done and pragmatic values concerning what can be done in immigrant sustainable entrepreneurship is one of the notable challenges highlighted in the results (Alagarsamy et al., 2025). Business ethics research shows that individuals that identify with ethical idealism tend to overemphasize what they believe ought to be done (e.g. values of social or environmental sustainability) over what can feasibly be executed under resource and time constraints (Oumlil & Balloun, 2009). Research in other contexts also confirms that ethical idealism tends to downplay pragmatic considerations (Agag & Colmekcioglu, 2020) and that such idealism is more prevalent in Japan compared to some other countries (Malloy et al., 2017).

Proposition 1 Immigrants pursuing sustainable entrepreneurship in Japan will experience tensions between pragmatism and ethical idealism that shape their entrepreneurial intentions and decision-making.

Language and cultural understanding barriers limit the legitimacy of foreign entrepreneurs (cf. AIC, 2020). Research in both Sweden (Evansluong et al, 2024) and Japan (Suppatkul et al., 2021;) highlights the importance of family members, such as spouses, acting as a communication bridge between immigrant entrepreneurs and potential customers to minimize the ‘liability of newness and earning legitimacy’ (Evansluong et al, 2024, p. 17). Family members are contributing to business ideas, accompanying entrepreneurs to business meetings or financing their start-ups. Research in Japan also emphasizes the important role of spouses not only for cultural integration but also for meso-embeddedness in obtaining guarantor (*hoshonin*) support (Suppatkul et al., 2021; see also Higuchi, 2018).

Proposition 2 Challenges of gaining language proficiency and cultural understanding constrain sustainable entrepreneurship and stakeholder engagement for immigrant entrepreneurs in Japan, especially if they do not have local family support.

Subsequent generations of immigrant entrepreneurs face a long-term challenge of sustaining the social capital of values and practices acquired by their parents in their countries of origin (Ramos-Torres, 2025). The dynamics of immigrant entrepreneurship in Japan are significantly shaped by the generational shift within Japan’s foreign population. While first-generation immigrants have predominantly filled low-skilled, low-wage roles, a growing number of second-generation immigrants—educated and socialized in Japan—are actively engaged in entrepreneurship. Recent research calls for closer attention to the distinct cultural value systems across these groups: first-generation entrepreneurs tend to adhere to values from their countries of origin, whereas second-generation entrepreneurs embody hybrid identities that blend Japanese and foreign values (Yoshida & Oe, 2025). While first-generation immigrants encounter trade-off dilemmas between preserving deeply ingrained personal values and adopting unfamiliar norms, second-generation entrepreneurs—educated and socialized in Japan—experience less cultural dissonance but face the challenge of reconciling their

hybrid identities that demand constant navigation between two value systems. Some values and practices socialized in the country of origin may provide unique advantages against local Japanese incumbents.

Proposition 3 Sustaining social capital of foreign norms, values and business practices is a salient challenge for second- and third-generation immigrants pursuing sustainable entrepreneurship in Japan.

Discrimination, segregation and skepticism toward outsiders complicate stakeholder management in sustainability-oriented ventures led by immigrants across several regions (Evansluong et al., 2024; Musara & Andrew, 2022; Morén-Alegret et al., 2021; Ramos-Torres, 2025; Yetkin & Tunçalp, 2024). In contrast to many Western societies, where anti-prejudice norms suppress the open expression of xenophobic attitudes, recent experimental research in Japan demonstrates an opposite dynamic. Japanese respondents express more negative attitudes toward immigrants when asked directly than when responding via list experiments designed to reduce social desirability bias (Igarashi & Nagayoshi, 2022). This implies that Japan is a context where prejudice against immigrants is normative, not stigmatized and where anti-prejudice norms are comparatively weak or absent (Igarashi & Nagayoshi, 2022). Consequently, immigrants must navigate a sociocultural environment where discrimination is normalized (cf. Laurence et al., 2022; Liu-Farrer, 2020). Additionally, similar to immigrant entrepreneurs in Turkey who face challenges with the rise of an anti-immigration discourse in politics and media (Yetkin & Tunçalp, 2024), immigrants in Japan are increasingly subject to ambivalent or negative views within segments of the political elites, media and online spaces (Chai, 2025).

Proposition 4 Discrimination in social interactions is a salient challenge for immigrants pursuing sustainable entrepreneurship in Japan, with implications for how founders select channels, shape messaging and sequence stakeholder engagement.

Lower in-group social identity among immigrants is associated with a reduced propensity to engage in sustainable entrepreneurship (Li et al., 2023). This tendency is more prevalent in countries with low institutional and in-group collectivism (Li et al., 2023). This invites a cultural-comparative lens: Japan is characterized by relatively lower institutional collectivism than several East-Asian and Global South counterparts such as China and India, where collectivist norms are more strongly embedded in formal institutions (Hofstede et al., 2010; Minkov & Kaasa, 2022). Therefore, the formation patterns of in-group identity in Japan will differ from those in more strongly collectivist cultures like China, which will also influence immigrants' engagement in sustainable entrepreneurship.

Proposition 5 Immigrants from more collectivistic countries will perceive greater challenges in developing an in-group social identity in Japan and engaging in sustainable entrepreneurship than immigrants from more individualistic countries.

Immigrant entrepreneurs in countries such as Spain, France, Turkey and the US face several challenges in accessing political support, which indirectly limit their engagement in sustainable entrepreneurship. Due to lacking political support immigrants face difficulties in securing housing (Morén-Alegret et al., 2021), validating foreign academic credentials and professional experience (Salamanca & Alcaraz, 2024), accessing information about financial aid (Mendoza, 2023; Yetkin & Tunçalp, 2024) and participating in local institutions and policy development (Morén-Alegret et al., 2021). Research on immigrant entrepreneurship in Germany further highlights that migrant-support policies are often designed with minimal involvement of the intended beneficiaries: immigrants are frequently included only as feedback providers, rather than as co-designers in programme development and decision-making (Rashid & Cepeda-García, 2021). In Japan, immigrants also face challenges in becoming recognized and involved in policy development (Milly, 2023) as well as challenges related to residential segregation, which are partially attributed to the lack of 'well-established institutional or ethnic frameworks to integrate new immigrants' (Liang, 2025, p. 19).

Proposition 6 Identifying and securing public support is a salient challenge for immigrants pursuing sustainable entrepreneurship in Japan.

6. Conclusion and implications for future research

This paper has provided a foundation for research on immigrants' roles in sustainable entrepreneurship in Japan by eliciting six theoretically grounded propositions across the micro, meso and macro levels of entrepreneurial activity. At the micro level, Proposition 1 foregrounds tensions between ethical idealism and pragmatism in entrepreneurial decision-making, implying the need for studies that trace how founders reframe trade-offs, sequence growth versus impact objectives and translate values-based commitments into feasible strategies over time. Proposition 2 highlights language and cultural-understanding barriers—especially acute in the absence of local family support—suggesting inquiry into boundary-spanning roles (e.g., spouses, bicultural employees). Proposition 3 identifies the intergenerational maintenance of social capital as a salient challenge, inviting intergenerational research into how first-, second- and third-generation entrepreneurs develop hybrid identities and reconcile contradictory personal and host-country values, norms and practices. At the meso level, Proposition 4 points to normalized discrimination and skepticism toward outsiders as a constraint to stakeholder management, indicating the need to study interactional dynamics (e.g., messaging, channel selection, sequencing of stakeholder engagement) and their effects on legitimacy. Normalized discrimination refers to a context in which discriminatory views toward immigrants are treated as standard or legitimate, rather than as socially deviant. Finally, at the macro level, Proposition 5 predicts variation by country-of-origin value systems, calling for comparative analyses of how immigrants from more collectivist contexts build in-group social identity in Japan and how identity work influences sustainability orientation. Proposition 6 emphasizes the challenge of identifying and securing public support, motivating studies of how immigrant entrepreneurs navigate institutional interactions and mobilize public resources for sustainable entrepreneurship. Together, these six propositions specify a focused agenda for future empirical research.

The six theoretical propositions consolidate literature review findings about the most commonly reported sociocultural challenges to immigrants' involvement in sustainable entrepreneurship globally and to immigrant entrepreneurship in Japan. In doing so, they bring together insights that are otherwise dispersed across research streams and contexts. In addition, the six propositions and related literature suggest specific enabling and moderating factors that shape how immigrants deal with sociocultural challenges and achieve related (sustainable) entrepreneurship outcomes (table 2). These triads (challenges, enabling/moderating factors and outcomes) provide directions for future research to investigate how enabling and constraining sociocultural factors shape sustainable immigrant entrepreneurship in Japan.

Table 2. Consolidated findings based on the six propositions highlighting sociocultural challenges and related enabling/moderating factors and (sustainable) entrepreneurship outcomes.

Sociocultural Challenges	Enabling/Moderating Factors	(Sustainable) Entrepreneurship Outcomes
Micro-level		
1. Tensions between ethical idealism vs pragmatism	Reprioritization/integration of values; sequencing of strategic goals	Translating values-based sustainability commitments into feasible strategies
2. Language and cultural understanding barriers	Presence/absence of local family support	Market access and social integration
3. Intergenerational maintenance of social capital	Education and socialization in the host country; degree of hybrid identity formation	Utilizing foreign values/practices as distinctive, transnationally informed capabilities (differentiation advantage)
Meso-level		
4. Normalized discrimination in social interactions	Long-term residence; language proficiency, sequencing of stakeholder engagement	Stakeholder legitimacy (e.g. trust formation; partnerships and customer acceptance)
Macro-level		
5. Developing in-group social identity in a more individualistic host-country context	Disparity between origin- and host-country collectivism (institutional and in-group)	Sustainability orientation
6. Identifying and securing public support	Inclusive institutional frameworks and policy design	Access to public resources (e.g., housing support, credential recognition, financial aid, involvement in local institutions/policy development)

We argue that ethnographic and interpretive methods are most suitable for empirically validating and elaborating the six theoretical propositions. The review indicates that most relevant studies already rely on qualitative approaches, reflecting the need to grasp implicit and dynamic sociocultural factors of immigrant entrepreneurship. Ethnography has repeatedly proven effective for revealing stakeholder values and tensions between values inside organizations and for tracing how those values are enacted (or fail to be enacted) across practices and decision making (Breuer & Ivanov, 2024; 2026).

Interpretative methods, such as ethnography are particularly effective for analyzing how implicit sociocultural factors shape sustainable innovation and entrepreneurship (Boenink & Kudina, 2020).

An ethnographic design—combining participant observation, in-depth interviews and artefact and document analysis can surface tacit sociocultural dynamics that are difficult to capture through surveys alone. A mixed-methods design (e.g., ethnography complemented with targeted surveys) can further strengthen the empirical design while retaining the in-depth contextual insights required to validate and refine the six propositions.

The expected outcomes of the proposed future research include a multi-level conceptual model explaining how immigrant entrepreneurs in Japan manage micro-, meso- and macro-level sociocultural challenges when pursuing sustainable entrepreneurship. The model's empirical grounding will make three contributions. First, it will provide the first comprehensive account of immigrant involvement in sustainable entrepreneurship in Japan. Second, it will extend research on sociocultural factors and immigrant entrepreneurship as antecedents of sustainable entrepreneurship. It will detail the most salient sociocultural challenges involved in sustainable immigrant entrepreneurship, thereby contributing to our understanding of the mechanisms that produce sustainability outcomes. Third, it will yield practical implications: immigrant entrepreneurs will be able to better anticipate and prepare for sociocultural challenges in Japan; policymakers will receive evidence-based recommendations for designing inclusive programs that mobilize immigrant contributions to Japan's business ecosystem and sustainability goals; and startup ecosystems will obtain guidance for reducing cultural tensions and leveraging diversity as a driver of sustainable entrepreneurship. By addressing how immigrant entrepreneurs advance sustainable development under restrictive sociocultural conditions, future

studies will contribute to international business scholarship and policy discourse with insights of global relevance.

Limitations of this study should be noted. First, gaps in Japan-specific empirical work may mean that some challenges are under- or over-represented. Second, sociocultural dynamics and policies are evolving over time and literature review data may constrain the relevance of findings for the current and future contexts. Finally, as a conceptual paper based on a systematic review, our propositions reflect the scope and biases of the underlying evidence base (e.g., only English-language publications, reliance on Web of Science and EBSCOhost databases and a relatively small final sample). Attempting to increase the sample of included publications, we conducted an exploratory search using broader adjacent keywords ("Immigra*" OR "migrant" OR "ethnic" OR "foreign" OR "diaspora"). This elicited 205 additional records for review from Web of Science and EBSCOhost. Given time constraints we were not able to review the records with the extended search string and to explore further databases such as Scopus. To address these limitations, a prospective follow-up study will expand coverage by incorporating additional databases, applying a broader keyword string and conducting systematic backward citation chaining to capture relevant work that may not be retrieved through keyword searches alone.

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Career Self-Management and Career Optimism Among Women in STEM: The Moderating Role of Paternalistic Leadership

Zhuo Zhang (Ritsumeikan University, Japan)

Jie Li (Xi'an Jiaotong-Liverpool University, China)

ABSTRACT

In recent years, with societal progress and growing labor shortages in Japan, female employment has become an important issue. In particular, women's participation in Science, Technology, Engineering, and Mathematics (STEM) fields has attracted increasing attention. Despite efforts to address this, women remain underrepresented in Japan's STEM industries. This study examines career optimism, a key psychological resource for career development, and explores how individual career self-management and paternalistic leadership jointly influence career optimism in East Asian workplaces. Using survey data from 300 Japanese STEM professionals, the findings of this study show that both career self-management and paternalistic leadership positively affect individual's career optimism. Additionally, paternalistic leadership also moderates the relationship between career self-management and career optimism. Moreover, beyond examining the overall effect of paternalistic leadership as a unified leadership style, this study also investigates the distinct impacts of its dimensions. The study concludes with theoretical and practical implications and suggests directions for future research.

Keyword: Human Resource Management, Organizational Behavior, Career Optimism, Women In STEM, Career Self-Management, Traditional Leadership, Eastern Context

Restructuring in Container Shipping Alliances - Evidence from ONE After Hapag-Lloyd's Withdrawal -

Ryo Nakajima (Keio University, Japan)

Satoka Oka (Keio University, Japan)

Soushi Iijima (Keio University, Japan)

ABSTRACT

This study aims to examine the benefits that firms seek when alliances undergo restructuring in the container shipping industry, which constitutes the backbone of the Global Value Chain (GVC), and to identify which benefits are of greatest importance to firms. In particular, the analysis focuses on recent cases of alliance restructuring, namely Hapag-Lloyd's withdrawal from THE Alliance and the partnership between Ocean Network Express (ONE) and MSC.

Based on a review of previous studies, this study classifies the benefits gained by alliances into six categories: (1) Expanded Network Coverage, (2) Higher Space Utilization, (3) Improved Service Frequency, (4) Increased Market Share, (5) Pursuing Operational Synergies, and (6) Lower Investment Risk in Vessels and Ports. These benefits are examined through Quantitative Data Analysis and Qualitative Interviews. The results indicate that the primary benefits of alliances lie in (1) Expanded Network Coverage and (3) Improved Service Frequency, demonstrating that the ability to construct wide-ranging and high-frequency transportation networks—unattainable by individual firms alone—constitutes a key source of competitiveness. At the same time, the increasing reliance on flexible cooperative arrangements through slot-swap is shown to entail new risks. (186 words)

Keyword: Container Shipping, Alliance, Restructuring, Ocean Network Express (ONE), Hapag-Lloyd, THE Alliance

1. Introduction

The Global Value Chain (GVC) constitutes a core mechanism underpinning today's global economy, and its foundation lies in global container transportation (Borggreve & Wilmsmeier, 2025). The introduction of containerization significantly improved the efficiency of international logistics, enabling low-cost and large-scale transportation and thereby expanding supply chains on a global scale (Matsuda, 2023).

However, maritime transportation by container vessels requires substantial capital investment in vessel construction and operation, as well as in port infrastructure, making it difficult for individual firms to maintain a worldwide service network independently (Yanagisawa, Tsuruta, & Kurokawa, 2003). Under these conditions, container shipping companies have increasingly formed cooperative arrangements with other firms—namely, “alliances”—to reduce costs while maintaining and improving service levels (Yanagisawa, Tsuruta, & Kurokawa, 2003).

In the container shipping industry, alliances have enhanced efficiency and stability by enabling multiple carriers to jointly utilize vessels and port facilities and to coordinate sailing schedules (Hatano & Matsuda, 2023). Another distinctive feature of alliances in this industry is their continuous restructuring through repeated entry, withdrawal, and consolidation. In recent years, notable cases of alliance restructuring include Hapag-Lloyd's withdrawal from THE Alliance and the alliance between Ocean Network Express (ONE) and MSC. Such developments indicate that alliance restructuring is not merely a change in partnership arrangements, but rather

reflects the evolution of alliance forms in response to firm strategies and changing market conditions.

Against this background, this study focuses on the restructuring of inter-firm alliances in the container shipping industry and aims to empirically examine the benefits derived from such restructuring. Section 2 outlines the structural factors surrounding the container shipping industry and presents the industrial context underlying the formation and restructuring of alliances. Section 3 reviews previous studies, followed by hypothesis development in Section 4. Section 5 conducts Quantitative Data Analysis and Qualitative Interviews, and Section 6 presents the results. Section 7 discusses the findings, and finally, Section 8 concludes by summarizing the study's findings, outlining its managerial implications and theoretical contributions, and suggesting limitations and directions for further research.

2. Current Situation

This section provides a multifaceted overview of the structural factors surrounding the container shipping industry and clarifies the industrial context underlying the formation and restructuring of container shipping alliances.

2.1 The Current State and Role of the Maritime Shipping Industry

Global maritime transport volumes have continued to increase over time (SHIPPING NOW, 2025), and maritime transportation constitutes the foundation of global trade. Approximately 80-90 percent of total world trade volume is carried by sea (Swiss Maritime Navigation Office, n.d.),

and in Japan, 99.5 percent of import and export cargo depends on maritime transportation (SHIPPING NOW, 2025). Thus, maritime shipping plays a central role in international logistics.

Among vessels engaged in maritime transportation, those carrying cargo are referred to as cargo ships (Ministry of Land, Infrastructure, Transport & Tourism, n.d.). These include tanker vessels transporting liquid cargo, bulk carriers transporting commodities such as grain and coal, pure car carriers transporting automobiles, and container ships transporting internationally standardized containers. From the perspective of operating patterns, maritime shipping can be broadly divided into tramp shipping, which transports cargo such as coal and crude oil in response to demand, and liner shipping, which transports industrial products and general cargo along fixed routes and schedules.

In this study, cargo ships operating on fixed routes are defined as “liner cargo vessels.” At present, approximately ninety percent of the cargo transported by liner cargo vessels is carried by container ships (Takumi, 2025), making container ships the core mode of liner cargo transportation.

2.2 The Transformation of International Logistics Brought About by the Container

Revolution

Matsuda (2023) argues that the rise of container ships as the core mode of liner cargo transportation was driven by the innovative technology of containerization. Prior to the widespread adoption of containers, maritime transportation relied heavily on manual labor. For example, in 1965—before containers were fully utilized—a single port worker could handle only 1.7 tons of cargo per hour,

whereas by 1970 this figure had increased dramatically to 30 tons per hour (Matsuda, 2023). In addition, following the introduction of containers, cargo-handling costs declined to approximately one-fortieth of their previous level, representing a reduction of 97.5 percent (Ministry of Land, Infrastructure, Transport & Tourism, 2010).

In this way, containerization dramatically enhanced the productivity of port operations and fundamentally transformed the structure of maritime transportation itself (Matsuda, 2023). This system, devised by the American entrepreneur Malcolm McLean, significantly improved both cargo-handling efficiency and transportation safety by placing goods into standardized containers (Matsuda, 2023).

Paul Krugman, an American economist and recipient of the 2008 Nobel Prize in Economics, noted that “when one considers the changes that have occurred in global trade, it becomes clear that the container marked a major turning point” (Takumi, 2025). Matsuda (2023) similarly describes containers as the “lifeblood of the economy,” emphasizing their role as a critical mechanism circulating modern economic activity. The defining characteristics of container transportation lie in its ability to provide large-scale, low-cost, and safe transportation through standardized containers. This enabled seamless sea–land intermodal transportation, and accelerated international production fragmentation and supply chain optimization. In other words, containerization brought about a dramatic reduction in transportation costs and the standardization of logistics, thereby strongly promoting the advancement of globalization (Matsuda, 2023).

At the same time, containerization requires massive capital investment, making it difficult for a single shipping company to operate an entire route independently (Takumi, 2025). Providing

global container shipping services entails enormous financial resources, and in order to reduce costs and maintain competitiveness (Yanagisawa, Tsuruta, & Kurokawa, 2003), liner container shipping companies have formed global strategic agreements in the form of alliances (Ports & Harbors Bureau, Ministry of Land, Infrastructure, Transport & Tourism, 2019).

2.3 The Concept and Structure of Alliances in the Container Shipping Industry

Regarding alliances, Yoshino & Rangan (1995) define them as relationships in which partner firms make ongoing contributions, share outcomes, and jointly exercise control over operations. Nonaka (1991) further emphasizes that alliances do not entail an inherent hierarchical relationship between partners. In other words, an alliance can be characterized as a sustained cooperative relationship in which multiple firms retain their independence while holding equal operational rights in pursuit of shared objectives.

This alliance framework holds particular significance in the container shipping industry, where investment costs are exceptionally high. Container shipping operations require the continuous deployment of multiple vessels to maintain weekly fixed-day departure and arrival schedules in response to shippers' demands. Moreover, vessel sizes have consistently increased in pursuit of higher transportation efficiency. In addition to vessels, substantial investment is required for containers and port infrastructure, which limits the ability of individual firms to operate all routes independently (Hatano & Matsuda, 2023).

Against this background, alliances have been formed as mechanisms through which multiple shipping companies cooperate to share resources and achieve both efficiency and stability.

Specifically, alliance arrangements include joint vessel construction with shared construction and operating costs, reciprocal allocation of vessel capacity in proportion to cost-sharing arrangements through space chartering (also referred to as slot chartering), joint use of container terminals, and coordination of sailing schedules (Takumi, 2025).

Another defining characteristic of alliances in the container shipping industry is their repeated restructuring. New alliances are rarely formed from scratch; instead, existing frameworks evolve through the entry of new members, withdrawal, and consolidation (Figure 1). During this process, not only are alliances reconfigured, but mergers and acquisitions and business integrations among firms proceed in parallel, leading to the restructuring of the overall industry structure itself (Matsuda, 2023).

2.4 Historical Development and Restructuring of Alliances

The formation of alliances in the container shipping industry began in earnest in the mid-1990s. In 1994, “The Global Alliance” was established by Mitsui O.S.K. Lines (Japan), APL (United Kingdom), Nedlloyd (the Netherlands), and OOCL (Hong Kong). In the following year, “Grand Alliance” was formed by Nippon Yusen Kaisha (Japan), Hapag-Lloyd (Germany), NOL (Singapore), and P&O (United Kingdom). Subsequently, in 1996, “CKY Alliance” was launched by Kawasaki Kisen Kaisha (Japan), COSCO (China), and Yang Ming (Taiwan), marking the full-scale emergence of global alliances in the container shipping industry (Takumi, 2025).

During the early 2000s, global container demand remained stable amid steady economic growth, and no major changes were observed in alliance structures. However, from 2008 onward,

container shipping companies were forced to restructure their alliances. Following the Global Financial Crisis, global transportation demand declined sharply, resulting in excess vessel capacity and increasing the need for supply adjustments (Hatano & Matsuda, 2023).

In 2012, six container carriers, including Nippon Yusen Kaisha and Mitsui O.S.K. Lines, formed the “G6 Alliance” and expanded joint operations on Europe-related routes. In 2013, three major global carriers, such as MSC (Switzerland), Maersk (Denmark), and CMA CGM (France), proposed the formation of the “P3 Network,” a large-scale framework that would have accounted for more than fifty percent of vessel capacity on Europe-related routes. However, the plan was abandoned after failing to obtain approval from Chinese antitrust authorities. In response, Maersk and MSC formed “2M” in 2014, followed by the establishment of “O3” in 2015 by CMA CGM, CSCL (China), and UASC (Kuwait).

As a result of these developments, a three-alliance structure— “2M,” “Ocean Alliance,” and “THE Alliance”—was established in April 2017. Since then, major global container routes have been operated under this framework. Although the three-alliance structure persisted for several years, a major change occurred in January 2024, when Hapag-Lloyd withdrew from THE Alliance and formed a new alliance, “Gemini Cooperation,” with Maersk. Meanwhile, MSC transitioned to an independent operating model and no longer belongs to any alliance. Instead, it maintains its service network through bilateral cooperation with individual alliances and container carriers.

Specifically, MSC utilizes a mechanism known as “Slot-Swap,” under which cargo space is mutually exchanged on a route-by-route basis, enabling partial sharing of vessel

deployment and service provision. In this manner, alliances in the container shipping industry have repeatedly undergone integration and restructuring¹ since their formation in the 1990s, reflecting changes in market conditions and corporate strategies.

The next section reviews prior theoretical and empirical studies on alliances in the container shipping industry and clarifies the achievements and limitations of previous studies.

3.Previous Studies

This section reviews the theoretical and empirical studies that have examined alliances to date and clarifies the achievements and limitations of the previous studies.

3.1 Positioning and Definition of Alliances

The container shipping industry is composed of commercial services in which container carriers provide shippers with regular connections between ports along fixed routes (Haralambides, 2019). However, the industry faces structural challenges, including heightened demand volatility and declining profitability caused by excess vessel capacity. As one response to these challenges, alliances, which are a form of inter-firm operational cooperation, have attracted significant attention.

¹ In this paper, alliance “restructuring” is defined broadly as the reconfiguration of the overall cooperative structure, encompassing not only changes in alliance membership—such as entry to or exit from existing alliances—but also the formation of new cooperative or partnership arrangements among firms. For example, the case in which Ocean Network Express (ONE), while remaining a member of the Premier Alliance, entered into a slot-swap agreement with MSC, a non-member carrier, represents the establishment of a new cooperative relationship outside the formal alliance framework. Such arrangements can ultimately alter the broader alliance structure within the industry and are therefore regarded in this study as a form of alliance restructuring.

In liner shipping, alliances have developed alongside consortia as a form of horizontal cooperation² (Merk & Teodoro, 2022). Bahinipati et al. (2009) define an alliance as a business agreement among multiple firms operating at the same level of a supply chain or network.

3.2 Previous studies and Research Motivation

Studies on alliances are generally classified into four categories: formation, management, optimization, and ad-hoc research (Ghorbani et al., 2022). Formation research examines motivations for alliance participation and partner selection (Crujssen et al., 2007; Caschili et al., 2014). Studies on management focus on issues such as capacity management, inter-alliance relationships, and network structures (Sys, 2009; González-Laxe et al., 2016). Optimization research addresses topics including network design, stability, and cost minimization (Ferrari et al., 2008; Li et al., 2015). Ad-hoc research investigates specific issues such as legal aspects of alliances and their impacts on related supply chains (Yap, 2014; Tang & Sun, 2018).

Among these streams, this study focuses on alliance formation, particularly partner selection. A key characteristic of liner shipping alliances is their frequent restructuring (Midoro & Pitto, 2000; Rau & Spinler, 2017). Such instability has been identified as a factor that can reduce both overall alliance performance and service quality for shippers. Accordingly, appropriate partner selection during restructuring has been positioned as an important research issue (Song & Panayides, 2002; Shi & Voss, 2008; Das, 2011).

² In addition, various forms of cooperation exist that are limited to specific regions or services, including slot charter agreements (SCA) and vessel sharing agreements (VSA) (Ghorbani et al., 2022).

Two major evaluation criteria in partner selection are compatibility and complementarity (Ghorbani et al., 2022). Compatibility refers to similarities among firms in terms of corporate culture, operational style (Haralambides, 1996; Kale & Singh, 2009), trust relationships, and financial stability (Solevik & Westhead, 2010). Complementarity, by contrast, refers to the potential for firms' strengths to mutually reinforce one another. Through complementarity, alliances can generate various benefits, including expanded geographic coverage, improved service frequency, and the sharing of operational knowledge (Ghorbani et al., 2022).

This study places particular emphasis on complementarity and examines in detail the types of benefits that firms can obtain through alliance participation.

3.3 Benefits Derived from Alliances

Several studies have examined the benefits that alliances provide to firms. For example, Brooks et al. (1993) and Alix et al. (1999) argue that cooperative agreements in the 1990s were primarily aimed at risk sharing and market expansion to realize economies of scale and scope. Panayides & Cullinane (2002) similarly note that, amid increasing globalization and declining profitability, shipping companies have emphasized risk and investment sharing, the realization of economies of scale, improved service frequency, and cost reduction through alliances.

Panayides & Wiedmer (2011) identify several elements of benefit, including risk and investment sharing, economies of scale, cost management, and the capability to provide high-

frequency services in an expanding container trade environment. They indirectly evaluate these elements through quantitative data analyses.

3.4 Limitations of Previous Studies and Positioning of This Study

Previous studies on the benefits derived from shipping alliances have primarily relied on empirical analyses using external quantitative data (Tsuruta, Kurokawa & Yanagisawa, 2002; Mitsuhashi & Greve, 2009; Meng et al., 2014; Ju et al., 2023). As a result, exploratory studies employing qualitative data that aim to uncover firms' internal intentions and decision-making mechanisms, which underly alliance formation have been extremely limited. Indeed, Ghorbani et al. (2022) point out the lack of research examining the extent to which alliance formation generates additional benefits at the firm level.

In the liner shipping market, maintaining competitive advantage over rival carriers is critically important (Kyo, 2019), and Mitsuhashi & Greve (2009) argue that alliances can provide competitive advantages that firms cannot obtain independently. From this perspective, partner selection in alliance formation represents a crucial strategic decision for firms (Shi & Voss, 2008). This is particularly the case in the container shipping industry, where frequent alliance reconfiguration has been observed (Midoro & Pitto, 2000). In such an environment, firms' judgments regarding which benefits to prioritize are closely related to complementarity in partner selection and directly influence the formation of subsequent competitive advantage.

However, previous studies have generally treated alliance benefits as parallel and enumerative elements (Meng et al., 2014; Ju et al., 2023), without sufficiently examining the

relative importance of each benefit. Although Panayides & Cullinane (2002) and Panayides & Wiedmer (2011) constitute notable exceptions by comparing the importance of different benefits, their analyses are based solely on external quantitative data. Consequently, these studies do not adequately capture which benefits are considered relatively important from the internal perspective of firms. While Ryoo & Thanopoulou (1999) compare the importance of alliance benefits using survey data that reflect internal firm perceptions, they do not fully address the mechanisms or strategic intentions through which firms arrive at such evaluations. Moreover, Panayides & Wiedmer (2011) emphasize the shortage of empirical research focusing on firms' subjective value judgments regarding the relative importance of alliance benefits.

Against this backdrop, this study focuses on alliance restructuring events such as alliance formation and withdrawal, and seeks to identify exactly which are the benefits that firms perceive from an internal perspective, as well as which of these benefits are considered most important. By doing so, the study aims to elucidate the strategic evaluation criteria that firms employ when making alliance-related decisions. Accordingly, the research question of this study is as follows:

“From the internal perspective of firms, what benefits are derived when alliances are restructured, and which of these benefits are considered most important by firms?”

4. Hypothesis Development

In the previous section, this study posed the following research question: “From the internal perspective of firms, what benefits are derived when alliances are restructured, and which of these

benefits are considered most important by firms?” The purpose of this section is to develop hypotheses to address this question.

Previous studies have identified various benefits derived from shipping alliances mainly through empirical analyses based on external quantitative data. Building on this literature, the present study extracts six elements that have been regarded as particularly important in previous studies and formulates them as hypotheses. However, it should be noted that these elements have been inferred as “important” primarily from an external perspective. Whether these benefits are also regarded as important from within firms themselves has not yet been sufficiently clarified.

Accordingly, this study examines whether the benefits identified as important from an external viewpoint are similarly prioritized from the internal perspective of firms. By doing so, it seeks to clarify differences in the relative importance among alliance-related benefits that are perceived internally by firms.

Based on a review of previous studies, the six benefits that have been most frequently emphasized in the literature are summarized in Table 1.

In the following sections, the content of each benefit is explained in detail.

4.1 Expanded Network Coverage

Alliances enable firms to offer more ports of call and shipping routes, thereby expanding the geographical scope of their services (Bergantino & Veenstra, 2002). Caschili et al. (2014) argue that alliances serve to expand market coverage for small and medium-sized shipping firms and facilitate entry into regionally specialized markets for large firms.

Hypothesis H1: From an internal perspective, the expansion of network coverage through alliances is considered an important benefit.

4.2 Higher Space Utilization

Due to physical constraints such as fleet size and vessel capacity, shipping companies find it difficult to respond immediately to demand fluctuations. However, the sharing and pooling of vessel space within alliances improve capacity utilization and cost efficiency (Bergantino & Veenstra, 2002; Cruijssen et al., 2007), thereby realizing economies of scale (Ghorbani et al., 2022).

Hypothesis H2: From an internal perspective, higher space utilization through alliances is considered an important benefit.

4.3 Increased Service Frequency

Alliances allow vessels from multiple companies to be operated in an integrated manner, resulting in increased service frequency on routes (Thanopoulou et al., 1999; Caschili et al., 2014). Higher service frequency contributes to customer satisfaction and reliability, which are key factors in liner shipping (Ghorbani et al., 2022).

Hypothesis H3: From an internal perspective, improved service frequency through alliances is considered an important benefit.

4.4 Increased Market Share

Shipping companies compete primarily on the basis of market share, and alliances can contribute to share expansion through increased customer acquisition and cargo volume (Heaver et al., 2000). Ryoo & Thanopoulou (1999) reported that this benefit was rated highly, with an importance score of 2.78.

Hypothesis H4: From an internal perspective, increased market share through alliances is considered an important benefit.

4.5 Pursuing Operational Synergies

Through collaborative vessel operations, terminal sharing, and schedule coordination, firms can reduce operational costs and improve efficiency (Takumi, 2025). In survey research by Ryoo & Thanopoulou (1999), operational synergies received the highest importance score (2.89) among 21 items, reflecting firms' strong expectations.

Hypothesis H5: From an internal perspective, pursuing operational synergies through alliances is considered an important benefit.

4.6 Lower Investment Risk in Vessels and Ports

Investments in large vessels and port infrastructure are highly burdensome and risky for individual firms. Alliances allow firms to share such investments, thereby mitigating financial risk (Panayides & Cullinane, 2002; Agarwal & Ergun, 2010).

Hypothesis H6: From an internal perspective, lower investment risk in vessels and ports through alliances is considered an important benefit.

Summarizing the above hypotheses, the six benefits that firms consider important when forming alliances are as follows:

H1: From an internal perspective, expanded network coverage is considered an important benefit.

H2: From an internal perspective, higher space utilization is considered an important benefit.

H3: From an internal perspective, improved service frequency is considered an important benefit.

H4: From an internal perspective, increased market share is considered an important benefit.

H5: From an internal perspective, pursuing operational synergies is considered an important benefit.

H6: From an internal perspective, lower investment risk in vessels and ports is considered an important benefit.

The following sections examine how these six benefits are evaluated from the internal perspective of firms.

5. Research Methodology

This section describes the target firms and the rationale for their selection, as well as the methodology used in this study.

5.1 Target Firms

The research question of this study is: “From the internal perspective of firms, what benefits are obtained when alliances undergo restructuring, and which benefits are considered most important by the firms?” To address this question, the previous chapter extracted six benefits that previous studies have identified as particularly important and formulated them as hypotheses. The

following sections examine whether these benefits are similarly considered important from the internal perspective of firms.

In selecting a case for this study, it was desirable to focus on a firm that meets the following conditions: 1) it has experienced restructuring, including alliance withdrawal, and 2) it is possible to track how the remaining alliance members responded after the withdrawal.

Accordingly, this study focuses on the recent large-scale restructuring of Ocean Network Express Pte. Ltd. (hereafter, ONE), a core member of THE Alliance.

ONE was established in July 2017 as the only container shipping company in Japan, jointly funded by three Japanese shipping companies: Nippon Yusen Kaisha (NYK), Mitsui O.S.K. Lines (MOL), and Kawasaki Kisen Kaisha (K-LINE). While these three companies are competitors as integrated shipping firms, they shared a common challenge of chronic deficits in their container shipping divisions, which motivated their business integration (Hatano & Matsuda, 2023).

ONE's headquarters is located in Singapore, with regional offices in Hong Kong, Dubai, London, São Paulo, and Richmond, Virginia, USA (ONE, 2025). The company serves over 20,000 customers, employs approximately 12,000 people across 57 countries, and is one of the largest liner operators in the world (Hatano & Matsuda, 2023; ONE, 2025).

ONE operates a fleet of 260 container vessels, including twelve ultra-large 20,000 TEU-class ships, and manages approximately two million magenta-colored containers across 175 trade routes connecting 265 ports in 120 countries (ONE, 2025). The company achieved its first operating profit in 2020 and recorded a net profit of USD 16.7 billion for the fiscal year ending

March 2022, five times higher than the previous year (Capital IQ, n.d.), ranking it second among publicly listed Japanese firms, only after Toyota Motor Corporation (Nikkei, 2022). ONE currently accounts for approximately 7% of global container shipping market share, ranking sixth in the world (Table 2) (Nikkei, 2025).

In 2017, ONE, together with Yang Ming (Taiwan) and Hapag-Lloyd (Germany), established “THE Alliance,” which later expanded to four members with the inclusion of HMM (South Korea) in 2020. THE Alliance, along with 2M and Ocean Alliance (OA), formed one of the three major global alliances.

However, at the end of January 2024, Hapag-Lloyd, which accounted for approximately one-quarter of THE Alliance’s fleet and capacity (Figures 2, 3 & 4), withdrew from the alliance. The remaining three members (ONE, Yang Ming, and HMM) subsequently established the “Premier Alliance” in February 2025 and advanced cooperation with MSC (Switzerland) through a Slot-Swap mechanism.

As illustrated in Figures 2, 3 and 4, Hapag-Lloyd’s fleet size and capacity represented a substantial portion of THE Alliance. Its withdrawal had a structural impact on the remaining members, making the case particularly suitable for examining the benefits of alliance restructuring from the internal perspective of firms.

As illustrated above, the case of ONE is particularly suitable for this study because:

1) It involves a recent alliance restructuring, including both withdrawal and the formation of a new partnership

2) It allows for examination of how the remaining alliance members prioritized specific benefits in reconstructing their network.

This makes ONE an appropriate subject for analyzing the internal evaluation of benefits in the context of alliance restructuring.

5.2 Analytical Method

This study examines the benefits of alliance restructuring from two perspectives: observable changes from external data, and importance from an internal perspective. Accordingly, two complementary approaches are employed: Quantitative Data Analysis and Qualitative Interviews.

Previous studies mainly focused on quantitative analysis using external data, such as the number of routes or vessel capacity (e.g., Tsuruta, Kurokawa, & Yanagisawa, 2002). In contrast, empirical research from an internal perspective, examining how firms prioritize each benefit, remains limited (Panayides & Wiedmer, 2011; Ghorbani et al., 2022).

In this study, the same indicators used in prior research—number of ports, number of routes, vessel capacity, and service frequency—were analyzed to assess which parts of ONE's network were affected following Hapag-Lloyd's withdrawal. This allows objective identification of changes before and after the exit, while maintaining comparability with previous studies. However, Quantitative Data Analysis alone cannot reveal which benefits that firms considered most important. Therefore, Qualitative Interviews were conducted with ONE to clarify which benefits were prioritized and the criteria used for partner selection from an internal perspective.

By combining Quantitative Data Analysis and Qualitative Interviews, this study links

observable network changes with internal prioritization, thereby reevaluating previous studies from the perspective of the firm.

5.2.1 Quantitative Data Analysis

For the four hypotheses, namely H1: Expanded Network Coverage, H2: Higher Space Utilization, H3: Improved Service Frequency, and H4: Increased Market Share, objective assessment is possible using external data, and therefore Quantitative Data Analysis was conducted.

The analysis is based on the methodology for maritime alliances developed by Tsuruta, Kurokawa, & Yanagisawa (2002), with minor modifications applied to examine changes before and after the THE Alliance restructuring from three perspectives: network coverage, vessel scale (market share), and service frequency. This approach enables comparison with previous studies while capturing the structural impact of alliance restructuring from an external viewpoint.

Network coverage was analyzed using the number of routes and ports of call as indicators. Alliances allow firms to provide more routes and ports, thereby expanding the geographical scope of their services (Bergantino & Veenstra, 2002). Changes in the number of routes and ports directly reflect the alliance's overall capacity to provide geographic coverage.

Vessel scale (market share) was measured using Dead Weight Tonnage (DW) and the number of containers (Twenty-Foot Equivalent Units: TEU). DW and TEU are standard indicators of a vessel's cargo-carrying capacity (Japan Maritime Daily, 2006). Changes in alliance composition directly affect these supply capabilities.

Service frequency was analyzed using the number of vessels deployed on each route and the number of vessels per route. Service frequency is a core element of service quality provided to

customers, and increases in frequency contribute to higher customer satisfaction and reliability (Ghorbani et al., 2022).

The data for this analysis were obtained from the *International Transportation Handbook 2025* published by Ocean Commerce. The routes selected for analysis were the “Asia-North America” route and the “Asia-Europe” route, as these are major global trunk routes in container shipping, with consistently high vessel capacity shares (Figure 5).

5.2.2 Qualitative Interviews

Hypotheses H5: Pursuing Operational Synergies, and H6: Lower Investment Risk in Vessels and Ports, are difficult to evaluate directly through external data analysis. Therefore, these hypotheses were examined through interviews that reflect the internal perspective of the company. In addition, interviews were conducted for Hypotheses H1-H4 to verify consistency with the quantitative data analysis.

An online interview was conducted with ONE for this purpose. The interview was based on a prepared list of questions, and additional follow-up inquiries were conducted via email when necessary. The questionnaire used for the interviews is provided in the appendix at the end of this paper.

Interview Details:

Date: October 24, 2025

Format: Online Interview (45 minutes) followed by e-mail correspondence

Participants:

Mr. Tomonao Iwasaki (General Manager) — interview & e-mail

Mr. Yui Kosakai (Corporate Communications) — e-mail

In this study, Hypotheses H1-H4, which can be examined using external data, were analyzed through both quantitative data analysis and qualitative interviews. Hypotheses H5 and H6, which are difficult to evaluate using external data alone, were examined through interviews. This approach allows for an integrated analysis of the objective changes and the subjective evaluations of the benefits derived from the alliance.

6. Results

This section presents the results of (1) quantitative data analysis, (2) qualitative interviews.

6.1 Quantitative Data Analysis

In this section, route-specific data from *International Transportation Handbook 2025* are used to analyze changes in network coverage, vessel scale (market share), and service frequency before and after the restructuring of THE Alliance. Comparisons of each variable on the Asia-North America and Asia-Europe routes are presented in Tables 3 and 4, while port calls on these routes are shown in Figures 6 and 7. The details of ports on each route are presented in Tables 5 and 6.

6.1.1 Network Coverage

Network coverage was measured by the number of routes and port calls. Tables 3 and 4 show the indicators for Hapag-Lloyd and MSC.

On the Asia-North America route, Hapag-Lloyd operated four routes with twenty-five ports, while MSC operated three routes with twenty ports. On the Asia-Europe route, Hapag-Lloyd operated five routes with thirty-one ports, and MSC operated three routes with twenty-five ports. At first glance, it might appear that Hapag-Lloyd's withdrawal from THE Alliance resulted in a loss of all its routes and port calls. However, the overall alliance network did not shrink, in fact, because the ports and routes previously served by Hapag-Lloyd were also jointly served by other members of Premier Alliance, including ONE, HMM, and Yang Ming.

Figures 6 and 7 show the ports served by Hapag-Lloyd and MSC on the map, and Tables 5 and 6 provide the names of these ports. On the Asia-North America route, Hapag-Lloyd exclusively served thirteen ports, MSC exclusively served eight ports, and both companies served twelve common ports. Notably, ports served only by MSC include the Port of Long Beach (ranked 21st worldwide in 2023 by container throughput) and the Port of Colombo, Sri Lanka (27th). New Atlantic-Caribbean ports, such as Miami (USA) and Caucedo (Dominican Republic), were also added to the network.

On the Asia-Europe route, Hapag-Lloyd exclusively served nineteen ports, MSC exclusively served thirteen ports, and twelve ports were common to both. Notable MSC-only ports include Tanjung Pelepas, Malaysia (ranked 15th worldwide), Colombo, Sri Lanka (27th), and Dalian, China (38th). Ports in the Baltic Sea, such as Gdańsk and Gdynia (Poland) and

Klaipėda (Lithuania), and UK ports, such as Liverpool, London Gateway, and Felixstowe, were newly added to the network.

Overall, Hapag-Lloyd's withdrawal did not reduce network coverage. Rather, the slot swap with MSC expanded the network, adding three routes and eight ports on the Asia-North America route and three routes and thirteen ports on the Asia-Europe route. This confirms that the partnership with MSC led to an expansion of geographic network coverage.

6.1.2 Vessel Scale (Market Share)

Fleet size was measured using Dead Weight Tonnage (DW) and the number of 20-foot containers (TEU). Tables 3 and 4 show the indicators for Hapag-Lloyd and MSC.

On the Asia-North America route, MSC's DW and TEU were approximately 1.54 and 1.52 times those of Hapag-Lloyd, respectively, indicating that MSC had a significantly larger scale on this route. On the Asia-Europe route, MSC also exceeded Hapag-Lloyd on both indicators, though the difference was relatively smaller than on the North America route.

Overall, MSC surpassed Hapag-Lloyd in fleet size on both routes, particularly on the Asia-North America route. This confirms that the partnership with MSC contributed to an increase in fleet size (market share).

6.1.3 Service Frequency

Service frequency was measured by the number of deployed vessels per route and the number of vessels per individual route. Tables 3 and 4 show the indicators for Hapag-Lloyd and MSC.

On the Asia-North America route, MSC deployed approximately 1.63 times as many vessels as Hapag-Lloyd, and the number of vessels per route was more than double. On the Asia-Europe route, the differences were even greater, with MSC deploying 1.75 times as many vessels overall and about 3 times as many vessels per route.

Overall, MSC deployed more vessels than Hapag-Lloyd on both routes, enabling the alliance to provide higher service frequency. This confirms that the restructuring improved operational frequency across the network.

Based on the results of the quantitative data analysis, changes consistent with hypotheses H1-H4 were observed.

H1: Expanded Network Coverage.

No reduction in network coverage was observed following Hapag-Lloyd's withdrawal. On the contrary, the addition of MSC's exclusive ports further expanded the geographic distribution.

H2: Higher Space Utilization.

MSC deployed more vessels than Hapag-Lloyd, increasing the overall availability of vessel capacity within the alliance.

H3: Improved Service Frequency.

MSC significantly exceeded Hapag-Lloyd in the number of vessels deployed per route, resulting in an overall increase in service frequency for the alliance.

H4: Increased Market Share.

MSC deployed more vessels than Hapag-Lloyd, leading to an increase in total transport capacity and an expansion of scale for the alliance.

Overall, the results of the quantitative data analysis are consistent with hypotheses H1-H4.

6.2 Qualitative Interviews

This section presents the analysis based on interviews with Ocean Network Express (ONE).

According to the interviews, H1: Expanded Network Coverage and H3: Increased Service Frequency were identified as the most critical factors, while H2: Higher Space Utilization, was also considered important. On the other hand, H4: Increased Market Share, H5: Pursuing Operational Synergies, and H6: Lower Investment Risks in Vessels and Ports, were considered secondary factors. Detailed insights from the interviews are provided in the following section.

6.3 Summary of Findings from Both Analyses

The consistency between the hypotheses, the results of the quantitative data analysis, and the qualitative interviews is summarized in Table 7.

Based on the results of the quantitative data analysis and qualitative interviews, the next chapter provides a discussion of the benefits of alliances from the corporate perspective, highlighting strategic priorities and decision-making implications.

7. Discussion

In this section, we discuss the benefits of alliances from the corporate perspective, focusing on the case in which Hapag-Lloyd withdrew from THE Alliance and subsequently formed a new partnership with MSC, based on the results of the quantitative data analysis and qualitative interviews.

7.1 Expanded Network Coverage

The quantitative data analysis confirms that the network of THE Alliance did not undergo significant changes following Hapag-Lloyd's withdrawal. This is because the routes and ports previously operated by Hapag-Lloyd were jointly served by other members of the alliance, maintaining the overall network structure. Therefore, no gaps emerged in the network due to the withdrawal. Furthermore, through the slot swap agreement with MSC, unique routes and ports operated by MSC were added, resulting in an overall expansion of the alliance's coverage.

The qualitative interviews reveal that one of the most important objectives for shipping companies in forming alliances is the expansion of network coverage. As Mr. Iwasaki stated, "The purpose of an alliance is to create a complementary network with broad coverage. By pooling our resources, we can build a global transport network that is broader and higher-frequency than any company could provide alone." This emphasizes that the central function of an alliance is to construct a worldwide network that cannot be realized individually.

In addition, Mr. Iwasaki noted, "Frequent changes in alliances can undermine trust with our customers." This indicates that network coverage is not only a matter of geographic expansion but also closely linked to ensuring service stability and consistency for shippers.

By expanding routes through alliances, companies can connect emerging regions, such as Latin America, the Middle East, and Africa, that would be difficult to serve independently, in addition to maintaining major trunk routes (e.g., Asia-Europe, Asia-North America). Increasing the number of ports also provides shippers with more options, reducing overland transport costs and lead times. Thus, the expansion of network coverage enhances both convenience and reliability for customers.

However, Mr. Iwasaki also pointed out the limitations of slot-swaps: “While slot-swaps allow for flexible collaboration, operations are influenced by the priorities of the partner company. Even if a route is strategically important to us, continuity is not guaranteed if the partner company does not consider it a priority.” This suggests that slot-swaps, while effective in complementing alliances, also introduce potential risks that can affect network stability.

In summary, the expansion of network coverage is one of the most critical benefits provided by alliances and serves as a source of competitive advantage for companies. A broad network strengthens service reliability for shippers and forms the foundation for the value of the alliance. Recently, flexible arrangements such as slot-swaps are increasingly used to further expand coverage, but they also carry inherent risks due to dependence on the operational priorities of partner companies.

7.2 Higher Space Utilization

The quantitative data analysis shows that MSC has deployed larger vessels in greater numbers, suggesting that the slot swap agreement has actually expanded the available vessel capacity options for ONE after the alliance restructuring. This indicates that the reduction in space due to Hapag-Lloyd's withdrawal did not directly translate into a reduction of overall alliance capacity. Instead, the arrangement allows ONE to flexibly utilize the space provided by MSC, creating conditions that facilitate efficient use of vacant capacity.

The qualitative interviews support this interpretation. Mr. Kosakai noted, "It is extremely important to fully utilize the additional capacity provided by the alliance, as this contributes to competitiveness." Container vessels are increasingly larger, yet they remain vulnerable to fluctuations in demand and port congestion, which can lead to unused capacity and reduced profitability. Therefore, "routes and vessel capacity sharing" among multiple carriers functions as an efficient supply-demand adjustment mechanism that cannot be achieved by individual operation alone.

Notably, previous studies have often treated "capacity sharing" as an incidental outcome. In contrast, the interviews highlight that companies consciously regard the effective utilization of vessel space as a strategic operational priority, providing new insight into alliance management practices.

7.3 Improved Service Frequency

The quantitative data analysis reveals that MSC deploys a significantly higher number of vessels per route compared to Hapag-Lloyd, indicating that MSC provides higher-frequency services, which in turn raises the overall service frequency of the alliance.

The qualitative interviews confirm that increasing service frequency is one of the most important objectives for shipping companies within an alliance. By operating vessels jointly, multiple companies can offer high-frequency services at a scale unattainable individually. This enables shippers to access more frequent shipping opportunities, thereby increasing their loyalty to the carriers.

Mr. Iwasaki emphasized that alliances aim not only to expand geographic coverage but also to strengthen the density of services: “By pooling resources through slot-swaps and joint vessel operations, we can increase the number of services available.” This demonstrates that alliances enhance operational intensity as well as network breadth.

Overall, the increase in service frequency is a key factor in providing shippers with more flexible and reliable shipping opportunities.

7.4 Increased Market Share

Focusing on vessel capacity indicators (DW, TEU) in the quantitative data analysis, the results suggest an approximate 5% increase in overall capacity following Hapag-Lloyd’s withdrawal and the slot-swap with MSC. This indicates that the alliance compensated for any potential decline in transport capacity through the deployment of larger vessels and slot swaps, effectively strengthening market share.

However, qualitative interviews reveal that market share expansion is considered a secondary outcome. Mr. Kosakai stated, “We do not structure the alliance to increase market share; rather, market share improves as a byproduct of enhanced coverage and service frequency.” Mr. Iwasaki also explained, “If ONE (with scale 10) forms an alliance with two other companies of scale 10 each, the alliance as a whole reaches scale 30, but our individual scale remains 10.” This suggests that each company’s market share remains roughly constant despite participating in the alliance.

Previous studies (e.g., Ryoo and Thanopoulou, 1999) often emphasizes market share expansion as a primary goal. The current analysis shows that from the corporate perspective, market share is not the direct motivation for forming alliances.

7.5 Pursuing Operational Synergies

The qualitative interviews indicate that pursuing operational synergies is a secondary consideration. Although Ryoo and Thanopoulou (1999) reported high importance for operational synergies in their survey, Mr. Kosakai emphasized that “the primary benefits of an alliance are the diversity of the service network and the frequency of services on each route,” viewing synergies as secondary.

This is consistent with the observation that MSC’s slot-swap effectively filled gaps left by Hapag-Lloyd’s withdrawal. According to Mr. Iwasaki, alliances provide a comprehensive, long-term coordination system where member companies jointly establish operational rules and route design. In contrast, slot swaps are short-term, route-specific agreements that follow the

partner's operational system rather than establishing joint rules. In other words, alliances are mechanisms for "co-designing operations," whereas slot-swaps are mechanisms for "participating in existing operations." Thus, strategic priority is given to network expansion over operational efficiency gains from slot swaps.

7.6 Lower Investment Risk in Vessels and Ports

Qualitative interviews indicate that reducing investment risk in vessels and ports is also a secondary factor. Mr. Iwasaki explained that, in the short term, companies operating larger vessels within the alliance have a relative negotiation advantage. Mr. Kosakai added, "We sometimes coordinate vessel investments with alliance partners, but compared to scale and frequency enhancements, the benefits are more long-term." These statements suggest that the reduction of investment risk was not a primary driver in alliance participation but rather a secondary benefit.

8. Conclusion and Implications

8.1 Conclusion

Based on the review of previous studies, six benefits of shipping alliances were identified. Through qualitative interviews, it was confirmed that the primary objectives of an alliance are the expansion of network coverage and the enhancement of service frequency. Constructing a broad and high-frequency shipping network, which cannot be achieved by a single firm alone, serves as a source of competitive advantage and provides shippers with more options and shorter lead

times. At the same time, the expansion of flexible collaboration mechanisms, such as slot swaps, carries new risks associated with dependency on partners' operational policies.

8.2 Managerial Implications

This study provides managerial implications by identifying, from the corporate perspective, which benefits shipping companies should prioritize during alliance restructuring. The results show that network coverage and service frequency are the most important, providing not only a basis for partner selection but also actionable guidance for managing network strategy, service quality, and customer retention in an industry where alliance restructuring occurs frequently. By visualizing internal decision-making mechanisms, this study also provides strategic guidance for operational decisions, such as alliance negotiations and the use of slot swaps. The prioritized benefits revealed in this study indicate how container shipping companies can sustain competitiveness in the market. The wide network and high-frequency services directly contribute to reliability and continued use by shippers, offering strategic insights to the firm for maintaining competitive advantage through alliances.

8.3 Theoretical Contributions

From a theoretical perspective, this study addresses a gap in prior research that has been biased toward external quantitative data. By collecting qualitative data through corporate interviews, this study empirically captures the internal strategic decision-making mechanisms behind alliance restructuring. Moreover, while many previous studies have treated alliance benefits in parallel

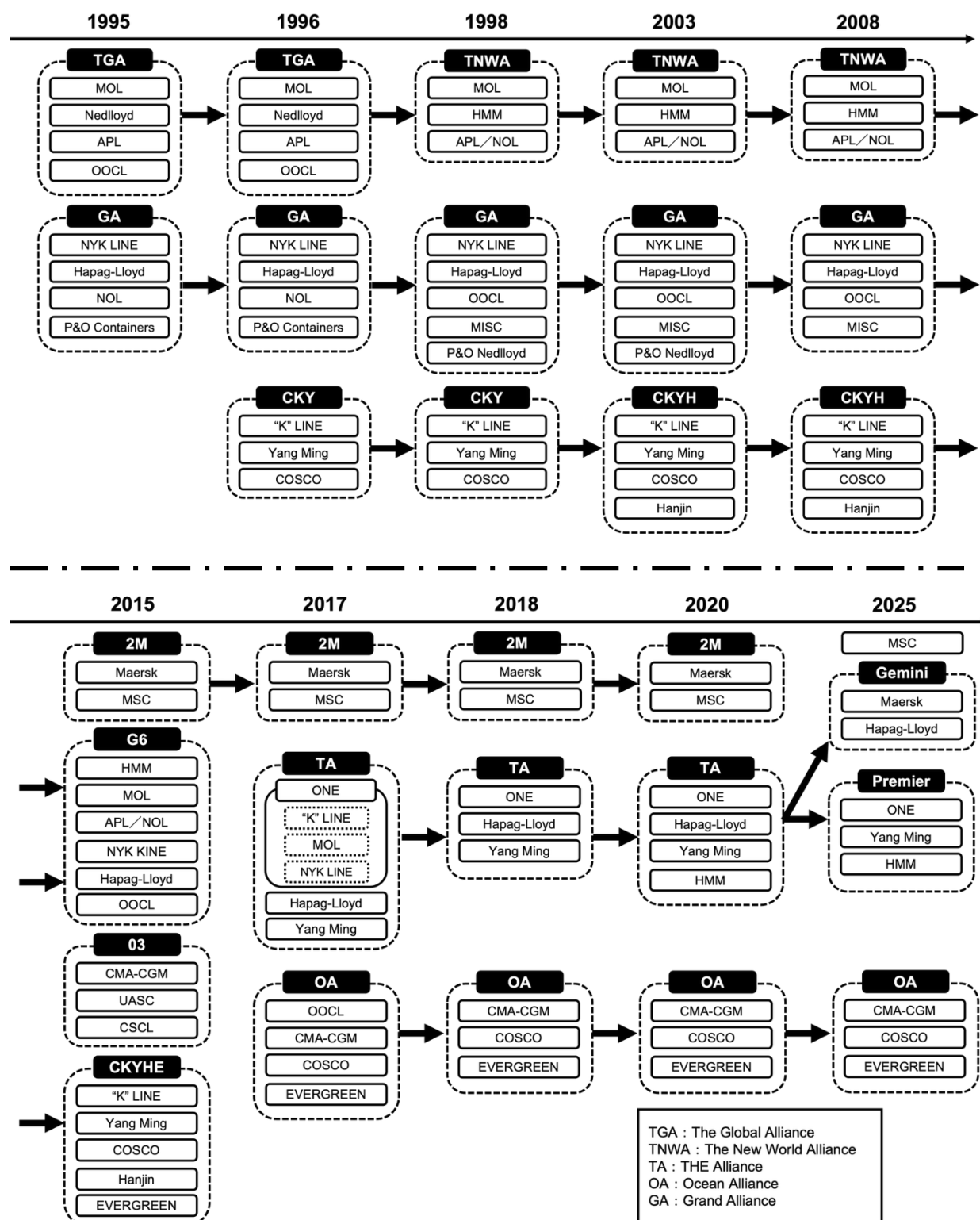
and estimated their importance based on quantitative indicators, this study demonstrates that the corporate perspective does not always align with the ranking suggested by external data.

Accordingly, the study complements existing research by addressing the overemphasis on quantitative data and the lack of internal corporate perspectives in shipping alliance studies. It also provides a novel insight: there can be a discrepancy between the importance of benefits inferred from quantitative data and the strategic significance assigned internally by firms.

8.4 Limitations and Further Research

This study has several limitations. First, it focuses on a single alliance case. Since the composition and scale of each container shipping alliance vary, it is difficult to generalize these findings to the entire shipping industry or to other alliances. Second, the quantitative data analysis relied on the methodology of Tsuruta, Kurokawa, & Yanagisawa (2002), focusing on operational indicators such as network coverage and vessel scale. However, recent alliances increasingly involve considerations such as environmental regulations and decarbonization strategies, which could affect corporate strategies but are not reflected in the current analysis. Addressing these limitations will be important for further research. Expanding the scope to multiple alliances and incorporating sustainability-related factors could provide a more comprehensive understanding of how shipping alliances influence corporate strategy in container shipping.

Figure 1: Evolution of Container Shipping Alliances (1995-2025)



Note: The chronological classification in this figure is primarily based on years in which there were significant changes in alliance membership composition.

Source: Compiled by the author based on *SHIPPING NOW*, 2025-2026

Table 1: Benefits Derived from Alliances in the Liner Shipping Industry

Expanded Network Coverage	Brooks et al. (1993), Ryoo & Thanopoulou (1999), Alix et al. (1999), Bergantino & Veenstra (2002), Panayides & Wiedmer (2011), Caschili et al. (2014)
Higher Space Utilization	Bergantino & Veenstra (2002), Cruijssen et al. (2007), Panayides & Wiedmer (2011)
Improved Service Frequency	Thanopoulou et al. (1999), Slack et al. (2002), Verstrepn et al. (2009), Panayides & Wiedmer (2011), Caschili et al. (2014)
Increased Market Share	Ryoo & Thanopoulou (1999), Heaver et al. (2000), Panayides & Wiedmer (2011)
Pursuing Operational Synergies	Ryoo & Thanopoulou (1999)
Lower Investment Risk in Vessels and Ports	Ryoo & Thanopoulou (1999), Panayides & Cullinane (2002), Agarwal & Ergun (2010), Panayides & Wiedmer (2011)

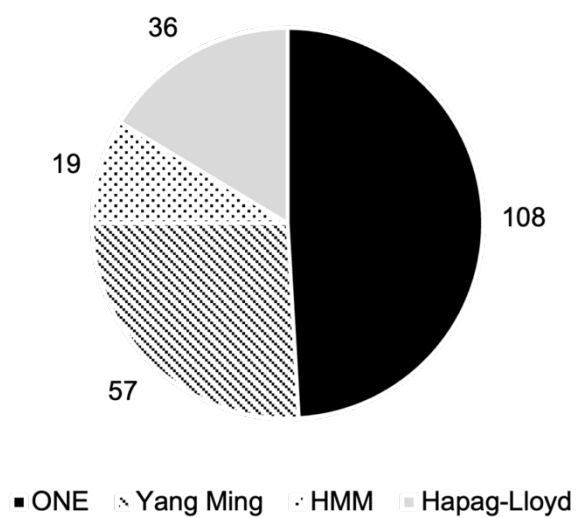
Source: Compiled by the author based on previous studies

Table 2: Top 10 Container Shipping Companies by Capacity and Global Market Share (2025)

Rank	Company	Vessel Capacity (TEU)	Global Share
1	MSC (Switzerland)	6,456,300	20.2%
2	Maersk (Denmark)	4,561,126	14.3%
3	CMA CGM (France)	3,880,865	12.1%
4	COSCO (China)	3,361,535	10.5%
5	Hapag-Lloyd (Germany)	2,386,704	7.5%
6	ONE (Japan)	2,014,342	6.3%
7	EVERGREEN (Taiwan)	1,809,070	5.7%
8	HMM (South Korea)	922,415	2.9%
9	ZIM (Israel)	776,779	2.4%
10	Yang Ming (Taiwan)	711,393	2.2%
	World	31,989,393	100.0%

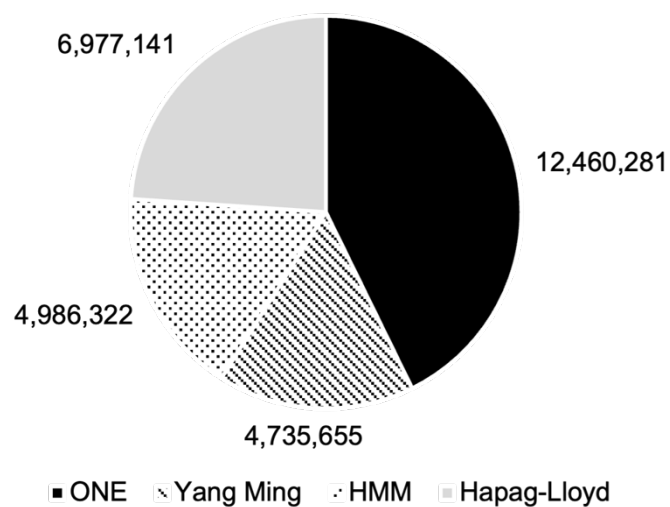
Source: Compiled by the author based on *SHIPPING NOW*, 2025-2026

Figure 2: Number of Vessels Owned by THE Alliance Members (2024) [Unit: Vessels]



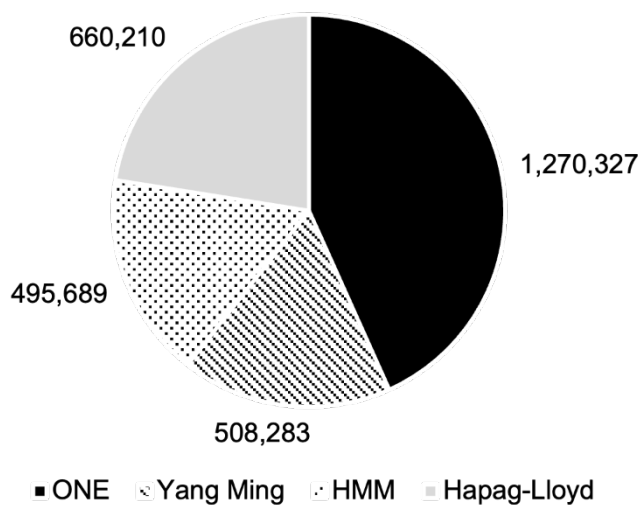
Source: Compiled by the author based on *International Transportation Handbook* (2025)

Figure 3: Deadweight Tonnage of THE Alliance Members (2024) [Unit: Tons]



Source: Compiled by the author based on *International Transportation Handbook* (2025)

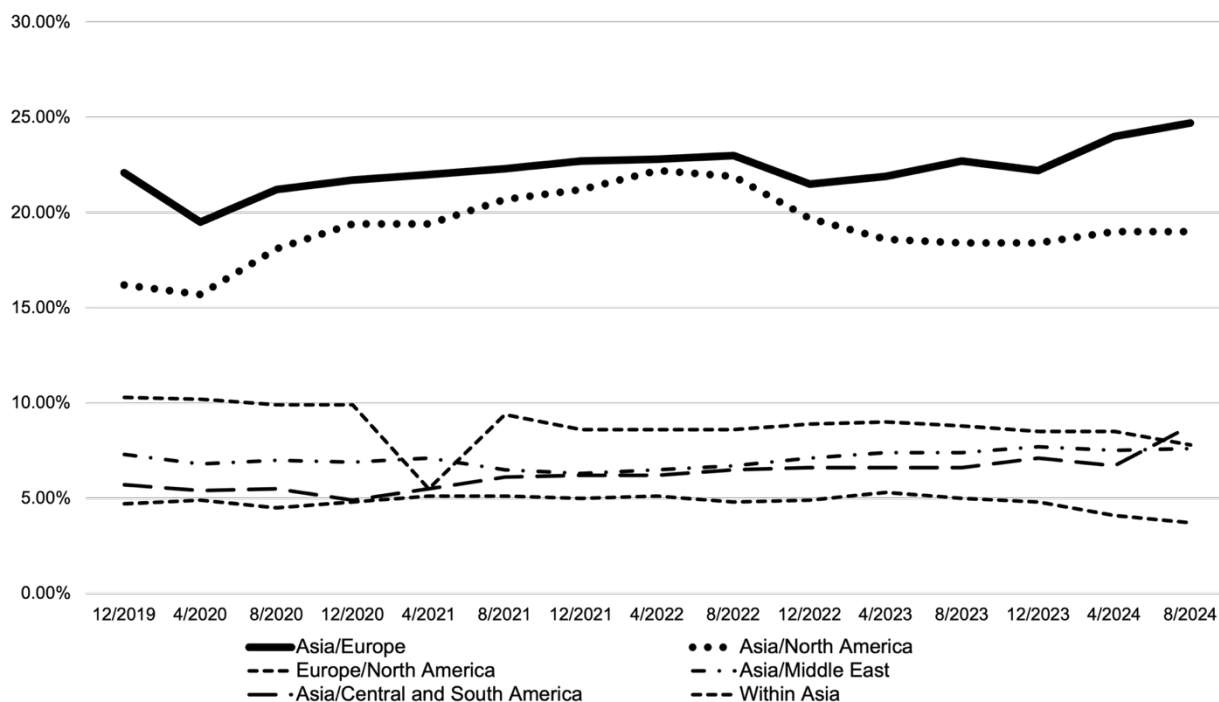
Figure 4: Number of 20-Foot Containers Owned by THE Alliance Members (2024) [Unit:



Units]

Source: Compiled by the author based on *International Transportation Handbook* (2025)

Figure 5: Trends in Vessel Capacity Share on Major Routes (2019–2024)



Source: Compiled by the author based on *Nippon Yusen Kaisha Research Group* (2024)

Table 3: Comparison of Asia-North America Route (2024)

Company	No. of Routes	No. of Ports	Dead Weight Tonnage (DW)	No. of 20-Foot Containers (TEU)	No. of Vessels	No. of Vessels deployed per route
Hapag-Lloyd	4	25	2,648,321	237,776	19	4.7
MSC	3	20	4,084,804	362,494	31	10.3

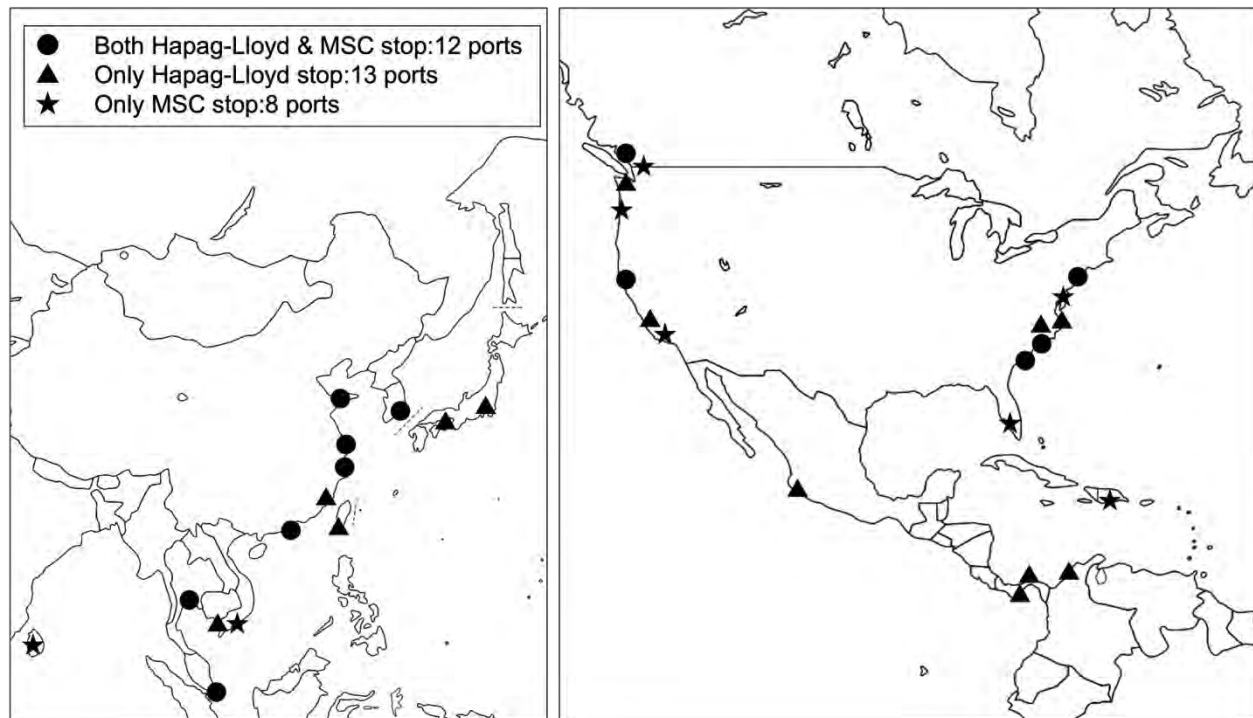
Source: Compiled by the author based on *International Transportation Handbook* (2025)

Table 4: Comparison of Asia-Europe Route (2024)

Company	No. of Routes	No. of Ports	Dead Weight Tonnage (DW)	No. of 20-Foot Containers (TEU)	No. of Vessels	No. of Vessels deployed per route
Hapag-Lloyd	5	31	4,328,820	422,434	24	4.8
MSC	3	25	4,838,794	445,923	42	14.0

Source: Compiled by the author based on *International Transportation Handbook* (2025)

Figure 6: Comparison of Port Calls on Asia-North America Route (2024)



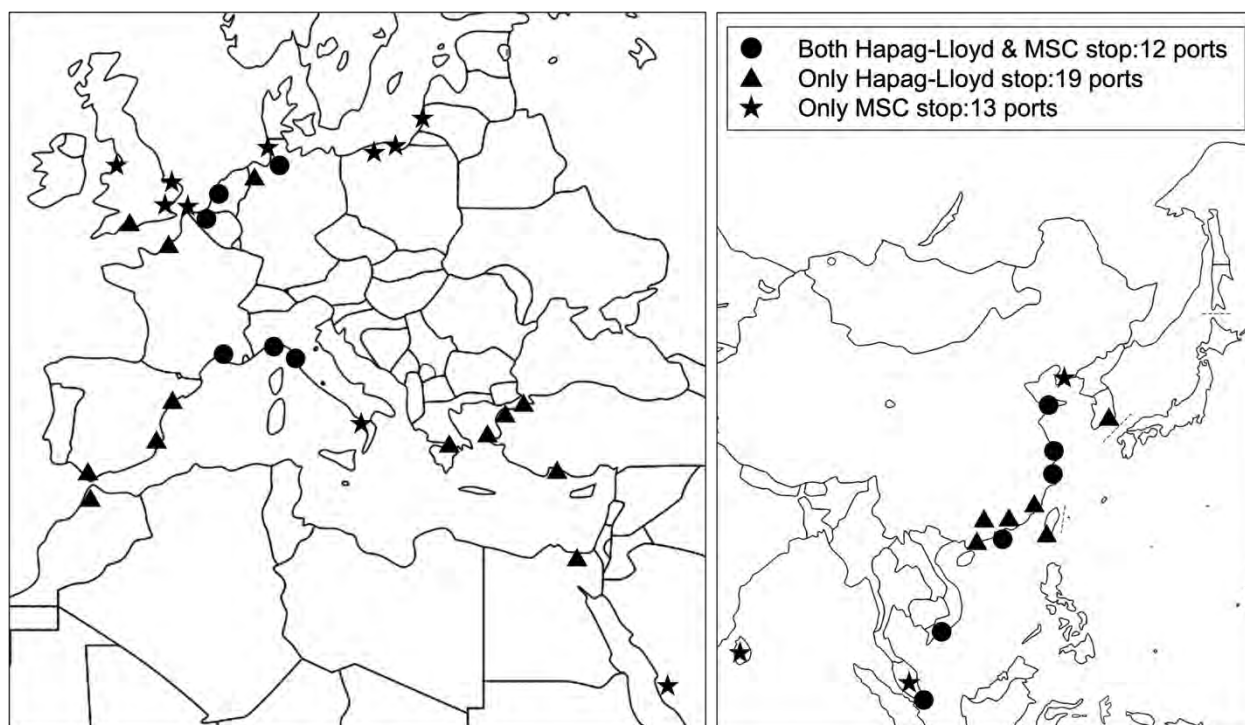
Source: Compiled by the author based on *International Transportation Handbook* (2025)

Table 5: The details of Port Calls on Asia-North America Routes (2024)

	●Both Hapag-Lloyd & MSC stop (12 ports)		▲Only Hapag-Lloyd stop (13 ports)		★Only MSC stop (8 ports)	
Asia	Shanghai	Ningbo	Tokyo	Kobe	Vung Tau	Colombo
	Qingdao	Yantian	Xiamen	Kaohsiung		
	Busan	Singapore	Cai Mep			
	Laem Chabang					
North America	Oakland	New York	Norfolk	Wilmington	Long Beach	Miami
	Savannah	Charleston	Los Angeles	Tacoma	Baltimore	Seattle
	Vancouver				Portland	
Central & South America			Cartagena	Rodman	Caucedo	
			Lázaro Cárdenas			
			Manzanillo de Panama			

Source: Compiled by the author based on *International Transportation Handbook* (2025)

Figure 7: Comparison of Port Calls on Asia-Europe Routes (2024)



Source: Compiled by the author based on *International Transportation Handbook* (2025)

Table 6: The details of Port Calls on Asia-Europe Routes (2024)

	●Both Hapag-Lloyd & MSC stop (12 ports)		▲Only Hapag-Lloyd stop (19 ports)		★Only MSC stop (13 ports)	
Asia	Shanghai	Ningbo	Xiamen	Nansha	Dalian	Colombo
	Qingdao	Yantian	Shekou	Hong Kong	Tanjung Pelepas	
	Vung Tau	Singapore	Kaohsiung	Busan		
Europe	Genova	Rotterdam	Piraeus	Barcelona	Felixstowe	Gdansk
	Fos	Antwerp	Southampton	Valencia	Zeebrugge	Gdynia
	Hamburg	La Spezia	Le Havre	Algeciras	Gioia Tauro	Klaipeda
			Wilhelmshaven		Liverpool	Bremerhaven
					London Gateway	
Middle East			Istanbul	Tanger	King Abdullah	
			Izmit	Aliaga		
			Mersing	Damietta		

Source: Compiled by the author based on *International Transportation Handbook* (2025)

Table 7: The results of quantitative data analysis and qualitative interviews

Hypotheses	Data Analysis	Interviews
H1: Expanded Network Coverage	Important	Most Important
H2: Higher Space Utilization	Important	Important
H3: Improved Service Frequency	Important	Most Important
H4: Increased Market Share	Important	Secondary
H5: Pursuing Operational Synergies		Secondary
H6: Lower Investment Risk in Vessels and Ports		Secondary

Source: Compiled by the author

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Appendix

< Ocean Network Express Interview Question List >

【Regarding Ocean Network Express】

- (1) From what strategic and operational perspectives did ONE choose THE Alliance?
- (2) When selecting partners, what factors does ONE prioritize in its partner selection process?

【Regarding the Relationship with Hapag-Lloyd】

- (1) We understand Hapag-Lloyd and NYK have belonged to the same alliance for many years,
building a relationship of trust.
 - 1) Was this relationship maintained after ONE's establishment?
 - 2) Were there any new adjustments or efforts to build trust with Hapag-Lloyd when establishing
ONE?
- (2) What are your thoughts on the factors leading to Hapag-Lloyd's withdrawal from THE
Alliance?
- (3) What impacts occurred around the time of Hapag-Lloyd's withdrawal?

【Regarding the Relationship with MSC】

After Hapag-Lloyd withdrew from THE Alliance in 2024, it announced a slot swap with MSC.

- (1) Was this move intended to compensate for the functions and roles Hapag-Lloyd had fulfilled
within THE Alliance?
- (2) How does ONE perceive this change, and what future impacts do you anticipate?

(3) Please outline the commonalities and differences between Hapag-Lloyd and MSC.

【Regarding the Relationship with HMM】

(1) What were the circumstances surrounding HMM's joining THE Alliance in 2020?

【Regarding Alliances in General】

(1) The paper states that “the market reputation of partner companies could potentially hinder alliance formation.” To what extent does ONE consider the market reputation of partner companies when forming alliances?

(2) In practice, from what perspectives (e.g., corporate culture, network coverage, fleet size) does ONE assess compatibility among partners?

(3) How are long-term versus short-term contracts determined within the alliance?

(4) What distinguishes the intent behind forming an alliance from the intent behind arranging slot swaps?

(5) Previous research categorized the benefits of forming alliances as follows. Please indicate which apply.

- 1) Network coverage
- 2) Efficient utilization of vessel space
- 3) Maximizing operational synergies
- 4) Reducing port facility and vessel investment risks

- 5) Increasing market share
- 6) Improving service frequency

Employee Volunteering as Corporate Social Responsibility in Japanese Companies: Its Relationship with Meaningful Work

Junko Araki (Meiji University, Japan)

ABSTRACT

The aim of this study is to reveal the relationship between volunteer activities as a form of CSR and meaningful work from the perspective of sustainable HRM. Although interest in sustainable HRM has been growing, empirical studies remain limited, and most existing studies have been conducted in Western countries. In addition, while CSR activities such as volunteering have been suggested to promote the meaningfulness of work, the relationship between the two has not been sufficiently examined. This study provides empirical evidence regarding the effects of volunteer activities in the Japanese context and addresses two major gaps in the literature: the gap between theoretical and empirical research, and the gap between Western and non-Western contexts. This study adopted a qualitative methodology and conducted semi-structured interviews with 34 full-time employees of Japanese companies who engaged in volunteer activities. Based on qualitative analysis, three categories of outcomes associated with participation in volunteering were identified: deepening social engagement, transformative learning and meaning-making, and positive psychological outcomes. Participants who engaged in volunteering experienced a deeper sense of social engagement through recognizing how their work contributes to society. They also experienced transformative learning and meaning-making through their volunteer activities, reflecting on their work and constructing new meanings regarding both their work and life. In addition, volunteer activities contributed to positive psychological outcomes, such as a sense of refreshment and overall life fulfillment. Furthermore, when volunteer activities were related to participants' work or career, their sense of meaningful work was enhanced. These findings suggest important implications for HRM practices in companies. Supporting employee volunteering as part of CSR initiatives may increase employees' organizational pride and deepen their understanding of the company's business and social contributions.

Keyword: Human Resource Management, Organizational Behavior, Management, CSR, Sustainable Career

Internationalization Cases of Local SMEs in Saitama Prefecture, Japan

Kazuhiro Akitomo (Hosei University, Japan)

Yukio Takagaki (Surugadai University, Japan)

ABSTRACT

SMEs, which account for approximately 99.7% of all Japanese companies, form the backbone of regional economies and employment. However, due to population decline and stagnant domestic demand, Japan's internal market is shrinking. To ensure sustainable growth, SMEs must explore new markets. According to Ansoff's Matrix, entering entirely new markets or developing new products carries high risk. In contrast, expanding existing domestic products into similar overseas market segments is a more rational and lower-risk strategy. Export-driven acquisition of external demand is particularly vital for SME growth. Moreover, overseas expansion not only strengthens corporate earnings but also enhances regional branding and creates jobs, thereby energizing local economies. This research examines three manufacturing SMEs in Saitama Prefecture as case studies of global expansion through domestic production and export. It also considers the rapid advancement of generative AI, which offers increasing productivity and support for internationalization for SMEs with limited resources. By analyzing how these companies utilize generative AI, the study aims to provide practical insights for SMEs seeking to expand globally through exports.

Keyword: Entrepreneurship, Strategy, Management, Internalization

When Green Goes Political: ESG Controversies, Lobbying and Ownership in Global Energy Firms

Lev Shalev (University of Reading, United Kingdom)

Irina Heim (University of Reading, United Kingdom)

Yelena Kalyuzhnova (University of Reading, United Kingdom)

ABSTRACT

Despite growing ESG scrutiny, the strategic interplay between corporate lobbying and ethical controversies remains underexplored, particularly in energy sectors where environmental stakes intensify legitimacy challenges. This study addresses this gap by examining lobbying's moderating role in the ESG controversy–performance relationship using a 20-year panel of 72 Fortune 500 Global energy firms. Results reveal that ESG controversies exhibit no uniform effect on firm valuation, but their impact varies systematically with lobbying intensity and ownership structure. Firms experiencing controversies demonstrate significantly higher lobbying expenditures, challenging substitution narratives and suggesting political engagement serves as a strategic response to reputational threats. Critically, mixed-ownership firms face market discounts when controversies arise, indicating that governance complexity erodes stakeholder confidence in sustainability commitments. These findings reframe lobbying as a complementary risk-management tool rather than a substitute for genuine ESG commitment, while positioning controversies as mechanisms that modulate downside risk rather than enhance returns. The study carries implications for regulatory design prioritising governance transparency, lobbying disclosure requirements, and ownership clarity in sectors facing heightened environmental accountability.

Keyword: Strategy, Management, Organizational Behavior, Lobbying, ESG, Corporate Governance, Ownership, Multiple Imputation

Servitization's Profit Effects in Japan: Does Service Revenue Heterogeneity Matter?

Takayuki Suzuki (Kyoto University of Advanced Science, Japan)

Kiminori Gemba (Hosei University, Japan)

ABSTRACT

In recent years, servitization—adding services to products—has attracted increasing attention as a strategy for enhancing customer value and competitive advantage. At the same time, prior research has reported mixed findings on its profitability implications, including the so-called service paradox. This study argues that one reason for these inconsistent findings is that servitization has often been measured using a single aggregate indicator, typically the share of service revenue, which may combine structurally different activities. Using firm-level microdata from the Ministry of Economy, Trade and Industry's Basic Survey of Japanese Business Structure and Activities for 2011–2024, we examine how different types of service revenues are associated with operating profit margin across Japanese firms. The results show that, in baseline pooled models, a broad servitization measure that combines distribution- and sales-oriented services (0533) with service business and other business activities (0534 and 0535) is negatively associated with operating profit margin. However, in two-way fixed-effects models with strict one-period lags, this broad measure becomes insignificant, whereas the more value-added service categories—especially service business (0534), and more broadly the 0534 + 0535 grouping—remain positively associated with profitability. These findings suggest that the performance implications of servitization depend less on the overall share of service revenues than on their composition across service domains.

Keyword: Strategy, Operations Management, Economics

1. Introduction

Positioning the Research Domain

Servitization in manufacturing is widely regarded as an indispensable strategy for enhancing customers' value-in-use—the value derived from using a product than just owning it—through product and service integration, thereby establishing a sustainable competitive advantage (Lin et al., 2019; Erixon & Vandermerwe, 2023). In the global market environment, many firms have accelerated expansion into high-value-added service domains to avoid price competition driven by imitation of their core products (Mastrogiacono et al., 2019; Erixon & Vandermerwe, 2023). In Japan, many manufacturing firms have expanded service revenues by providing maintenance and operations support as well as solutions, beyond their core product offerings. This indicates that servitization within the manufacturing sector has increased (Mastrogiacono et al., 2019).

Knowledge Gap

Currently, there is still no academic consensus on whether servitization consistently improves firms' financial performance (Wang et al., 2018; Li, Wang, et al., 2022; Neely, 2008; Li, Pournader, et al., 2022; Queiroz et al., 2020). A growing body of empirical research reports the existence of the “service paradox,” whereby firms fail to obtain expected profits despite providing services (Neely, 2008; Huang et al., 2022; Crozet & Milet, 2017; Xing et al., 2023; Queiroz et al., 2020; Lee et al., 2016). Earlier research relied on limited measures of servitization, such as profit, sales, and stock price (Calabrese et al., 2019; Faramarzi et al., 2024). Most existing research has measured servitization

using a single indicator—the share of service revenue. However, this measure may structurally combine low-margin distribution and sales activities with relatively high-profit business activities that leverage specialized capabilities and assets (Calabrese et al., 2019).

Proposed Approach and Contribution

This study examines how the composition of service revenues is associated with firm performance by disaggregating servitization into distinct business domains. Using revenue item codes from the Ministry of Economy, Trade and Industry's (METI) *Basic Survey of Japanese Business Structure and Activities*, we distinguish between two types of services: “distribution- and sales-oriented services” (0533), such as wholesale and retail activities, and “value-added services” (0534 and 0535) characterized by higher levels of specialization. By employing long-term panel data covering all industries in Japan from fiscal year 2011 to fiscal year 2024, the study provides updated evidence not limited to a particular sector. This research's objective is to empirically identify how servitization's impact on firms' operating profit margins differs depending on the type of service activities involved. The remainder of this paper is organized as follows. Section 2 presents a literature review, Section 3 describes the research questions and hypothesis, Section 4 outlines the data and methodology, Section 5 presents the results of the multiple regression analyses, Section 6 presents the discussion, and Section 7 presents the conclusion.

2. Literature Review

Servitization and Financial Performance: The Service Paradox

Empirical research on the impact of servitization on financial performance reveals mixed results, reporting positive, negative, and nonlinear relationships (Neely, 2008; Huang et al., 2022; Crozet & Milet, 2017; Xing et al., 2023; Queiroz et al., 2020; Lee et al., 2016). For example, a meta-analysis identifies an overall significant positive association, suggesting that the magnitude and direction of the effect depend strongly on the type of services offered as well as the firm's context (Wang et al., 2018). Using data from more than 10,000 firms, Neely (2008) shows that although servitized firms tend to have higher sales, they often generate lower profit margins than “pure” product firms due to increased labor costs and operating expenses. This finding implies that expanding the scope of service provision can raise managerial complexity, offsetting potential revenue gains.

The Nature of Service Revenues and Structural Profitability

An increasing number of studies focus on the content and “quality” of service revenues which are key determinants of profitability. Prior research indicates that advanced services, namely those supporting customers' broader activities, yield stronger performance improvements than basic product-support services (Shou & Wang, 2018). Additionally, Zhang and Liu (2023) empirically demonstrate that “embedded services”—services closely integrated into products can improve performance; conversely, “hybrid services”—those unrelated to the product may disperse resources and negatively affect performance. These results suggest that the efficiency with which firms can appropriate value differs fundamentally depending on the nature of the business activities involved (Liu & Zhang, 2023).

Positioning of This Study: Disaggregated Business Segments in Japanese Firms

While much of the debate on servitization and profitability relies on firm-level data, data availability has often constrained empirical research on Japanese firms. Many Japanese companies do not continuously disclose detailed segment-level revenue data, limiting the scope of prior analyses (Gemba, 2015). However, Japan provides large-scale official statistics—such as the Ministry of Economy, Trade and Industry’s *Basic Survey of Japanese Business Structure and Activities*. These surveys capture diversification (segment-level sales) across both large enterprises and small-to-medium-sized firms. By applying for academic use and analyzing this microdata, researchers can examine, at scale, how firms’ detailed business composition relates to profitability. Moreover, decomposing revenues in accordance with these public business classifications enables a clear distinction between activities close to distribution and sales (e.g., wholesale and retail) and knowledge-intensive, high-value-added activities (e.g., information and communications, software, R&D, and professional services). This approach helps researchers empirically identify which types of servitization (i.e., diversification into service domains) are more likely to translate into profitability. By leveraging fine-grained data grounded in official business classifications, this study clarifies how different revenue sources contribute to profitability and provides empirical evidence toward resolving the service paradox.

3. Research Question and Hypotheses

Research Question

Drawing on prior research and descriptive evidence, this study addresses the following research question:

RQ: Is the association between servitization and operating profit margin among Japanese firms contingent on the structural characteristics of the business domains into which firms expand? More specifically, does profitability differ between expansion into distribution- and sales-oriented services and expansion into more value-added, knowledge-intensive service activities?

Hypotheses Development

Prior research suggests that servitization does not affect profitability uniformly. Neely (2008) shows that servitized manufacturers may achieve higher sales yet lower profits as a percentage of sales, partly because service expansion can entail additional labor, working-capital requirements, and investment burdens. His typology also treats retail and distribution as downstream, integration-oriented forms of servitization. Complementing this view, Mathieu (2001) distinguishes between services that support the supplier's product (SSP), which tend to be more standardized and less customized, and services that support the client's action (SSC), which tend to be more relational and more highly customized. Building on these distinctions, this study argues that the profitability implications of servitization should differ systematically across service domains.

Hypothesis 1: A higher revenue share of distribution- and sales-oriented services (0533) is expected to

be negatively associated with a firm's overall operating profit margin.

Activities classified under 0533 are close to downstream, product-supporting services. Because these activities are relatively standardized, exposed to price competition, and often require parallel expansion of physical distribution, sales operations, and frontline personnel, revenue growth in this domain may be accompanied by rising operating costs and limited scalability. As a result, expansion of 0533 is less likely to translate into higher firm-wide margins and is expected to be negatively associated with operating profit margin.

Hypothesis 2: A higher revenue share of service business and other business activities (0534 and 0535) is expected to be positively associated with a firm's overall operating profit margin.

By contrast, activities classified under 0534 and 0535 are closer to client-supporting and knowledge-intensive services. SSC-type services require a closer relationship with customers, greater customization, and stronger reliance on skilled personnel. Relatedly, Cusumano et al. (2015) distinguish adapting services and customer-specific solutions from more standardized smoothing services, emphasizing the role of specialized knowledge and customer-specific use contexts. Such services can deepen customer relationships, support differentiation, and strengthen value capture. Prior work also suggests that customer proximity and the accumulation of service capabilities can improve profitability when firms are able to translate service investments into scale and learning effects. Therefore, expansion into 0534 and 0535 is expected to be positively associated with operating profit margin.

4. Methods

Data Source and Sample Construction

The empirical analysis uses firm-level microdata from the Ministry of Economy, Trade and Industry's *Basic Survey of Japanese Business Structure and Activities*. This official survey is designed to capture the structure and activities of Japanese firms on a nationwide basis and covers firms with 50 or more employees and paid-in capital of at least JPY 30 million. The study period spans fiscal years 2011–2024. After combining the 14 annual files and conducting basic cleaning and duplicate checks at the firm-year level, the pooled dataset contains 432,305 firm-year observations. This large-scale panel provides substantially broader coverage than prior questionnaire-based studies and allows us to examine the association between servitization and profitability across a wide range of Japanese firms.

Variable Definitions and Measurement

The dependent variable is operating profit margin, measured as operating profit divided by total sales.

Servitization is operationalized using sales item codes from the METI survey. Specifically, we construct three measures:

1. Servitization (broad): the combined revenue shares of item codes 0533 (distribution- and sales-oriented services), 0534 (service business), and 0535 (other business activities).
2. Servitization (semi-broad): the combined revenue shares of 0534 and 0535.

3. Servitization (core): the revenue share of 0534 alone.

In addition, we estimate a decomposed specification that includes the revenue shares of 0533, 0534, and 0535 separately. All servitization measures are defined as ratios to total sales (K0501). To avoid division by zero, the denominator is bounded below at $1e-9$.

To account for other factors associated with profitability, we include capital intensity, R&D intensity, advertising intensity, and firm size as control variables. Firm size is measured using the survey's categorical firm-size item. All continuous variables used in the regressions, including the dependent variable, servitization ratios, and intensity controls, are winsorized at the 1st and 99th percentiles. In the main specification, missing values for items 0533–0535 are treated as zero. As a robustness check, we re-estimate the models after dropping observations with missing values in any of these three items.

Estimation Strategy

We estimate two sets of models. The baseline models are pooled regressions on the combined 2011–2024 dataset with year fixed effects and heteroskedasticity-robust standard errors. These models provide a benchmark for comparing alternative servitization measures while accounting for common macro shocks across years.

Our main specification is a two-way fixed-effects model with firm fixed effects and year fixed effects, estimated with firm-clustered robust standard errors. In these models, all explanatory variables are lagged by one year. The lag is constructed as a strict $t-1$ lag: a lagged value is retained only when the immediately preceding year is observed for the same firm. If a firm is not observed in the previous

year, the lagged value is treated as missing and the observation is excluded from the fixed-effects estimation. This procedure avoids conflating a true one-year lag with a “previous observation” lag when panel years are non-consecutive.

Throughout the analysis, coefficients are interpreted as associations rather than definitive causal effects. The baseline models capture broad conditional associations, whereas the fixed-effects models provide a more demanding specification by absorbing time-invariant firm heterogeneity, controlling for year-specific shocks, and imposing a one-year temporal ordering on the explanatory variables. This modeling strategy is consistent with the panel structure of the data and with prior servitization research that uses fixed-effects panel designs to address unobserved heterogeneity.

Robustness Checks

We conduct two robustness checks. First, we estimate the models under two alternative treatments of missing service revenue items: missing = zero and missing = drop. Second, for descriptive comparison, we also estimate year-by-year OLS models using the same winsorization rules. These yearly estimates are treated as supplementary rather than as the main identification strategy.

Replicability

The analysis is based on explicitly defined revenue item codes, clearly specified variable construction rules, fixed winsorization thresholds, a stated denominator adjustment, and transparent missing-data treatments. These procedures make the empirical design replicable for researchers with access to the same official microdata.

5. Results

Table 1 reports the main regression results. Panel A presents the baseline pooled models with year fixed effects, while Panel B presents the two-way fixed-effects models with strict one-period lags and firm-clustered robust standard errors. Across both panels, we estimate four specifications to compare alternative ways of measuring servitization. Model 1 uses the broad servitization measure (0533 + 0534 + 0535), Model 2 uses the semi-broad measure (0534 + 0535), Model 3 uses the core service business measure (0534 only), and Model 4 includes 0533, 0534, and 0535 separately. Table 2 reports robustness checks based on alternative treatments of missing values in the service-revenue items.

In the baseline pooled models shown in Table 1, Panel A, the results differ markedly across service categories. Broad servitization is negatively associated with operating profit margin (coefficient = -0.002, $p < 0.001$), whereas semi-broad servitization is positively associated with profitability (coefficient = 0.027, $p < 0.001$). The coefficient for the core service business measure is also positive and statistically significant (coefficient = 0.017, $p < 0.001$). When the three components are entered separately in Model 4, the revenue share of wholesale and retail activities (0533) is negatively associated with operating profit margin (coefficient = -0.021, $p < 0.001$), whereas service business (0534) and other business activities (0535) are both positively associated with profitability (coefficients = 0.014 and 0.024, respectively; both $p < 0.001$). These baseline results indicate that aggregating heterogeneous service activities into a single measure can obscure important differences

in their profitability implications.

The more demanding fixed-effects results in Table 1, Panel B, refine this picture. Once firm fixed effects, year fixed effects, and strict $t-1$ lags are introduced, the coefficient on broad servitization becomes statistically insignificant (coefficient = 0.000). By contrast, the positive association for semi-broad servitization remains statistically significant (coefficient = 0.012, $p < 0.001$), and the coefficient for core service business also remains positive and significant (coefficient = 0.007, $p < 0.01$). In the decomposed specification, service business (0534) and other business activities (0535) continue to show positive associations with operating profit margin (coefficients = 0.011 and 0.010, respectively; both $p < 0.001$), whereas the coefficient on 0533 is negative but not statistically significant (coefficient = -0.003). Thus, the fixed-effects results suggest that the positive association between profitability and higher-value service activities is more robust than the negative association between profitability and downstream distribution- and sales-oriented activities. Although the estimated coefficients are modest in magnitude, they are economically interpretable. For example, in the fixed-effects specification, a 10 percentage-point increase in the share of 0534 + 0535 is associated with an approximately 0.12 percentage-point increase in operating profit margin, while the corresponding figure for 0534 alone is about 0.07 percentage points.

Table 2 examines whether these findings are sensitive to the treatment of missing values in the service-revenue items. Panel A reproduces the fixed-effects results under the main coding rule in which missing values are treated as zero. Panel B reports estimates after dropping all rows with missing

values in 0533–0535. The main substantive pattern remains broadly similar. Under the missing = drop specification, semi-broad servitization remains positively associated with profitability (coefficient = 0.017, $p < 0.05$), and the core service business measure also remains positive (coefficient = 0.016, $p < 0.05$). In the decomposed model, service business (0534) remains positively associated with operating profit margin (coefficient = 0.022, $p < 0.05$), while 0535 continues to show a positive coefficient (0.011), although statistical significance is weaker. By contrast, 0533 is approximately zero and remains statistically insignificant. Taken together, these robustness checks indicate that the positive association between profitability and 0534—and, more broadly, the 0534 + 0535 grouping—is not driven solely by the main missing-value treatment.

Overall, the results suggest that the profitability implications of servitization depend less on the overall extent of service revenue than on the composition of that revenue. In the baseline specifications, the broad servitization measure combines activities with opposing associations and therefore yields a weakly negative coefficient. Once service revenues are disaggregated, higher-value and more knowledge-intensive activities—especially 0534, and to a lesser extent 0535—show consistently positive associations with operating profit margin. By contrast, the downstream distribution- and sales-oriented category (0533) does not exhibit a robust positive relationship with profitability and is negative only in the baseline pooled models. These findings support the view that revenue mix, rather than service intensity alone, is central to understanding the performance consequences of servitization among Japanese firms.

6. Discussion

The results suggest that the profitability implications of servitization depend less on the overall share of service revenues than on the composition of those revenues across business domains. In the baseline pooled models, the broad servitization measure is negatively associated with operating profit margin, whereas the semi-broad and core measures are positively associated with profitability. In the decomposed baseline specification, 0533 is negatively associated with profitability, while 0534 and 0535 are both positive. However, the more demanding fixed-effects models with strict one-period lags refine this picture. Once firm fixed effects, year fixed effects, and lagged explanatory variables are introduced, the coefficient on broad servitization becomes insignificant, while the positive coefficients on 0534 + 0535 and on 0534 alone remain. In the decomposed fixed-effects specification, 0534 and 0535 continue to show positive associations with profitability, whereas 0533 is no longer statistically significant. Taken together, these findings indicate that the positive association between profitability and higher-value service activities is more robust than the negative association between profitability

and downstream distribution- and sales-oriented activities.

One useful way to interpret these differences is to distinguish between product-supporting and client-supporting services. Wholesale and retail services (0533) can be understood as being closer to Mathieu's (2001) notion of services supporting the supplier's product (SSP). SSPs are typically directed at the product itself, involve lower levels of relational intensity and customization, and are more easily standardized. In addition, activities involving physical distribution and sales operations often require continuing investments in personnel, sites, and operating processes, making cost expansion more likely as revenue expands. Under such conditions, scaling up this domain does not necessarily translate into higher profit margins. In our results, 0533 is negatively associated with profitability in the baseline pooled models, but this negative association is not robust in the fixed-effects specifications. Accordingly, rather than concluding that 0533 is uniformly unprofitable, a more appropriate interpretation is that this domain may offer limited scope for margin improvement because of standardization, price competition, and expansion costs. This interpretation is consistent with Mathieu's characterization of SSPs and with Visnjic Kastalli and Van Looy's (2013) argument that profitability depends on whether service investments can be translated into sufficient economies of scale.

By contrast, information, communications, and specialized service activities (0534/0535) are closer to Mathieu's services supporting the client's action (SSC). SSCs are characterized by closer customer relationships, greater customization, and a stronger reliance on skilled personnel. These domains also

share features with the “adapting services” and customer-specific solutions discussed by Cusumano, Kahl, and Suarez (2015), in that they do not merely complement the product in a standardized manner but extend product value through customer-specific use contexts and operational integration. This makes 0534/0535 more conducive to knowledge accumulation, relational continuity, and differentiated value capture. Our results are broadly consistent with this interpretation: 0534 remains positively associated with profitability across specifications, while 0535 also shows a positive direction, although its statistical strength is somewhat more sensitive to specification. Overall, the evidence suggests that shifting toward more knowledge-intensive and client-supporting service domains is more closely aligned with improvements in operating profit margin.

These differences can also be interpreted through the lens of industry profitability and competitive structure. Downstream distribution- and sales-oriented activities such as those captured by 0533 are closer to domains in which offerings are relatively standardized, price competition is more intense, and margin expansion is constrained by the need to scale physical operations and frontline activities together with revenue. This interpretation is consistent with Neely’s discussion of downstream and integration-oriented forms of servitization and with Mathieu’s characterization of product-supporting services as more standardized and less customized. By contrast, more knowledge-intensive service domains such as 0534 and parts of 0535 are closer to activities in which profitability depends less on volume alone and more on differentiation, specialized expertise, customer-specific adaptation, and the ability to appropriate value from relational and informational advantages. This reading is also

consistent with prior work emphasizing customer proximity, customization, and the need to translate service investments into scale and learning effects in order to sustain profitability. From this perspective, the present findings suggest that the servitization–profitability relationship is shaped not simply by the overall presence of services, but by the competitive and value-capture structures of the service domains into which firms expand.

These findings also offer a more nuanced interpretation of the service paradox. Prior research has often emphasized that servitization can reduce profitability because additional services involve higher labor costs, working-capital requirements, and difficulties in recouping investments. Our results suggest that this paradox should not be interpreted as a uniform consequence of “more services.” Rather, it appears to depend on the specific service domains into which firms expand. The weakly negative coefficient on the broad servitization measure in the baseline models may reflect the fact that low-margin downstream activities and higher-value knowledge-intensive activities are combined within a single aggregate indicator. Once this composite measure is disaggregated, the opposing associations become visible. In this sense, the service paradox may arise not from servitization per se, but from the particular mix of service activities that firms adopt.

The study also contributes to the measurement debate in the servitization literature. Calabrese et al. (2019) argue that inconsistent operationalizations make it difficult to compare findings across studies. Our results support this concern. When service revenues are aggregated into a single broad measure, the estimated association with profitability is weakly negative or insignificant depending on

specification. When the same revenues are disaggregated into 0533, 0534, and 0535, much clearer differences emerge. This suggests that measurement heterogeneity is not merely a technical issue but a substantive reason why prior studies have reported mixed findings. By using official revenue item codes to distinguish among structurally different service activities, this study shows that the composition of service revenues matters at least as much as their total share.

This study also contributes to Japanese business research by providing updated evidence on the servitization–profitability relationship using official Japanese microdata covering 2011–2024. Prior studies (Gemba, 2015) have already examined servitization and profitability in Japanese firms, particularly in manufacturing, but they rely on earlier periods and different empirical designs. By contrast, the present study uses a longer and more recent panel and examines servitization not only as a strategic orientation but also as the composition of service revenues. In doing so, it shows that, in contemporary Japanese firms, the profitability implications of servitization are not uniform but vary substantially across service domains. This does not necessarily imply that Japanese firms follow a wholly unique business model. Rather, it suggests that the Japanese context, together with the availability of detailed official microdata, makes revenue composition a particularly informative lens for understanding the servitization–profitability relationship.

From a managerial perspective, the results imply that firms should not treat servitization as a single generic growth strategy. Simply increasing the share of service revenues does not guarantee higher profitability. Rather, managers need to consider which service domains are most compatible with their

capabilities, customer relationships, and value-capture opportunities. The more robust positive associations observed for 0534—and, more broadly, for the 0534 + 0535 grouping—suggest that profitability is more likely to improve when firms expand into service domains that rely on specialized expertise, information, and closer interaction with customers. By contrast, expansion into downstream distribution- and sales-oriented activities may increase sales volume without necessarily improving margins. The strategic challenge, therefore, is not merely to servitize, but to servitize in domains where knowledge, customization, and customer integration can be translated into sustainable value capture.

7. Conclusion

Summary of Key Findings

Using a large-scale panel dataset covering Japanese firms across multiple industries, this study examined how the composition of servitization is associated with operating profit margin. The results show that the profitability implications of servitization differ across service domains. In the baseline pooled models, the broad servitization measure is negatively associated with operating profit margin, while the semi-broad and core measures are positively associated with profitability. Once firm fixed effects, year fixed effects, and strict one-period lags are introduced, the broad measure becomes insignificant, whereas the positive associations for 0534 and for the broader 0534 + 0535 grouping

remain. In the decomposed models, 0534 shows the most robust positive association with profitability, while 0535 also points in a positive direction, although its statistical strength is somewhat more sensitive to specification. By contrast, 0533 is negative only in the baseline models and does not remain statistically significant in the fixed-effects specifications.

These findings suggest that the performance implications of servitization depend less on the overall share of service revenues than on the composition of those revenues. In other words, the key issue is not simply whether firms servitize, but where they servitize. More knowledge-intensive and client-supporting service activities appear to be more closely aligned with higher operating profitability than downstream distribution- and sales-oriented activities. This study therefore contributes to the servitization literature by showing that disaggregating service revenues using official business item codes helps clarify why prior studies have reported mixed findings on the servitization–performance relationship.

Limitations and Directions for Future Research

This study has several limitations. First, although the fixed-effects models with lagged explanatory variables provide a more demanding specification than pooled regressions, the analysis remains observational and does not establish definitive causal effects. Second, while the use of official survey categories improves comparability and scale, these categories do not fully capture the strategic intent or organizational design behind service expansion. For example, they do not directly reveal whether a service activity is deployed as a standardized downstream support function, a customer-specific

solution, or part of a broader digital business model. Third, the positive association for 0535 is less stable across specifications than that for 0534, suggesting that additional work is needed to unpack heterogeneity within information- and communication-related activities.

Future research could extend this analysis in several directions. One promising avenue would be to examine more directly how digital technologies, such as AI, cloud-based systems, and data-driven monitoring, reshape the profitability of different service domains. Another would be to investigate how organizational capabilities—such as service sales capabilities, customer integration, and knowledge management—mediate the relationship between service composition and profitability. Finally, combining large-scale panel evidence with case-based analysis would help clarify the mechanisms through which firms move from lower-margin service domains toward more profitable, knowledge-intensive forms of servitization.

Appendices

Official label in METI	
Code	Applicable classification numbers based on METI materials
survey	
Wholesale, retail,	
0533 accommodation, and	Wholesale (511–559), retail (570–610), accommodation (750), and food
food service sales	services (760, 766, 770)
Service business	
0534	Service industries (702–710, 726–746, 781–809, 880–929)
income	
	Information and communications (371–419), finance and insurance
	(621, 643), medical and welfare (830), education and learning support
0535 Other business income (811, 824), agriculture/forestry/fisheries (010–030), construction (060),	
	transport and postal services (440–480), real estate (680–693), and
	compound services (860, 870)

Note: Official labels are taken from the 2024 Basic Survey of Japanese Business Structure and

Activities questionnaire. Applicable classification numbers are based on the METI survey form and

instructions. In the discussion, 0533 is interpreted as closer to downstream, product-supporting

services, whereas 0534 and 0535 are interpreted as closer to more client-supporting and knowledge-

intensive service domains. These interpretations are analytical categories used in this study and are not official METI definitions.

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Table 1. Main regression results

Panel A. Baseline pooled model with year fixed effects *Missing service-revenue items treated as zero; HC1 heteroskedasticity-robust SE.*

	Model 1 Broad	Model 2 Semi-broad	Model 3 Core	Model 4 Decomposed
Broad Servitization	-0.002*** (0.000)			
Semi-Broad Servitization		0.027*** (0.000)		
Core Service Business			0.017*** (0.000)	
Wholesale & Retail (0533)				-0.021*** (0.000)
Service Business (0534)				0.014*** (0.000)
Other Business (0535)				0.024*** (0.000)
Capital Intensity	0.050*** (0.003)	0.054*** (0.003)	0.048*** (0.003)	0.031*** (0.003)
R&D Intensity	0.215*** (0.010)	0.273*** (0.009)	0.250*** (0.009)	0.144*** (0.010)
Advertising Intensity	0.013 (0.011)	-0.085*** (0.011)	-0.024* (0.011)	0.015 (0.011)
Firm Size	0.013*** (0.000)	0.016*** (0.000)	0.014*** (0.000)	0.019*** (0.000)
Observations N	432,305	432,305	432,305	432,305
Adj. R ²	0.030	0.057	0.036	0.074

Entries are coefficients with standard errors in parentheses.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

All ratio variables are measured on a 0–1 scale.

Table 1. Main regression results (continued)

Panel B. Two-way fixed effects with strict t–1 lag *Firm and year fixed effects; firm-clustered robust SE; all explanatory variables lagged one year.*

	Model 1 Broad	Model 2 Semi-broad	Model 3 Core	Model 4 Decomposed
Broad Servitization	0.000 (0.001)			
Semi-Broad Servitization		0.012*** (0.002)		
Core Service Business			0.007** (0.002)	
Wholesale & Retail (0533)				-0.003 (0.001)
Service Business (0534)				0.011*** (0.003)
Other Business (0535)				0.010*** (0.003)
Capital Intensity	-0.048*** (0.003)	-0.048*** (0.003)	-0.048*** (0.003)	-0.048*** (0.003)
R&D Intensity	-0.188*** (0.025)	-0.188*** (0.025)	-0.188*** (0.025)	-0.188*** (0.025)
Advertising Intensity	-0.242*** (0.031)	-0.242*** (0.031)	-0.242*** (0.031)	-0.241*** (0.031)
Firm Size	0.051*** (0.002)	0.051*** (0.002)	0.051*** (0.002)	0.051*** (0.002)
Observations N	340,722	340,722	340,722	340,722
Within Adj. R ²	0.020	0.020	0.020	0.020

Entries are coefficients with standard errors in parentheses.

*** p < 0.001, ** p < 0.01, * p < 0.05.

All ratio variables are measured on a 0–1 scale.

Table 2. Robustness to missing-value treatment (TWFE only)

Panel A. Missing = zero Firm and year fixed effects; firm-clustered robust SE; all explanatory variables lagged one year.

	Model 1 Broad	Model 2 Semi-broad	Model 3 Core	Model 4 Decomposed
Broad Servitization	0.000 (0.001)			
Semi-Broad Servitization		0.012*** (0.002)		
Core Service Business			0.007** (0.002)	
Wholesale & Retail (0533)				-0.003 (0.001)
Service Business (0534)				0.011*** (0.003)
Other Business (0535)				0.010*** (0.003)
Capital Intensity	-0.048*** (0.003)	-0.048*** (0.003)	-0.048*** (0.003)	-0.048*** (0.003)
R&D Intensity	-0.188*** (0.025)	-0.188*** (0.025)	-0.188*** (0.025)	-0.188*** (0.025)
Advertising Intensity	-0.242*** (0.031)	-0.242*** (0.031)	-0.242*** (0.031)	-0.241*** (0.031)
Firm Size	0.051*** (0.002)	0.051*** (0.002)	0.051*** (0.002)	0.051*** (0.002)
Observations N	340,722	340,722	340,722	340,722
Within Adj. R ²	0.020	0.020	0.020	0.020

Entries are coefficients with standard errors in parentheses.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

All ratio variables are measured on a 0–1 scale.

Table 2. Robustness to missing-value treatment (TWFE only, continued)

Panel B. Missing = drop Rows with missing values in 0533–0535 excluded; firm and year fixed effects; firm-clustered robust SE.

	Model 1 Broad	Model 2 Semi-broad	Model 3 Core	Model 4 Decomposed
Broad Servitization	0.008 (0.007)			
Semi-Broad Servitization		0.017* (0.007)		
Core Service Business			0.016* (0.006)	
Wholesale & Retail (0533)				0.000 (0.008)
Service Business (0534)				0.022* (0.009)
Other Business (0535)				0.011 (0.009)
Capital Intensity	-0.035*** (0.009)	-0.036*** (0.009)	-0.036*** (0.009)	-0.036*** (0.009)
R&D Intensity	-0.387* (0.151)	-0.387** (0.149)	-0.387* (0.151)	-0.387** (0.150)
Advertising Intensity	-0.274 (0.157)	-0.273 (0.158)	-0.277 (0.157)	-0.276 (0.158)
Firm Size	0.046*** (0.006)	0.048*** (0.006)	0.047*** (0.006)	0.048*** (0.006)
Observations N	23,176	23,176	23,176	23,176
Within Adj. R ²	0.018	0.019	0.019	0.019

Entries are coefficients with standard errors in parentheses.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

All ratio variables are measured on a 0–1 scale.

Re-Exit Among Immediate-Contributor Hires: A Temporal Process Model of Post-Entry Turnover Decision Making

Mikiko Inoue (University of Tsukuba, Japan)

ABSTRACT

This study examines how experienced mid-career hires recruited as immediate contributors make sense of their post-entry experiences and, through coping and exploration, finalize a decision either to stay or to leave again (re-exit). We define immediate-contributor hires as employees with at least 10 years of work experience and either specialized skills or managerial skills. We conducted semi-structured interviews and iteratively generated and integrated concepts with reference to the Modified Grounded Theory Approach (M-GTA). The analysis yielded 20 concepts organized into three subcategories and five categories (Stages 1–5), capturing a temporal decision-making process that culminates in retention or re-exit. In particular, early experiences including support and recognition from supervisors and the organization, autonomy/discretion and scope of responsibility, and self-efficacy (mastery experience/sense of achievement) were suggested to be associated with later self-reevaluation and reconsideration of conditions, thereby shaping the eventual branching decision. While concept generation showed a certain convergence within the scope of this study, refining branching conditions through comparisons across industries, occupations, and organizational sizes remains a task for future research.

Keyword: Human Resource Management, Organizational Behavior, Immediate-Contributor Hires, Mid-Career Hiring, Re-Exit, Retention, Decision-Making Process, Modified Grounded Theory Approach (M-GTA)

The Impact of Faltering Free Trade Agreements on Foreign Direct Investment Flows from Major East Asian Investor economies to TPP and RCEP Members

Yiping Lien (Tottori University of Environmental Studie, Japan)

ABSTRACT

This study examines how faltering free trade agreements (FTAs) affect foreign direct investment (FDI) flows in the Asia-Pacific region, focusing on the Trans-Pacific Partnership (TPP) and the Regional Comprehensive Economic Partnership (RCEP). While existing studies mainly emphasize the positive effects of FTAs after their implementation, limited attention has been paid to periods characterized by stalled negotiations, major member withdrawals, and institutional uncertainty. Using panel data from 2000 to 2020, this study analyzes FDI flows from three major East Asian investor economies—Japan, China, and Taiwan—to two host economies, Malaysia and Vietnam, both members of TPP and RCEP. Multiple regression analyses are employed to assess the effects of economic fundamentals and FTA-related developments on FDI. The results reveal heterogeneous impacts across investor economies. China's outward FDI is primarily driven by domestic economic growth, with TPP-related developments accelerating investment into Vietnam. Taiwan's FDI is more sensitive to tariff conditions and RCEP-related dynamics, while no significant effects of TPP or RCEP are identified for Japan. Overall, the findings indicate that the impact of faltering FTAs on FDI is not uniform across economies, suggesting the need for future research to examine firm-level mechanisms underlying investment responses to institutional uncertainty.

Keyword: Economics, Management, Strategy, Economics, Management, Strategy, Free Trade Agreements (Ftas), Foreign Direct Investment (FDI), Asia-Pacific Region.

1. Introduction¹

In the Asia-Pacific region, numerous free trade agreements (FTAs) and economic partnership agreements (EPAs)² have been negotiated over the past two decades, and the number of agreements that have been signed and ratified has increased substantially. These agreements have promoted the liberalization and facilitation of trade and investment by reducing tariff barriers, harmonizing regulations, and strengthening regional economic integration. For instance, in 2016, twelve economies—including the United States and Japan—signed the Trans-Pacific Partnership (TPP)³ with the objective of lowering tariff rates, eliminating non-tariff barriers, and establishing high-standard trade and investment rules among member economies. Similarly, in 2020, fifteen economies—including Japan, China, and the Association of Southeast Asian Nations (ASEAN)—signed the Regional Comprehensive Economic Partnership (RCEP) to enhance regional economic cooperation and strengthen their collective position in the global economy.

Trade and investment liberalization under these regional agreements has encouraged the overseas expansion of multinational corporations (MNCs) and facilitated the internationalization of production networks, thereby extending global supply chains across regions. However, the momentum toward deeper integration has not been linear. In 2017, during President Donald Trump's first term, the United States announced its withdrawal from the TPP. This was followed by the escalation of U.S.–China trade tensions in 2018. Moreover, the future trajectory of RCEP remains uncertain, as the agreement was signed in 2020 amid intensifying the U.S.–China trade war and the simultaneous outbreak of the COVID-19 pandemic, both of which have substantially increased uncertainty in the global economic environment.

Against this backdrop, this study focuses on two major regional FTAs—TPP and RCEP—and empirically examines how faltering FTAs affect FDI flows in the Asia-Pacific region. While existing studies have largely emphasized the positive effects of FTAs on trade and investment following their conclusion, less attention has been paid to periods characterized by stalled negotiations, major member withdrawals, and heightened uncertainty. By addressing this gap, this study seeks to contribute to the

¹ This work was supported by JSPS KAKENHI Grant Number 25K05339.

² FTA (free trade agreement) and EPA (economic partnership agreement) are often used interchangeably, but their definitions are slightly different. FTA aims to reduce or eliminate tariffs and/or barriers on trade in goods and services between specific countries or regions. Yet, EPA aims to strengthen economic relations by liberalizing and facilitating the movement of people, money, information etc. including reducing and eliminating tariffs on trade in goods and services (Compiled from JETRO “EPA Utilization Manual”). This paper will use FTA when explaining FTAs or EPAs such as TPP and RCEP.

³ Following the U.S. withdrawal, the agreement was renamed the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP, also known as TPP11), which is hereafter referred to as the TPP.

literature on international business and regional economic integration.

The remainder of this paper is organized as follows. Section 2 reviews the relevant literature on FTAs and FDI. Section 3 outlines the development of TPP and RCEP, including their negotiation processes, signatures, ratifications, and the withdrawal of major member economies. Section 4 examines trends in outward FDI from major East Asian investor economies—Japan, China, and Taiwan—as well as inward FDI to TPP and RCEP member economies that serve as potential host economies. Section 5 presents the analytical framework and describes the data sources. Section 6 reports and discusses the empirical results, and Section 7 concludes the paper.

2. Literature Review

Since the beginning of 21st century, bilateral and multilateral FTAs have been actively negotiated, and the number of agreements signed and entering into force has increased substantially. FTAs aim to reduce tariffs and facilitate the movement of capital and people across economies. Previous studies have also emphasized that domestic policy reforms play an important role in enabling economies to participate in FTAs. (Aswicahyono et al., 2001; Austria, 2003).

2.1 The economic effects of FTAs

There are numerous studies examining the economic effects of FTAs, including their impacts on gross domestic product (GDP), trade, and investment. Using a computable general equilibrium (CGE) model. Itakura (2008) demonstrates that FTAs in East Asia significantly affect logistics and transportation activities in Japan. His findings indicate that East Asian FTAs not only contribute positively to Japan's GDP growth, but also enhance exports and imports and stimulate investment.

In a subsequent study, Itakura (2012) applies a CGE framework to analyze the economic effects of tariff reductions and the liberalization of trade in services under the TPP. The results suggest that Japan's participation in the TPP would positively affect real GDP, exports, and imports, while also reducing barriers to trade in services.

Moreover, Son et al. (2013) examine the impact of the Korea–ASEAN FTA on trade using panel data for the period 1997–2011, covering Korea and six ASEAN member economies—Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam. Their findings lead to two policy recommendations for the Korean government: first, to maximize the benefits of FTAs in accessing foreign markets; and second, to strengthen domestic institutional compliance with World Trade Organization (WTO) and FTA-related regulations concerning goods and services.

2.2 The impact of FTAs and Investment Agreements on FDI

Recent studies have also examined the relationship between trade and investment agreements and outward FDI.

Jen (2015) analyzes the determinants of Japanese FDI flows to ASEAN economies, with particular attention to the effects of Economic Partnership Agreements (EPAs) signed between Japan and individual ASEAN member economies, as well as the ASEAN–Japan Comprehensive Economic Partnership (AJCEP). The study finds that AJCEP exerts a positive effect on Japan’s FDI to ASEAN across all industries, whereas bilateral EPAs significantly promote FDI only in the manufacturing sector.

Using firm-level data, Urata and Baek (2023) find that international investment agreements promote Japanese outward FDI by reducing investment uncertainty and improving institutional conditions. Similarly, Li et al. (2024) argue that the quality of bilateral investment treaties affects outward FDI decisions. These studies suggest that institutional arrangements embedded in FTAs and investment agreements may influence MNCs’ investment behavior.

Overall, existing studies indicate that FTAs play an important role in promoting economic growth and facilitating the international movement of goods, labor, and capital. However, limited attention has been paid to the effects of faltering FTAs and institutional uncertainty on FDI flows. Therefore, this study focuses on how faltering FTAs—such as prolonged negotiations, major member withdrawals, and increased uncertainty—affect FDI flows in the Asia-Pacific region.

3. Major Free Trade Agreements in the Asia-Pacific Region

3.1 TPP and the Aftermath of the U.S. Withdrawal

The TPP was initiated in 2005 by four countries, Singapore, Brunei, Chile, and New Zealand, with negotiations formally beginning in 2006. Following the participation of the United States in 2010, additional economies—including Australia, Vietnam, Peru, Malaysia, Canada, Mexico, and Japan—joined, transforming the TPP into a mega-regional FTA spanning East Asia, North America, and Oceania.

Negotiations were prolonged due to disagreements over issues such as intellectual property rights, investor–state dispute settlement (ISDS)⁴, and environmental standards (Kumagai, 2016; Suto, 2017; Uchida, 2017). An agreement in principle was reached in 2015, and the TPP was formally signed in

⁴ Investor state dispute settlement (ISDS) is an arrangement that allows investors or companies to sue the host economy in an international arbitration institution when they are disadvantaged by the host economy’s unfair discriminatory policies.

February 2016. However, the United States withdrew from the agreement in 2017, introducing significant uncertainty for member economies and MNCs that had anticipated expanded trade and investment opportunities.

In response, the remaining eleven economies signed the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) in 2018, suspending certain provisions, some related to investment and trade in services, while maintaining the overall framework⁵. Despite the reduced economic scale following the U.S. withdrawal, the CPTPP continues to promote high levels of trade and investment liberalization, substantial tariff elimination commitments.

Given its high-standard provisions, including investment-related disciplines that reduce uncertainty for firms, the TPP (CPTPP) is expected to influence FDI decisions by improving the institutional environment for cross-border investment. However, ongoing uncertainties regarding membership expansion and the absence of the United States suggest that its effects may be uneven across economies.

3.2 Negotiation Process and Conclusion of RCEP

The Regional Comprehensive Economic Partnership (RCEP) emerged from competing regional initiatives led by China (ASEAN+3) and Japan (ASEAN+6), which were later integrated under an ASEAN-led framework (Sukegawa, 2016). Formal negotiations began in 2013 among sixteen economies but progressed slowly due to differences in national interests, particularly between Japan and China, and India's reluctance to commit to trade liberalization.

RCEP was eventually signed in November 2020 by fifteen economies, following India's withdrawal in 2019, and entered into force in 2022 after sufficient ratifications. The agreement covers approximately 30 percent of global GDP and trade, making it one of the largest FTAs in the world.

Compared with the TPP, however, RCEP adopts a more gradual and flexible approach to liberalization. Tariff reductions are less extensive, and the agreement lacks high-standard provisions in areas such as labor and environmental regulation. As a result, while RCEP contributes to regional economic integration, its direct impact on investment conditions may be more limited, particularly in the short term.

3.3 Comparison between TPP and RCEP

Table 1 compares the economic scale and liberalization commitments of TPP and RCEP. While

⁵ Japan External Trade Organization (JETRO). "TPP11 Explanation: Regarding the use of TPP11 preferential tariffs."

RCEP encompasses a larger share of intra-regional population, GDP, and exports, the TPP provides a higher degree of trade and investment liberalization, including faster and more comprehensive tariff elimination in industrial products.

These differences imply distinct channels through which the two agreements may affect FDI. The TPP's high-standard rules and investment-related provisions are likely to reduce uncertainty and transaction costs for MNCs, thereby encouraging investment. In contrast, the more gradual liberalization under RCEP suggests more modest and delayed effects.

At the same time, both agreements have experienced elements of “faltering,” including the withdrawal or absence of major economies, the suspension of certain provisions, and uncertainties surrounding future membership expansion. These factors may weaken the expected positive effects of FTAs on FDI and contribute to heterogeneous investment responses across economies.

Table 1. Economic scale and trade liberalization commitments under TPP and RCEP

	TPP (11 members)	RCEP (15 members)
Share of intra-regional population in the world total	7% (510 million people)	30% (2,270 million people)
Share of intra-regional GDP in global GDP	13.1% (US\$ 11.2 trillion)	30% (US\$ 25.8 trillion)
Share of intra-regional exports in world trade	15.8% (US\$ 2.9 trillion)	30% (US\$ 5.5 trillion)
Final tariff elimination rate for industrial products (by number of tariff lines)	99.9%	91.5%
Final tariff elimination deadline for industrial products	11th year	21st year

Sources: Compiled from Ministry of Foreign Affairs of Japan; Ministry of Economy, Trade and Industry.

4. The Trend in FDI

4.1 Outward FDI from Major East Asian Investor Economies

Table 2 summarizes outward FDI from major East Asian investor economies, drawing on investment statistics compiled by the United Nations Conference on Trade and Development (UNCTAD). We divide outward FDI over the period 2004–2021 into three six-year stages. The first stage (2004–2009) precedes both the expansion of TPP negotiations and the initiation of RCEP

negotiations; the second stage (2010–2015) follows the expansion of TPP negotiations and coincides with the early phase of RCEP negotiations; and the third stage (2016–2021) corresponds to the period in which TPP and RCEP were concluded but also marked by major disruptions, including the U.S. withdrawal from the TPP, the intensification of the U.S.–China trade war, and the outbreak of the COVID-19 pandemic.

Table 2. Outward Foreign Direct Investment Flows from Major East Asian Investor Economies

	US\$ 100 million, current prices										
	2016	2017	2018	2019	2020	2021	2004–09	2010–15	Growth multiple	2016–21	Growth multiple
							(A)	(B)	(B/A)	(C)	(C/B)
Japan	1,559	1,646	1,450	2,326	957	1,468	4,033	6,893	1.7	9,406	1.4
S. Korea	299	341	382	352	348	608	869	1,685	1.9	2,331	1.4
Taiwan	179	115	181	118	115	101	478	792	1.7	809	1.0
China	1,961	1,583	1,430	1,369	1,537	1,452	1,743	6,079	3.5	9,333	1.5
Hong Kong	597	867	822	532	1,007	875	2,869	5,427	1.9	4,700	0.9

Sources: Compiled from UNCTAD (<https://unctad.org/statistics>). Notes: Data for Taiwan are reported on an asset/liability basis; FDI refers to outward FDI flows.

The annual data on the left-hand side of Table 2 reports annual outward FDI flows from 2016 to 2021. In 2020, as the global spread of COVID-19 became widely recognized in 2020, outward FDI from Japan, South Korea, and Taiwan declined, whereas that from China increased.

The right-hand side of Table 2 compares changes in total outward FDI between the first stage (2004–2009) and the second stage (2010–2015), that is, before and after the expansion of TPP negotiations and the initiation of RCEP negotiations. During this period, total outward FDI increased by 1.7 times in Japan, 1.9 times in South Korea, and 1.7 times in Taiwan. Despite their differing participation statuses in the two major FTAs—Japan participating in both TPP and RCEP, South Korea participating only in RCEP, and Taiwan participating in neither—their outward FDI trends were broadly similar. This suggests that the expansion of FTA negotiations influenced outward FDI not only from member economies but also from non-member economies. Over the same period, China’s total outward FDI increased sharply, from US\$174.3 billion to US\$607.9 billion.

Comparing the second stage (2010–2015), when TPP and RCEP negotiations were ongoing, with the third stage (2016–2021), following the conclusion of both agreements, outward FDI increased by 1.4 times in Japan, 1.4 times in South Korea, and 1.5 times in China, while Taiwan’s outward FDI exhibited little change. Although outward FDI continued to rise in all four economies, the pace of growth slowed relative to the previous stage. Given that TPP and RCEP were concluded in 2016 and 2020, respectively, one might have expected a substantial acceleration of outward FDI from MNCs headquartered in member economies due to improved investment conditions. However, the observed

increase in outward FDI was modest, suggesting that the negative effects of the U.S. withdrawal from the TPP, heightened U.S.–China trade tensions, and the COVID-19 pandemic outweighed the investment-stimulating effects of the agreements’ conclusion.

4.2 Inward FDI of TPP and RCEP Member Economies

This section examines changes in inward FDI to TPP and RCEP members as potential host economies, based on the data in Table 3.

Table 3. Inward Foreign Direct Investment Flows to TPP and RCEP member economies

							US\$ 100 million, current prices				
	2016	2017	2018	2019	2020	2021	2004~09 (A)	2010~15 (B)	Growth multiple (B/A)	2016~21 (C)	Growth multiple (C/B)
TPP											
Australia*	484	461	683	394	167	251	1,209	3,002	2.5	2,441	0.8
Brunei*+	-2	5	5	4	6	2	19	36	1.9	20	0.6
Canada	361	228	377	501	232	597	2,866	2,834	1.0	2,295	0.8
Chile	125	41	103	152	96	127	640	1,319	2.1	645	0.5
Japan*	194	94	100	138	107	247	630	160	0.3	878	5.5
Malaysia*+	113	94	76	78	32	116	320	636	2.0	509	0.8
Mexico	312	341	341	344	279	316	1,522	1,888	1.2	1,934	1.0
N. Z.*	30	27	23	43	38	35	138	117	0.8	196	1.7
Peru	65	65	68	62	-9	59	265	523	2.0	310	0.6
Singapore*+	675	825	739	1,063	754	991	1,505	3,471	2.3	5,048	1.5
Viet Nam*+	126	141	155	161	158	157	301	538	1.8	898	1.7
RCEP											
Cambodia+	25	28	32	37	36	35	37	107	2.9	192	1.8
Indonesia+	39	206	206	239	186	201	363	1,094	3.0	1,076	1.0
Laos+	9	17	14	8	10	11	10	38	3.9	68	1.8
Myanmar+	29	44	29	25	19	21	22	130	5.9	167	1.3
Philippines+	83	103	99	87	68	105	118	214	1.8	545	2.5
Thailand+	35	83	132	48	-18	114	464	599	1.3	363	0.6
China	1,337	1,363	1,383	1,412	1,493	1,810	4,916	7,478	1.5	8,799	1.2
S. Korea	121	179	122	96	88	168	651	549	0.8	774	1.4

Sources: Compiled from UNCTAD (<https://unctad.org/statistics>). Notes: Data for the Philippines from 2010 and Vietnam from 2019 are reported on an **asset/liability basis**; FDI refers to inward FDI flows; negative values in inward FDI flows indicate **net disinvestment**, which may result from profit repatriation, intracompany loan repayments, or the withdrawal of previously invested capital, as defined by UNCTAD; countries are grouped by their membership status in TPP or RCEP as of 2021; * indicates countries that are members of both TPP and RCEP; + indicates ASEAN countries.

In Japan and South Korea, where manufacturing costs are relatively high, the growth of inward FDI slowed from US\$63.0 billion and US\$65.1 billion, respectively, during 2004–2009 to US\$16.0 billion and US\$54.9 billion during 2010–2015, before rebounding to US\$87.8 billion and US\$77.4 billion during 2016–2021. In particular, inward FDI into Japan increased sharply after 2016, when the

TPP was signed. According to JETRO⁶, investment inflows to Japan from Asian economies have grown notably, with many projects concentrated in consumer-oriented sectors, such as sharing and platform-based services.

Turning to economies with relatively low manufacturing costs, inward FDI into China increased by only 1.5 times from the first stage (2004–2009) to the second stage (2010–2015). By contrast, inward FDI in other RCEP member countries—namely Cambodia, Indonesia, Laos, and Myanmar—expanded much more rapidly during the same period, increasing by 2.9 times, 3.0 times, 3.9 times, and 5.9 times, respectively. Similarly, inward FDI in Malaysia and Vietnam, both of which are members of TPP and RCEP, increased by 2.0 times and 1.8 times, respectively. These patterns indicate that ASEAN economies participating in RCEP have emerged as increasingly important destinations for inward FDI. In recent years, ASEAN has attracted substantial investment as multinational MNCs have relocated production activities to mitigate exposure to China-related risks (Kitami, 2021).

However, when comparing the second stage (2010–2015) with the third stage (2016–2021), the growth of inward FDI slowed across most ASEAN economies, with the exception of the Philippines. This pattern suggests that while ASEAN countries have become more important as both production bases and consumer markets, their scale and absorptive capacity remain insufficient to fully substitute for China as a destination for inward FDI.

5. Analytical Framework

This section develops an analytical framework to examine how faltering of major regional FTAs, namely TPP and RCEP, has affected FDI flows among East Asian economies.

5.1 Analytical Model

This study employs an empirical model to examine the determinants of FDI flows among East Asian economies. While the model is inspired by the gravity framework, it does not fully incorporate multilateral resistance terms or fixed effects typically used in standard gravity models. Therefore, the model is referred to as an empirical model rather than a formal gravity model.

The analytical framework assumes that FDI flows increase with the economic size of the investor economy and the market potential of the host economy, while they decrease with transaction costs such as geographical distance. In addition, this study examines whether developments and disruptions in major FTAs, namely TPP and RCEP, influence FDI flows through changes in trade and investment

⁶ JETRO. “Investment in Japan Report 2018.”

conditions.

The baseline empirical specification is expressed as follows:

$$FDI_{ij} = \alpha + GDP_i + YG_j + D_{ij} + L_j + \alpha Y_{ij} + MFN_j + TPP + RCEP \dots\dots (1)$$

Denotes FDI flows from investor economy i to host economy j .

5.2 Definition of Variables

Table 4 summarizes the variables used in the empirical analysis and their respective assumed signs. The dependent variable, FDI_{ij} , represents bilateral FDI flows from investor i to host j . The independent variables are defined as follows:

Table 4. Variables and Expected Signs

	Variables		Expected sign
Dependent variable	FDI_{ij}	FDI from investor i to host economy j	
Independent variables	GDP_i	Real GDP of investor economy	+
	YG_j	GDP growth rate of the host economy	+ / -
	D_{ij}	The geographical distance between the capitals of the two economies	-
	L_j	Labor force in the host economy	+
	αY_{ij}	Difference in GDP per capita between the two economies	+
	MFN_j	Average MFN tariff rates on industrial imports in the host economy	-
	TPP	Dummy variable	
	$RCEP$	Dummy variable	

GDP_i : Real GDP of the investor economy, which captures the investment capacity of MNCs. A positive sign is expected.

YG_j : GDP growth rate of the host economy, reflecting not only market growth potential but also rising wage costs. The expected sign is ambiguous, as high growth may attract FDI in non-manufacturing sectors, while increase costs in manufacturing sectors.

D_{ij} : Geographical distance between the capitals of the two economies, used as a proxy for transaction and information costs. A negative sign is expected.

L_j : Labor force in the host economy, capturing production scale and labor availability. A positive sign is expected.

αY_{ij} : The difference in GDP per capita between the investor and host economies, representing development gaps and vertical FDI motives. A positive sign is expected.

MFN_j : The average MFN tariff rate on industrial imports in the host economy, reflecting import costs faced by foreign affiliates, such as machinery and raw materials. A negative sign is expected.

$TPP/RCEP$: Two dummy variables capturing the progress of TPP and RCEP are included to examine whether these agreements affected the movement of the dependent variable.

5.3 FTAs and Expected Effects on FDI (Hypotheses)

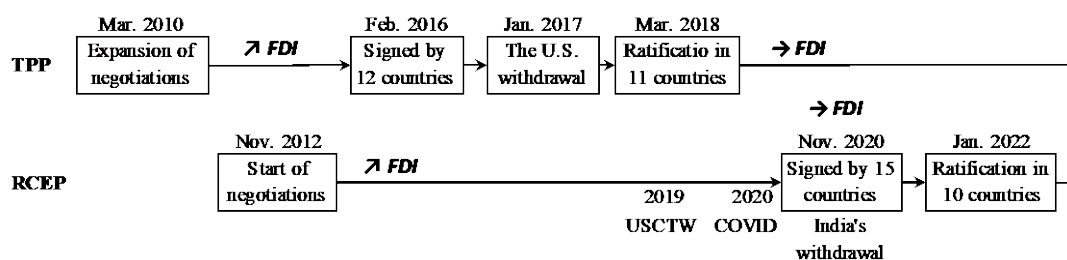
To capture the effects of major regional FTAs, dummy variables are introduced to represent different stages in the negotiation and implementation processes of TPP and RCEP.

FTAs are generally expected to promote FDI by reducing tariff barriers, enhancing market access, and improving institutional transparency. As trade and investment conditions become more favorable, MNCs are likely to expand their overseas investments. Therefore, the expansion of FTA negotiations is expected to stimulate FDI flows.

However, the effects of faltering FTAs on FDI are less straightforward. Although disruptions in FTA processes—such as negotiation delays, major member withdrawals, or heightened geopolitical tensions—may increase institutional uncertainty and potentially discourage new investments, MNCs do not easily withdraw existing investments once they have been established. This is partly due to sunk costs, supply-chain commitments, and long-term strategic considerations. Consequently, faltering FTAs are expected to slow down or stall FDI growth rather than cause an immediate decline.

Unlike most previous studies that focus on the economic effects of the signing or entry into force of FTAs, this study focuses on how faltering FTAs—such as prolonged negotiations, major member withdrawals, and increased uncertainty—affect FDI flows. In particular, the analysis emphasizes institutional uncertainty surrounding FTAs rather than the direct effects of formal implementation. Based on these considerations, we propose the following hypotheses (see Figure 1).

Figure 1. Progress of TPP and RCEP and Expected Changes in FDI (Hypotheses)



Sources: compiled by the author. Notes: USCTW refers the U.S.-China trade war, which has characterized economic tensions between the United States and China since January 2018; $\uparrow$ FDI indicates an expected acceleration of FDI flows, whereas $\rightarrow$ FDI indicates no clear increase in FDI flows.

Hypothesis 1 The expansion of TPP negotiations in 2010 is associated with an increase in FDI.

Hypothesis 2 The initiation of RCEP negotiations in 2012 is associated with an increase in FDI.

Hypothesis 3 The U.S. withdrawal from the TPP in 2017 is associated with a weakening or stagnation of FDI growth.

Hypothesis 4 The escalation of the U.S.–China trade war in 2019 and the COVID-19 pandemic in 2020 are associated with a weakening or stagnation of FDI growth.

In order to examine whether regional FTAs (TPP, RCEP) have affected FDI differently across economies with varying membership status, this study selects three investor economies (*i*): Japan, a member of both TPP and RCEP; Taiwan, which is not a member of either agreement (Lien, 2018); and China, a member of RCEP but not of TPP. In addition, to assess the extent to which FDI by MNCs seeking tariff reductions has been influenced by TPP or RCEP, two host economies (*j*) are selected: Malaysia and Vietnam, both of which participate in the two agreements.

5.4 Data Sources

Since numerous bilateral and regional FTA negotiations became active after 2000, this study conducts a multiple regression analysis using long-term data covering the period from 2000 to 2020.

First, bilateral FDI data from Japan, China, and Taiwan to Malaysia and Vietnam are obtained from the following sources: (1) Japan's FDI data are taken from the "Direct Investment Statistics" of the Japan External Trade Organization (JETRO) up to 2004, and from the "International Investment Position Statistics" of the Bank of Japan from 2005 onward; (2) China's FDI data are obtained from the "Statistical Bulletin of China's Outward Foreign Direct Investment" published by the Ministry of

Commerce of the People's Republic of China (MOFCOM); (3) Taiwan's FDI data are taken from the "Statistical Monthly Bulletin (December 2021)" published by the Department of Investment Review, Ministry of Economic Affairs (MOEA).

Next, data for the independent variables assumed to affect FDI are obtained as follows: (1) Data on real GDP for the investor economies (Japan, China, and Taiwan) and GDP growth rates for the host economies (Malaysia and Vietnam) are compiled from the United Nations Conference on Trade and Development (UNCTAD); (2) Geographical distance data are obtained from "indo.com," measured between the capital cities of the investor economy and the host economy; however, for Vietnam, the distance is measured to Ho Chi Minh City rather than Hanoi, due to the concentration of manufacturing industries such as textiles and garment production; (3) Data on labor force size in the host economies are compiled from the Department of Statistics Malaysia and the General Statistics Office of Vietnam; (4) The income gap between the investor and host economies is calculated using real GDP per capita data from the IMF's World Economic Outlook Database (October 2022 edition); (5) Data on average MFN tariff rates on industrial products in Malaysia and Vietnam are obtained from UNCTAD.

Finally, two dummy variables are constructed to capture the progress of TPP and RCEP negotiations. For the TPP dummy variable, the value is set to 0 prior to the expansion of negotiations in 2010, set to 1 for the period after 2010, and reset to 0 following the U.S. withdrawal from TPP in 2017. For the RCEP dummy variable, the value is set to 0 before the start of negotiations in 2012, set to 1 after 2012, and reset to 0 after the agreement was signed in 2020 amid the COVID-19 pandemic.

6. Analytical Results

In this section, we use the statistical software Stata (Ver. 17) to analyze the factors that affect FDI in three steps. First, prior to conducting multiple regression analysis, we perform a correlation test to assess potential multicollinearity and to determine whether highly correlated variables should be excluded from the set of independent variables specified in equation (1). Second, we conduct multiple regression analysis using the forced-entry method, in which all independent variables are included simultaneously, to estimate their effects on FDI (the dependent variable). Third, we further conduct multiple regression analysis using the stepwise selection method, in which variables are sequentially selected based on a significance level of 10%, to identify statistically significant determinants of FDI and the magnitude of their effects.

6.1 Correlation Matrix

Table 5 shows the correlation coefficients between bilateral FDI flows—from Japan, China, and Taiwan to Malaysia and Vietnam—and the explanatory variables.

Table 5. Correlation Matrix of Variables

	FDI_{ij}	GDP_i	YG_j	D_{ij}	L_j	αY_{ij}	MFN_j	TPP	$RCEP$
FDI_{ij}	1								
GDP_i	0.2579	1							
YG_j	-0.0841	-0.1037	1						
D_{ij}	-0.1108	0.3859	-0.1828	1					
L_j	0.0847	0.1118	-0.4437	0.4458	1				
αY_{ij}	-0.0984	0.6484	0.1582	-0.2768	-0.4325	1			
MFN_j	-0.1813	-0.2231	0.3848	-0.2983	-0.7220	0.2613	1		
TPP	-0.0483	0.1016	0.0907	0.0018	0.1286	-0.0046	-0.4186	1	
$RCEP$	0.3689	0.2552	0.0783	0.0020	0.2453	0.0169	-0.4910	0.4708	1

The first step is to examine the signs of the correlation coefficients between each independent variable and the dependent variable, and to verify whether they are consistent with the expected signs shown in Table 4. The correlation coefficients between GDP_i and L_j (independent variables) and FDI_{ij} (dependent variable) are positive, which is consistent with the expected signs, indicating that economic expansion in the investor economies and an increase in the labor force in the host economies are associated with higher FDI flows. In addition, the correlation coefficients between D_{ij} and MFN_j and FDI_{ij} are negative, also consistent with the expected signs, suggesting that shorter geographical distance and lower MFN average tariff rates on imported industrial products in the host economies are associated with greater FDI inflows. Although the expected sign of YG_j was ambiguous, the correlation coefficient between YG_j and FDI_{ij} in Table 5 is negative, which indicate that FDI from Japan, China, and Taiwan to Malaysia and Vietnam is largely concentrated in manufacturing activities, where investors seek to take advantage of relatively low labor costs in the host economies. Furthermore, although a positive correlation between αY_{ij} and FDI_{ij} was expected, the results in Table 5 show a negative correlation, implying that income or wage differentials between investor and host economies are not necessarily associated with FDI growth.

The second step is to assess the strength of the correlation between each independent variable and the dependent variable. Correlation coefficients range between +1 and -1, where values between ± 0.7 and ± 1.0 indicate strong correlation, ± 0.4 and ± 0.7 indicate relatively strong correlation, ± 0.2 and ± 0.4 indicate weak correlation, and values below ± 0.2 indicate little or no correlation. As shown in Table 5, only GDP_i and $RCEP$ exhibit weak correlations with FDI_{ij} , while the remaining independent variables display little or no correlation with the dependent variable. One possible explanation for the generally weak correlations is that the determinants of FDI differ across investor economies, namely Japan, China, and Taiwan. Accordingly, in the subsequent regression analysis, FDI is estimated separately for each investor economy rather than pooled across all three economies.

The third step is to examine potential multicollinearity among the independent variables. Following the criterion adopted in this study, correlation coefficients equal to or exceeding ± 0.7 are

regarded as indicating potential multicollinearity. As shown in Table 5, the only correlation coefficient that slightly exceeds this threshold is that between L_j and MFN_j (-0.7220). However, given the absence of a clear theoretical relationship between labor force size and the MFN average tariff rates on industrial products in the host economies, both variables are retained in the regression analysis rather than being excluded.

6.2 Multiple Regression Analysis Using the Forced-Entry Method

This subsection evaluates the explanatory power of the regression models estimated using the forced-entry method. The results are summarized in Table 6 and are assessed based on the adjusted coefficient of determination (adjusted R^2). Models are qualitatively classified as having Low, Moderate, or High explanatory power, following the criteria defined in the notes to Table 6.

Table 6. Results of Multiple Regression Using the Forced-Entry Method

Investor (<i>i</i>) → host economies (<i>j</i>)	Adjusted R^2	Explanatory power of the regression model
Japan, China, Taiwan → Malaysia	0.3304	Low
Japan, China, Taiwan → Vietnam	0.1902	Low
Japan → Malaysia and Vietnam	0.2461	Low
China → Malaysia and Vietnam	0.7684	High
Taiwan → Malaysia and Vietnam	0.7167	High
Japan → Malaysia	0.4913	Moderate
Japan → Vietnam	0.4853	Moderate
China → Malaysia	0.6892	High
China → Vietnam	0.9247	High
Taiwan → Malaysia	0.1797	Low
Taiwan → Vietnam	0.5872	High

Notes: Since an analysis of FDI from a single investor economy to a single host economy cannot identify the effect of geographical distance, the variable D_{ij} is omitted in the regressions reported from the sixth row onward. To facilitate interpretation, the explanatory power of each regression model is qualitatively classified based on the adjusted R^2 . Specifically, models with an adjusted R^2 below 0.50 are labeled as having “**Low**” explanatory power; values close to 0.50 are labeled as having “**Moderate**” explanatory power; and values exceeding 0.50 are described as “**High**.” This classification is used solely for descriptive purposes and does not affect the estimation results.

First, four regression models exhibit Low explanatory power, with adjusted R^2 values well below 0.50. These include FDI from Japan, China, and Taiwan to Malaysia (first row), FDI from Japan, China, and Taiwan to Vietnam (second row), FDI from Japan to Malaysia and Vietnam (third row), and FDI from Taiwan to Malaysia (tenth row). The low adjusted R^2 values suggest that these models are unable to adequately explain variations in FDI, and thus they are not suitable for further analysis.

Second, two models—FDI from Japan to Malaysia (sixth row) and FDI from Japan to Vietnam (seventh row)—show adjusted R^2 values close to 0.50 and are therefore classified as having Moderate

explanatory power. Although these models provide some explanatory capacity, subsequent estimation using the stepwise selection method does not substantially improve their adjusted R^2 . Consequently, these results are not discussed further in the subsequent analysis.

Finally, five regression models demonstrate High explanatory power, with adjusted R^2 values exceeding 0.50. These include FDI from China to Malaysia and Vietnam (fourth row), FDI from Taiwan to Malaysia and Vietnam (fifth row), FDI from China to Malaysia (eighth row), FDI from China to Vietnam (ninth row), and FDI from Taiwan to Vietnam (eleventh row). Given their relatively strong explanatory power, these five models are selected for further examination using the stepwise selection method in the next subsection, with the aim of identifying the key determinants of FDI in each case.

6.3 Multiple Regression Analysis Using the Stepwise Selection Method

This section examines the determinants of FDI using the stepwise selection method. Stepwise regression is an automated procedure in which explanatory variables are sequentially added to or removed from the regression model based on a prespecified criterion. In this study, the significance level is set at 10%; variables with significance levels exceeding this threshold are excluded from the regression equations.

The estimation results obtained using the stepwise selection method are reported in Table 7. All five regression models exhibit adjusted R^2 values greater than 0.50, indicating relatively strong explanatory power. The discussion below focuses on the results presented in columns 2 through 6 of Table 7 and examines how each factor affects FDI.

Table 7. Results of Multiple Regression Using the Stepwise Selection Method

Investor (<i>i</i>)	China	Taiwan	China	China	Taiwan
↓	↓	↓	↓	↓	↓
Host economies (<i>j</i>)	Malaysia and Vietnam	Malaysia and Vietnam	Malaysia	Vietnam	Vietnam
Constant	−1781.132 (−4.2) ***	1200.64 (3.13) ***	−854.828 (−3.83) ***	−3620.413 (−4.95) ***	1162.936 (3.88) ***
GDP_i	0.0001919 (9.06) ***	−0.0035807 (−4.38) ***	0.0001597 (6.78) ***	0.001196 (5.45) ***	
YG_j				−82.72634 (−2.24) **	
D_{ij}			—	—	—
L_j					
αY_{ij}	−17990.06 (−1.99) *	55463.53 (8.47) ***		−1981073 (−4.79) ***	
MFN_j	60.47596 (2.37) **	−81.05437 (−4.62) ***			−65.14478 (−3.08) ***
TPP				353.0484 (2.38) **	
$RCEP$		195.507 (2.12) **			349.0321 (2.17) **
Adjusted R^2	0.7876	0.7303	0.7256	0.9347	0.6589
Observations	36	42	18	18	21

Notes: Values in parentheses are t-values. The geographical distance variable (D_{ij}) is omitted from the regression equations for FDI from a single investor economy to a single host economy (columns 4–6), as geographical distance does not vary within these specifications. Blank cells indicate variables that do not meet the 10% significance level and are therefore excluded from the regression results under the stepwise selection method.

*** Significant at 1% level.

** Significant at 5% level.

As shown in column 2 of Table 7, three variables— GDP_i , αY_{ij} and MFN_j —significantly affect FDI from China to Malaysia and Vietnam. The coefficient on GDP_i has the expected positive sign. Specifically, a US\$ 10,000 increase in China's real GDP is associated with an increase of approximately US\$ 2 in FDI to Malaysia and Vietnam. By contrast, the coefficients on αY_{ij} and MFN_j exhibit signs opposite to those initially hypothesized. While it was expected that a larger income gap between investor and host economies would attract more FDI, the negative coefficient on αY_{ij} suggests the opposite. One possible explanation is that China's investment in Malaysia and Vietnam is driven more by market-seeking motives—targeting economies with higher consumption capacity—rather than by cost-reduction considerations. In addition, the positive coefficient on MFN_j implies that higher tariffs on imported industrial products are associated with greater FDI. This result may reflect the formation of local production networks: once firms within the same supply chain co-locate in the host economy, reliance on imported machinery and intermediate goods declines, allowing FDI to expand even in the presence of higher tariffs.

Column 3 reports the results for FDI from Taiwan to Malaysia and Vietnam. Four variables— GDP_i , αY_{ij} , MFN_j and $RCEP$ —are statistically significant. The coefficient on GDP_i is negative, indicating that a US\$ 10,000 increase in Taiwan's real GDP is associated with a decrease of approximately US\$ 35.8 in FDI to Malaysia and Vietnam. The underlying reasons for this pattern are not immediately clear and warrant further investigation, which will be addressed in future interviews with multinational corporations operating in these economies. In contrast, the coefficients on αY_{ij} and MFN_j have the expected signs, suggesting that a larger income gap and lower industrial import tariffs in the host economy attract Taiwanese FDI. The positive and significant coefficient on $RCEP$ further indicates that the agreement has contributed to increased Taiwanese investment in Malaysia and Vietnam.

Column 4 presents the results for FDI from China to Malaysia. In this specification, only GDP_i is statistically significant, with a positive coefficient consistent with theoretical expectations. The estimated coefficient implies that a US\$ 10,000 increase in China's real GDP leads to an increase of approximately US\$ 1.6 in FDI to Malaysia.

Column 5 shows the results for FDI from China to Vietnam. Four variables— GDP_i , YG_j , αY_{ij} , and TPP —are statistically significant. The positive coefficient on GDP_i indicates that a US\$ 10,000 increase in China's real GDP is associated with an increase of approximately US\$ 12 in FDI to Vietnam. The negative coefficient on YG_j suggests that lower economic growth in Vietnam is associated with higher FDI inflows from China, consistent with the view that Chinese multinational enterprises invest in Vietnam to take advantage of relatively low labor costs. The coefficient on αY_{ij} again exhibits a sign opposite to that expected, indicating that FDI increases as the income gap between China and Vietnam narrows. In addition, the positive and significant coefficient on TPP suggests that the expansion of TPP negotiations has accelerated Chinese FDI to Vietnam.

Finally, column 6 reports the results for FDI from Taiwan to Vietnam. Two variables— MFN_j and $RCEP$ —are statistically significant. The positive coefficient on MFN_j indicates that lower industrial import tariffs in Vietnam are associated with increased Taiwanese FDI. Moreover, the positive coefficient on $RCEP$ suggests that the initiation of RCEP negotiations has contributed to the expansion of Taiwanese investment in Vietnam.

7. Conclusion

This study examined the effects of developments in the TPP and the RCEP on FDI from Japan, China, Taiwan to Malaysia and Vietnam.

First, the study reviewed the progress of TPP and RCEP, two major free trade agreements in the Asia-Pacific region. Although member economies actively engaged in

negotiations prior to their signing, the survey highlights several persistent challenges, including the withdrawal of the U.S. from the TPP, India's withdrawal from RCEP, the slow pace of further trade liberalization, and uncertainties arising from the potential expansion of membership.

Second, the study examined changes in outward FDI from Japan, China, and Taiwan and inward FDI to Malaysia and Vietnam. The results indicate that during the period from 2010 to 2015—when TPP negotiations expanded and RCEP negotiations began—FDI tended to flow from economies with relatively high manufacturing costs, such as Japan, South Korea, and Taiwan, to lower-cost economies, including Cambodia, Indonesia, and Myanmar. This phase can be characterized as a period of “offshoring.” In contrast, during the period from 2016 to 2021—following the signing of TPP and RCEP amid rising global uncertainty, including the U.S.–China trade conflict and the COVID-19 pandemic—FDI increasingly returned to higher-cost manufacturing economies. This latter phase can be described as a period of “reshoring.”

Third, the study empirically assessed whether changes in FDI were influenced by disruptions in FTA processes, such as negotiation expansion, agreement signing, and the withdrawal of major member economies. The results differ across investor economies. For Japan, the regression models exhibit low explanatory power, making it difficult to identify the determinants of Japanese FDI or to assess the effects of TPP and RCEP. For China, real GDP emerges as the primary determinant of outward FDI, indicating that economic growth has driven China's overseas investment expansion. In addition, TPP is found to have influenced Chinese FDI to Vietnam. For Taiwan, the most influential factors are lower import tariff rates on industrial products in host economies and the effects of RCEP.

This study initially assumed that the development of FTAs would encourage FDI by multinational enterprises seeking lower tariffs and reduced production costs, while disruptions in FTA processes could negatively affect FDI. However, the empirical results suggest that faltering FTAs do not necessarily exert a strong or uniform impact on FDI flows. Rather, the effects of FTAs appear to differ across investor economies and host countries depending on economic conditions, firm strategies, and institutional environments.

The findings imply that tariff reduction alone may not fully explain FDI behavior under conditions of institutional uncertainty. In particular, MNCs may continue overseas investment despite disruptions in FTA processes because of sunk costs, supply-chain commitments, and long-term strategic considerations. Future research could employ firm-level data or difference-in-differences approaches to distinguish between announcement effects and enforcement effects of FTAs and further examine sector-specific investment responses.

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Rethinking the Determinants of Reverse Knowledge Transfer in Overseas Subsidiaries of Japanese Multinational Enterprises - From the Perspective of Embeddedness Mechanisms -

Jiacheng Liu (Keio University, Japan)

ABSTRACT

Amid intensifying global competition, Reverse Knowledge Transfer (RKT) from foreign subsidiaries, particularly those of Japanese MNEs in China, has become a critical strategic challenge. While RKT is increasing, its facilitation mechanisms remain inconsistently understood. Drawing on embeddedness theory, this study categorizes internal/external embeddedness as structural factors and shared values/subsidiary autonomy as managerial factors. PLS-SEM analysis reveals that embeddedness does not directly impact RKT. Instead, it operates indirectly through managerial mediators. Furthermore, a significant interaction effect confirms that RKT is maximized when shared values and autonomy are simultaneously high. By substantiating a hierarchical process of "Structural Factors → Managerial Factors → RKT," this study offers an integrative framework for global knowledge utilization.

Keyword: Japanese Mnes, Reverse Knowledge Transfer (RKT), Internal Embeddedness, External Embeddedness, Mechanism, Shared Values, Subsidiary Autonomy

1.Introduction

Since the mid-20th century, the form of modern multinational enterprises (MNEs) has been established due to developments in communication and logistics technologies. However, expanding operations across national borders is by no means an easy task. Consequently, extensive research has been conducted on the international expansion of MNEs, pioneered by scholars such as Hymer and Dunning (Hymer, 1960; Dunning, 1977). MNEs possessing ownership advantages sought vast markets and inexpensive labor, enabling overseas operations by transferring managerial resources, such as knowledge and know-how accumulated in their home countries, to foreign subsidiaries (Dunning, 1979). However, the outcomes gained through the international expansion of MNEs are not necessarily limited to tangible elements such as market access.

With globalization, MNEs must acquire competitive advantages through local subsidiaries (Dunning, 1981). The knowledge-based view recognizes knowledge as a vital strategic resource (Nonaka, 2009), while Doz et al. (2001) proposed the "metanational strategy" to utilize knowledge dispersed worldwide.

Against this backdrop, the concept of "Reverse Knowledge Transfer" (RKT), whereby foreign subsidiaries grow to create and acquire knowledge locally and subsequently transfer it back to headquarters for global utilization rather than keeping it localized, has garnered significant attention in recent years (Gupta & Govindarajan, 2000; Håkanson & Nobel, 2001; Ambos et al., 2006; Yang et al., 2008; Kogut & Mello, 2017).

A concrete example is Unilever's initiative in India (Mahajan, 2016). Hindustan Unilever, the company's Indian subsidiary, developed expertise in opening rural markets by recruiting and training women in rural areas as door-to-door sales representatives through a project called "Shakti." Unilever

headquarters focuses on the firm-wide sharing of diverse knowledge and know-how regarding production and marketing held by each subsidiary (Goold et al., 1994). As a result, the expertise cultivated in "Shakti" was transferred back to the headquarters and subsequently deployed to other countries via the head office (Mahajan, 2016).

Such corporate activities related to RKT carry significant meaning as a means of globally transferring and utilizing knowledge generated in local environments, thereby approaching the strategic ideals of "transnational" and "metanational" organizations. Accordingly, this study examines how knowledge transfer from foreign subsidiaries of MNEs to parent companies, so-called RKT, is achieved, focusing on its facilitation mechanisms to clarify part of the growth mechanism driven by the international expansion of MNEs.

The structure of this thesis is as follows. Chapter 2 provides an overview of the current state of RKT in Japanese MNEs using various types of data. Chapter 3 reviews prior research on RKT and embeddedness and identifies the research gap based on their theoretical and empirical limitations. Chapter 4 constructs the hypotheses to be tested in this study, based on a theoretical framework connecting embeddedness and RKT. Chapters 5 and 6 explain the empirical analysis methodology and results, while Chapters 7 and 8 provide discussions based on the analysis results, presenting theoretical and practical implications, as well as the limitations of this study and directions for future research.

2. Current Situation

In this chapter, the current state of RKT activities in Japanese MNEs is indirectly examined through aspects such as technology trade and global innovation activities. RKT encompasses both explicit knowledge (codified, e.g., patents) and tacit knowledge (practice-based, e.g., know-how). Tacit

knowledge, which is deeply rooted in daily practices and routines and is difficult to verbalize, such as know-how and information (Nonaka, 1994; Noorderhaven & Harzing, 2009). While tacit knowledge is difficult to transfer due to its causal ambiguity (Håkanson & Nobel, 2001), its inimitability provides a sustainable competitive advantage (Becerra et al., 2008; Pérez-Nordtvedt et al., 2008). RKT research distinguishes itself from traditional global innovation research by its inclusion of tacit knowledge.

Since RKT constitutes an intra-firm event occurring between a parent and its subsidiary, obtaining direct macro-data on RKT is extremely challenging. Despite the scarcity of direct macro-data on intra-firm RKT (Nakagawa et al., 2022), trends can be captured through indirect indicators. Accordingly, this study utilizes "technology trade" as a primary proxy for explicit knowledge transfer to elucidate the current landscape of RKT.

The concept of technology trade has been widely employed in the research fields of international management and innovation (Arora et al., 2001; Lichtenthaler, 2005, 2008). It primarily consists of "purchases," where codified knowledge and technologies such as external patents and licenses are absorbed and acquired within the firm, and "sales," where internal technologies are commercialized and provided to external parties. While technology trade is often discussed in the context of transactions between different firms, intra-firm technology trade between a parent and its subsidiary is synonymous with the transfer of explicit knowledge in this study.

The definition of technology trade at the international level according to the "Science and Technology Indicators" by the Ministry of Education, Culture, Sports, Science and Technology (MEXT, 2019) is as follows. "Technology exports" refer to granting the right to use technologies to foreign companies or individuals in exchange for consideration, while "technology imports" refer to receiving such rights from foreign companies or individuals in exchange for payment. Although

limited to cases involving payment for technology, technology imports conducted between a parent company and its subsidiaries under this definition correspond precisely to the RKT of explicit knowledge.

First, Figure 1 shows the trends in technology trade volume for various countries as compiled by MEXT. It is evident from Figure 1 that there are significant differences in scale between countries. Looking at the technology trade balance ratio (the ratio of technology exports to technology imports in the most recent fiscal year), the ratios for developed nations such as the U.S., Germany, France, and the U.K. are distributed between 1 and 2, with an average value of 1.74. However, Asian nations such as Japan and South Korea differ significantly from these Western countries. South Korea's ratio stands at 0.63, a situation where technology imports exceed exports. In contrast, Japan's ratio is 6.17, with technology exports far exceeding imports. Comparing these balance ratios suggests that, beyond differences in scale, there are notable disparities in the patterns and trends of technology trade and knowledge transfer across countries. Therefore, this study focuses on Japan, which possesses an exceptional balance ratio among major nations, and on Japanese MNEs which exhibit distinct characteristics often described by terms such as "Japanese-style management." (Figure 1)

Next, the current state of Japan's technology trade is examined. Figure 2 summarizes data from the "Survey of Research and Development" by the Ministry of Internal Affairs and Communications (MIC) regarding Japan's total technology imports and the ratio of those transactions conducted between parent and subsidiary companies from 2001 to 2023. As can be seen from Figure 2, Japan's total technology imports have fluctuated over the past two decades but have remained relatively stagnant overall. However, an analysis of the breakdown reveals that the proportion of intra-firm transactions (between parent and subsidiary) is on an upward trend. Specifically, it has more than

doubled, growing from 17% in 2001 to 37% in 2023. In other words, despite sluggish growth in overall technology imports from abroad, RKT between parent and subsidiary companies is becoming increasingly active. (Figure 2)

On the other hand, looking at the composition by partner country and region, the United States has maintained the top position, consistently accounting for approximately 60% or more over the decade leading up to 2024. European countries follow, with China and South Korea often alternating in the subsequent positions. However, when focusing specifically on technology imports from emerging economies, China has consistently occupied the first place over the last ten years.

These current conditions indicate that Japan possesses a unique pattern of knowledge transfer, with RKT from Japanese foreign subsidiaries increasing annually, and that technology imports from China have garnered the most attention among emerging nations. Nevertheless, it remains unclear to what extent technology imports from China are attributable to the activities of local subsidiaries, which stands for the actual degree of RKT from China. To clarify this point, the next section focuses on the knowledge creation activities of Japanese MNE subsidiaries, particularly those located in China.

Figures 3 and 4 illustrate the trends in R&D centers and expenditures by foreign affiliates of Japanese MNEs. While Asia remains a critical hub accounting for 30% of global R&D spending, a breakdown reveals that investments in China have accelerated significantly since the 2010s, now far exceeding those of other Asian nations. This implies that subsidiaries in China have evolved into the most significant knowledge creation units within the region. (Figure 3,4)

Furthermore, the average R&D expenditure per center in China indicates a strategic shift toward the non-manufacturing sector, which expanded approximately 4.3-fold over the past decade (Figure 5).

This rapid growth suggests that subsidiaries in China are occupying an increasingly vital position in the global knowledge networks of Japanese MNEs.

In summary, the consistent rise in R&D inputs confirms that Chinese subsidiaries are no longer mere production sites but key actors in knowledge creation. Given the intensifying scale of these activities, it is highly probable that the degree of RKT from China has also grown substantially. Consequently, this study focuses its analysis on the RKT activities of Japanese MNE subsidiaries in China.

On the other hand, while the preceding discussion focused on the explicit knowledge aspects associated with global R&D, the significance of RKT lies particularly in its focus on the transfer of tacit knowledge. Thus, an account of the current state of RKT would be insufficient without addressing this dimension. Nakagawa (2022) conducted a questionnaire survey of 166 Japanese foreign subsidiaries, attempting to directly clarify the overall state of global innovation in Japanese firms without limiting the scope to specific regions or industries. Despite limitations regarding sample size, the results provide valuable insights as follows. First, regarding the roles of subsidiaries in knowledge creation activities, "development" and "improvement" of products and services were predominant, while "basic research" and "applied research" were less frequent. Additionally, "responding to local market needs" was the most common reason cited for conducting knowledge creation activities in foreign subsidiaries. Furthermore, regarding knowledge transfer, interactions occurred primarily with the Japanese parent company rather than among foreign subsidiaries. Examining the breakdown, the mean score for RKT on a 7-point Likert scale was 3.41, while the mean for knowledge transfer from parent to subsidiary was 4.04, indicating that conventional knowledge transfer remains slightly more prevalent. Finally, the most frequent type of knowledge transferred

from foreign subsidiaries to the Japanese parent company was knowledge regarding the local market.

When comparing these survey findings on knowledge transfer with technology trade and global R&D data, the finding that conventional knowledge transfer is more prevalent than RKT aligns with the fact that Japan's technology exports exceed its technology imports. However, the difference in mean scores in Nakagawa's (2022) survey was only 0.63 on a 7-point scale, a result that is far from the massive disparity reflected in the technology trade balance ratio of 6.17. This discrepancy cannot be fully explained by simple sample bias; rather, it is highly probable that it stems from whether tacit knowledge is considered. Furthermore, considering that knowledge regarding local markets is the most frequently transferred type, the presence of non-codified tacit knowledge beyond technical specifications appears to be substantial in RKT, highlighting the significance of conducting direct and comprehensive research on this phenomenon.

Consequently, to reiterate, the objective of this study is not only to examine the increasingly active RKT activities of Japanese MNE subsidiaries in China but also to investigate them directly in a manner that encompasses tacit knowledge. Moreover, the question arises as to how such RKT from subsidiaries in China can be achieved. Accordingly, the next chapter introduces the characteristics of RKT, reviews the facilitation factors discussed to date, and explains the specific focus of this research.

3. Literature Review

This chapter reviews prior research on RKT and analyzes the factors that facilitate this process.

3.1 Defining RKT

Intra-organizational knowledge transfer within MNEs has long been understood as the process of

deploying ownership advantages held by the headquarters to foreign subsidiaries. Within internalization theory and the OLI paradigm, it is assumed that knowledge is created at the headquarters and that competitive advantage is maintained by transferring it within the firm rather than through the market; thus, the fundamental direction of knowledge transfer was "headquarters to subsidiary" (Hymer, 1960; Dunning, 1979). This vertical and downward type of knowledge transfer is referred to as conventional knowledge transfer, primarily aimed at the international deployment of technology, managerial know-how, and organizational routines.

In contrast, RKT has garnered attention since the 1990s against the backdrop of the international dispersion of R&D activities and the increasing reliance on local knowledge. RKT refers to the process in which knowledge created by subsidiaries through interaction with local markets, customers, and research institutions is transferred back to the headquarters and utilized in the firm's overall technological base and strategy formulation (Håkanson & Nobel, 2001; Ambos et al., 2006). In RKT, subsidiaries are positioned not merely as recipients of knowledge but as competence-creating entities; in particular, it has been noted that R&D subsidiaries located in advanced knowledge environments or those deeply embedded in external networks serve as vital knowledge sources for the headquarters (Andersson et al., 2002; Cantwell & Mudambi, 2005). Furthermore, as previously mentioned, RKT contributes to global knowledge utilization and competitive advantage by transferring difficult-to-move tacit knowledge generated locally back to the headquarters (Håkanson & Nobel, 2001; Becerra et al., 2008; Noorderhaven & Harzing, 2009).

Thus, unlike conventional knowledge transfer, RKT is characterized by its premise of searching for and integrating globally dispersed knowledge, serving as a means for MNEs to restructure their knowledge utilization capabilities on a worldwide scale. Meanwhile, horizontal knowledge transfer,

where knowledge is transferred between subsidiaries, also exists within MNEs. This has primarily been positioned as mutual learning and the sharing of best practices within the subsidiary network (Gupta & Govindarajan, 2000).

3.2 Facilitating Factors of RKT

Regarding the factors that enable RKT, research has accumulated focusing primarily on the capabilities, motivations, and organizational mechanisms of both subsidiaries and headquarters. Early studies pointed out that for a subsidiary to supply knowledge to the headquarters, it is essential not only to possess the knowledge but also to have the capability for that knowledge to be recognized and evaluated within the firm. Competence-creating subsidiaries have been shown to possess the potential to develop unique technologies and know-how by leveraging advanced local knowledge bases and subsequently channeling them back to the headquarters (Cantwell & Mudambi, 2005). Whether such knowledge is transferred to the headquarters depends heavily on the headquarters' absorptive capacity; if the headquarters lacks the ability to recognize, assimilate, and apply knowledge of external origin, RKT is hindered (Ambos et al., 2006; Cohen & Levinthal, 1990).

Furthermore, the learning orientation and motivation for knowledge sharing on the part of the subsidiary have been identified as crucial facilitators; if a subsidiary lacks the incentive to provide its knowledge to the headquarters, the knowledge tends to remain localized (Gupta & Govindarajan, 2000). In addition, the existence of high-quality information exchange methods and communication channels is cited as an organizational condition supporting RKT. Frequent, bidirectional communication, a shared language, and standardized reporting systems reduce misunderstandings and friction regarding knowledge, thereby enhancing transfer efficiency (Hansen, 1999; Nohria &

Ghoshal, 1997).

The relationship between subsidiary autonomy and RKT is a particularly contentious issue in prior research (Oh & Anchor, 2017). Miao et al. (2011) found that subsidiaries with higher autonomy transfer more valuable knowledge to the headquarters. Najafi-Tavani et al. (2015) demonstrated that when a strong relationship exists between the headquarters (HQ) and the subsidiary, frequent RKT can, conversely, enhance subsidiary autonomy. On the other hand, Jankowska et al. (2021) reported that high autonomy may increase a subsidiary's independence and bargaining power, which could potentially decrease RKT. Thus, autonomy can both facilitate and hinder RKT, and its effect may depend on the relationship between the HQ and the subsidiary as well as the organizational context (Ambos & Ambos, 2009).

In this regard, the existence of shared values and goals between the headquarters and its subsidiaries is said to mitigate uncertainties and concerns regarding opportunistic behavior associated with knowledge transfer, thereby increasing the subsidiary's motivation to voluntarily provide knowledge (Nohria & Ghoshal, 1997; Kostova & Roth, 2002). While the studies suggest that RKT is a complex process facilitated by the interaction of multiple factors, there is a lack of comprehensive research examining their interrelationships. Using embeddedness theory as a central axis, this study attempts an initial integration of certain facilitating factors of RKT.

3.3 The Concept of Embeddedness

One concept that has gained importance in recent years as a facilitator of RKT is embeddedness. Embeddedness originally developed in sociology as a concept indicating that economic actions are situated within social relationships; however, it was systematically introduced into the context of

MNEs by business network research. Andersson et al. (2002) defined embeddedness as a "relational network formed through mutual adaptation in product development and production processes between a subsidiary and a limited number of counterparts with whom it has ongoing transaction relationships," emphasizing that MNE subsidiaries are situated within long-term, relation-specific ties that differ from temporary, transactional arms-length market relationships. From this perspective, embedded relationships are viewed as network relationships based on trust, iterative interaction, and tacit understanding, in contrast to impersonal market relations predicated on transactions through price mechanisms.

Furthermore, a primary characteristic of MNEs is that subsidiaries do not belong to a single network but are simultaneously embedded in both an internal network centered on the relationship with headquarters and an external network consisting of customers, suppliers, and research institutions. In this light, embeddedness has been researched in terms of internal embeddedness, external embeddedness, and further as dual embeddedness, which integrates the two (Madhok & Liu, 2006).

These embedded relationships function not merely as transactional structures but as social capital that enables knowledge transfer. Nahapiet and Ghoshal (1998) theoretically demonstrated that social capital plays a central role in the creation and transfer of knowledge. Furthermore, empirical research has clarified that subsidiaries maintaining frequent and significant interactions with headquarters exhibit higher levels of knowledge exchange and contribute more substantially to the headquarters' knowledge base (Håkanson & Nobel, 2001). Particularly in the transfer of advanced knowledge, including tacit knowledge, close and embedded relationships are indispensable. It is argued that such relationships facilitate resource exchange and learning, thereby realizing knowledge acquisition and

transfer (Beaverstock, 2004; Empson, 2001; Windrum & Tomlinson, 1999). Therefore, internal and external embeddedness serve as both the foundation for subsidiary knowledge creation and the relational condition that enables the transfer of that knowledge to headquarters.

3.4 RKT and the Concept of Embeddedness

Existing research on RKT has focused on the nature of the relationships which subsidiaries form with headquarters and their external environments, positioning embeddedness as a key facilitator of RKT. Studies focusing on the headquarters-subsidiary relationship have pointed out that internal embeddedness formed between the two plays a crucial role in smoothing knowledge transfer. Gupta and Govindarajan (2000) demonstrated that knowledge flows between headquarters and subsidiaries depend strongly on relational elements such as trust, interdependence, and the frequency and quality of communication, rather than mere structural controls.

Furthermore, Håkanson and Nobel (2001) empirically showed that subsidiaries maintaining headquarters-subsidiary relationships involving frequent and significant interactions provide higher degrees of knowledge to headquarters, suggesting that deep embeddedness within the internal network facilitates RKT. Such internal embeddedness is thought to function as a relational foundation that reduces uncertainty and interpretative discrepancies associated with knowledge transfer, particularly enabling the transfer of tacit knowledge (Szulanski, 1996). On the other hand, it has been noted that excessively strong internal embeddedness may overly constrain subsidiary behavior toward headquarters' orientation, potentially suppressing exploratory activities and the creation of new knowledge; thus, its effects are not unidirectional (Birkinshaw et al., 1998).

In contrast, external embeddedness refers to the depth of a subsidiary's involvement in relational

networks with customers, suppliers, competitors, and research institutions in the host country, and has been emphasized as a source of knowledge creation in RKT research. Andersson et al. (2002) demonstrate that deep subsidiary embeddedness in external business networks facilitates mutual adaptation in product development and technological learning; as a result, knowledge valuable to the MNE as a whole is generated. Knowledge acquired through such external embeddedness serves as the foundation for the subsidiary to function as a competence-creating entity rather than a mere implementation site, thereby enabling RKT to headquarters (Cantwell & Mudambi, 2005). Furthermore, it has been noted that subsidiaries located in advanced local knowledge clusters and closely linked to external networks are more likely to create highly unique knowledge and channel it back to headquarters (Frost et al., 2002). At the same time, however, subsidiaries with strong external embeddedness tend to prioritize relationships with local stakeholders over headquarters. This can lead to an increased distance from headquarters, which may hinder knowledge transfer (Andersson et al., 2007). For this reason, RKT is understood to be realized not by the strength of external embeddedness alone, but through its interaction with internal relationships that link externally created knowledge to the headquarters.

While existing research has suggested that internal and external embeddedness may play crucial roles in RKT, empirical studies that directly verify the relationship between embeddedness and RKT are not necessarily abundant. Moreover, empirical results regarding the effects of embeddedness remain inconsistent. While some studies report positive effects, others suggest that embeddedness may inhibit knowledge transfer through increased distance from headquarters or the "localization" of relationships (Ambos & Ambos, 2009; Andersson et al., 2007). Specifically, regarding the direct effects of embeddedness on RKT, conclusions are conflicting: no significant relationship was found in

the UK (Najafi-Tavani et al., 2012), whereas positive influences were confirmed in Central and Eastern Europe and Iran (Filippov, 2014; Ghahroudi et al., 2022). This suggests that the theoretical mechanisms through which embeddedness influences RKT have not yet been fully elucidated.

Even among studies on the facilitative effects of embeddedness on RKT, analysis focusing on the underlying mechanisms remains limited. Pioneering studies in this field include Forsgren et al. (2005) and Ghahroudi et al. (2022). Ghahroudi et al. demonstrated that internal and external embeddedness directly facilitate RKT, while these effects are partially moderated by absorptive capacity. Meanwhile, Forsgren et al. distinguished between structural "hard" factors and managerial "soft" factors as drivers of knowledge transfer, empirically examining the roles played by embedded relationships as the former and shared values as the latter. In other words, their analysis assumed that both the network aspect (the relational structure in which a subsidiary is situated) and the cognitive/normative aspect (the sharing of values and understanding within the organization) are associated with knowledge transfer. Tsai and Ghoshal (1998) followed a similar logic; although their focus was not specifically on knowledge transfer, they classified social capital into structural, cognitive, and relational dimensions, showing that structural and cognitive social capital influence relational social capital and facilitate resource exchange between units through these dimensions. However, the analysis by Forsgren et al. (2005) focused primarily on placing these two types of factors in parallel to compare their relative importance, leaving the causal mechanisms of how embedded relationships and shared values are interrelated and link to knowledge transfer insufficiently discussed. Thus, there remains room to explicitly examine the intermediate pathways linking "hard" structural factors with "soft" relational and cognitive factors.

3.5 RKT in the Context of Japanese MNE Research

Finally, I discuss the current state of RKT research concerning Japanese MNEs. As explained in the situation analysis, there are differences in how "knowledge" is conceptualized even within the RKT context. There is a tendency to split into two views: a narrow definition focusing on codified assets such as R&D and patents, and a broad definition encompassing general know-how, including tacit knowledge in marketing and logistics. While the former allows for the use of highly accessible data like patents, it risks overlooking the more critical transfer of tacit knowledge via RKT. Japanese firms are said to rely heavily on context-dependent "tacit knowledge," such as on-site coordination and interpersonal relationships (Nonaka, 1994). Consequently, patent data alone may fail to capture the knowledge transfer originating from the *gemba*, which is a core strength of Japanese firms. Empirical studies on Japanese MNEs are scarce to begin with, and most have focused on the former aspect, while discussions on the latter remain neglected (Kurokawa et al., 2007; Suzuki, 2015; Asakawa et al., 2018). Thus, research on Japanese MNEs in the RKT context is biased and incomplete. This study aims to complement the limitations of existing research by elucidating the true mechanisms of RKT in Japanese MNEs.

3.6 Research Question

From the preceding literature review, although it is suggested that embeddedness plays a crucial role in RKT, empirical results remain inconsistent. It has become clear that the specific processes through which embeddedness leads to RKT have not been sufficiently elucidated. Therefore, it is necessary to explicitly examine the mechanisms by which embeddedness influences knowledge transfer.

Accordingly, this study sets the following research question:

RQ: Through what organizational and relational mechanisms do a subsidiary's internal and external embeddedness influence RKT within MNE?

4. Hypothesis Development

In this chapter, after organizing the preceding analyses, I derive the research hypotheses. As shown in the previous chapter, while existing studies have demonstrated that factors such as embeddedness, autonomy, and values are associated with RKT, the causal processes through which these factors link to knowledge transfer have not been sufficiently investigated.

In this study, utilizing insights from Tsai and Ghoshal (1998) and following the framework of Forsgren et al. (2005), I distinguish the factors influencing RKT into "hard" structural factors and "soft" managerial factors, focusing on the hierarchical relationship between the two. Specifically, I position embeddedness as the most fundamental structural condition in which a subsidiary is situated. I assume that these structural conditions influence managerial factors, such as subsidiary cognition, which in turn lead to knowledge transfer. In other words, rather than acting directly on RKT, embeddedness is considered to influence RKT indirectly by shaping and being mediated by managerial factors.

Furthermore, as RKT occurs through a sequential process (Kogut & Mello, 2017), this study employs external embeddedness as the structural factor for knowledge acquisition and internal embeddedness for knowledge transfer. Regarding internal embeddedness, drawing on prior research (Forsgren et al., 2005), I adopt shared values as the "soft" managerial factor. In headquarters–subsidiary relationships where internal embeddedness is advanced, a common understanding of organizational goals and norms is more likely to form through frequent interaction and trust, serving as

a precondition for facilitating knowledge transfer (Nahapiet & Ghoshal, 1998).

Conversely, for external embeddedness, I focus on how a subsidiary gains access to strategic resources and bargaining power by deeply engaging in local business networks (Andersson et al., 2002), and I identify subsidiary autonomy as the corresponding managerial factor. In embeddedness theory, external embeddedness is a factor that brings strategic discretion to the subsidiary; thus, more autonomous subsidiaries are considered to have the capability to actively engage in external knowledge acquisition and exploratory activities (Andersson et al., 2002; Birkinshaw et al., 1998).

From this perspective, this study posits a theoretical model where the structural conditions, reflecting the internal and external network characteristics of the MNE, influence RKT through distinct managerial factors. I construct and test hypotheses regarding the relationships and mechanisms between these two types of factors. Figure 6 illustrates the theoretical model showing the relationship paths between structural factors (internal and external embeddedness) and managerial factors (shared values and autonomy). (Figure 6)

In the following sections, I first present hypotheses regarding internal embeddedness and shared values, followed by hypotheses concerning external embeddedness and subsidiary autonomy. Symmetrically for both cases, I first construct hypotheses for the direct effects of structural and managerial factors on RKT and the influence of structural factors on managerial factors, before deriving hypotheses for the indirect effects of structural factors on RKT. Subsequently, I develop a hypothesis regarding the synergistic effect between the two managerial factors.

Internal embeddedness refers to a state in which a subsidiary has built ongoing and close reciprocal relationships within the internal corporate network, including the headquarters (Andersson et al., 2002; Yamin & Andersson, 2011). According to prior research, when frequent interaction and

trust are established between the headquarters and a subsidiary, the contextual understanding of knowledge improves, facilitating the smooth transfer of knowledge, including tacit knowledge (Gupta & Govindarajan, 2000; Szulanski, 1996). For this reason, it is considered that subsidiaries with stronger internal embeddedness will experience more facilitated RKT to the headquarters.

Accordingly, the following hypothesis is derived: **Hypothesis 1a (H1a)**: The stronger a subsidiary's internal embeddedness, the more facilitated the RKT.

Shared values refer to the degree of congruence between two units regarding organizational goals, ambitions, and context (Tsai & Ghoshal, 1998). Internal embeddedness facilitates the formation of shared values between the headquarters and its subsidiaries. Through frequent interaction, a common understanding of organizational goals and the value of knowledge is fostered, making it easier for subsidiaries to provide their knowledge to the headquarters (Nohria & Ghoshal, 1997). Therefore, it is expected that stronger internal embeddedness leads to a higher level of shared values.

Accordingly, the following hypothesis is derived: **Hypothesis 1b (H1b)**: The stronger a subsidiary's internal embeddedness, the higher the shared values between the headquarters and the subsidiary.

The importance of shared values in knowledge transfer is widely recognized in knowledge management research (Bhagat et al., 2002; Tenkasi, 2000). Regarding the transfer of newly developed knowledge, similarity between the sender and receiver is positively correlated with the receiver's learning ability, as it helps the receiver understand the knowledge correctly (Lane et al., 2001). In contrast, organizational or cultural distances inhibit the headquarters' ability to understand and utilize the subsidiary's knowledge, thereby reducing the effectiveness of knowledge transfer (Ambos et al., 2006). When shared values are established between the headquarters and the subsidiary, the subsidiary

is more likely to perceive its own knowledge as useful to the headquarters, and psychological resistance to providing knowledge decreases. As a result, it is considered that higher shared values will facilitate RKT from the subsidiary to the headquarters.

Accordingly, the following hypothesis is derived: **Hypothesis 2a (H2a)**: The higher the shared values, the more facilitated the RKT.

Furthermore, this study posits that shared values mediate the relationship between internal embeddedness and RKT. Internal embeddedness represents the structural condition regarding the degree of closeness in the relationships a subsidiary maintains within the internal corporate network, including the headquarters. However, this structural condition itself may not necessarily generate RKT automatically. Rather, its essential significance may lie in how internal embeddedness influences subsidiary behavior and cognition through the formation of mutual understanding and trust between the headquarters and the subsidiary.

Specifically, advanced internal embeddedness enables frequent interaction and iterative collaboration, facilitating the formation of shared values regarding organizational goals, strategic direction, and the value of knowledge. These shared values act as a managerial factor in RKT by reducing interpretative discrepancies and coordination costs associated with knowledge transfer, and by weakening psychological resistance to providing knowledge. Therefore, internal embeddedness is considered to influence RKT indirectly through the managerial factor of shared values, rather than acting solely in a direct manner.

Accordingly, the following hypothesis is derived: **Hypothesis 2b (H2b)**: Shared values mediate the relationship between internal embeddedness and RKT.

External embeddedness refers to a state in which a subsidiary has established ongoing and close

relationships with external actors, such as local suppliers, customers, and research institutions. Prior research has shown that external embeddedness provides subsidiaries with access to diverse and sophisticated knowledge, facilitating the acquisition of location-specific technical and market knowledge (Andersson et al., 2002; Cantwell & Mudambi, 2005). Additionally, subsidiaries with high external embeddedness have greater opportunities to absorb and combine new knowledge. As a result, they possess a higher capability to contribute to existing products and services or to develop new services, technologies, and products (Almeida & Phene, 2004; Andersson et al., 2002). Thus, subsidiaries deeply embedded in external networks are more likely to form unique knowledge bases, making them valuable sources of knowledge for the headquarters (Almeida & Phene, 2004; Frost et al., 2002). Consequently, it is expected that stronger external embeddedness will facilitate RKT from the subsidiary to the headquarters.

Accordingly, the following hypothesis is derived: **Hypothesis 3a (H3a)**: The stronger a subsidiary's external embeddedness, the more facilitated the RKT.

Furthermore, in embeddedness theory, external embeddedness is considered a factor that enhances a subsidiary's strategic position and bargaining power (Andersson et al., 2007). Subsidiary autonomy refers to the extent to which a subsidiary can exercise discretion independently of the headquarters in its strategic decision-making and operational activities. Subsidiaries that have gained control over critical resources and knowledge through external networks are more likely to be granted greater discretion by the headquarters, thereby increasing their autonomy in strategic decision-making. Therefore, it is expected that stronger external embeddedness leads to higher subsidiary autonomy.

Accordingly, the following hypothesis is derived: **Hypothesis 3b (H3b)**: The stronger a subsidiary's external embeddedness, the higher the subsidiary autonomy.

Highly autonomous subsidiaries can actively engage in exploratory activities and learning behaviors adapted to the external environment, facilitating the acquisition and creation of new knowledge (Birkinshaw et al., 1998). Such subsidiaries are more likely to possess knowledge valuable to the headquarters, which in turn increases the likelihood of RKT.

Accordingly, the following hypothesis is derived: **Hypothesis 4a (H4a)**: The higher the subsidiary autonomy, the more facilitated the RKT.

Furthermore, this study posits that autonomy mediates the relationship between external embeddedness and RKT. First, external embeddedness represents the structural condition regarding the depth of a subsidiary's involvement in external networks, such as local suppliers, customers, and research institutions. While subsidiaries with strong external embeddedness have access to diverse and sophisticated knowledge and strategic resources, whether these translate into RKT depends on the degree to which the subsidiary can act proactively.

According to embeddedness theory, subsidiaries that occupy a significant position in external networks are likely to enhance their bargaining power relative to the headquarters based on their unique resources and knowledge, making it easier for them to be granted greater discretion (Andersson et al., 2007; Mudambi & Navarra, 2004). Thus, external embeddedness functions as a structural foundation that enhances subsidiary autonomy. Meanwhile, autonomy is a managerial factor that determines whether a subsidiary explores and integrates knowledge acquired from outside and transfers it to the headquarters, thereby influencing RKT. Therefore, external embeddedness is considered to facilitate RKT indirectly through autonomy.

Accordingly, the following hypothesis is derived: **Hypothesis 4b (H4b)**: Subsidiary autonomy mediates the relationship between external embeddedness and RKT.

Finally, I posit that RKT is not generated by a single factor but is facilitated by a combination of two dimensions: knowledge acquisition and knowledge transfer. Shared values foster mutual understanding and trust between the headquarters and the subsidiary, reducing coordination costs and psychological resistance associated with knowledge transfer. Conversely, subsidiary autonomy is a factor that provides the subsidiary with the discretion and behavioral latitude to explore, acquire, and utilize knowledge from the external environment. If either one is lacking, knowledge transfer may not function effectively.

Specifically, even when shared values are high, if sufficient autonomy is not granted to the subsidiary, its ability to proactively utilize acquired knowledge and transfer it to the headquarters will be constrained. On the other hand, even with high autonomy, a lack of shared values between the headquarters and the subsidiary may lead to misaligned perceptions of knowledge value or a lack of trust, potentially inhibiting knowledge transfer. Therefore, shared values and autonomy act in a complementary manner; RKT is expected to be most facilitated when both are combined at high levels.

Accordingly, the following hypothesis is derived: **Hypothesis 5 (H5):** Shared values and subsidiary autonomy act complementarily, such that RKT is more strongly facilitated when both are high.

5. Methodology

This chapter explains the variables, subjects, and analytical methods used to test the hypotheses.

5.1 Subjects and Data Collection

To elucidate the facilitating factors of RKT in the Chinese subsidiaries of Japanese MNEs, this study employs Partial Least Squares Structural Equation Modeling (PLS-SEM) using data collected through a questionnaire survey. The data used for the analysis were collected via a survey conducted from October to December 2025.

Based on information on Japanese wholly-owned and joint-venture enterprises obtained from the Chinese corporate information database *Tianyancha*, questionnaires were distributed via email to 10,933 companies selected based on the criteria of "in operation for 10 years or more, no business abnormalities, and email address listed." The 10-year threshold was established because subsidiaries require time to build external network relationships before they can effectively absorb knowledge from the local environment; thus, subsidiaries that have operated for over a decade are highly likely to have established sufficiently robust external network relationships.

Ultimately, due to factors such as invalid email addresses and transmission permission issues, the questionnaire successfully reached and was viewed by 1,242 companies. Of these, 43 responses were received, resulting in a response rate of 3.46%. After excluding missing values and outliers, 40 valid responses were utilized for the data analysis.

5.2 Measurement

All measurement scales in the questionnaire were measured using 7-point Likert scales adapted from established literature (Ferraris et al., 2020; Ghahroudi et al., 2022; Najafi-Tavani et al., 2012). Detailed measurement items and descriptive statistics are provided in the Appendix.

Reverse Knowledge Transfer RKT is a construct representing the degree of knowledge and know-how transfer from a foreign subsidiary to the parent company. It was measured with a focus on a

broad definition of knowledge transfer, including tacit knowledge. Specifically, it was measured using seven items that assessed the extent to which knowledge and know-how in seven areas. As the sample in this study is not industry-specific, the relative importance of knowledge in each area is expected to vary across firms. Therefore, following Ferraris et al. (2020), the mean score of these items was adopted for the analysis.

Internal Embeddedness (IE) Internal Embeddedness is a construct representing the depth of the relationship between the subsidiary and the parent company. This was measured using four items developed from the perspectives of technical adaptation, relationship stability, mutual interdependence, and mutual trust between the two parties.

External Embeddedness (EE) External Embeddedness refers to the strength of the relationships the subsidiary has built with external networks (e.g., suppliers, customers, partners) in the host country. In this study, it was measured using four items covering technical adaptation with external networks, long-term relationship stability, mutual interdependence, and mutual trust. These items serve as indicators of the degree to which a subsidiary is deeply involved with external knowledge sources.

Shared Values (SV) Shared Values represent the degree of congruence in organizational values and perceptions shared between the parent company and the subsidiary; this study adopts the definition based on Tsai and Ghoshal (1998). It was measured using four items covering aspects such as similarity in business practices, common understanding, consistency in organizational culture, and shared goals.

Subsidiary Autonomy (AT) Subsidiary Autonomy indicates the extent to which a subsidiary makes decisions independently. In this study, it was measured using three items focusing on autonomy in decision-making regarding strategy formulation, human resource management, and budget

formulation and execution. These items reflect the degree of discretion the subsidiary possesses to judge and act independently in the local market.

Control Variables In the analysis, the log-transformed age of the subsidiary ($\ln\_year$) and firm size ($\ln\_scale$) were included as control variables to account for their potential influence on RKT, following prior research (Ghahroudi et al., 2022; Najafi-Tavani et al., 2012).

Given the broad scope of the survey, the target respondents were intended to be managers. As email addresses listed in the *TianYanCha* database generally connect to managers or, in some cases, top-level executives, the risk of a discrepancy between the target and actual respondents is considered minimal.

Furthermore, to check for the influence of common method bias resulting from single-source data, Harman's single-factor test was conducted (Podsakoff et al., 2003). Exploratory factor analysis using all items revealed that the largest factor accounted for 37.395% of the variance. As this remains below the commonly accepted 50% threshold, the influence of CMB is judged to be limited in this study.

5.3 Analytical Method

To simultaneously test the causal relationships among multiple latent variables, as well as the mediation and interaction effects posited in the hypotheses, this study follows the approach of prior research (Ghahroudi et al., 2022; Najafi-Tavani et al., 2012) by employing Structural Equation Modeling (SEM). Specifically, the analysis is conducted using PLS-SEM rather than Covariance-Based SEM (CB-SEM).

PLS-SEM was selected over CB-SEM primarily due to the sample size ($n=40$), which is suitable

for the robust estimation capabilities of PLS-SEM in small-sample contexts (Hair et al., 2017, 2019; Sarstedt et al., 2016). Additionally, PLS-SEM is highly appropriate for this research given the complexity of the model, incorporating multiple mediation paths and interaction effects, and its robustness against non-normal data distributions typical of Likert-scale surveys (Reinartz et al., 2009; Sarstedt et al., 2016). The analysis was conducted using SmartPLS 4, with path coefficient significance tested via the bootstrapping method (5,000 re-samples).

6. Results

This chapter summarizes the findings and confirms whether each hypothesis was supported based on the results of the analytical methods described in the previous chapter.

6.1 Measurement Model Assessment

To evaluate the reflective measurement models, reliability and convergent validity were tested using Cronbach's alpha, rho_A, composite reliability (CR), and average variance extracted (AVE). As summarized in Table 1, all latent variables exceeded the recommended thresholds (Cronbach's alpha > 0.7, CR > 0.6, and AVE > 0.5), confirming high internal consistency and sufficient convergent validity (Hair et al., 2019). Additionally, all indicator outer loadings ranged from 0.728 to 0.94, surpassing the ideal cut-off of 0.708. (Table 1)

Discriminant validity was verified using the Heterotrait-Monotrait ratio (HTMT). As shown in Table 2, all HTMT values fell between 0.133 and 0.704, well below the conservative threshold of 0.85 (Henseler et al., 2015). The test of VIF turns out to be under 4, which is an acceptable level. These results confirm that all constructs are conceptually distinct, establishing the validity of the

measurement model. (Table 2)

6.2 Structural Model Assessment

After confirming the reliability and validity of the measurement model, the structural model was assessed using PLS-SEM. In this model, I estimated the relationships starting from internal and external embeddedness, utilizing shared values and subsidiary autonomy as mediators, and incorporating their interaction effect. The significance of the path coefficients was tested using the bootstrapping method with 5,000 resamples. The results of the analysis are summarized in Tables 3 and 4, and illustrated in Figure 7. (Tables 3, 4; Figure 7)

6.2.1 Hypothesis Testing: Direct Effects

As shown in Table 3, the direct effect of internal embeddedness on RKT is positive but not statistically significant, thus Hypothesis H1a was not supported. Conversely, internal embeddedness exerts a significant positive influence on shared values, supporting Hypothesis H1b. The path from shared values to RKT is positive and significant, supporting Hypothesis H2a. This indicates that organizational values shared between the parent company and its subsidiary are a crucial factor in facilitating RKT.

Regarding external embeddedness, its direct effect on RKT is negative and not significant. Therefore, Hypothesis H3a was not supported. However, external embeddedness shows a significant positive influence on subsidiary autonomy, providing support for Hypothesis H3b. These results indicate that direct effects on RKT from both internal and external embeddedness were not observed in this sample.

Additionally, the path from subsidiary autonomy to RKT is positive and significant, supporting Hypothesis H4a. This result suggests that granting a certain degree of discretion to a subsidiary can facilitate the transfer of knowledge back to the parent company.

Furthermore, the interaction term between shared values and subsidiary autonomy shows a significant positive effect on RKT, supporting Hypothesis H5. In other words, it was confirmed that RKT is most strongly facilitated when both shared values and subsidiary autonomy are simultaneously at high levels.

6.2.2 Hypothesis Testing: Mediation Effects

Next, the mediation effects were verified. As shown in Table 3, the indirect effect of internal embeddedness on RKT via shared values is positive and significant. Thus, Hypothesis H2b was supported. This demonstrates that the impact of internal embeddedness on RKT is primarily manifested through the formation of shared values.

Regarding external embeddedness, the indirect effect on RKT via subsidiary autonomy was positive and significant at the 10% level. Accordingly, it is determined that Hypothesis H4b received a certain level of statistical support.

Interestingly, while direct effects on RKT from both internal and external embeddedness were not observed, the results confirmed only those effects mediated through shared values and autonomy. This suggests a "full mediation" mechanism within the context of this study.

6.2.3 Control Variables

Finally, the control variables of subsidiary age and firm size did not show any significant influence on

RKT. This result suggests that the variance observed in RKT in this study is primarily explained by embeddedness relationships and organizational factors rather than basic firm characteristics.

Although direct effects from structural factors were not statistically confirmed, all other paths including indirect effects, mutual influences, and synergistic effects were significant. In the following chapter, I discuss the mechanisms facilitating RKT based on these results.

A post-hoc power analysis was conducted using G*Power to evaluate the statistical robustness of the model. With a sample size of 40 and an effect size (f^2) of 0.198 for the interaction term, the achieved power was 0.48. While this is below the conventional threshold of 0.80, it is important to note that the interaction effect demonstrated a "medium-to-large" effect size. This suggests that the observed mechanism has substantial practical significance in the context of Japanese MNEs in China, even if the small sample size limits the statistical power.

7. Discussion

This chapter provides a detailed discussion of the results of the hypotheses tested in Chapter 6.

7.1 Discussion on Internal Embeddedness and Shared Values (H1a, H1b, H2a, H2b)

The analysis revealed that Hypothesis H1a, which posited a direct effect of internal embeddedness on RKT, was not supported. This result suggests that frequent interaction and close relationships between the headquarters and a subsidiary do not, in themselves, automatically generate RKT. Because RKT involves a complex process of the headquarters identifying, accepting, and utilizing knowledge held by a subsidiary, structural proximity alone is insufficient to overcome organizational barriers such as misaligned perceptions of knowledge value or interpretative gaps (Szulanski, 1996; Tsai & Ghoshal,

1998).

On the other hand, Hypothesis H1b was supported. This finding indicates that internal embeddedness functions as a critical structural condition that facilitates the formation of trust and mutual understanding. It can be interpreted that deeper internal embeddedness, rooted in frequent interaction and long-term collaboration, fosters a common cognitive framework regarding organizational goals and behavioral norms, which in turn cultivates shared values (Nahapiet & Ghoshal, 1998; Tsai & Ghoshal, 1998). While prior research often treated structural and managerial factors as parallel drivers of RKT, these results suggest a hierarchical relationship: structural factors serve as the necessary foundation that enables the emergence of managerial factors.

Hypothesis H2a was supported. This finding is consistent with prior research, indicating that shared values reduce interpretation costs and psychological resistance associated with knowledge transfer, thereby playing a crucial role in enabling the headquarters to accept knowledge from its subsidiaries (Szulanski, 1996; Tsai & Ghoshal, 1998). Particularly in the context of RKT, where the subsidiary acts as the source of knowledge, the existence of common values and cognitive frameworks is essential for the headquarters to accurately evaluate the legitimacy and utility of the incoming knowledge.

Furthermore, Hypothesis H2b was also supported. This result demonstrates that the impact of internal embeddedness on RKT is manifested only through the formation of shared values. In other words, internal embeddedness should be positioned as the structural foundation for forming managerial factors, such as shared values, rather than as a direct determinant of RKT. It can be argued that structural factors represent latent resources that do not directly translate into managerial outcomes; they realize their value only when mediated by managerial factors.

In the context of Japanese MNEs, this process represents a socialization control based on corporate philosophy (*Keiei-rinen*). This indigenous logic enables headquarters to trust and accept subsidiary knowledge by bridging the cognitive gap through relational coordination.

Consequently, these findings support a staged mechanism: internal embeddedness functions as a structural prerequisite that enables the emergence of shared values, which in turn substantially facilitate RKT. By articulating the process of "Structural Factors → Managerial Factors → Corporate Activities" (in this case "Internal Embeddedness → Shared Values → RKT"), this study provides a coherent theoretical explanation for the inconsistent results found in prior literature concerning the relationship between internal embeddedness and RKT.

7.2 Discussion on External Embeddedness and Subsidiary Autonomy (H3a, H3b, H4a, H4b)

First, Hypothesis H3a was not supported. This result suggests that even if a subsidiary is deeply involved with local suppliers or industrial networks, such involvement does not automatically result in knowledge transfer to the parent company. While external embeddedness primarily contributes to the expansion of knowledge acquisition and learning opportunities for the subsidiary, whether that knowledge is mobilized within the corporate organization depends on further organizational conditions.

On the other hand, Hypothesis H3b was supported. This finding suggests that by becoming deeply embedded in local networks, subsidiaries acquire access to strategic resources and gain bargaining power, making it more likely for the headquarters to grant them a certain degree of discretion. External embeddedness functions as a factor that repositions the subsidiary from a mere execution site to a strategic entity with unique knowledge and capabilities, thereby increasing its autonomy. This again

points to the hierarchical relationship between structural and managerial factors.

Hypothesis H4a was also supported. This result is consistent with prior research (Foss & Pedersen, 2002; Gupta & Govindarajan, 2000), showing that highly autonomous subsidiaries are more likely to proactively explore, integrate, and transmit externally acquired knowledge to the headquarters. Autonomy is not just about the extent of decision-making rights; it is a critical managerial factor that supports the subsidiary's agency in knowledge processes.

Furthermore, Hypothesis H4b was supported. This demonstrates that the effect of external embeddedness on RKT only materializes through the improvement of autonomy. Knowledge acquired through external networks risks remaining untapped or buried within the subsidiary if the subsidiary lacks sufficient discretion to act upon it.

Such autonomy aligns with the Japanese ethos of Gemba-ism, positioning the overseas laboratory as a 'Home-Base-Augmenting' (HBA) agent. As Asakawa (2001) suggests, this empowerment allows subsidiaries to internalize localized external knowledge and facilitate its reverse flow to the parent organization, effectively overcoming the limitations of traditional ethnocentric control.

In conclusion, the results support a staged mechanism where external embeddedness serves as a structural prerequisite for fostering subsidiary autonomy, which then substantially drives RKT. By articulating the "External Embeddedness → Autonomy → RKT" process, this study offers a new interpretation of the inconsistent findings in previous literature through the lens of a mediation mechanism.

7.3 Discussion on the Synergistic Effect of Shared Values and Autonomy (H5)

The analysis confirmed that the interaction between shared values and subsidiary autonomy exerts a

significant positive influence on RKT, thereby providing support for Hypothesis 5.

Shared values play a role in fostering trust and mutual understanding between the headquarters and the subsidiary, which reduces the interpretive gaps and psychological resistance that often accompany knowledge transfer. Meanwhile, autonomy serves as the factor that provides the subsidiary with the necessary discretion and behavioral latitude to proactively explore and integrate knowledge from the external environment for transfer to the headquarters. However, even with high shared values, if the subsidiary lacks sufficient autonomy, the proactive behaviors required for knowledge transfer may be constrained. Conversely, even for a highly autonomous subsidiary, a lack of shared values with the headquarters can lead to misaligned perceptions of knowledge value and a lack of trust, making it difficult for acquired knowledge to be transferred effectively. Thus, RKT is not sufficiently promoted when only one factor is high; it is most strongly facilitated when both shared values and autonomy coexist at high levels. Consequently, these managerial factors should be understood as functioning in a complementary rather than independent manner.

Considering the above, this study positioned internal and external embeddedness as structural factors, and autonomy and shared values as managerial factors. The findings demonstrate that these factors do not simply promote RKT in a parallel fashion. Instead, they exist in a hierarchical relationship where structural factors influence managerial factors, which in turn drive RKT. This suggests that structural factors represent latent potential that does not generate corporate activity on its own; their value is only actualized through the mediation of managerial factors. Furthermore, the confirmed synergistic effect, where RKT is maximized when both shared values and autonomy are high, highlights that the facilitation mechanism of RKT is a multi-layered and multifaceted process consisting of several "Structure → Management → Organizational Behavior (RKT)" pathways.

8. Conclusion and Research Significance

This chapter summarizes the conclusions and significance of this study, as well as its limitations.

8.1 Conclusion

In an era where global knowledge utilization is central to corporate competitiveness, this study has focused on the facilitation mechanisms of RKT in Japanese MNEs, with a specific focus on the strategic transition of Chinese subsidiaries into knowledge hubs. The core finding of this research is that RKT is not a direct consequence of structural proximity, but rather the result of a multi-layered process: "Structural Factors → Managerial Factors → Organizational Behavior (RKT)."

The empirical results demonstrate that internal and external embeddedness function as structural prerequisites that only manifest their value when mediated by shared values and subsidiary autonomy. Furthermore, the maximum efficiency of RKT is achieved through the synergy between these two managerial factors. By substantiating this hierarchical and complementary mechanism, this study provides an integrative theoretical explanation for the inconsistent findings in prior literature and offers a clear strategic roadmap for global knowledge utilization.

8.2 Theoretical Implications

The primary theoretical implications of this study lie in elucidating the underlying mechanisms of RKT that have remained insufficiently explored in previous literature. While prior studies have pointed out the associations between factors such as embeddedness, autonomy, or shared values and RKT, they have often lacked a clear explanation of the specific processes through which these factors culminate in RKT. By positioning internal and external embeddedness as structural factors and shared

values and subsidiary autonomy as managerial factors, this study clarifies the relationship between them through the lens of mediation effects, thereby offering significant theoretical implications for the discourse on RKT facilitation mechanisms.

Furthermore, this study provides an integrative explanatory framework for the inconsistent findings in prior literature regarding the relationship between embeddedness and RKT. The result showing that internal and external embeddedness do not directly influence RKT might appear to contradict some earlier studies at first glance. However, by introducing managerial factors as mediators, this study offers a compelling explanation for why direct effects are often not observed. In this regard, it encourages a reconsideration of the link between embeddedness and RKT research, reintegrating them from a mechanistic perspective.

Thirdly, this study holds theoretical significance by highlighting the complementarity of multiple managerial factors as a condition for promoting RKT. The interaction effect between shared values and subsidiary autonomy demonstrates that RKT functions most effectively only when relational dimensions, such as trust and mutual understanding, and structural dimensions, such as discretion and decision-making rights, are established simultaneously. This insight provides a perspective that views intra-organizational knowledge transfer as a dynamic and multifaceted process.

Lastly, the novelty of this study lies in its methodological approach. By utilizing original survey data, I have attempted to capture knowledge transfer comprehensively, including tacit knowledge, moving beyond the conventional scope of patent data, which primarily reflects explicit knowledge.

8.3 Managerial Implications

The results of this study offer several critical implications for the management of foreign subsidiaries

within MNEs.

First, the findings emphasize that RKT does not occur automatically simply by fostering close relationships between the headquarters, the subsidiary, and external partners. As the analysis demonstrates, structural conditions such as internal and external embeddedness do not directly facilitate RKT on their own; they function effectively only when mediated by managerial factors such as shared values and subsidiary autonomy. Therefore, MNEs aiming to leverage global knowledge must look beyond merely increasing contact frequency or formal integration. They must actively monitor and cultivate the specific cognitive frameworks and behavioral authorities that are being formed within their subsidiaries.

Second, the interaction effect between shared values and subsidiary autonomy suggests that a single-faceted management approach is insufficient for facilitating RKT. Headquarters should not view the building of trust-based relationships and the delegation of decision-making authority as separate initiatives. Instead, designing an integrated and comprehensive subsidiary management strategy that harmonizes both elements will be the cornerstone of successful global knowledge utilization in the future.

8.4 Limitations and Future Research

This study contains several limitations that suggest directions for future research.

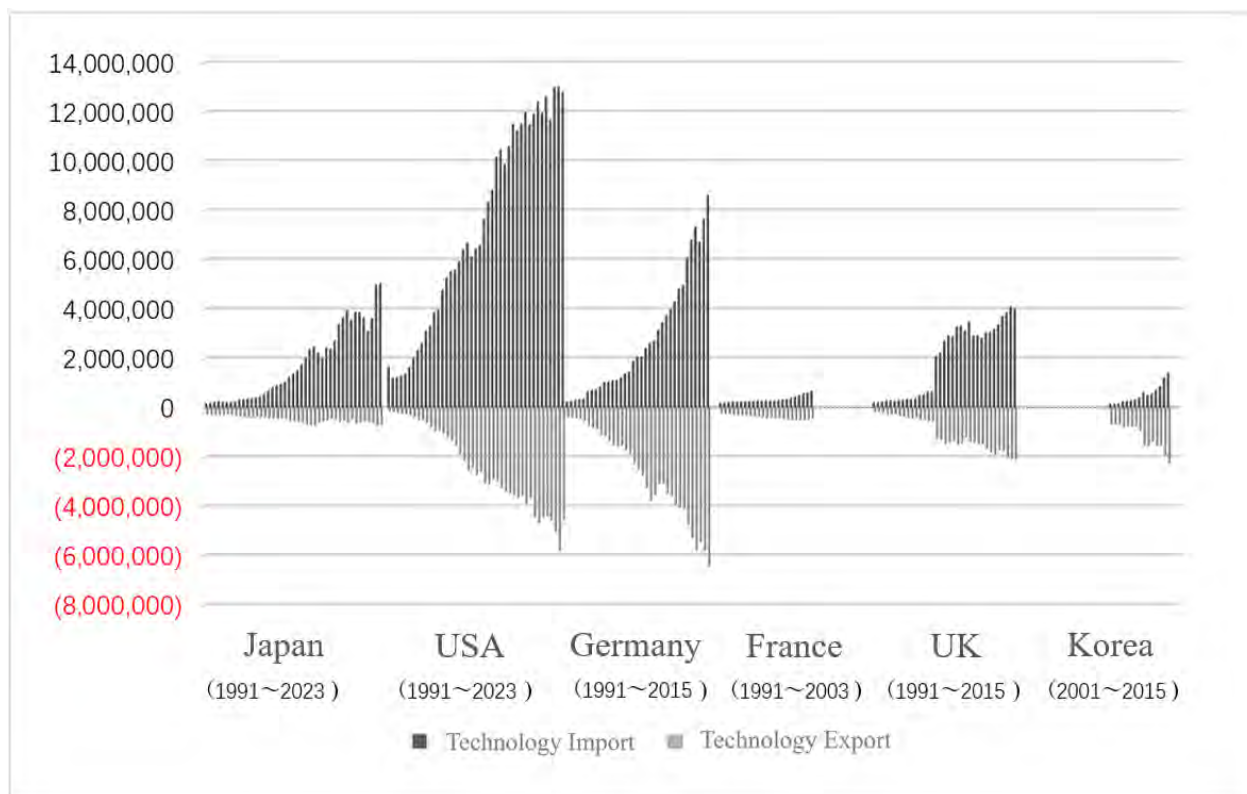
First, while PLS-SEM was appropriate for the small sample size, the cross-sectional nature of the data limits generalizability and the verification of longitudinal causality; therefore, future studies should employ larger samples and CB-SEM for broader validation.

Second, the scope was restricted to specific structural and managerial factors, whereas multi-

level variables such as headquarters' absorptive capacity and individual boundary-spanning roles likely influence RKT. Investigating the interrelationships between these additional factors would provide a more holistic understanding of the mechanism.

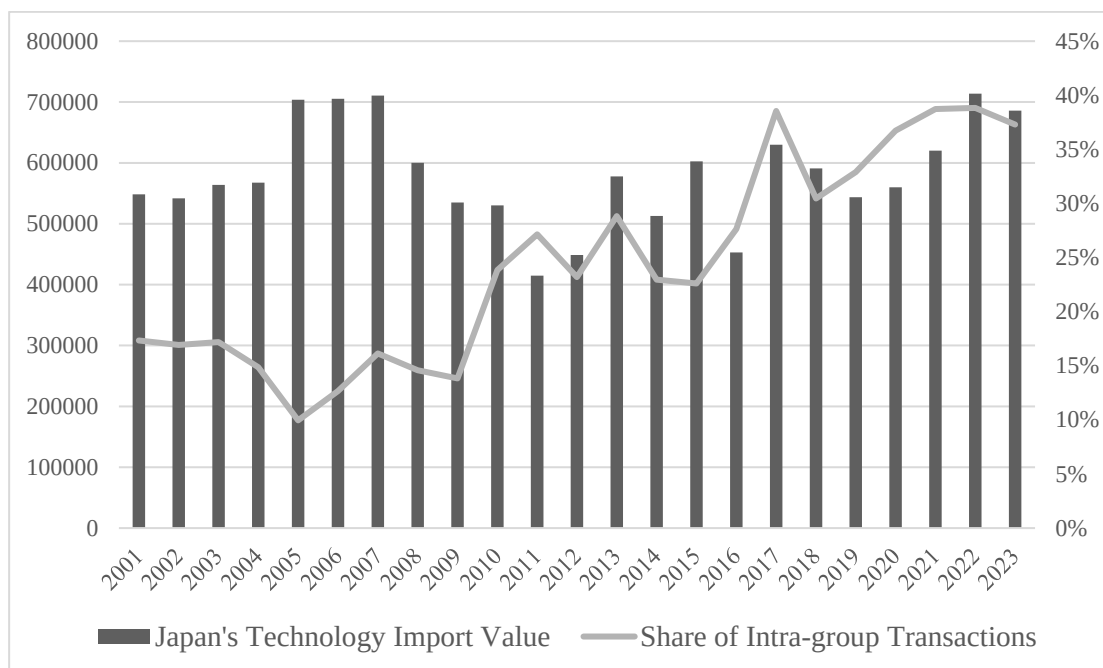
Finally, as the focus was limited to Japanese MNEs in China, the findings may reflect unique regional or organizational cultures. Comparative analyses across different nationalities and institutional contexts are necessary to distinguish between universal and context-dependent RKT drivers.

Figure 1: Trends in Technology Trade Volumes of Major Countries (OECD Purchasing Power Parity Conversion, Unit: Million Yen)



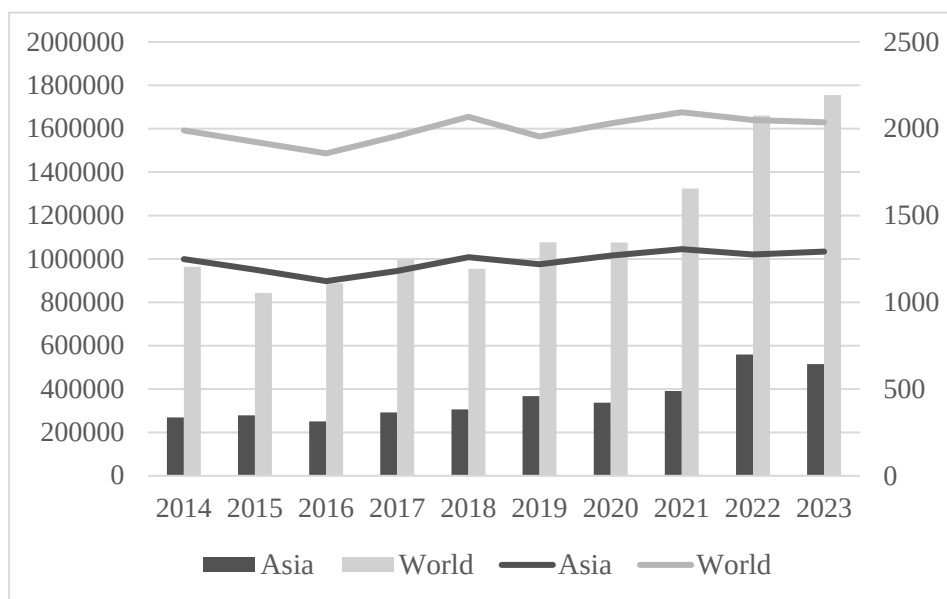
Source: Compiled by the author based on MEXT, Science and Technology Indicators (2019) and *Science and Technology Indicators* (2025).

Figure 2: Japan's Technology Import Value and the Share of Intra-group Transactions (Million Yen)



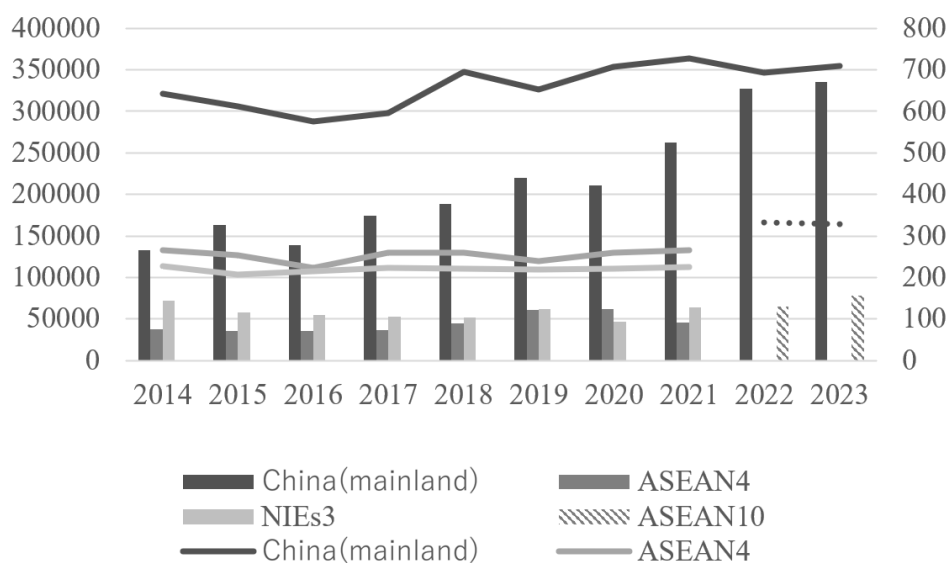
Source: Compiled by the author based on the Ministry of Internal Affairs and Communications, *Survey of Research and Development* for each year

Figure 3: Number of R&D Bases and R&D Expenditures of Overseas Subsidiaries (Million Yen)



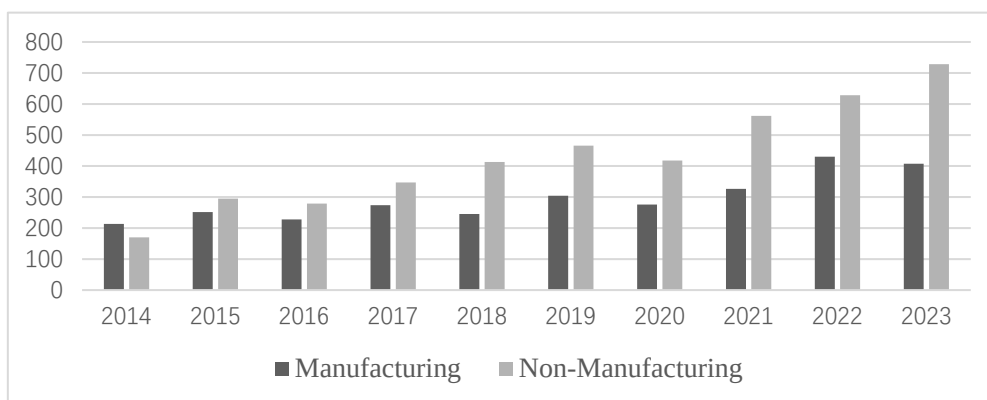
Source: Compiled by the author based on the Ministry of Economy, Trade and Industry, Survey on Overseas Business Activities for each year

Figure 4: Number of R&D Bases and R&D Expenditures of Overseas Subsidiaries (Breakdown within Asia, Million Yen)



Source: Compiled by the author based on the Ministry of Economy, Trade and Industry, Survey on Overseas Business Activities for each year

Figure 5: R&D Expenditures per R&D Base in China (Million Yen)



Source: Compiled by the author based on the Ministry of Economy, Trade and Industry, Survey on Overseas Business Activities for each year

Figure 6: Hypothetical Path Diagram

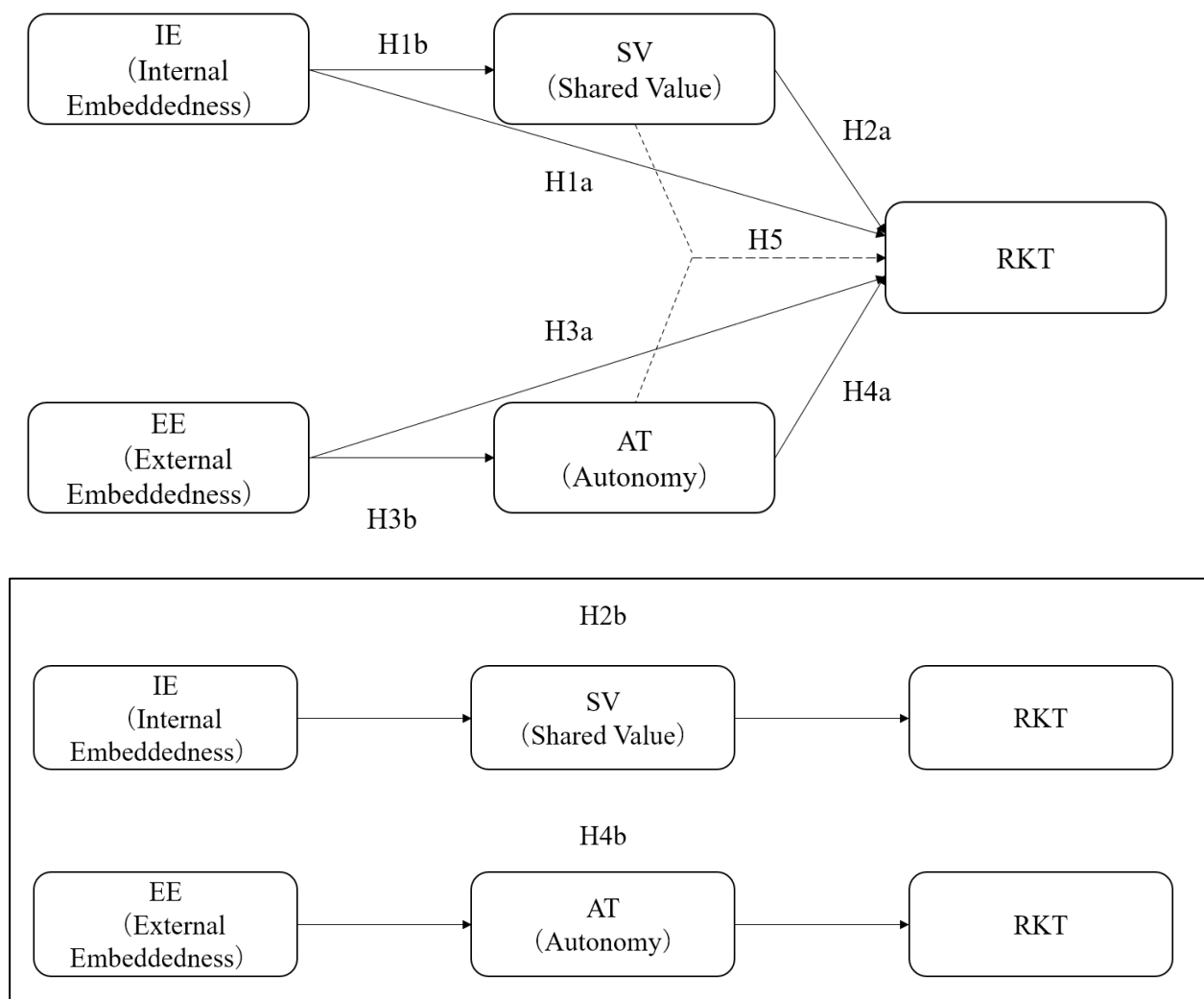
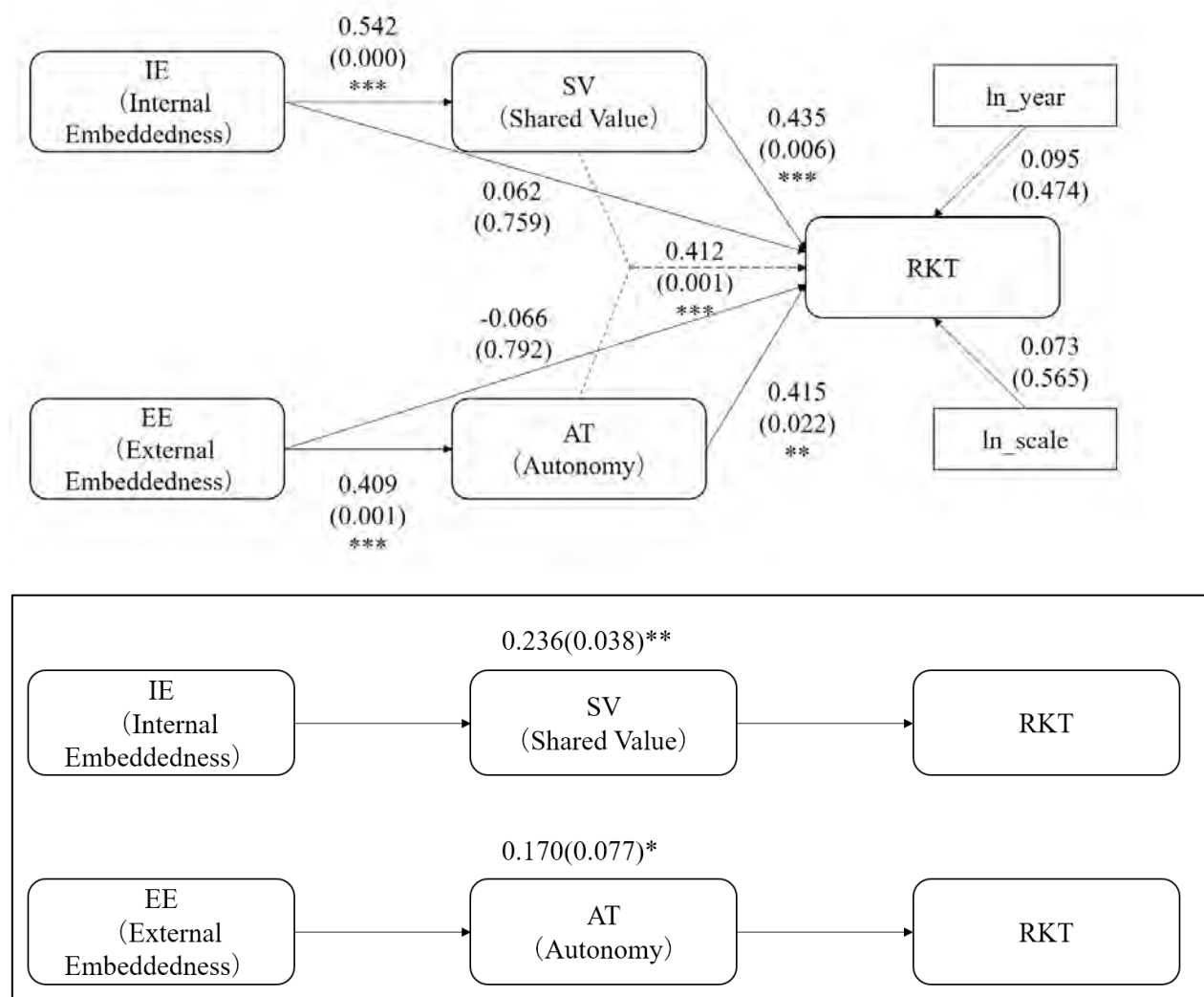


Figure 7: Structural Model Verification Results



*** p < 0.01, ** p < 0.05, * p < 0.10

Table 1: Results of Confirmatory Factor Analysis (CFA)

	Cronbach's Alpha	Rho_A	Composite Reliability	Average Variance Extracted (AVE)	Indicators	Outer Loadings
AT	0.865	0.9	0.917	0.786	AT_1	0.866
					AT_2	0.937
					AT_3	0.855
EE	0.914	0.947	0.945	0.852	EE_1	0.938
					EE_2	0.891
					EE_4	0.94
IE	0.835	0.858	0.889	0.667	IE_1	0.728
					IE_2	0.833
					IE_3	0.843
					IE_4	0.856
SV	0.932	0.933	0.951	0.83	SV_1	0.908
					SV_2	0.932
					SV_3	0.915
					SV_4	0.89

Table 2: HTMT Analysis Matrix

	AT	EE	IE	SV
AT				
EE	0.442			
IE	0.214	0.704		
SV	0.133	0.572	0.582	

Table 3: Results of PLS-SEM Analysis (Bootstrapping Significance Test)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
IE -> RKT	0.062	0.046	0.203	0.307	0.759
IE -> SV	0.542	0.572	0.12	4.512	0***
SV -> RKT	0.435	0.432	0.159	2.726	0.006***
EE -> RKT	-0.066	-0.034	0.25	0.264	0.792
EE -> AT	0.409	0.424	0.125	3.261	0.001***
AT -> RKT	0.415	0.418	0.181	2.286	0.022**
SV x AT -> RKT	0.412	0.398	0.124	3.319	0.001***
ln_year -> RKT	0.095	0.097	0.132	0.716	0.474
ln_scale -> RKT	0.073	0.073	0.126	0.575	0.565

*** p < 0.01, **p < 0.05, *p < 0.10

Table 4: Results of PLS-SEM Analysis for Mediating Effects (Bootstrapping Significance Test)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
IE -> SV -> RKT	0.236	0.249	0.114	2.073	0.038**
EE -> AT -> RKT	0.17	0.175	0.096	1.772	0.077*

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

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Appendix 1: List of Questionnaire Items

Latent Variable	Item ID	Question Content
Shared Values (SV)	SV_1	In general, the business practices of both companies are very similar.
	SV_2	Both companies share a common understanding of how to conduct business.
	SV_3	Both companies have consistent and similar organizational cultures.
	SV_4	We share the same goals as the headquarters.
Internal Embeddedness (IE)	IE_1	There is a high degree of adaptation regarding specific technologies with the headquarters.
	IE_2	There is high long-term orientation and stability in the relationship with the headquarters.
	IE_3	There is a high level of mutual interdependence with the headquarters.
	IE_4	There is a high level of mutual trust with the headquarters.
External Embeddedness (EE)	EE_1	There is a high degree of adaptation regarding specific technologies with external networks.
	EE_2	There is high long-term orientation and stability in the relationship with external networks.
	EE_3	There is a high level of mutual interdependence with external networks.
	EE_4	There is a high level of mutual trust with external networks.
Autonomy (AT)	AT_1	We independently formulate and execute our own strategies.
	AT_2	We make decisions regarding human resource management independently.
	AT_3	We make decisions regarding budget formulation and execution independently.
Reverse Knowledge	RKT_1	To what extent has marketing knowledge/know-how been transferred to the headquarters?

Latent Variable	Item ID	Question Content
Transfer (RKT)		
	RKT_2	To what extent has distribution knowledge/know-how been transferred to the headquarters?
	RKT_3	To what extent has strategic know-how (knowledge of customers, suppliers, competitors) been transferred to the headquarters?
	RKT_4	To what extent has product/service design knowledge/know-how been transferred to the headquarters?
	RKT_5	To what extent has production process design knowledge/know-how been transferred to the headquarters?
	RKT_6	To what extent has purchasing knowledge/know-how been transferred to the headquarters?
	RKT_7	To what extent has management systems and practices knowledge/know-how been transferred to the headquarters?

Appendix 2: Descriptive Statistics

	Variable Name	Mean	Standard Deviation	Min	Max
SV	SV_1	4.7	1.937484	1	7
	SV_2	4.95	1.839035	1	7
	SV_3	4.675	1.817119	1	7
	SV_4	5.075	1.845125	1	7
IE	IE_1	4.8	1.58842	1	7
	IE_2	5.65	1.369072	1	7
	IE_3	5.375	1.496791	2	7
	IE_4	5.775	1.208676	1	7
EE	EE_1	4.625	1.612253	1	7
	EE_2	4.825	1.500214	1	7
	EE_3	4.725	1.584986	1	7
	EE_4	4.975	1.458617	1	7
AT	AT_1	5.175	1.534016	1	7
	AT_2	5.1	1.721657	1	7
	AT_3	4.7	1.667179	1	7
RKT	RKT_1	2.95	1.449138	1	6
	RKT_2	3	1.585188	1	7
	RKT_3	3.25	1.705947	1	7
	RKT_4	3.625	1.734824	1	7
	RKT_5	3.425	1.752471	1	7
	RKT_6	3.25	1.720912	1	7
	RKT_7	3.1	1.598076	1	7
	ln_year	2.858554	0.331105	2.302585	3.526361
	ln_scale	3.053367	1.264241	1.098612	5.638355

How Internationalization Shapes Voluntary Sustainability Disclosure of Japanese Firms: An Empirical Study

Suolinga Suolinga (Ritsumeikan University, Japan)

Mengqi Zhu (Tohoku University, Japan)

ABSTRACT

The purpose of this study is to empirically investigate the relationship between firm internationalization and language choice in voluntary sustainability reporting of Japanese firms, drawing on signaling theory. Our sample comprises a list of Japanese companies with overseas revenue from the Nikkei 225 index, which includes the leading companies listed on the Tokyo Stock Exchange. Based on a total sample of 1573 observations from 175 listed companies during 2015 and 2024, the results indicated that, higher degree of internationalization increases the likelihood that Japanese firms issue sustainability reports in English. What's more, we found that firms with lower ESG performance are more likely to issue both Japanese and English reports, indicating decoupling behaviors and greenwashing risks of internationalized Japanese firms. By examining the role of internationalization in shaping sustainability reporting behaviors of Japanese firms, this study contributes to the nuanced understanding of language dimension of corporate sustainability reporting as a signaling and greenwashing mechanism by companies from non-English speaking countries.

Keyword: Sustainability Reporting; Firm Internationalization; ESG; CSR; Reporting Language

Introduction

Sustainability disclosure refers to the provision of information on companies' environmental and social impacts and its relationship with its stakeholders by means of relevant communication channels (Campbell, 2004; Gamerschlag et al., 2011; Gray et al., 2001). In today's global market, stakeholders are more concerned about environmental and social activities as firms expand to overseas, which lead to firms undergoing more pressures to disclose sustainability related information. Therefore, sustainability reporting on environmental, social and governance (ESG) issues has become a common practice for firms in many economies (e.g. S&P 500 and Fortune Global 250 organizations). For firms engaged in global operations, issuing sustainability reports in multiple languages have also become increasingly common.

Sustainability report has not only been used as a marketing and public relation communication tool by organizations and Multinational Enterprises (MNEs) to portray sustainability activities and practices, but also more of a strategy that attracts and retains stakeholders including customers, employees, business partners and investors (Friske et al., 2023) in order to gain legitimacy and trust in global markets (Marano et al., 2017; Wang et al., 2023; Xie & Zeng, 2025). By altering the number, form and language of corporate reports, many companies selectively disclose more or less of their environmental and social actions (Kochkina et al., 2024; Marquis et al., 2015). Drawing on signaling theory, existing studies showed that international firms and organizations use sustainability related reports to signal their unobserved capabilities and performances related to CSR and sustainable development to

global stakeholders to avoid adverse selection (Wang et al., 2023). However, other studies revealed that sustainability disclosure can be selective, symbolic and even misleading (Marquis et al., 2015).

In this study, we add language dimension to examine the relationship between firm internationalization and sustainability reporting behaviors. Prior research has extensively examined the drivers, benefits and costs of sustainability reports (Chirilli et al., 2022; Daugaard & Ding, 2022; Dissanayake et al., 2021; Levy & Brown, 2014), as well as the relationship between firm characteristics and disclosure practices (Branco & Rodrigues, 2008b; Friske et al., 2023; Gray et al., 2001). However, the influence of internationalization on firms' voluntary disclosure practices, including how firms modify the form and language of sustainability reports, remain insufficiently explored. Empirical studies have shown that ESG or CSR reporting is positively associated with levels of internationalization of MNEs from emerging markets such as China, Vietnam, Russia and India (Agnihotri & Bhattacharya, 2019; Aray et al., 2021; Jiang et al., 2024; Nguyen & Luong, 2025). The academic debate continued to focus on whether firms are genuine signaling or merely employing greenwashing strategy (Mahoney et al., 2013; Tashman et al., 2019; Uyar et al., 2020). Nonetheless, existing studies have yet to clarify the mechanism and channels through which firms convey such signals or engage in greenwashing.

We aim to fill the gap by empirically investigating how internationalization affects the language choice of voluntary sustainability reporting among firms from non-English speaking countries. To answer this question, we conduct an empirical study on Japanese firms. Following

the establishment of the Sustainability Standards Board of Japan (SSBJ) in 2022, all listed companies in Japan are required by authorities to adopt the SSBJ standards and principles and disclose sustainability and climate related information since fiscal year 2027 onward (IFRS, 2025). Until now, however, sustainability reporting has largely been voluntary in Japan, even though the ideas and principles of sustainable development have been supported and endorsed by many domestic corporations. In the latest report on sustainability reports of Nikkei 225 firms by KPMG (2025), it is found that around 50% of Japanese firms issued sustainability reports in English in during 2022~2024, while more than 80% of firms issued English versions of integrated reports. We become interested in finding out whether internationalized firms will be more willing to disclose sustainability information in English, and the difference between Japanese and English reports. In order to answer these questions, we collected data from a sample of Nikkei 225 listed companies, which include publicly listed Japanese companies, and conducted regression analysis.

Drawing on signaling theory, we investigated the relationship between firm internationalization and sustainability reporting behaviors of Japanese firms and highlight the impacts that internationalization has on different aspects of sustainability reporting. Specifically, we hypothesize and confirm that internationalized Japanese firms are more willing to issue sustainability reports in English reports. However, we also observe a degree of decoupling behavior: firms with lower ESG performances tend to disclose more sustainability information. This paper is structured in five sections. The subsequent review session explains the theoretical foundation of this study – signaling theory and its application in sustainability reporting

literature and provide our hypotheses. Next, the quantitative research method and sampling method will be explained. Subsequently, we show the results of regression tests, followed by theoretical and practical implications of empirical findings. Finally, this paper concludes with limitations and suggestions for future research.

1. Literature Review

We adopt signaling theory to understand the current voluntary sustainability reporting behaviors of Japanese firms as they internationalize.

2.1 Firm Internationalization and Sustainability Reporting

Sustainability reporting is disclosure of non-financial performance information to external parties, voluntary or mandatory (Paridhi & Arora, 2023). More broadly, sustainability reporting encompasses information relating to environmental, social, economic and governance issues. Scholars increasingly recognize it not only as a crucial communication medium and mechanism to engage stakeholders (Herremans et al., 2016), but also as an effective signal through which companies convey their commitment, value and strategies (Yu et al., 2017). Although scholars have raised questions against the gap between symbolic sustainability reports and the substantial sustainability/CSR performance such as decoupling (Marano et al., 2017; Marquis & Qian, 2014; Tashman et al., 2019), most of the international firms conform to the expectations and engage in sustainability disclosure. For firms from non-English speaking countries, issuing sustainability reporting in English language has become a major trend.

The large number of existing studies reported mixed evidence on the relationship between firm internationalization and CSR/sustainability engagement (Chen et al., 2025). Some studies found that international firms were linked with higher CSR performance, due to the increased stakeholder and institutional pressures (Attig et al., 2016). These studies have showed positive impact of internationalization of firms on CSR engagement and performances (Symeou et al., 2018), as well as the reverse positive effect of CSR activities on firm internationalization and foreign market penetration (Khojastehpour & Saleh, 2020). However, some studies showed there were negative or no impact of firm internationalization on CSR activities. For example, evidence suggested that some multinational enterprises from developed economies will explore the less stringent regulations or accept lower CSR standards to compete in local markets. (Chen et al., 2025).

Many different theories have been used to explain the motivation and mechanism of sustainability/CSR reporting in global markets, such as institutional theory (Marano et al., 2017; Tashman et al., 2019), legitimacy theory (Aray et al., 2021), stakeholder theory (Prado-Lorenzo et al., 2009), political cost theory (Gamerschlag et al., 2011). Drawing on legitimacy theory and signaling theory, recent empirical studies on emerging market multinational enterprises have shown that ESG or CSR reporting is positively associated with levels of internationalization (Jiang et al., 2024; Nguyen & Luong.; Zhang et al., 2021). This is easy to understand since the number and range of relevant stakeholders are expected to increase as firms internationalize, which will lead to more corporate legitimacy seeking behaviors by signaling their superior performances and commitment to profitability and sustainable development.

Despite its widespread adoption, sustainability reporting faces critical scrutiny and thus have received increased scholarly attentions on the authenticity and the impact of disclosed information. Although the global expectations on the transparency and comparability of sustainability reporting have increased, disparities remain in both reporting standards and expectations of institutions. Information asymmetry persists across different countries and regulatory authorities. Scholars have pointed to the phenomenon of sustainability/CSR decoupling, which refers to a symbolic strategy whereby a firm overstates its CSR or sustainability performance in their disclosure to gain legitimacy (Tashman et al., 2019). One of the most common forms of decoupling is greenwashing, which describes the strategy that companies adopt to communicate sustainability and environmental issues without substantive actions (Walker & Wan, 2012). Due to the weak institutions in home country, MNEs from emerging markets are more likely to be involved with decoupling behaviors in global markets. However, Tashman et al. (2019) found that, the increase in the level of internationalization also motivates emerging markets multinational enterprises to avoid decoupling behaviors.

Nevertheless, the trend towards sustainability disclosures continues to gain momentum internationally. Firms from non-English speaking countries have become increasingly motivated to issues reports in English to reach broader audiences and enhance transparency. However, existing studies have not sufficiently examined the strategy and mechanism of sustainability reporting practices. Specifically, we argue that multilingual reporting may be used a strategic communication tool to appeal to diverse stakeholder groups, even when the underlying sustainability practices and performance remain unchanged or insufficient.

2.2 Signaling Theory and Hypotheses Development

Signaling theory (Spence, 1973) is concerned with addressing information asymmetry between two parties and is becoming commonly used by management scholars to examine and explain the corporate sustainability activities. According to Spence (2002), signaling theory has five essential components: the signaler, the signal, the receiver, receiver feedback, and the signaling environment. In international market (signaling environment), firms (signalers), use sustainability reporting (signals) to signal their intentions to engage in sustainable business practices to interested stakeholders (receivers). Stakeholders interpret the sustainability reports and make decisions regarding the firm. The signaling environment affects receivers' interpretations of the signals. To allow receivers to differentiate between high- and low- quality market actors, signals must be both observable and costly, so that a 'separating equilibrium' can occur (Connelly et al., 2025). Therefore, to improve the effectiveness of the signals, the signalers will need to consider factors including the observability, cost of imitation, and credibility of signals (Friske et al., 2023), as well as institutional environments that interpret the signals (Wang et al., 2023).

In their latest review work on signaling theory, Connelly et al. (2025) described the organizational signals related to environment concerns and CSR engagement as virtue signaling. They underscored the risks related to low-cost virtue signaling and argued that virtue signaling is ineffective and can even backfire when signals do not align with the genuine corporate

concerns for society and environment (Connelly et al., 2025). To improve the effectiveness of the signals, firms may employ external auditors to increase the credibility of the signals. Firms can also improve the strengths and amounts of signals by issuing reports in multiple languages.

In the context of sustainability reporting, internationalizing firms from non-English speaking countries (signalers) will publish sustainability reports in both English and home country language to send virtue signals about their concerns for sustainability issues as well as their performances to domestic and foreign stakeholders. For Japanese companies, Japanese reports can be regarded as a signal to domestic stakeholders, including employees, investors, customers, regulators. While English-language report serves as an additional virtue signals targeted at international stakeholders, including investors, customers, business partners abroad and other potential stakeholders, who will become increasingly salient and powerful as the firm's degree of internationalization grows. This dual legitimacy will enable Japanese firms to publish both Japanese and English reports to meet expectations for transparency and global competitiveness. Building on this line of reasoning, we developed the following hypotheses.

H1a. The higher the degree of internationalization, the more likely Japanese firms are to issue sustainability report in Japanese to signal to domestic stakeholders.

H1b. The higher the degree of internationalization, the more likely Japanese firms are to issue sustainability report in English to signal to international stakeholders.

Signalers will also change their signal forms to increase the signal fit between the signals and the desired outcome and credibility of signals (Connelly et al., 2011). Based on the empirical

findings from companies listed in Tokyo and London Stock Exchange, Nishitani et al. (2021) suggests that more firms are publishing sustainability related information through integrated reports instead of separate sustainability reports (Nishitani et al., 2021). What's more, according to International Accounting Federation (2024), sustainability reporting practices among the large global companies have continued to mature. The use of standalone sustainability reports has declined by 27 percentage points in the past three years (IAF, 2024), reflecting the global shift towards integrated reporting where sustainability information is embedded in. Japanese firms, aiming to align with international practices to gain legitimacy and credibility, are expected to adopt this standard and include sustainability information in companies' annual or integrated reports. Therefore, we assume that the report type will be influenced by internationalization and Japanese firms' intentions to keep up with global standards.

H2. The positive effect of internationalization on the publication of integrated reports is stronger than its positive effect on the publication of other sustainability reports.

The study of Tashman (2009) revealed that home country institutional voids will cause more CSR decoupling behaviors of emerging markets multinational enterprises (EMNEs), but greater level of internationalization motivate EMNEs to avoid CSR decoupling (Tashman et al., 2019). Based on a sample of 224 Japanese firms, Nishitani et al. (2021) found out that firms with better sustainability performance are more likely to disclose nonfinancial sustainability related information (Nishitani et al., 2021). Therefore, our third hypothesis is:

H3. The positive effect of internationalization on the publication of sustainability reports is

stronger among firms with higher ESG performance

Figure 1 shows theoretical framework for this empirical study.

{Insert Figure 1 here}

2. Methods

Our sample comprises a list of Japanese companies with overseas sales from the Nikkei 225 index, which includes the 225 leading companies listed on the Tokyo Stock Exchange. Based on the 2025 Nikkei 225 list, we selected those with foreign sales over 0 as international firms. After combining dependent variables manually and other variables from the eol Annual Securities Report Database and LSEG Workspace, we finally have a sample of 1573 observations from 175 listed companies during 2015 and 2024.

Table 1 shows definitions for all variables. Dependent variables include Jreport and Ereport, both of which are dummy variables equal to 1 if the firm publishes its voluntary sustainability report in Japanese or English in a given year. Here, we define a voluntary sustainability report as a voluntarily released document that includes descriptions of sustainability activities (including CSR, ESG, SDGs, and so on) and is available on the official website in PDF format for download. Reports with only numerical data are excluded for the balance of data quality of the voluntary disclosure. If a firm has no sustainability report in a given year, we record the integrated report, which includes both financial and non-financial data. Dependent variables are manually collected by searching for sustainability reports on the websites of sample companies.

For the independent variable, we employ one of the most widely accepted estimators of the degree of internationalization (DOI), specifically foreign sales as a percentage of total sales (FSTS) (Sullivan, 1994).

We considered multiple control variables that may affect the possibility of voluntary sustainability reporting. Studies have suggested that the profitability and leverage of MNCs have a significant impact on their social reporting behavior, due to their limited financial resources (e.g., Sotorrío & Sánchez, 2010). Thus, we include return on assets (ROA) and leverage as control variables. Moreover, since larger companies are found to be more likely to make voluntary disclosure (e.g., Brammer & Pavelin, 2006), firm size, that is, the logarithm of total assets, is considered as one of the control variables. We also include financial institution ownership share (Financialshare) as a control variable because prior literature has shown that institutional or financial ownership is often a significant determinant of voluntary sustainability disclosure (e.g., El-Gazzar, 1998). Based on the conclusions from Harjoto & Jo (2011), governance characteristics such as board independence positively affect firms' CSR engagement. Therefore, we have considered the board independence, measured by the ratio of independent directors to the total number of directors. Moreover, Board size is controlled for because larger boards may provide greater expertise and stakeholder representation, thereby affecting CSR disclosure decisions (Jizi et al., 2014). Prior research suggests that foreign institutional investors play an important monitoring role and encourage firms to increase voluntary disclosure and transparency in global markets (Tsang et al., 2019). Therefore, foreign ownership is also controlled for in the empirical analysis.

{Insert Table 1 here}

$$Report_{i,t} = \beta_0 + \beta_1 Fin\_int_{i,t} + \beta Control_{i,t} + \sum Year + \sum Firm + \varepsilon_{i,t}$$

The baseline regression model is shown in the equation above. In the model, $Report_{i,t}$ is the dependent variable, including Jreport and Ereport, and Fin_int for measuring the degree of internationalization is the independent variable. β_0 is the constant, and $Control_{i,t}$ represent the control variables. Based on the result of the Hausman Test ($\chi^2 = 35.99$, $p < 0.05$), the use of fixed effects models in baseline regressions is supported, thus $\sum Year + \sum Firm$, the fixed effects of time and firm, are considered in the regression models. $\varepsilon_{i,t}$ is the error term.

3. Findings

Tables 2 and 3 present descriptive statistics and correlation analysis. As shown in Table 2, voluntary disclosure of sustainability information is prevalent in this dataset, with both Japanese and English disclosures averaging a high 0.9. This indicates that most of the large international Japanese firms tend to release sustainable reports, whether in Japanese or English. The average Fin_int also exceeds 50%, indicating that the sample consists of highly internationalized firms. The average ROA stands at 6.94%, though the distribution is relatively dispersed (ranging from -34.76% to 51.89%). Capital structures also show significant variation, indicating broad heterogeneity among sample firms in profitability and leverage levels. The mean value for the firm size indicator is 14.54, as the selected sample comprises large, top-ranked listed companies in the Nikkei index. The average institutional ownership stands at 35.21%, reflecting the

significant role of institutional investors in Japanese corporate governance. The descriptive statistics also reveal several governance characteristics of the sampled firms. Independent directors account for 32.79% of board members on average, although substantial variation exists across firms ($SD = 16.15$). The mean value of board size is 2.47, while foreign ownership averages 32.39%, suggesting that foreign investors hold a considerable proportion of shares in Japanese listed firms.

{Insert Table 2 here}

In Table 3, the correlation coefficient between $Jreport$ and $Ereport$ reaches 0.859***, indicating that most companies disclosing Japanese reports also tend to disclose English versions. The correlation between Fin_int and $Jreport$ is insignificant (-0.036), while the correlation with $Ereport$ is significant (-0.041*). This suggests that internationalization has a slightly stronger correlation with English report disclosure but a limited impact on Japanese disclosure. Correlations among other variables are moderate (mostly from 0.2 to 0.3), indicating no severe multicollinearity. Additionally, we verified the multicollinearity test for both models separately. The variance inflation factor (VIF) coefficients for all variables fall between 1 and 1.72, confirming that no multicollinearity issues exist.

Table 4 presents the results of the baseline regression, based on fixed-effects models with both firm and year fixed effects. Standard errors are clustered at the firm level to account for within-firm correlation over time. The regression coefficient for the independent variable Fin_int (Japanese reports 0.001 and English reports 0.002*) indicates that higher levels of

internationalization correlate with a greater tendency for firms to publish sustainable reports in English, while showing no significant effect on Japanese reporting behavior. This finding aligns only with the theoretical expectations of H1b and rejects H1a, demonstrating that internationalization not only drives firms to enhance information transparency but also motivates them to proactively disclose social responsibility information to foreign stakeholders.

{Insert Table 3 here}

{Insert Table 4 here}

{Insert Table 5 here}

To further examine the robustness of the results, we employ one-period lagged regressions to alleviate potential reverse causality concerns. Table 5 reports the results of the lagged regression models, in which the internationalization variable is lagged by one year. The results remain generally consistent with the baseline findings. Specifically, the coefficient on lagged internationalization (*L.Fin_int*) remains positive and statistically significant for English CSR report disclosure (*Ereport*), suggesting that firms with higher levels of internationalization are more likely to publish English CSR reports in subsequent periods. The coefficient for Japanese CSR report disclosure (*Jreport*) is not statistically significant as that of baseline regression, and its direction remains consistent with the baseline results. Overall, these findings suggest that the main results are robust to the use of lagged explanatory variables and are unlikely to be driven by reverse causality.

{Insert Table 6 here}

Additionally, we conducted several additional analyses. According to Nishitani et al. (2021), corporate voluntary reporting is now transitioning to a new phase, shifting toward the publication of integrated reports. Therefore, by manually collecting the names of sustainability reports published by all sample companies, we created two variables to divide Japanese firms into those that only release integrated reports and others. Integrated reports encompass both financial and non-financial information, while dedicated reports contain solely non-financial data such as environmental, social, and governance (ESG) aspects, including CSR and ESG reports.

Table 6 presents the regression results for report types. Integrated_J and Integrated_E are dummy variables with their value equal to 1 if an observation only releases an integrated report in Japanese or English, 0 for others. The coefficient on internationalization (Fin_int) is positive in both the Japanese and English integrated report models, consistent with the predicted direction. However, the coefficients are not statistically significant. Therefore, Hypothesis 2 is not empirically supported. One possible explanation is that integrated reporting has become increasingly institutionalized among Japanese listed firms and may be driven more by regulatory expectations and general disclosure trends than by firms' level of internationalization.

{Insert Table 7 here}

Further, since ESG performance can be regarded as an objective indicator for Japanese firms' sustainability related performances. Firms with lower ESG performance may need to utilize sustainability reporting to make up for their poor scores. Thus, we consider ESG score level

heterogeneity by dividing the full sample into two groups, firms with relatively high and low ESG performance, for subsample regression analysis. Overall ESG scores of the sample firms during 2015 and 2024 are collected from LSEG Workspace. We use the median ESG scores from the previous year's sample as the grouping criterion. Observations exceeding the median of the annual sample are assigned to the high ESG group, while those below it are assigned to the low ESG group.

Table 7 presents the results for ESG performance heterogeneity. Model 1-2 represents the effect of internationalization extent on Japanese reporting among firms with high and low ESG performance. As the result shows, the positive effect of internationalization on Japanese sustainability reporting exists for firms with low ESG scores. However, for those with high scores, it even shows a negative effect. Model 3-4 represents the effect of internationalization extent on English reporting among firms with high and low ESG performance. Similarly, the positive effect of internationalization on English sustainability reporting only exists for firms with low ESG scores. Therefore, H3 is rejected. The results indicate that the internationalization level of Japanese firms with low ESG performance promotes the release of both Japanese and English voluntary sustainability reporting.

4. Discussion

This study contributes to IB literature by providing implications for signaling theory and sustainability reporting practices. First, our study addresses the gap in sustainability reporting

research in the Japanese context. Second, we contribute to the sustainability reporting literature by exploring the relationship between firm internationalization and voluntary sustainability disclosure. The findings suggest that the higher the degree of internationalization, the more likely Japanese firms are to issue sustainability reports in English to signal to foreign stakeholders. What's more, the positive effect of internationalization exists in the publication of both Japanese and English sustainability reports for firms with lower ESG performance.

5.1 Implications

This study extends signaling theory and extends its application to sustainability disclosure practices in internationalized Japanese firms. Our results showed that language choice itself can constitute part of corporate signaling. Internationalization changes the stakeholder environment, creating dual institutional pressures, which lead Japanese firms to release multi-layered signals. Internationalized Japanese firms (signalers) first release baseline signals (Jreport) that satisfy local legitimacy and then additional signals (Ereport) which respond to global institutional logics (foreign investors, buyers, regulators, etc.). This finding supports the view of Kochkina et al. (2024), where they used language game theory to argue that language plays an important role in crafting sustainability communication strategies (Kochkina et al., 2024).

A core premise of signaling theory is that credible signals must be costly to produce, so that low-quality firms cannot imitate them (Connelly et al., 2025). Our findings also shed lights on the costs of sending sustainability signals to foreign stakeholders by internationalized Japanese

firms. Although the global reporting standards for sustainability reports incentivized firms to issue more integrated reports, our empirical findings on Japanese firms did not support these observations. In other words, internationalization of Japanese firms did not translate into greater integrated reporting adoption. Possible explanations could be that, for Japanese firms, formal IR adoption is ineffective or redundant signal that do not convey additional informational value to their foreign stakeholders.

The findings about decoupling behavior among weak ESG performers echoed with the concerns of ineffective virtue signals in previous studies. Internationalized Japanese firms with low ESG performance utilize Japanese and English sustainability reports as strategic tools to manage impression. Therefore, we can conclude that multiple language reports can be ineffective, because they are not costly to imitate. For companies with strong ESG performance, the marginal benefits of publishing sustainability reports are relatively limited. By highlighting how the internationalization degree shapes the language and report types of voluntary sustainability disclosure practices, our study contributes to the sustainability reporting literature and provide new insights within the Japanese context.

However, stakeholder, such as investors and government, might need to scrutinize the decoupling or greenwashing behaviors of internationalized Japanese firms. Policy makers can consider how to better identify firms that engage in greenwashing behaviors.

5.2 Limitations

Although this paper reveals the impact of internationalization on voluntary sustainability reporting of Japanese firms, there are several limitations. Firstly, since we collected the dependent variable manually, given that some companies only publish reports for the most recent year, our data may contain some potential bias. Secondly, the level of voluntary disclosure behavior examined is relatively superficial. We only considered a binary choice, namely disclosure or non-disclosure, without questioning the quality, topics, or other dimensions of the disclosure behavior. Moreover, the measurement of internationalization is limited. Only one of the most classic internationalization measurements, the proportion of overseas sales, is used, without exploring other dimensions such as the geographic distribution of overseas subsidiaries. Finally, due to data availability, the study sample is limited to Japan's leading publicly listed companies. Other types of samples, such as small and medium-sized enterprises, are not considered. It also does not include cross-country comparisons with other Asian nations.

Thus, there is much room left for further research. First, future research can go beyond “disclosure or non-disclosure” by incorporating text analysis methods to measure report richness, depth, and other disclosure quality dimensions, thereby capturing more differences in information disclosure. Analysis could delve into the thematic content of disclosures—such as environmental, social responsibility, or governance issues—to explore how internationalization shapes strategic communication targeting diverse stakeholders. Second, future research can explore the effects of institutional factors of Japanese firms on sustainability reporting. The study by Yoshida et al. (2022) found that Japanese Keiretsu firms, such as Mitsubishi Keiretsu firms, which are firms

that belong to a horizontal corporate group, tend to engage in CSR activities more constantly than non-Keiretsu firms (Yoshida et al., 2022). Furthermore, expanding the research sample to include small and medium-sized enterprises, other countries, or utilizing longer longitudinal data would help test the universality and boundary conditions of internationalization's role in voluntary sustainable disclosure behavior. This would foster a more comprehensive understanding of corporate sustainability communication strategies within the globalization context.

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Appendix: Tables and Figures

Figure 1 How internationalization extent affects sustainability reporting of Japanese firms



Table 1 Variable Definition

Variable Type	Variable Symbols	Definition
Dependent Variable	Jreport	A dummy variable that equals 1 if the firm publishes its sustainability report in Japanese in a given year, and 0 otherwise.
	Ereport	A dummy variable that equals 1 if the firm publishes its sustainability report in English in a given year, and 0 otherwise.
Independent Variable	Fin_int	The ratio of foreign sales
Control Variable	Financialshare	Ownership share of financial institutions
	Leverage	Total Liabilities / Total Assets
	ROA	Net Profit/Total Assets
	Size	Logarithm of total assets
	Indep	Ratio of independent directors to the total number of board directors
	Boardsize	Logarithm of the total number of board directors
	IntOwnership	Percentage of shares held by foreign investors

Table 2 Descriptive Statistics

	Mean	SD	Min.	Max.
Jreport	0.91	0.29	0.00	1.00
Ereport	0.90	0.29	0.00	1.00
Fin_int	51.40	23.27	1.00	100.00
Financialshare	35.21	9.48	8.01	59.04
Leverage	2.99	3.70	-36.49	65.03
ROA	6.94	5.60	-34.76	51.89
Size	14.54	1.27	11.00	19.77
Indep	32.79	16.15	0.00	87.50
Boardsize	2.47	0.26	1.61	3.33
IntOwnership	32.39	12.05	1.12	90.83
N	1573			

Table 3 Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Jreport	1.000									
(2) Ereport	0.859***	1.000								
(3) Fin_int	-0.036	-0.041*	1.000							
(4) Financialshare	0.110***	0.102***	0.064**	1.000						
(5) Leverage	0.087***	0.096***	-0.252***	-0.180***	1.000					
(6) ROA	-0.147***	-0.162***	0.173***	0.008	-0.310***	1.000				
(7) Size	0.207***	0.206***	-0.131***	-0.308***	0.497***	-0.313***	1.000			
(8) Indep	0.172***	0.166***	0.122***	-0.145***	0.086***	0.017	0.186***	1.000		
(9) Boardsize	0.034	0.034	-0.101***	0.091***	0.144***	-0.194***	0.270***	-0.298***	1.000	
(10) IntOwnership	-0.144***	-0.171***	0.167***	-0.262***	-0.002	0.260***	0.135***	0.166***	-0.063**	1.000

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 4 Baseline Regressions

	(1)	(2)
	Jreport	Ereport
Fin_int	0.001 (0.001)	0.002* (0.001)
Financialshare	-0.002 (0.003)	-0.004 (0.003)
Leverage	-0.000 (0.001)	0.000 (0.001)
ROA	0.004 (0.003)	0.004 (0.003)
Size	0.093 (0.078)	0.087 (0.076)
Indep	0.003** (0.001)	0.003*** (0.001)
Boardsize	-0.068 (0.049)	-0.037 (0.054)
IntOwnership	-0.002 (0.002)	-0.003 (0.002)
N	1568	1568
adj. R^2	0.583	0.618
Year	Yes	Yes
Firm	Yes	Yes

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 5 One-period Lagged Regressions

	(1) Jreport	(2) Ereport
L.Fin_int	0.002 (0.001)	0.003* (0.001)
Financialshare	-0.002 (0.003)	-0.003 (0.003)
Leverage	-0.004 (0.003)	-0.002 (0.002)
ROA	0.003 (0.003)	0.004 (0.003)
Size	0.120 (0.083)	0.120 (0.080)
Indep	0.002 (0.001)	0.003** (0.001)
Boardsize	-0.077 (0.052)	-0.034 (0.058)
IntOwnership	-0.002 (0.002)	-0.003* (0.002)
N	1369	1369
adj. R ²	0.589	0.631
Year	Yes	Yes
Firm	Yes	Yes

Table 6 Regressions Based on Report Type

	(1) Integrated_J	(2) Integrated_E
Fin_int	0.003 (0.003)	0.003 (0.003)
Financialshare	0.009* (0.005)	0.009** (0.004)
Leverage	0.001 (0.002)	0.001 (0.002)

ROA	-0.003 (0.004)	-0.001 (0.004)
Size	0.039 (0.107)	0.014 (0.115)
Indep	0.002* (0.001)	0.002 (0.001)
Boardsize	-0.135* (0.075)	-0.163* (0.086)
IntOwnersh	0.004* (0.003)	0.004 (0.003)
N	1568	1568
adj. R ²	0.653	0.656
Year	Yes	Yes
Firm	Yes	Yes

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 7 ESG Heterogeneity

	(1) Jreport with high ESG	(2) Jreport with low ESG	(3) Ereport with high ESG	(4) Ereport with low ESG
Fin_int	-0.002 (0.002)	0.003* (0.002)	-0.001 (0.002)	0.004** (0.002)
Financialsh are	-0.005 (0.004)	-0.003 (0.005)	-0.001 (0.004)	-0.008** (0.003)
Leverage	0.006** (0.003)	-0.012* (0.006)	0.005* (0.003)	-0.012* (0.006)
ROA	0.008** (0.004)	0.001 (0.003)	0.007* (0.004)	0.002 (0.003)
Size	0.067 (0.084)	0.145 (0.124)	0.063 (0.085)	0.163 (0.113)
Indep	0.004*** (0.002)	-0.001 (0.002)	0.005*** (0.002)	-0.001 (0.002)
Boardsize	0.017 (0.055)	-0.124* (0.069)	0.045 (0.065)	-0.072 (0.073)

IntOwnershi	-0.000	-0.004	0.000	-0.005*
p	(0.003)	(0.003)	(0.003)	(0.003)
<i>N</i>	770	726	770	726
adj. <i>R</i> ²	0.483	0.652	0.494	0.698
Year	Yes	Yes	Yes	Yes
Firm	Yes	Yes	Yes	Yes

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Dynamic OLI Cycle in International Business: Case Analysis of Retail Business and Fast-food Business

Yukio Takagaki (Surugadai University, Japan)

ABSTRACT

International business research often focuses on Multinational Enterprises (MNEs) in manufacturing industries because they are the primary participants in Foreign Direct Investment (FDI). MNEs have been the most frequently cited targets in FDI analyses, rather than other entry modes, such as export, licensing (and franchising), and M&A. As production has become increasingly globalized in response to cost-efficient modes of production, delivery, and marketing, more companies are actively engaged in foreign countries, which have now become integral to the value chain. This paper concerns industries closer to the end-consumer: the non-manufacturing “retail businesses” and “fast-food businesses”. The discussion considers their development, evolution, and expansion into foreign markets, which sometimes includes non-FDI. To analyze these topics, the case analysis was employed. I propose 7 hypotheses and examine them using a revised version of Dunning’s OLI Paradigm (1973). The revision introduces the concepts of “dynamic” and “cyclic” into the original paradigm and names the revised paradigm the “Dynamic OLI Cycle Model.” Case analysis includes three “retail businesses” and four “fast-food businesses”. The results indicate that the “Dynamic OLI Cycle Model” can be applied to non-manufacturing firms such as retail and fast-food businesses.

Keyword: Management, Strategy, Operations Management, Theory of FDI and the MNE (Ownership-Location-Internalization), Dynamic OLI Cycle

Beyond Support: A Conceptual Framework of Expatriate–HCN Boundary-Spanning Roles

Keisuke Ujike (Monash University, Japan)

Ivan Destian Butar Butar (Monash University, Indonesia)

ABSTRACT

In MNEs, expatriates and host-country nationals (HCNs) hold distinct knowledge that the other party lacks. To mitigate these informational asymmetries, both parties develop mutual expectations that the other will translate, mediate, and coordinate across boundaries. Drawing on role theory and self-determination theory, we reconceptualize expatriate–HCN collaboration as a dyadic role process in which role expectations are shaped through role sending and role receiving. This conceptual paper develops a model and propositions in which these expectations trigger boundary-spanning behaviors and two simultaneous pathways. In the bright path, boundary spanning provides access to specialized values, knowledge, and practices the counterpart does not possess and supports need satisfaction (autonomy, competence, relatedness), enabling internalization. This yields asymmetric outcomes: expatriates' interaction adjustment via host-context internalization and HCNs' organizational identification via internalization of MNE values. In the dark path, boundary spanning evolves into taken-for-granted role demands, intensifying role ambiguity, role conflict, and role overload, and increasing emotional exhaustion for both parties. This framework is especially salient for Japanese MNEs, where demographic constraints and localization pressures make expatriate-heavy coordination difficult and elevate HCNs from one-way “support” providers to central coordination actors.

Keyword: Expatriate Management; Cross-cultural Management; Work design; HCN; Japanese MNEs

INTRODUCTION

In international management research, a central conversation concerns how expatriates and host-country nationals (HCNs) coordinate work in MNEs when each side lacks the other's knowledge and access (Furusawa & Brewster, 2019; Michailova et al., 2023). Expatriates tend to have access to headquarters policies and internal networks (Ando & Paik, 2013), whereas HCNs tend to have deep knowledge of local institutions, culture, language, and work practices (Vance et al., 2009). Coordination, therefore, requires ongoing interaction across cultural, linguistic, institutional, and work-practice boundaries (Schotter et al., 2017; Augustin et al., 2025). Within this tradition, research has often been expatriate-centered (Takeuchi, 2010), positioning HCNs mainly as socializing agents (Toh & DeNisi, 2007) or supporting actors (Fan & Harzing, 2017). Reviews and meta-analyses show that HCN support and cooperation facilitate expatriates' interaction adjustment (Bhaskar-Shrinivas et al., 2005; Hechanova et al., 2003; Kang & Shen, 2018).

However, framing HCNs mainly as providers of support to expatriates (Toh & DeNisi, 2007) can obscure how translation, mediation, and coordination across boundaries are experienced and evaluated in everyday work (Fee, 2020; Heizmann et al., 2018). Under a support framing, these activities are typically treated as discretionary extra-role help by HCNs supporting expatriates (Fee, 2020; Peltokorpi, 2020; Yamao et al., 2020). Yet in dyadic interaction, expatriates can come to expect HCNs to translate and coordinate by leveraging local knowledge, while HCNs can expect expatriates to interpret MNE values, strategic priorities, and networks that are otherwise hard to access (Furusawa & Brewster, 2019; Heizmann et al., 2018; Hsu et al., 2024). As expectations are sent and received through repeated interaction, they can become obligations that are hard to refuse (Fee, 2020; Rizzo et al., 1970). This matters because when we frame the relationship as "HCNs supporting expatriates," expatriates remain the focus, and we learn less about what these interactions do to HCNs (Michailova et al., 2023). Also, without theorizing the shift from support to role, we cannot explain why boundary-spanning work becomes taken for granted (Fee, 2020), or why role ambiguity, role conflict, role overload, and emotional exhaustion can emerge alongside positive outcomes (Kang et al., 2024; Liu et al., 2025; Zhao & Jiang, 2021).

The purpose of this paper is to reconceptualize expatriate–HCN collaboration as a dyadic role process of boundary spanning, which is translation, mediation, and coordination across cultural and organizational boundaries, drawing on role theory and self-determination theory (SDT). We ask how mutually formed role expectations shape this work and why the same dyadic process can produce two simultaneous pathways. In the bright path, boundary spanning supports task-relevant need satisfaction (autonomy, competence, relatedness), enabling internalization that yields asymmetric outcomes (Van den Broeck et al., 2016): expatriates’ interaction adjustment via host-context internalization and HCNs’ organizational identification via internalization of MNE values . In the dark path, boundary spanning can evolve into taken-for-granted role demands that intensify role ambiguity, role conflict, and role overload, increasing emotional exhaustion for both parties (Fee, 2020; Kang et al., 2024; Liu et al., 2025; Zhao & Jiang, 2021). This question is especially important for Japanese MNEs, where demographic constraints and localization pressures limit expatriate-heavy coordination, and COVID-19 and virtual coordination may further shift coordination responsibilities from expatriates to HCNs (Michailova et al., 2023). Beyond this general relevance, two features of the Japanese organizational context—comparatively high reliance on expatriates in subsidiary management positions and a high-context organizational culture—are likely to intensify the dyadic role dynamics we theorize, particularly the dark path on the HCN side. We elaborate these conditioning features in the Boundary Conditions and Scope of the Model section.

THEORY AND PROPOSITIONS

Overview of the Conceptual Model

This paper conceptualizes expatriate–HCN collaboration as a dyadic role process of boundary spanning. Rather than treating boundary spanning as voluntary “support,” we argue that it emerges from mutually formed role expectations in the relationship.

Within MNEs, expatriates and HCNs possess distinct, non-substitutable forms of capital and knowledge access (Ando & Paik, 2013; Levy et al., 2015). Expatriates typically lack deep familiarity with local institutional contexts and interactional norms (Kang & Shen, 2018), whereas HCNs

frequently lack access to headquarters' values, strategic priorities, and evaluative logics (Lee et al., 2019). To mitigate these informational asymmetries, we propose that both parties develop mutual expectations that the other will serve as a boundary-spanner to translate, mediate, and coordinate across cultural and organizational boundaries. Over time, these relational expectations often transcend discretionary support and evolve into taken-for-granted role demands, frequently manifesting as extra-role burdens or role stressors (Anglin et al., 2022; Fee, 2020; Kahn et al., 1964).

Figure 1 summarizes the model. Role expectations lead to boundary-spanning behaviors (Propositions 1a–1b). These behaviors then trigger two simultaneous pathways.

Figure 1 goes about here

First, the bright path explains positive internalization outcomes. Drawing on SDT, we argue that boundary spanning supports task-relevant need satisfaction (autonomy, competence, relatedness), which facilitates internalization (Ryan & Deci, 2000; Van den Broeck et al., 2016). As shown in Figure 1, HCNs' boundary spanning supports expatriates' host-context internalization and interaction adjustment, whereas expatriates' boundary spanning supports HCNs' internalization of MNE values and organizational identification (Propositions 2a–3b).

Second, the dark path explains psychological depletion. We propose that boundary-spanning behaviors can generate boundary-spanning role stressors, role ambiguity, role conflict, and role overload (Aldrich & Herker, 1977; Rizzo et al., 1970), which in turn increase emotional exhaustion for both expatriates and HCNs (Fee, 2020; Liu et al., 2025; Zhao & Jiang, 2021) (Propositions 4a–5b).

Because both paths can operate simultaneously, boundary spanning can produce the internalization of values and strain. We begin by specifying how role expectations are formed within expatriate–HCN dyads.

Expatriates' Role Expectations Toward HCNs: Required Local Translation and Mediation

Expatriates are structurally disadvantaged regarding host-country institutional systems, languages, cultural norms, and informal social networks (Ando & Paik, 2013; Black, 1988; Toh &

DeNisi, 2007). Particularly during the initial assignment phase or within institutionally complex environments, expatriates struggle to independently access local decision-making logic and networks, which often results in inefficient decision-making or opportunity costs (Furusawa & Brewster, 2019; Massingham, 2010; Watanabe & Yamaguchi, 1995).

In this context, the knowledge and access possessed by HCNs are non-substitutable. Beyond surface-level assistance such as literal translation, determining which procedures are functional and which stakeholders possess authority depends on HCNs' local embeddedness (Li et al., 2016; Vance et al., 2009, 2014).

Consequently, expatriates' expectations for HCNs to perform translation, mediation, and coordination do not constitute merely discretionary requests for help but are functionally essential role requirements necessary for the operational functioning (Fee, 2020; Marrone, 2010; Toh & DeNisi, 2007). Crucially, these demands are framed as a "liaison role" (Vance et al., 2009, 2014) indispensable for compensating for the expatriate's inherent deficiencies in local understanding and access. While traditional support models have predominantly analyzed these activities as discretionary extra-role behaviors (Toh & DeNisi, 2007; Varma et al., 2011; Wang & Fang, 2014), a role-based framework positions them as a structural necessity arising from the functional dependency of expatriates on their local counterparts (Fee, 2020; Fee & Michailova, 2021).

Proposition 1a: Expatriate role expectations toward HCNs are positively related to the performance of boundary-spanning activities by HCNs.

HCNs' Role Expectations Toward Expatriates: Explaining HQ Logic and Linking to the Network

We argue that HCNs also formulate distinct role expectations toward expatriates. To HCNs, MNE values, evaluative standards, decision-making logic, and strategic priorities are frequently opaque, hindering their ability to perform effective sense-making regarding local operational judgments and career progression (Massingham, 2010; Watanabe & Yamaguchi, 1995). Much of the friction in MNEs arises not from the simple delivery of MNE policies, but from the failure to explain

why such policies are legitimate or by what criteria local work will be evaluated (Leung et al., 2011; Watanabe & Yamaguchi, 1995). Here, expatriates are structurally positioned to interpret and translate MNE intent into locally meaningful terms because they have privileged access to parent-company logics and organizational networks (Harzing et al., 2016; Vance et al., 2014). Consequently, expatriates are structurally expected to clarify MNE intentions, mediate connections within the global network, and translate local performance into accountable meanings understandable to headquarters (Ando & Paik, 2013; Li et al., 2016; Vance et al., 2009). This dynamic cannot be captured by viewing expatriates solely as recipients of support; HCNs are indispensable actors (Lee et al., 2017) who seek to access the MNE's value system to acquire legitimacy and global career resources (Reade, 2001b). Therefore, we propose that HCN's role expectations toward expatriates emerge naturally as a functional consequence of mutual interdependence.

Proposition 1b: HCN role expectations toward expatriates are positively related to the performance of boundary-spanning activities by expatriates.

The Bright Path: Boundary Spanning, Task-Relevant Need Satisfaction, and Internalization

Boundary-spanning activities integrate expatriates and HCNs across diverse cultural, institutional, and organizational contexts, facilitating access to values, practices, and conceptual frameworks that they do not possess themselves (Barner-Rasmussen et al., 2014; Schotter et al., 2017). Prior research demonstrates that these social linkages are positively associated with expatriates' interaction adjustment (Bhaskar-Shrinivas et al., 2005; Liu & Shaffer, 2005) and HCNs' identification with MNE (Liu et al., 2025). However, these outcomes cannot be attributed to mere information transfer (Heizmann et al., 2018; Massingham, 2010; Yakob, 2018). Both interaction adjustment and organizational identification necessitate internalization, the active process through which external norms and behavioral regulations are integrated into one's own cognitive and behavioral reference points (Gagné & Deci, 2005; Ryan & Deci, 2000; Toh & DeNisi, 2007).

To explain this process, we draw on SDT as a framework for psychological internalization. SDT specifies how externally provided values and demands become self-endorsed forms of regulation

when social contexts support individuals' innate psychological needs for autonomy, competence, and relatedness (Deci & Ryan, 2000; Van den Broeck et al., 2016). Importantly, we do not employ SDT as a general theory of motivation, but as a focused explanatory framework for why boundary-spanning interactions facilitate deep internalization rather than superficial compliance (Gagné & Deci, 2005; Kostova, 1999; Toh & DeNisi, 2007). In this sense, SDT allows us to theorize the psychological mechanism through which boundary spanning translates access to foreign contexts into meaningful interaction adjustment, and organizational identification.

Within expatriate–HCN dyads, boundary spanning creates task-relevant conditions for need satisfaction that differ systematically by role. For expatriates, boundary spanning by HCNs provides access to host-country interactional norms, institutional practices, and informal evaluative cues (Toh & DeNisi, 2007; Vance et al., 2014). When HCNs provide relational inclusion and emotional support such as inviting expatriates to local social events, expatriates are more likely to experience relatedness and reduced isolation (Bayraktar, 2019), fulfilling basic psychological needs (Gagné & Deci, 2005). Expatriates' competence is further supported when HCNs act as information brokers (Vance et al., 2014) and socializing agents who offer localized guidance and feedback on unwritten workplace rules (Toh & DeNisi, 2007), strengthening self-efficacy (Liu & Shaffer, 2005) and mastery in a novel context (Mahajan & Toh, 2014).

Moreover, when HCNs provide meaningful rationales for local practices by explaining the cultural logic underlying specific procedures, they support expatriate autonomy by enabling understanding and volitional endorsement rather than mere compliance (Ryan & Deci, 2000). Together, these need-supportive interactions create the conditions for internalization, through which expatriates integrate local norms into self-regulated frameworks, thereby facilitating deeper interaction adjustment (Toh & DeNisi, 2007; Ryan & Deci, 2000).

Conversely, within the MNE context, expatriates serve as vital boundary spanners who clarify MNEs' values, strategic priorities, and evaluative standards, allowing HCNs to access organizational meanings that are otherwise difficult to interpret (Harzing et al., 2016; Liu et al., 2025). HCNs' competence is bolstered when expatriates act as sense-giving agents who provide guidance on how local performance is evaluated and how decisions are justified, thereby enhancing HCNs' competence

in navigating complex organizational expectations (Fee & Gray, 2020; Heizmann et al., 2018; Vance et al., 2014). Expatriates further support HCN autonomy by offering meaningful rationales (Gagné & Deci, 2005) for MNEs' practices through suggestive dialogue (Heizmann et al., 2018), which enable HCNs to understand and volitionally endorse (Gagné & Deci, 2005) these values rather than experiencing them as externally imposed demands. Additionally, when expatriates connect HCNs to legitimate organizational actors and global networks, they foster relatedness by strengthening the HCNs' sense of inclusion and belonging within the broader MNE community (Harzing et al., 2016; Liu et al., 2025). Together, these boundary-spanning interactions create the psychological conditions for internalization, through which HCNs integrate MNE values into their self-concept, ultimately fostering strong organizational identification.

This conceptualization elucidates how expatriate–HCN relationships can produce asymmetric internalization outcomes, focusing on interaction adjustment for expatriates and organizational identification for HCNs, while remaining contingent on a shared psychological pathway. Consequently, we propose that boundary-spanning activities facilitate internalization through task-relevant psychological need satisfaction, which enhances expatriates' interaction adjustment and fosters HCNs' identification with MNE.

Proposition 2a: Boundary-spanning activities performed by HCNs are positively related to expatriates' satisfaction of psychological needs relevant to the internalization of the host-country context.

Proposition 2b: Boundary-spanning activities performed by expatriates are positively related to HCNs' satisfaction of psychological needs relevant to the internalization of MNE values.

Proposition 3a: Expatriates' satisfaction of psychological needs relevant to host-country internalization is positively related to their host-country interaction adjustment.

Proposition 3b: Host-country nationals' satisfaction of psychological needs relevant to the internalization of MNE and HQ values is positively related to their organizational identification.

The Dark Path: Boundary Spanning, Role Stressors, and Emotional Exhaustion

This paper argues that while boundary-spanning activities can facilitate internalization of external values, they also entail a "dark side" through which role stressors are intensified and emotional exhaustion arises. Importantly, the burden of boundary spanning does not stem merely from task complexity; rather, it arises because boundary spanning functions as a role performance embedded in dyadically formed role expectations that are often difficult to refuse (Fee, 2020; Liu et al., 2025). As discussed, expatriates and HCNs develop mutual role expectations for translation, mediation, and coordination to compensate for asymmetries in knowledge and access (Heizmann et al., 2018; Vance et al., 2009, 2014).

These expectations frequently extend beyond formal job descriptions or institutional assignments (Fee, 2020; Yamao et al., 2020). Through repeated everyday interactions, these activities are continuously sent and received, gradually becoming institutionalized as roles that actors feel bound to perform (Fee, 2020; Fee & Michailova, 2020).

As a result, boundary spanning tends to be interpreted not as discretionary support, but as a role demand whose fulfillment is taken for granted (Fee, 2020; Liu et al., 2025). Boundary spanning is commonly carried out alongside core tasks and requires actors to translate, mediate, and coordinate across multiple stakeholders and meaning systems. Because these activities are embedded in ongoing dyadic expectations, they are often difficult to refuse or delimit, which makes boundary-spanning demands prone to accumulation over time (Fee, 2020; Okamoto & Teo, 2011).

This structural condition generates multiple forms of role stressors. First, because boundary spanning requires actors to coordinate across multiple stakeholders and value systems (Aldrich & Herker, 1977), role ambiguity tends to increase as expectations and responsibility boundaries remain unclear (Liu et al., 2025; Rizzo et al., 1970). Second, simultaneous demands from the local context and headquarters, or from different functional domains, heighten role conflict as actors must address incompatible expectations concurrently (Furusawa & Brewster, 2019; Liu et al., 2025; Rizzo et al., 1970). Third, as boundary-spanning tasks accumulate as additional extra-role responsibilities, role overload is likely to occur, exceeding actors' temporal and psychological resources (Fee, 2020; Kang et al., 2024; Rizzo et al., 1970).

These stressors often evolve beyond short-term burdens (Kang et al., 2024), continuously depleting psychological resources and leading to emotional exhaustion (Liu et al., 2025; Zhao & Jiang, 2021). Over time, sustained boundary-spanning role stressors can deplete psychological resources, increasing the likelihood of emotional exhaustion (Fee, 2020; Liu et al., 2025; Zhao & Jiang, 2021). Consequently, boundary spanning entails a structural risk: while it can promote learning and identification, it simultaneously generates psychological depletion through intensifying role stressors (Kang et al., 2024; Liu et al., 2025).

Importantly, this dark side is not restricted to specific personal traits or a single role category, such as expatriates or HCNs (Liu et al., 2025; Okamoto & Teo, 2011). Although the content and targets of boundary spanning differ by actors, the structural conditions of assuming multiple, often incompatible expectations without sufficient formalization apply to both groups. Consequently, boundary-spanning activities can simultaneously facilitate role-specific internalization outcomes, such as interaction adjustment and organizational identification, while generating heightened emotional exhaustion within the same dyadic relationship.

Proposition 4a: Expatriates' boundary-spanning behaviors are positively related to expatriates' boundary-spanning role stressors (role ambiguity, role conflict, and role overload).

Proposition 4b: HCNs' boundary-spanning behaviors are positively related to HCNs' boundary-spanning role stressors (role ambiguity, role conflict, and role overload).

Proposition 5a: Expatriates' role ambiguity, role conflict, and role overload are positively related to their emotional exhaustion.

Proposition 5b: HCNs' role ambiguity, role conflict, and role overload are positively related to their emotional exhaustion.

IMPLICATION

In this section, we outline three theoretical implications, two practical implications, and directions for future research, including the scope and boundary conditions of the model.

Theoretical Implications

The first implication of this paper is the reframing of boundary spanning from discretionary support to role-embedded work. In much of the prior literature, HCNs' translation, coordination, and mediation activities have been treated as voluntary, extra-role, and secondary forms of assistance (Fan & Harzing, 2017; Toh & DeNisi, 2007; van Bakel, 2019). Under this support framing, it is difficult to explain why such activities are repeatedly expected and hard to refuse, or why they frequently generate significant strain and exhaustion (Fee, 2020; Kang et al., 2024; Michailova et al., 2023). This paper instead conceptualizes these activities as role performance grounded in role expectations formed within the dyadic relationship. When boundary spanning functions as a role, it is sustained by expectations that are repeatedly sent and received through daily interaction, leading actors to experience these activities not as simple goodwill, but as obligations tied to their professional roles (Fee, 2020; Fee & Michailova, 2020; Vance et al., 2014). From this perspective, HCNs' boundary-spanning activities are not auxiliary behaviors but are structurally necessary work for the functioning of MNEs. This shift substantially expands HCN research by moving HCNs from peripheral factors in expatriate-centered models to central theoretical actors (Michailova et al., 2023; Takeuchi, 2010; Toh & DeNisi, 2003). By contrast, a role-based framing legitimizes HCN behaviors as key explanatory variables and positions their workload, exhaustion, tensions, and dilemmas as core phenomena rather than incidental problems (Fee, 2020; Kang et al., 2024; Lee et al., 2019).

The second implication of this paper is the conceptualization of boundary spanning as a dyadic role process rather than an individual behavior or a one-way flow of support (Hsu et al., 2024; Liu et al., 2025; van Bakel, 2019). Role expectations are not formed solely through formal job descriptions or hierarchical assignments; instead, they emerge and stabilize through everyday interactions where expectations are sent, received, and gradually institutionalized within the dyadic relationship (Fee, 2020; Heizmann et al., 2018; Ljubica et al., 2019). This dyadic perspective connects expatriate and HCN research within a shared theoretical language: while expatriates' interaction

adjustment and HCNs' organizational identification are distinct outcomes, they can be understood as asymmetric forms of internalization produced within the dyadic boundary-spanning process (Fee & Michailova, 2021; Hitotsuyanagi-Hansel et al., 2016; Liu et al., 2025). The variance in these outcomes reflects the different meaning systems and institutional logics accessible to each party within the relationship, rather than individual traits alone (Caprar, 2011; Lee et al., 2019; Reade, 2001b). By foregrounding this relational structure, this paper positions HCN research not merely as a supplement to expatriate-centric models but as an indispensable component of theorizing MNE coordination and strategic integration (Lee et al., 2017; Michailova et al., 2023; Toh & DeNisi, 2005). Consequently, role expectations and boundary-spanning enactment within expatriate–HCN dyads are shown to shape not only individual outcomes but also broader organizational processes across functional and cultural boundaries.

The third implication is explaining the outcomes of boundary spanning through the psychological mechanism of internalization, rather than through exposure, information, or contact frequency alone (Deci & Ryan, 2000; Gagné & Deci, 2005; van Bakel, 2019). While prior research has shown that interaction and support are associated with adjustment and identification, it has offered a limited explanation of why external values and norms become self-endorsed standards (Bhaskar-Shrinivas et al., 2005; Reade, 2001b; Toh & DeNisi, 2007). This paper addresses this gap by applying SDT. Importantly, SDT is used specifically to explain internalization, the active process by which external regulations are integrated into the self (Deci & Ryan, 2000; Ryan & Deci, 2000). When boundary-spanning interactions support task-relevant autonomy, competence, and relatedness, external norms are more likely to be internalized (Gagné & Deci, 2005; Van den Broeck et al., 2016), leading to more effective functioning than mere compliance (Van den Broeck et al., 2021). This framework clarifies how a shared psychological process leads to asymmetric outcomes: interaction adjustment for expatriates and organizational identification for HCNs (Fee & Michailova, 2021; Lee et al., 2017; Shaffer et al., 2006). For HCN research, this implies that identification is shaped not only by organizational attractiveness (Reade, 2001a) but also by socializing interactions (Smale et al., 2015; Toh & DeNisi, 2007), which further enhances their perceived career incentives (Yang & Pak, 2022).

Practical Implications

When boundary-spanning activities are characterized merely as informal support, they frequently remain invisible within the organization: they are neither evaluated nor managed as formal work, and are typically excluded from workload allocation (Fee, 2020; Fee & Michailova, 2020; Kang et al., 2024). Consequently, coordination and mediation tasks accumulate, especially for HCNs, without being acknowledged as legitimate organizational responsibilities (Fee, 2020; Vance et al., 2009, 2014). Even when psychological strain and emotional exhaustion intensify, they are rarely recognized as structural issues arising from these dyadically formed role demands (Liu et al., 2025). Conversely, conceptualizing boundary spanning as a formal role renders this coordination work visible to management. Such visibility facilitates systematic performance evaluation, resource allocation, and necessary workload adjustments (Fee & Michailova, 2020; Kang et al., 2024). For HCNs, this shift transforms boundary spanning from an assumed "matter of course" into a strategic role that organizations must explicitly recognize and design (Michailova et al., 2023; Vance et al., 2014).

The second implication of this model is that boundary-spanning activities can concurrently facilitate adjustment and organizational identification while increasing the risk of emotional exhaustion due to intensified role stressors. The practical imperative, therefore, is not whether to facilitate these interactions but how to design and orchestrate boundary roles to maximize developmental benefits while mitigating psychological depletion (Fee & Michailova, 2020; Marrone, 2010). To this end, formalization, role clarity, and systematic evaluation are critical organizational levers. When boundary spanning remains an informal "extra-role" activity, the lack of explicit guidance is likely to heighten role ambiguity and role overload (Fee, 2020; Kang et al., 2024; Rizzo et al., 1970). In contrast, when organizations formally define these activities with explicit responsibility boundaries and recognition mechanisms, they are better positioned to support internalization without overburdening pivotal actors like HCNs (Fee, 2020; Liu et al., 2025; Vance et al., 2014). This role-based approach establishes a practical principle for enabling MNE coordination without exhausting key stakeholders.

Directions for Future Research

This paper reconceptualized expatriate–HCN relationships not as a one-way support model, but as a dyadic role process in which role expectations emerge through interaction and boundary-spanning becomes embedded as part of everyday work. The next step is to specify more concretely how boundary-spanning unfolds and what kinds of behaviors are expected and enacted between the two parties.

Although prior research has attempted to disaggregate boundary spanning into functional, linguistic, and cultural subdimensions (Liu et al., 2025; Augustin et al., 2025), expatriates' and HCNs' behaviors have largely been examined as individual-level characteristics (van Bakel, 2019). Accordingly, drawing on broader calls to clarify blurred role conceptualizations (Anglin et al., 2022), a limited understanding exists regarding how these multiple boundary-spanning behaviors are experienced collectively as an integrated role (Liu et al., 2025). Furthermore, it remains unclear how these behaviors combine with a counterpart's actions to generate specific patterns of reciprocity or imbalance within the dyad (Hsu et al., 2024; Michailova et al., 2023). Future research should therefore prioritize qualitative work that identifies boundary spanning as a repertoire of expected and enacted behaviors. Semi-structured interviews, the critical incident technique (CIT), and observation can document concrete actions to reveal what specific boundary-spanning behaviors are expected and how they are enacted (Ancona & Caldwell, 1992; Augustin et al., 2025; Chen et al., 2005; Fee, 2020; Nurmi & Koroma, 2020). This mapping provides a necessary basis for examining how discretionary activities transition into role-embedded expectations (Schotter et al., 2017) that shape the interpersonal dynamics of the expatriate–HCN dyad (Fee, 2020; Liu et al., 2025).

Building on this foundation, boundary spanning should be analyzed not as a single aggregated construct but as configurations of interrelated behaviors, applying a configural logic similar to that proposed for other organizational constructs (Howard et al., 2025). Whether these behaviors are simultaneously expected, concentrated on one party, or distributed across the dyad is likely to shape relational outcomes due to the inherent mutuality of dependence between expatriates and HCNs (Hsu et al., 2024; Ljubica et al., 2019). By conceptualizing boundary spanning in terms of behavioral

configurations within the dyad, future research can move beyond treating these activities as a simple matter of “more” or “less” (Howard et al., 2025; Marrone, 2010). This configural lens allows for a precise examination of the interplay between expatriates and HCNs, revealing how specific combinations of their actions generate synergetic or neutralizing effects (Hsu et al., 2024; Ljubica et al., 2019). Such mapping provides an essential foundation to distinguish the “bright path,” where the internalization of organizational values is facilitated, from the “dark path,” where role stressors, namely ambiguity, conflict, and overload, intensify emotional exhaustion (Kang et al., 2024; Liu et al., 2025; see also Ryan & Deci, 2000).

Subsequently, insights derived from qualitative research provide a theoretically grounded agenda for future empirical work, including the development of measures and dyadic research designs (Hinkin, 1998). To accurately capture the reciprocal and interpersonal nature of these interactions, dyadic data analysis (e.g., actor-partner interdependence modeling), time-lagged longitudinal designs, and multi-source measures are preferable for mitigating common method variance and establishing causal directionality (Hsu et al., 2024; Michailova et al., 2023; Podsakoff et al., 2012; Tse & Ashkanasy, 2015). Although this paper remains conceptual, this integrated methodological approach provides a robust roadmap for the empirical validation of the role-based boundary-spanning framework.

Boundary Conditions and Scope of the Model

The proposed framework is not intended to apply uniformly across all multinational contexts. First, the model is most pertinent in settings characterized by significant asymmetries in expertise, local knowledge, and access, where translation and mediation are essential for task accomplishment (Heizmann et al., 2018; Massingham, 2010; Vance et al., 2009). In highly standardized or routinized environments where boundary-spanning needs are limited, boundary roles tend to be governed by formal rules (Aldrich & Herker, 1977), thereby reducing the role ambiguity that typically intensifies role strain (Jackson & Schuler, 1985).

Second, the strength of the dark path may depend on how boundary spanning is formalized and recognized within the organization. When liaison or coordination responsibilities are explicitly

defined and supported through systematic evaluation and resource allocation (Vance et al., 2014), boundary spanning generates less role ambiguity and overload (Rizzo et al., 1970), thereby attenuating negative work outcomes (Stamper & Johlke, 2003) such as emotional exhaustion (Liu et al., 2025). Conversely, when boundary spanning is treated as informal coordination work, role stressors may be more likely to accumulate. Future research should explicitly test these boundary conditions rather than assuming a single organizational design.

Third, power and voice structures constitute critical boundary conditions. In contexts where HCNs possess high professional discretion or bargaining power, role expectations may be less constraining, and boundary spanning may be experienced as a resource for status enhancement rather than a psychological burden (Aldrich & Herker, 1977; Marrone, 2010). Future research should examine how these contextual factors shape the strength and direction of the proposed relational pathways.

Fourth, the Japanese organizational context offers an institutional setting in which the proposed dyadic role dynamics are likely to be intensified—particularly the dark path on the HCN side—rather than fundamentally altered. Two features of this context are particularly consequential. First, in Japanese MNEs, expatriates—typically Japanese nationals dispatched from headquarters—have historically occupied key subsidiary management positions while HCNs have remained in subordinate roles. Localization has proceeded more slowly than in their U.S. and European counterparts (Gong, 2003; Tungli & Peiperl, 2009). Within these expatriate–HCN dyads, the structural power asymmetry concentrates boundary-spanning load on HCNs: HCNs face strong expectations to translate, mediate, and broker, with limited capacity to refuse or renegotiate the demand. The same dyadic interaction therefore generates more intense HCN role overload (P4b) and emotional exhaustion (P5b) than in flatter staffing configurations. Second, Japanese organizational culture is characterized by high-context communication (Hall, 1976) and consensus-based decision-making practices such as the ringi system (Watanabe & Yamaguchi, 1995), where meaning is conveyed through implicit understanding and accumulated relational knowledge rather than explicit articulation. This raises the cognitive thickness of translation and mediation work—boundary spanners must translate not only language but also unstated assumptions, evaluative criteria, and

decision logics—further intensifying the dark path, particularly for HCNs who bear the brunt of this translation labor. Together, these institutional features do not redirect the model’s mechanisms; rather, they suggest that Japanese organizational settings constitute a context in which the theorized dyadic role dynamics are particularly observable and consequential, especially through the strain they place on HCN actors.

CONCLUSION

This paper reframes the expatriate–HCN relationship from support to role, from individual action to relational process, and to a model that integrates both positive and negative outcomes. By theorizing boundary spanning as a dyadic role process, the paper positions HCNs as central actors and offers a unified explanation of how internalization and exhaustion can occur simultaneously. In doing so, it extends the scope of HCN research and provides new theoretical and practical insights into the design and management of collaboration in multinational enterprises.

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Figure 1 Conceptual model of dyadic role processes in boundary spanning

Exploring the Use of Energy-related Metaphors: A Comparison of UK and Japanese Broadsheet and Regional Newspapers

Elise François (KEDGE Business School, France)

Ralf Barkemeyer (KEDGE Business School, France)

ABSTRACT

The aim of this paper is to investigate how energy metaphors shape public discourse about fracking in UK and Japanese broadsheet newspapers. It addresses an important research gap in our understanding of environmental discourse by moving beyond the Anglocentric focus of metaphor analysis, exploring cross-linguistic and cross-cultural differences in environmental communication. We investigate metaphor use in Japanese, an underrepresented language. Using a specialized corpus, we examine 8,805 UK-based and 199 Japanese broadsheet and regional newspaper articles published between 2007 and 2024. Metaphors are identified using the Metaphor Identification Procedure developed by the Pragglejaz Group and classified through a Type Hierarchy Approach. Our findings show areas of convergence alongside clear divergence in the use of fracking-related metaphors. Notably, metaphor usage differs between the Japanese outlets depending on the language (Japanese vs English edition). As our main contribution, we advance metaphor theory by empirically demonstrating how metaphor deployment varies with linguistic structure, media system and institutional context.

Keyword: Strategy, Management, Fracking, Japan, Metaphor, UK, Type Hierarchy Approach

A Usage Ecology of Workplace English: BELF Communication, Corporate Monolingualism, and AI-Mediated Language Use

Saeko Ujiie (SBF Consulting LLC, Japan)

ABSTRACT

This study reconceptualizes workplace English competence through the notion of a usage ecology of workplace English, defined as the communicative environment shaped by organizational structures, interactional practices, language ideologies, and technological mediation. Rather than framing reported low proficiency among Japanese business professionals as an individual deficit, the study examines how opportunities for English use are distributed across corporate settings and how these conditions shape communicative development. Using a mixed-methods design, the research integrates two strands of data. The first analyzes corporate language strategies and everyday communicative practices through manager interviews and a survey of business professionals, revealing that English use in many Japanese corporations is infrequent, functionally narrow, and socially restricted. The second investigates the growing role of AI-driven language tools, showing that AI-mediated communication increases exposure to conventionalized business constructions and enhances perceived communicative confidence, even within predominantly monolingual workplaces. Findings suggest that workplace English competence emerges from patterns of situated use within specific communicative ecologies rather than from individual knowledge alone. Corporate monolingual norms constrain opportunities for flexible language use, while AI tools function as distributional amplifiers that expand access to standardized and pragmatically safe constructions. This framework clarifies how language development unfolds within technology-mediated global business contexts.

Keyword: Human Resource Management, Organizational Behavior, Management, Workplace Communication, English As A Business Lingua Franca (BELF), AI Language Tools, Corporate Language Practices, Communicative Development

Layered Co-Learning with Agentic AI: Reconfiguring Tacit Knowledge Transfer in a Japanese Industrial Conglomerate

Natsumi Takahashi (Japan Advanced Institute of Science and Technology, Japan)

Indranil Bhattacharjee (Birla Institute of Technology and Science, India)

ABSTRACT

Tacit knowledge is central to organizational learning, yet most knowledge management practices continue to use prior externalization and codification. This study examines how agentic AI workflows combined with human-in-the-loop (HIL) design may shape how tacit knowledge can be engaged and transferred without being fully converted into explicit form, in organizational practice. Drawing on a comparative multiple-case study of three AI development projects in a Japanese industrial conglomerate, the study contrasts conventional IT/AI development and agentic AI workflows. Results show that by combining agentic AI with HIL, tacit practical knowing is gradually transferred through interaction logs generated in everyday work, rather than requiring complete prior externalization. Findings suggest that continuous learning is sustained through a layered learning-agent design, in which different types of domain knowledge are accumulated, weighted, and updated through ongoing interactions. This structure allows expert-level judgments, organizational improvements, and culturally embedded practices to be integrated without collapsing them into a single codified representation. This study contributes to knowledge management theory by repositioning externalization as one pathway among several, operationalizing knowing-in-practice through action logs, and extending the knowledge-based view of the firm by incorporating agentic AI as a layered knowledge infrastructure.

Keyword: Tacit knowledge; knowledge management; Human–AI collaboration; continuous improvement; agentic AI

Introduction

Tacit knowledge and knowledge creation have long been central concerns in knowledge management research. Polanyi (1966) argued that much of human knowing is rooted in a “tacit dimension” that cannot be fully articulated: we often “know more than we can tell.” Ryle (1949) similarly distinguished between *knowing-that*, which can be stated propositionally, and *knowing-how*, which is manifested in skilled action. Nonaka and Takeuchi (1995) proposed the SECI model and argued that organizational knowledge is created through socialization, externalization, combination, and internalization. However, scholars have argued that these risks treating tacit knowledge as overly codifiable (Gourlay, 2006; Tsoukas, 2002).

Collins (2010) showed that embodied skills or socially distributed tacit knowledge are not readily expressible in language and Cook and Brown (1999) emphasized *knowing* as an ongoing activity rather than a static possession, highlighting that practical knowing is generated and sustained in practice. Together, these perspectives suggest that approaches relying primarily on codification (writing knowledge down) may not capture the core value of practice-based expertise.

In organizational learning, concepts such as exploration and exploitation (March, 1991), absorptive capacity (Cohen & Levinthal, 1990), and dynamic capabilities (Teece et al., 1997) explain how organizations combine external and internal knowledge to create value. However, much of this work assumes that knowledge can be made sufficiently explicit to be used by organizations, and guidance on *how* organizations can transfer, sustain, and extend context-dependent practical knowing—knowledge that is difficult to verbalize and deeply intertwined with experience—is limited.

Recent advances in large language models (LLMs) and agentic AI offer new possibilities for intelligent system design. LLMs learn statistical regularities from massive text corpora and can generate outputs for question answering, summarization, and code generation (Vaswani et al., 2017; Wang et al., 2024). Agentic AI extends these capabilities by interpreting goals expressed in natural language, decomposing tasks, and executing multi-step workflows while calling external tools

(Karunanayake et al., 2025). In such systems, multiple agents with differentiated roles (e.g., supervisor, planner, worker) coordinate with each other, resembling an internal organization within software.

Integrating these advances with everyday work practices is challenging for organizations. This study examines how an Agentic AI workflow combined with human-in-the-loop (HIL) design can reconfigure the transfer of tacit knowledge in organizational practice.

Background

Prior research has examined how organizations utilize tacit knowledge held by domain experts, knowledge that is personal, context-dependent, and difficult to formalize (Alavi & Leidner, 2001; Nonaka & Takeuchi, 1995; Polanyi, 1966). A dominant approach has been to externalize tacit knowledge into explicit form and operate it through knowledge management systems (KMS) (Alavi & Leidner, 2001; Hansen et al., 1999). Yet this approach raises well-known challenges: difficulties in eliciting knowledge, loss of what cannot be fully codified, and the burden of interpretation and internalization by later users (Brown & Duguid, 1991; Szulanski, 1996). Even established qualitative methods for eliciting requirements, such as ethnography and contextual inquiry, face similar problems, including incomplete articulation and the “requirements change” challenge (Curtis et al., 1988; Kotonya & Sommerville, 1998; Suchman, 1987, 2007). Because tacit knowledge inherently includes ambiguity and non-articulability, externalization-centered methodologies have structural limits (Polanyi, 1966; Tsoukas, 2005).

Recent developments in AI and interactive system design suggest that organizations could transfer parts of their expertise to AI artifacts and improve knowledge transfer through human-machine interaction (Li et al., 2023; Shneiderman, 2020). Therefore, this study explores how organizations can utilize domain-specific tacit knowledge *without* relying on full codification. This problem is salient because experts are generally too time-constrained to undertake interviews or documentation work (Curtis et al., 1988; Wiegars & Beatty, 2013). Agentic AI designs, such as coupling reasoning and acting, and using reflection mechanisms, and multi-agent coordination, suggest a new direction for

organizational learning and knowledge transfer (Amugongo et al., 2025; Wang et al., 2024). The study analyzes system development in a large Japanese industrial conglomerate (hereafter “Company H”) where manufacturing-domain (OT) expertise was transferred into digital tools. Company H is a century-old, diversified manufacturer operating across bespoke heavy-industry businesses, mass-production manufacturing, and IT-related businesses. Japanese firms have historically developed expertise through long-term employment and skill accumulation, supported by institutional arrangements such as seniority-based systems and lifetime employment (Aoki, 1988; Brunet & New, 2003). As a result, domain- and industry-specific tacit knowledge remains embedded in people and local practices (Nonaka, 1994; Nonaka & Takeuchi, 1995). Because this knowledge has been cultivated through social ties and experiential learning rather than standardized manuals alone, knowledge management involves complexities not fully controlled by formal strategy planning or generic organizational learning prescriptions (Brown & Duguid, 1991; Grant, 1996). Incorporating generative AI into everyday work to create business value means organizations must address governance concerns including monitoring and rollback, confidentiality and security, quality assurance, and transparency of AI outputs (Geburu et al., 2021; Mitchell et al., 2019).

Against this background, this study compares generative AI and Agentic AI workflows in business development tasks involving implementing and reusing tacit domain knowledge, such as specialized skills, local norms, and implicit understandings within operational applications (Alavi & Leidner, 2001; Nonaka & Takeuchi, 1995).

Research Purpose and Research Questions

This study examines how development approaches based on agentic AI and human-in-the-loop (HIL) design reshape knowledge transfer and the handling of tacit knowledge, in comparison with conventional IT development and model-driven AI development (Park et al., 2023) In particular, the study explores how industry-specific tacit knowledge can be utilized *as tacit knowledge*, rather than being fully converted into explicit form.

This focus is motivated by a practical constraint in organizational settings. Domain experts are

chronically busy, and it is often unrealistic to expect them to devote sufficient time to extensive interviews or to fully articulate and document their knowledge for formal codification (Curtis et al., 1988; Wiegers & Beatty, 2013). As a result, approaches that rely on comprehensive externalization of expertise face structural limitations in practice.

Recent advances in agentic AI workflows suggest a potential alternative. Features such as the coupling of reasoning and acting, reflective memory mechanisms, and role-based multi-agent coordination make it possible to combine AI capabilities with ongoing organizational learning processes (Amugongo et al., 2025; Wang et al., 2024). When these technical characteristics are integrated into everyday work, they may enable new ways of engaging with tacit knowledge without requiring its full formalization. Based on empirical analysis of organizational cases, this paper reports a new perspective on how tacit knowledge can be transferred and utilized in practice.

Accordingly, this study addresses the following research questions:

RQ1: How does using agentic AI workflows change knowledge transfer and the handling of tacit knowledge, compared with conventional IT and AI development approaches?

RQ2: What concrete implementation approaches are used when AI is introduced as an actor in organizational knowledge creation?

By answering these questions, this paper seeks to contribute to the literature on tacit knowledge and knowledge creation by proposing a shift in interpretation—from operational models that presuppose the externalization of tacit knowledge to practice-based approaches that do not require full formalization. In doing so, the study aims to articulate a new form of value creation grounded in human–AI knowledge co-creation.

Literature Review

Tacit Knowledge, Practical Knowing, and Knowledge Creation

Tacit knowledge refers to forms of knowing that are embodied through experience, such as the hand movements of a skilled craftsman, a physician’s diagnostic intuition, or an employee’s ability to

read subtle organizational cues. Such knowledge is difficult to fully articulate in words, or formalize into manuals or explicit rules. Ryle (1949) differentiated between *knowing-that* and *knowing-how*. While *knowing-that* can be expressed propositionally, *knowing-how* manifests as an ability to perform. Collins (2010) categorized tacit knowledge into embodied, relational, and socially distributed tacit knowledge, suggesting that tacit knowledge embodies qualitatively different forms of knowing and cannot be treated simply as “knowledge that has not yet been verbalized.” Nonaka (1994) proposed a dynamic theory of organizational knowledge creation, later formalized as the SECI model by Nonaka and Takeuchi (1995). The SECI model conceptualizes knowledge creation as a spiral process consisting of socialization (tacit-to-tacit), externalization (tacit-to-explicit), combination (explicit-to-explicit), and internalization (explicit-to-tacit). This framework has been highly influential in knowledge management research and practice.

However, the SECI model has attracted criticism, particularly regarding its implicit emphasis on externalization. Tsoukas (2002) argued that describing knowledge creation as a “conversion” of tacit knowledge into explicit knowledge is misleading, because tacit knowledge remains a background condition of knowing. Gourlay (2006) similarly questioned reducing understanding of diverse knowledge creation processes to the SECI cycle alone, and called for a pluralistic understanding of how tacit and explicit knowledge interact.

Relatedly, Cook and Brown (1999) shifted attention from *knowledge* as stock to *knowing* as an ongoing activity. They emphasized that organizations rely on forms of knowing that are enacted in practice rather than stored in documents. Orlikowski (2002) further demonstrated that knowing is constituted through sociomaterial practices involving tools, discourse, routines, and communities. From this perspective, knowledge is not merely possessed but continuously produced through action.

Building on these discussions, the present study focuses on tacit and practical knowing not as something to be fully externalized in advance, but as something that can be transferred and reshaped *through use*, in interaction with AI systems embedded in everyday practice.

2.2 Knowledge Transfer and Organizational Learning

Research on knowledge transfer has highlighted the difficulty of moving knowledge across organizational boundaries. Szulanski (1996) introduced the concept of “stickiness” to explain why even well-documented best practices often fail to transfer smoothly. Cohen and Levinthal (1990) defined absorptive capacity as an organization’s ability to recognize, assimilate, and exploit external knowledge, emphasizing the role of prior knowledge and learning routines. Teece et al. (1997) further argued that in dynamic environments, competitive advantage depends on dynamic capabilities—the ability to integrate, build, and reconfigure knowledge and resources. Further, March’s (1991) distinction between exploration and exploitation in organizational learning is important. Exploration involves experimentation and the pursuit of new knowledge, whereas exploitation focuses on refinement and efficient use of existing knowledge. Crossan et al. (1999) proposed the 4I framework—intuition, interpretation, integration, and institutionalization—to explain how learning moves across individual, group, and organizational levels.

Although these theories are useful for understanding knowledge movement and value creation, they raise the practical question of how much knowledge should be externalized and formalized, and when should learning be left to practice and experience, particularly regarding tacit, experience-based expertise (Nonaka & Takeuchi, 1995; Orlikowski, 2002). The present study addresses this unresolved issue by examining how the introduction of agentic AI and human-in-the-loop (HIL) design may redraw the boundary between externalization and practice (Shneiderman, 2020).

Although prior research recognizes the importance of tacit knowledge, in practice, knowledge management continues to emphasize documentation and formal sharing (Kotonya & Sommerville, 1998; Suchman, 1987, 2007). While this emphasis was reasonable in an era dominated by paper documents and databases, it deserves re-examination if the core of tacit knowledge lies in situated practice rather than in transferable representations.

Large Language Models and Generative AI

Large language models (LLMs) are a class of generative AI based on transformer architecture (Vaswani et al., 2017). LLMs learn statistical regularities in language by training on massive text

corpora enabling them to generate coherent text across a wide range of tasks. These models have been used for text generation, summarization, translation, question answering, and code generation (Brown et al., 2020). A defining feature of LLMs is their generality. Rather than being trained separately for each task, LLMs can be adapted through prompts written in natural language, enabling flexible reuse without large task-specific datasets (Liang et al., 2023). Technically, LLMs are autoregressive models that predict the probability distribution of the next token. Despite their statistical foundation, increases in model scale have been associated with so-called “emergent abilities,” such as zero-shot learning and reasoning-like behavior, which were not explicitly programmed (Amugongo et al., 2025; Liang et al., 2023).

At the same time, LLMs face important limitations. They lack direct access to information beyond their training data and may generate factually incorrect outputs, commonly referred to as “hallucinations” (Huang et al., 2025). To mitigate this issue, retrieval-augmented generation (RAG) systems can retrieve relevant documents from external knowledge bases and provide them as context to the LLM, thereby enabling generated outputs to be based on organizational repositories or trusted sources (Lewis et al., 2020).

From a knowledge management perspective, RAG functions as a bridge between codified organizational knowledge and generative language capabilities. Users can interrogate internal repositories in natural language, while the LLM summarizes, reorganizes, and recontextualizes the retrieved information. In this sense, the LLM operates as a “recomposition engine,” enabling new combinations of existing explicit knowledge (Nonaka and Takeuchi, 1995; Amugongo et al., 2025).

Human-in-the-Loop and Human-Centered AI

Human-in-the-loop (HIL) design refers to the intentional integration of human judgment and feedback throughout the AI lifecycle (Li et al., 2023). Typical HIL mechanisms include data labeling, review and correction of model outputs, intervention during failures, and feedback for iterative improvement. Shneiderman (2020) formulated principles of human-centered AI that emphasize reliability, safety, transparency, and human responsibility. Rai (2020) argued that from an organizational perspective,

adopting AI systems—especially opaque models—requires new capabilities related to explainability, accountability, and governance (Miller, 2019).

In this study, HIL is not viewed merely as a safeguard against errors, but as an interactional framework through which humans and AI can learn from each other. This interpretation positions HIL as a key mechanism for integrating AI into organizational learning and knowledge creation processes (Nonaka, 1994; Nonaka & Takeuchi, 1995).

Agentic AI Workflow and Systems of Agents

Recent research has focused on agent-based systems built around LLMs (Karunanayake et al., 2025). Agentic AI refers to AI systems that go beyond single-turn responses to prompts and can autonomously execute sequences of actions. Typically, an agentic system (1) receives a goal, (2) plans tasks, (3) invokes external tools or APIs, and (4) evaluates and revises outcomes. Many frameworks implement a “system of agents,” in which multiple agents with distinct roles—such as supervisor, planner, and worker—coordinate to accomplish tasks. Technically, each agent combines an LLM with tool-use capabilities and operates through structured prompts or code (Park et al., 2023; Wang et al., 2024). The supervisor decomposes user requests into subtasks, assigns them to worker agents, and integrates the results. Workers may retrieve information using RAG, perform calculations, or run simulations (Amugongo et al., 2025). Iteration and refinement occur through feedback loops.

The present study focuses on how this system of agents, when connected to human experts through HIL design, alters the process of tacit knowledge transfer. Through interaction logs—such as explanations, counterexamples, and revisions—agentic AI systems can gradually absorb tacit judgment criteria and exception patterns (Albrecht and Stone, 2018; Acharya et al., 2025). This mode of operation differs fundamentally from traditional approaches that require full articulation of knowledge before system implementation.

Research Gap and Problem Statement

Classical theories of tacit knowledge and knowledge creation have emphasized the limits of externalization and codification, yet practical knowledge management has largely continued to rely on

externalization and documentation (Nonaka and Takeuchi, 1995; Tsoukas, 2002). At the same time, recent advances in LLMs, agentic AI, and HIL design suggest that tacit knowledge may be engaged *without* requiring complete formalization in advance (Park et al., 2023; Wang et al., 2024; Yao et al., 2022).

Accordingly, this study examines how development using agentic AI workflows changes knowledge transfer and the handling of tacit knowledge compared with conventional IT and model-driven AI development, drawing on multiple organizational cases. It introduces a new perspective on tacit knowledge transfer in agentic AI environments, in which prior externalization is not mandatory and interaction logs play a central role (Wang et al., 2024; Piccialli et al., 2025). Through this analysis, the study questions the assumption that externalization is a necessary condition for knowledge creation and explores the possibility of bridging tacit knowledge to AI while preserving it as a practical actor (Polanyi, 1966; Tsoukas, 2005).

Method

Research Design

A comparative multiple-case study design was used to examine how development approaches based on agentic AI combined with human-in-the-loop (HIL) design change the transfer and handling of tacit knowledge, compared with conventional IT development and model-driven AI development. A multiple-case approach is appropriate for identifying patterns that extend beyond idiosyncratic contexts while retaining sensitivity to organizational practice (Eisenhardt, 1989; Eisenhardt & Graebner, 2007; Yin, 2014).

The analysis focused on three interrelated issues:

- When, how, and with what level of burden tacit knowledge was transferred from humans to AI artifacts during development.
- How agentic AI and HIL-based development processes challenged the conventional assumption that knowledge must be fully externalized prior to system design.

- In cases where a transformation in knowledge transfer from humans to systems was observed, best practices were identified by examining the concrete knowledge transfer mechanisms that were implemented in practice.

Case Organization and Case Selection

The study setting was Company H, a large Japanese diversified industrial manufacturer operating across heavy electrical equipment, industrial systems, and IT services. Prior research has noted that Japanese firms tend to accumulate substantial tacit knowledge through long-term employment and strong emphasis on on-site practice (Brunet & New, 2003; Nonaka & Takeuchi, 1995). Company H exhibits similar characteristics: experienced engineers in manufacturing and engineering functions possess rich practical knowledge that cannot be fully captured through documents or manuals alone.

Individuals and departments within Company H share a tacitly held common understanding of industry-specific terminology, implicit conventions, and organizational norms that are taken for granted internally but remain opaque to outsiders. Even when identical terms are used, their meanings may differ across industries or organizations, creating barriers to understanding. Becoming an expert, therefore, requires not only technical proficiency and stable execution of tasks but also experiential familiarity with industry-specific language, customs, and organizational culture. Tacit knowledge in this sense represents a complex combination of multiple forms of practical knowing, yet few knowledge management systems are designed to engage with this complexity in depth.

We selected recent Company H projects that aimed to utilize such domain knowledge through AI-based systems. Case selection was guided by theoretical relevance rather than statistical representativeness, and projects that allowed comparison across different technological approaches and enabled examination of how advances in AI reshaping the use of tacit knowledge were selected.

Case Selection. This study analyzes three AI development projects conducted within Company H. Company H has accumulated extensive experience with AI projects over time; however, the objective of this study is not to compare AI performance across projects, but to analyze how knowledge is learned, updated, and transferred through interaction between AI systems and users, with particular

attention to differences in human–AI learning dynamics.

From this perspective, the study focuses on the potential of a newly emerging development approach—agentic AI workflows (Case 3)—and seeks to identify its distinctive features. To enable meaningful comparison, two well-established approaches commonly used for learning and operationalizing on-site know-how were selected as comparison cases (Case 1 and Case 2). These approaches represent dominant patterns of knowledge transfer in organizational AI development and provide a baseline against which the characteristics of agentic AI can be examined.

Cases 1 and 2, model-driven AI development and document-based AI development using retrieval mechanisms—have been implemented multiple times within Company H. Accordingly, this study adopts representative cases executed in 2025 as selection cases. Representativeness was assessed based on theoretical relevance rather than statistical criteria, focusing on whether each case clearly embodied the core assumptions and knowledge transfer logic of its respective development approach (Yin, 2014).

In contrast, agentic AI workflows with HIL-based learning remains relatively rare within Company H. Accordingly we selected Case 3 as a typical and information-rich example of this emerging approach at the current stage of adoption. The purpose of selecting Case 3 is exploratory: to observe and analyze a novel pattern of mutual learning between humans and AI that is not yet well understood. Consistent with case study methodology, the emphasis is placed on analytical insight rather than numerical representativeness (Yin, 2014).

Case selection was guided by the aim of enabling theoretical comparison of different modes of knowledge transfer and learning, rather than achieving comprehensive coverage of all AI development practices. This comparative design made it possible to examine how agentic AI workflows differ qualitatively from conventional approaches in their treatment of tacit knowledge and human–AI interaction.

Data Collection

Data was collected from multiple sources, mainly centered on project records. These sources included

official project documents (e.g., project plans, requirements definitions, and design documents), meeting minutes and field notes from project discussions, and semi-structured interviews with key participants, including domain experts from the business side, AI engineers, and project leaders.

The first author participated directly in multiple projects as a project planner within Company H. From this position, the author continuously observed how tacit knowledge was exchanged and negotiated during development. Participant observation is particularly suitable for capturing practice-based knowing and *knowing-in-practice* that may not be fully articulated in formal documentation (Orlikowski, 2002).

Data Analysis

Data analysis proceeded iteratively through within-case and cross-case analysis (Eisenhardt, 1989). For each project, development processes were traced chronologically to identify events involving tacit knowledge. These included explanations of implicit judgments, the handling of exceptions, the articulation of experiential rules, and instances in which instruction or feedback was provided to AI systems.

The indicators used in the analysis were not treated as precise quantitative measures; rather, they were constructed as a hybrid of qualitative assessment and simple, relative comparison across cases. To enhance reliability, preliminary interpretations were reviewed with members of the development teams, and discrepancies were discussed and resolved through follow-up dialogue. This process helped to reduce interpretive bias and strengthen the credibility of the findings (Miles et al., 2014).

Findings

Cross-case comparison

A cross-case comparison was conducted to identify how different AI development approaches handled domain knowledge. Each case involved the development of an analysis system for operational and industrial data requiring domain knowledge and contextual interpretation. The analysis addressed two questions: (1) how domain knowledge provided from the workplace was represented and used within

the AI system, and (2) when learning or knowledge updating occurred during development and use. Table 1 summarizes the three cases. In this analysis, differences among specific domain departments or individual developers were not treated as the primary explanatory factors. Requirements were provided by professional units in different departments, and developments were conducted by a group company with professional IT development capabilities.

Differences in knowledge extraction and updating

The results of the comparison suggest that conventional IT or model-driven AI development and agentic AI workflows differed in how they extracted knowledge outputs and incorporated feedback. In the more conventional approach, output quality is ensured through upfront clarification of requirements, prior training, and formal verification. This configuration produces stable and predictable outputs, which is particularly important for mission-critical applications such as industrial control systems. However, it also limits flexibility and opportunities for interactive adaptation to evolving user intent (Curtis et al., 1988; Wiegers & Beatty, 2013).

In contrast, agentic AI workflows can incorporate self-feedback and iterative refinement within the workflow. This capability allows generated outputs that better align with user intent. Importantly, the cross-case evidence also indicated that using agentic AI alone did not determine outcomes. Rather, a comparison between Case 2 and Case 3 indicates that outcomes differed depending on how the workflow was designed, what roles were assigned to agents, and how HIL was integrated into operational use (Li et al., 2023; Shneiderman, 2020).

These patterns echo prior concerns in literature. Knowledge transfer reliant on upfront codification can remain “sticky” and difficult to accomplish in practice (Szulanski, 1996). Moreover, converting tacit knowing into explicit rules is inherently limited (Tsoukas, 2002). The findings showed that users in these projects sought both accurate outputs and “mutual learning” that goes beyond the role of conventional industrial AI. Among the cases examined, only Case 3 explicitly embedded such a mutual learning mechanism within the system design.

The Learning-agent design in Case 3

Case 3 featured the introduction of a dedicated “learning agent” to facilitate continuous learning during operations. This design was adopted in response to users’ feedback that it would be unrealistic to transfer all domain knowledge at the beginning. In the agentic AI workflow cases, a “system of agents” was implemented as a team of agents with differentiated roles (e.g., a supervisor and task-executing agents). The LLM served as a reasoning engine that interpreted user instructions and generated responses while retrieving information when necessary (Lewis et al., 2020; Wei et al., 2022). In Case 3, the learning agent was introduced as an additional actor within this system. Its role was to receive domain knowledge from users and coordinate with other agents so that the knowledge would be reflected in subsequent system behavior. In this configuration, AI participated in ongoing knowledge creation alongside humans, rather than merely executing predefined rules (Nonaka & Takeuchi, 1995).

To clarify the learning mechanism in practice, consider a complex system-configuration task in Case 3. The workflow required integrating multiple technical and contextual conditions, a process that had traditionally relied on manual cross-referencing and expert judgment.

In this scenario, the system operates through a semi-autonomous human-in-the-loop architecture. A supervisory agent decomposes the task, worker agents execute iterative retrieval and calculation, and a dedicated learning agent monitors expert interventions during operation. When an expert finds that the proposed configuration overlooks an important local condition, they do not rewrite formal rules or procedures. Instead, they adjust the output and annotate the reason for the deviation. This interaction is captured as a contextualized action log (Layer 1), parsed for relational engineering heuristics (Layer 2), and reconciled with catalog specifications and historical performance baselines (Layer 3). The system subsequently derives a weighted adjustment rule that prioritizes grid-stability constraints in future configurations, without requiring the engineer to articulate a static conditional rule.

Human-Side Formation of the Learning Model

Case 3 involved developing a method to calculate changes in the energy flow of an existing facility

before and after the introduction of a particular industrial device. Because the task required multiple parameters, physical conditions, business factors, and planning points known mainly to experienced practitioners, it could not be reduced to a simple formula. Thus, the challenge was not only to automate the calculation but also to elicit expert planning knowledge that was difficult to articulate in advance. From the outset, the user organization had two expectations: experts wanted the AI to learn domain knowledge from them over time, while less experienced members wanted it to retain senior experts' knowledge for everyday work, including newcomer training. These expectations were rooted in an organizational context in which long-tenured experts had accumulated decades of domain-specific practical knowledge. Much of this knowledge had become so ingrained that even the experts themselves could not easily identify or articulate it. At the same time, many of these experts were approaching retirement, raising concerns about potential knowledge loss.

For this reason, the project did not begin with a fixed learning model. At the requirements stage, it was clear that the full content of the knowledge to be transferred was not yet known. However, two practical demands were evident: experts wanted to teach the AI their work knowledge, and learners wanted the AI to preserve and reuse the knowledge of senior experts in daily operations. The underlying problem was the difficulty of specifying which pieces of practical knowledge would later prove critical.

This led the project team to adopt a workflow-centered development strategy. Rather than attempting exhaustive elicitation at the outset, the team first built an application containing the basic calculation and data processing workflow. Then, domain knowledge was added, corrected, and refined as users interacted with the prototype in realistic work situations. In other words, knowledge was expected to transfer when the workflow encountered incompleteness, ambiguity, or error, and the system was designed so that these moments could become opportunities for instruction.

This pattern was especially evident in the first prototype review. After an application was built according to the initially defined requirements, users reviewed it, including highly respected master-level experts. At that point, many additional requests emerged. Participants explained that they had not initially expected the AI to do so much. Once they saw the prototype, they realized that more

know-how could be embedded. Previously vague or missing planning knowledge was articulated through review and discussion. The resulting changes were substantial enough to require major revisions to the calculation logic. Similar dynamics continued in later agile review cycles. Each time new functionality became available, additional domain knowledge emerged from the user organization. This suggests that critical practical knowledge does not exist as a stable stock waiting to be extracted. Rather, it appears in relation to concrete situations and evolving system capabilities.

Tacit knowledge as an interactional, continuously updated asset

The Case 3 configuration also highlights a shift in how tacit knowledge was handled in practice. Rather than being treated as something to be fully externalized once and encoded into the system, tacit knowledge was partially elicited through repeated interaction, with system behavior being updated accordingly. This pattern demonstrates that knowing is enacted and refined through practice, rather than stored as a static stock of knowledge (Cook & Brown, 1999).

The findings therefore suggest that incorporating AI into organizational learning requires more than adopting advanced technology. It requires intentionally designing HIL so that AI can function as an actor in ongoing knowledge creation. Across the cases, the observed differences indicate that recent AI advances can enable a shift in practice: tacit knowledge may be engaged and updated through operation, rather than treated only as an object to be fully externalized and codified in advance.

Table 1. Cross-case comparison of three cases

Comparison dimension	Case 1	Case 2	Case 3
(1) AI approach used	Rule-based / model-driven AI development	Document-centered LLM use with retrieval	Agentic AI workflow with HIL and a learning agent
(2) How knowledge is processed in the system	Pre-codified knowledge is implemented as rules	The LLM recomposes knowledge from documents and records	Combines rule-based functions (Case 1) and document-based recompositing (Case 2)

(3) Approach to tacit knowledge	Domain knowledge is externalized in advance and programmed as explicit rules	Assuming relevant knowledge is already externalized in documents; the LLM reorganizes it into meaningful outputs	Introduces a learning agent to enable continued learning in operation beyond the initial inputs
(4) Timing of knowledge transfer from experts	Primarily during requirements definition (early phase)	Implicitly when documents are created (knowledge assumed to exist in documentation)	Both: prior externalization for initial rules plus gradual elicitation through the learning agent during use
(5) Learning from feedback after deployment	No direct learning; changes occur through system modification	No direct learning; changes occur through system modification	Direct mutual learning; users provide feedback during operation
(6) How post-deployment feedback is retained	Retained indirectly through later redesign or rule modification by developers	Usually not retained as reusable knowledge unless documents are manually updated	Captured as layered action logs and selectively reflected in subsequent workflow executions

Discussion

Procedural Logging Versus Propositional Codification

This theoretical repositioning clarifies a critical epistemological distinction that underpins the study's methodological design: how structured log management fundamentally diverges from traditional codification while preserving the tacit quality of knowledge transfer. The apparent tension between preserving tacit knowledge and implementing a structured, weighted categorization system stems from a conflation of procedural logging with propositional codification. Traditional externalization, as conceptualized within the SECI framework, operates by extracting tacit knowing and translating it into static, decontextualized propositions—rules, manuals, or databases that can be read and applied independently of their origin. The layered log architecture proposed in this study operates on a fundamentally different epistemological premise: it does not seek to articulate tacit knowledge into explicit form, but rather to preserve its situated, action-bound character through contextual metadata and dynamic weighting.

Where codification demands verbalization and rule formulation, the layered system captures non-verbalizable judgments as procedural traces. Experts are not asked to articulate conditional rules or

document decision trees; instead, their interventions during workflow execution are recorded as contextualized action logs. These logs retain the embeddedness of practical knowing by preserving operational state, temporal markers, and expert role metadata. The knowledge is not converted into propositions but maintained as behavioral signatures that guide system responses without requiring full articulation.

Traditional codification treats knowledge transfer as a discrete, upfront extraction event. In contrast, the layered architecture functions as a continuous, practice-embedded archive. Knowledge is not externalized once and stored; it accumulates incrementally through repeated interaction, with weights adjusted according to contextual relevance and source authority. This processual approach aligns with the view of knowing as an ongoing activity rather than a static possession, ensuring that tacit knowledge remains responsive to evolving operational conditions rather than being frozen into rigid specifications.

Codification inherently decontextualizes knowledge to make it portable and universally applicable. The layered log system, however, maintains contextual embeddedness through its metadata structure and weighted integration mechanism. By preserving the situational cues surrounding each expert intervention—such as production constraints, equipment states, or organizational norms—the system ensures that tacit knowledge is not stripped of its practice-bound meaning. The AI does not retrieve explicit rules; it navigates a dynamic knowledge space shaped by weighted traces that reflect the original contextual conditions of expert judgment.

Consequently, the layered management of logs does not constitute a sophisticated form of codification but rather a methodological innovation for preserving tacit quality without requiring full externalization. It bridges the gap between practice-based knowing and system integration by treating interaction logs not as explicit documentation, but as living procedural traces that guide AI behavior through contextual weighting rather than propositional retrieval. This approach resolves the logical tension by demonstrating that structural organization and tacit preservation are not mutually exclusive: knowledge can be systematically weighted and integrated while remaining fundamentally tied to situated action, contextual cues, and expert discretion. The system thus operationalizes tacit

knowledge transfer not through articulation, but through contextualized preservation and dynamic behavioral alignment.

Organizational Context and Boundary Conditions for Generalization

While the epistemological architecture clarifies how tacit knowledge is preserved without formal externalization, the success of this design is equally contingent upon the organizational context in which human-in-the-loop (HIL) mechanisms operate. The effectiveness of Case 3 cannot be fully explained through technical architecture alone; it is deeply rooted in the institutional and cultural conditions that shape knowledge-sharing practices within Japanese manufacturing environments. Long-standing arrangements such as lifetime employment norms, seniority-based career progression, and deeply embedded kaizen (continuous improvement) practices cultivate high levels of organizational trust and knowledge-sharing reciprocity (Brunet & New, 2003). These cultural conditions reduce the perceived threat of AI integration, framing the system not as a replacement for human expertise but as a co-creating place (ba) aligned with existing routines of experiential learning and collective problem-solving (Nonaka & Takeuchi, 1995). Consequently, domain experts demonstrate a greater willingness to engage with the system, providing candid feedback and contextual corrections without the hesitation often observed in contexts where knowledge hoarding or competitive individualism prevails.

This cultural alignment directly enables the layered learning-agent design to function as intended. The HIL mechanism relies on continuous, low-friction interaction between experts and the AI system. In environments where organizational trust is high and knowledge sharing is institutionalized, experts are more likely to treat interaction logs as legitimate contributions rather than administrative burdens. The system's design further reinforces this engagement by preserving expert authority through weighted knowledge layers, ensuring that senior judgments retain priority while still accommodating iterative refinement. This dynamic mirrors traditional Japanese practices of nemawashi (consensus-building) and on-the-job skill transmission, where tacit knowledge is refined through situated dialogue rather than formal documentation. As a result, the HIL design succeeds not merely because of its technical architecture, but because it resonates with established organizational routines that normalize

continuous knowledge co-creation.

However, these contextual enablers also define the boundary conditions for generalization. The model's effectiveness is contingent upon specific cultural and structural factors: high baseline trust in internal systems, organizational norms that value experiential expertise over purely procedural compliance, and governance structures that permit iterative knowledge refinement without immediate formalization. In industries or cultural contexts characterized by low trust, high regulatory scrutiny, or competitive knowledge environments, the HIL design may encounter resistance, reduced expert engagement, or heightened demands for upfront codification. Generalizing this model would therefore require adaptation to local trust dynamics, knowledge-sharing incentives, and governance frameworks. Future implementations should assess whether organizational cultures support the low-friction, iterative feedback loops that sustain continuous learning.

This contextual analysis bridges knowledge management theory with empirically grounded observations of Japanese organizational practices. It demonstrates how AI-enabled learning architectures can be designed to align with, rather than disrupt, culturally embedded knowledge routines.

Continuous learning through agentic AI workflows

Building on the cross-case comparison, this section examines in greater depth how agentic AI workflows were used to implement continuous learning. Some form of learning was present in all three cases, but the nature and timing of learning differed substantially.

The cross-case analysis demonstrates that the operational successes and structural limitations of Cases 1 and 2 logically necessitate the hierarchical knowledge integration observed in Case 3. Case 1's reliance on upfront codification produced stable but rigid rule sets that struggled to adapt to contextual shifts, while Case 2's document-dependent recomposition operated under the assumption that tacit knowledge was already fully articulated in records. Both approaches treated practical knowing as a static stock to be extracted, which inevitably led to the "stickiness" of knowledge transfer (Szulanski, 1996) and placed unsustainable cognitive burdens on domain experts. These outcomes reveal that full

prior externalization is neither sufficient nor sustainable for transferring context-dependent, practice-based expertise.

The hierarchical structure observed in Case 3 emerges not as an isolated technical pipeline, but as a conceptual solution to these externalization bottlenecks. Rather than functioning merely as a system specification, the three-tiered architecture is best understood as a theoretical reconfiguration of how organizational knowing is integrated. The cross-case comparison necessitates this structure because it directly addresses the pluralistic nature of tacit knowledge (Collins, 2010) and operationalizes the critique that externalization cannot capture the full spectrum of practical knowing (Tsoukas, 2002; Gourlay, 2006). Specifically:

Layer 1 (Raw Action Logs) corresponds to embodied, expert-level tacit judgments. These logs capture situated corrections that cannot be fully verbalized in advance but are inherently tied to real-time operational context.

Layer 2 (Human-in-the-Loop Feedback) maps to relational and socially distributed tacit knowledge. This layer integrates peer-level improvement proposals, reflecting the collective, practice-based adjustments that emerge through everyday collaboration.

Layer 3 (Explicit Knowledge Synthesis) aligns with institutionalized, customary practice-based knowing. This layer reconciles tacit inputs with documented guidelines, ensuring that learned adjustments remain compatible with organizational standards and historical best practices.

By framing the model through this cross-case lens, we shift from descriptive case reporting to a broader theoretical contribution. The layered structure operationalizes “knowing-in-practice” (Cook & Brown, 1999) as a continuous, weighted integration process rather than a discrete conversion event. It extends the knowledge-based view of the firm (Grant, 1996) by demonstrating how AI systems can function as latent knowledge infrastructures that preserve contextual nuance while enabling scalable, iterative learning. Consequently, the model is not an artifact of Case 3’s implementation but a theoretically grounded response to the fundamental challenge of transferring practice-based expertise without collapsing it into explicit form. This reframing positions agentic AI workflows not as

automation tools, but as co-constitutive participants in organizational knowledge creation.

Figure 1 illustrates the layered learning-agent model identified in this study. The layered structure represents an empirically grounded design pattern, rather than a universal prescription. Tacit knowledge is transferred from the human organization to the agentic AI model as follows: The first layer captures expert-level judgments provided by senior domain experts, the second incorporates improvement proposals based on experience and the third reflects updated customary knowledge and organizational preferences accumulated through everyday use. Each layer is weighed differently and governed by explicit rules regarding authorization and priority. This layered structure enables continuous learning without requiring full prior externalization and codification of tacit knowledge.

Practical knowing and tacit knowledge as action logs

At first, categorizing knowledge into three layers and assigning different weights may seem like a sophisticated form of codification. However, the mechanism observed in Case 3 differs from conventional codification in several important ways. First, the project did not begin with the assumption that all relevant tacit knowledge could be elicited and formalized in advance. In fact, the case demonstrated that significant knowledge frequently remained latent until a practical workflow or prototype revealed its absence. Second, the layered architecture preserved differences in authority and revisability across types of knowledge instead of collapsing them into a single, uniformly codified rule base.

For this reason, Case 3 is better understood as an extension of externalization, in which practical interventions generated during use are selectively retained for future action, rather than as the full conversion of tacit knowledge into explicit knowledge. Much of the underlying competence remained embodied in senior experts and organizational practice. The timing and medium of externalization changed: knowledge was externalized not only in advance through documents or formal rules but also during operation through interaction with the agentic AI workflow. In this process, learning logs served as a knowledge-bearing medium that captured situated judgments, corrections, and practical rationales in reusable form. From this perspective, the model broadens the SECI view by suggesting

that externalization can occur incrementally through new socio-technical actors and media in ongoing practice (Nonaka & Takeuchi, 1995).

As emphasized by Ryle (1949) and Collins (2010), practical knowing (*knowing-how*) operates on a different plane from propositional knowledge. Cook and Brown (1999) similarly highlighted the duality of knowledge and knowing, arguing that knowing is generated in action. By combining learning agents and HIL, practical knowing was captured in the form of *action logs*. Corrections, acceptances, and rejections made by experts in interaction with the AI were recorded as logs, weighted according to their source and significance, and reflected in subsequent agent behavior.

These logs differ fundamentally from traditional specifications or manuals. Rather than describing what *should* be done, they recorded what *was actually judged and enacted* in practice. From this perspective, action logs can be interpreted as traces of practical knowing. This has important implications for knowledge management practice. Traditionally, organizations have attempted to mitigate knowledge loss by encouraging experts to document as much know-how as possible before they leave. By embedding learning agents in agentic AI workflows, the everyday interactions between experts and AI became a knowledge asset. This mitigates the “stickiness” of knowledge transfer identified by Szulanski (1996).

LLMs maintain high-dimensional internal parameter spaces learned from massive text corpora. Although invisible to human users, these spaces can be understood as latent structures in which diverse contexts and associations are embedded (Vaswani et al., 2017). User prompts retrieve and shape portions of this latent space into explicit outputs.

In the knowledge-based view of the firm, organizations are mechanisms for integrating knowledge (Grant, 1996). The present findings extend this view, suggesting that firms integrate both the tacit and explicit knowledge of human agents, as well as AI-based latent knowledge layers embodied in LLMs and agentic systems. Knowledge management, in this configuration, involves orchestrating these multiple layers so that they jointly contribute to value creation.

Answers to the research questions

Answer to RQ1. This study examined cases in which agentic AI workflows combined with human-in-the-loop design enabled tacit knowledge to be transferred incrementally through ongoing interaction, rather than being fully externalized in advance, as is typical in conventional IT or model-driven AI development. In these cases, knowledge transfer occurred during everyday workflow operations through feedback, corrections, and judgments, thereby reducing the burden on domain experts.

Answer to RQ2. AI was introduced as an actor in organizational knowledge creation through specific system designs. These included learning agents, layered knowledge structures with differentiated priorities and update permissions, and action logs with weighted significance. Figure 1 illustrates a representative implementation, showing how expert judgment, organizational improvements, and customary practices were incorporated within a layered learning-agent model.

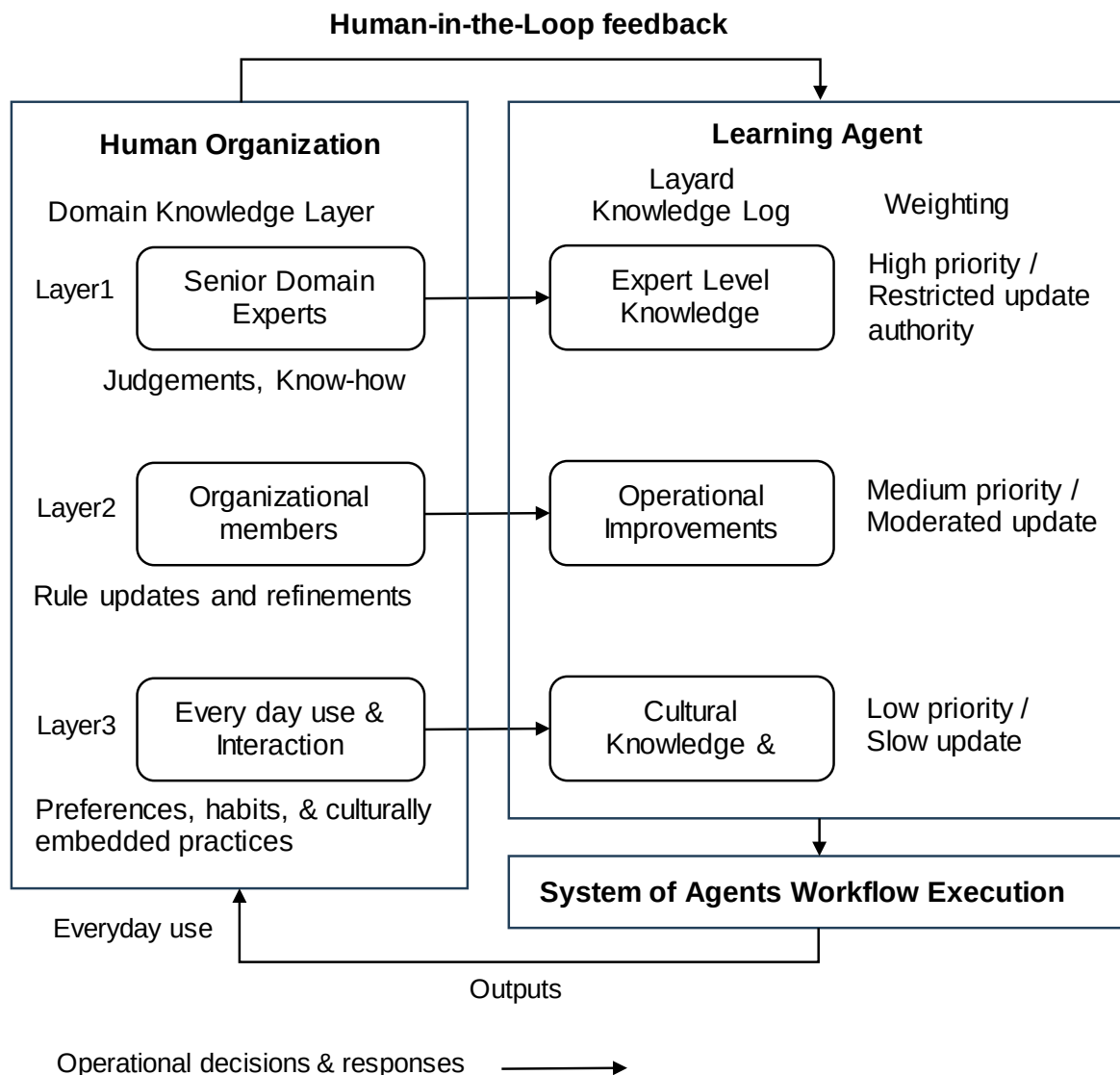


Figure 1. A layered learning-agent model for tacit knowledge transfer in Case 3

Implications

Theoretical implications

This study makes two theoretical contributions. First, it expands upon research concerning tacit knowledge and knowing-in-practice by demonstrating that externalization is not restricted to prior documentation or formal rule articulation. Based on the work of Nonaka and Takeuchi (1995), Cook and Brown (1999), and Orlikowski (2002), the findings indicate that externalization can occur incrementally during use through action logs generated by agentic AI workflows with a human-in-the-

loop design. Thus, the study broadens the SECI view by expanding the timing and medium through which practical knowledge becomes organizationally reusable.

Second, the study contributes to the knowledge-based view of the firm and organizational learning research by conceptualizing agentic AI as part of a layered knowledge infrastructure, not merely as a tool for retrieval or automation. Building on Grant (1996) and complementing Crossan et al. (1999) and March (1991), the study specifies a concrete mechanism through which organizations can retain and mobilize practice-based knowledge over time. Expert intervention is captured in action logs differentiated by authority and purpose and is then selectively incorporated into later system behaviour. This contribution does not claim universal superiority but rather offers a mechanism-based explanation of how human–AI co-learning can support knowledge integration under specific organizational conditions.

Practical implications

The findings have several implications for practitioners. First, knowledge transfer does not have to rely exclusively on asking experts to document all relevant know-how in advance. A workflow-centered learning design can reduce this burden by creating opportunities for knowledge to transfer as necessary during actual work. This is particularly important in organizational settings where experts are busy and much of their expertise is difficult to articulate outside of specific tasks.

Second, HIL design becomes a central knowledge management issue. Organizations must decide who is permitted to correct the system, which types of input are considered highly authoritative, how action logs are stored and reviewed, and how system behaviour is revised later on. These are not merely technical design choices, but also governance decisions regarding organizational memory and authority.

Third, organizations should be careful not to assume that all learning architectures are equally transferable. The success of Case 3 was shaped by both its technical architecture and its organizational context. The user organization placed a high value on the knowledge of senior experts with more than three decades of experience in the same company and industry. Their judgments were treated as an

authoritative source worthy of explicit prioritization, not as one input among many. This "master-apprentice" orientation, together with long-term employment, shared local terminology, and a strong concern about knowledge loss due to retirement, reflects conditions often associated with Japanese manufacturing organizations. These contextual features help explain why users expected the AI to support not only calculation but also learning work knowledge and assisting in developing newcomers, as if it were a growing organizational member.

At the same time, the broader implications of the study are not limited to Japan. The underlying mechanism, whereby knowledge can be elicited through realistic workflow use, retained as action logs, and differentiated by authority and purpose without requiring exhaustive prior codification, may be transferable to other contexts. This mechanism is likely relevant in other organizations where expertise is concentrated, practical judgment emerges in context, and experts can provide corrections during operation but cannot invest heavily in upfront documentation. However, the specific three-layer hierarchy identified in this study should be considered context-specific rather than universally applicable.

Limitations and scope for future research

This study has several limitations that also point to important directions for future research. First, the analysis is based on cases from a single Japanese industrial firm. While this setting is theoretically appropriate for examining practice-based knowledge and long-term learning, caution is required when generalizing the findings to organizations operating in other industries, institutional environments, or cultural contexts.

Second, the study develops one empirically grounded *best-practice* model of how agentic AI and humans can engage in continuous learning, and how experience-based knowing can be transferred and refined without full prior externalization and codification. The layered learning-agent design should therefore be understood as one possible configuration rather than a universal solution. Other patterns of continuous learning and human-AI interaction may exist, and systematic exploration of alternative models remains an important task for future research.

Third, the study relies on qualitative assessment and comparison across cases. While this approach is appropriate for theory building and for capturing practice-based knowing, it does not address questions such as how many layers of knowledge are optimal, how knowledge levels should be differentiated, or how weighting parameters should be calibrated over time. Future research could extend this work by conducting quantitative analyses of interaction logs, testing alternative layer structures, and evaluating learning outcomes across different weighting schemes.

Finally, future research could explore issues of participation, access, and capability in human–AI knowledge co-creation, examining who is able to engage with agentic AI systems, how access to such systems is structured, and how these conditions could shape organizational learning trajectories (Orlikowski, 2007; Van Dijk, 2006).

Conclusion

This study examined how agentic AI workflows combined with human-in-the-loop (HIL) design reshaped knowledge transfer in organizational practice (Li et al., 2023). Drawing on a comparative multiple-case study of three AI development projects in a Japanese industrial conglomerate, the analysis showed that the three approaches differed not only in technical architecture but also in the timing, mechanism, and organizational burden of knowledge transfer. Rather than relying on complete prior externalization, knowledge was gradually conveyed and refined through interaction logs generated in everyday work (Cook and Brown, 1999; Orlikowski, 2002).

The findings suggest that continuous learning can be sustained through a layered learning-agent design, in which different types of domain knowledge are accumulated, weighted, and updated over time (Wang et al., 2024). This structure allows expert judgments, organizational improvements, and practice-based conventions to be integrated without collapsing them into a single explicit representation. The findings extend prior research on practice-based knowing and organizational learning (Nonaka and Takeuchi, 1995; Szulanski, 1996).

Overall, this study suggests that the value of agentic AI for knowledge management lies not only in its

generative or conversational capabilities, but in its potential to serve as part of a learning infrastructure through which organizations capture, retain, and selectively reuse practical knowledge over time. Agentic AI and HIL do not replace human expertise. Rather, under appropriate conditions, they can reconfigure how practical knowing is socialized in everyday work, selectively externalized through interaction and learning logs, combined with existing organizational knowledge, and internalized through repeated use, thereby becoming more firmly rooted in organizational life (Nonaka & Takeuchi, 1995; Teece et al., 1997).

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Addressing the Logistics "2024 Problem" through Advanced Weight-in-Motion Systems: Deep Learning-Based Axle-Weight Estimation and its Practical Application in Japan

Yucheng Shang (Shibaura Institute of Technology, Japan)

Yusuke Goto (Shibaura Institute of Technology, Japan)

ABSTRACT

The “2024 problem” in Japan’s logistics industry is not only a labor issue but also a management challenge involving driver well-being, service reliability, regulatory compliance, and infrastructure utilization. Weight-in-Motion (WIM) systems can help address this challenge by estimating vehicle loads without interrupting traffic flow, but their operational value depends on accuracy under changing measurement conditions. This study examines axle-weight estimation as both a prediction task and a decision-support problem for Japanese logistics and infrastructure management. Four strategies are compared within a unified framework: a peak-based baseline, an MLP-based regression model, a pretrained MLP-based regression model, and a residual correction model. Experiments are conducted under random and condition-held-out splits to evaluate both accuracy and robustness. The residual correction model performs best in both settings, achieving 20.710 kg MAE and 0.362% MAPE under the random split, and 155.037 kg MAE and 2.023% MAPE under the stricter condition-held-out split.

Keyword: Weight-in-Motion (WIM), Logistics “2024 Problem”, Data-Driven Approaches

1. Introduction

The “2024 problem” currently facing Japan’s logistics industry presents a critical business and management challenge. It involves not only labor shortages and tighter working-hour constraints, but also the need to maintain logistics capacity, service reliability, and driver well-being under more restrictive operating conditions [1]. In addition to long hours of driving, truck drivers are burdened by a range of ancillary tasks, including waiting for cargo, loading and unloading operations, and weighing procedures intended to prevent overloading. Conventional weighing methods that require physical stops not only reduce operational efficiency but also increase psychological and physical stress for drivers. To achieve sustainable supply chain management, it is therefore important to leverage digital technologies [2] that can reduce these labor burdens while supporting the efficient use of road infrastructure. Against this background, there is growing interest in Weight-in-Motion (WIM) systems, which estimate vehicle loads while vehicles are moving, without requiring them to stop for static weighing.

From the perspective of infrastructure and asset management, which seeks to maintain the long-term value of public road infrastructure and optimize life-cycle costs, accurate load measurement via WIM also plays a crucial role. Vehicle overloading accelerates rutting, fatigue cracking, permanent deformation, and other forms of structural damage, thereby shortening the service life of pavements, bridges, joints, and expansion devices. In Japan, compliance with axle-load regulations, including the 10-ton axle limit [3], should be regarded not merely as a matter of enforcement but also as a managerial discipline for preserving the

reliability of social infrastructure. In this sense, high-quality load data obtained during motion are valuable not only as engineering measurements but also as a data foundation for preventive maintenance, inspection prioritization, and cost-effective enforcement under resource constraints. In many real-world scenarios, however, load assessment is required at the axle level rather than only at the whole-vehicle level. Vehicle loads are transmitted to the road through individual axles, and axle loads are more directly related to both pavement response and regulatory compliance. Even when gross vehicle weight is known, the distribution of load across axles still matters, since excessive load on a single axle may cause severe local damage and may also trigger legal penalties. Accurate axle-weight estimation is therefore an important problem in WIM research, with direct relevance to logistics compliance, overload screening, pavement management, and infrastructure protection.

These issues show why WIM-based axle-weight estimation is relevant to business and management research. For logistics operators, reliable in-motion weighing can reduce the operational friction associated with unnecessary stops and support smoother transport planning. For road administrators and enforcement agencies, it can enable risk-based screening rather than uniform inspection of all vehicles. For infrastructure managers, axle-level load data can support preventive maintenance, inspection prioritization, and life-cycle cost management. The practical value of WIM therefore depends not only on whether it can measure loads accurately, but also on whether its estimates remain reliable under changing operating conditions.

Despite its importance, reliable axle-weight estimation under real driving conditions remains difficult. One reason is that axle-related waveform responses are not always stable. In practice, sensor signals are influenced not only by static axle loads but also by vehicle speed,

axle spacing, dynamic vibration, filtering settings, and local waveform distortion. As a result, the responses associated with different axles may vary in amplitude, width, and separation, and adjacent axle events may partially overlap. Under such conditions, methods based on local peaks can be highly sensitive to event detection and peak selection, and the observed maxima do not always provide a stable indicator of the true axle loads.

Another major difficulty arises from distribution shift across operating conditions. In this study, waveform samples are collected under different conditions, which implicitly reflect differences in vehicle position states, frequency settings, and filtering configurations. These factors alter both the shape and the scale of the measured signals, meaning that samples from one condition are not necessarily drawn from the same distribution as those from another. This issue is important because a model may appear effective when training and test samples are randomly mixed yet degrade substantially when entire folders or operating conditions are held out for testing. From a deployment perspective, axle-weight estimation should therefore be evaluated not only under a conventional random split but also under a stricter condition-held-out split, in which entire operating conditions are excluded from training and used only for testing.

These considerations suggest that axle-weight estimation should not be viewed simply as a standard regression problem. Different estimation strategies rely on different assumptions and may behave differently under condition shift. Rule-based peak methods are simple and interpretable, but their performance depends heavily on the stability of detected waveform peaks. A multilayer perceptron (MLP)-based regression model can learn nonlinear mappings from waveform-related features to axle weights, but its performance may be sensitive to data

variation and limited supervision. A pretrained MLP-based regression model may improve feature quality through prior representation learning, although such pretraining does not necessarily guarantee robustness when the downstream data distribution changes substantially. A residual correction model offers another possibility by refining an initial baseline estimate rather than predicting axle weights entirely from scratch. For practical WIM applications, it is therefore necessary to compare these strategies within a consistent framework and to examine not only their predictive accuracy but also their robustness.

These practical requirements make method selection a managerial as well as technical issue. A more accurate and stable estimation method can improve the prioritization of detailed inspections, reduce unnecessary vehicle stops, and support more efficient allocation of enforcement and maintenance resources. In addition, a residual correction approach may be easier to communicate in practice because it refines an interpretable baseline rather than replacing it with a fully opaque prediction process. This characteristic may be important in operational environments where transparency, accountability, and organizational acceptance matter alongside predictive performance.

Motivated by these issues, this study systematically investigates four representative axle-weight estimation strategies: a peak-based baseline, an MLP-based regression model, a pretrained MLP-based regression model, and a residual correction model that refines the baseline estimate. To connect technical accuracy with practical decision support, the comparison is conducted under both random and condition-held-out splits using the same evaluation criteria. The main contributions of this study are summarized as follows:

1. We formulate axle-weight estimation in WIM as a unified comparison problem and examine four representative estimation strategies within the same experimental framework, thereby clarifying the trade-offs among interpretable baseline estimation, direct learning, pretraining, and residual correction.
2. We provide empirical evidence that baseline-guided residual correction offers the strongest overall robustness among the compared methods and clarify how such robustness can support managerial decision-making in overload screening, inspection prioritization, driver-burden reduction, and preventive infrastructure management in Japan.

Overall, this study aims to provide a more realistic assessment of axle-weight estimation methods for practical WIM deployment and to clarify how method selection should be related to signal stability, operating conditions, and decision-support requirements in the Japanese logistics and infrastructure-management context.

2. Related Work

Recent studies on WIM and Bridge Weigh-in-Motion (BWIM) can be broadly organized into three lines that are most relevant to this work: learning-based weight estimation, axle detection and temporal signal interpretation, and self-supervised representation learning for time series. Together, these studies reflect a clear shift from purely rule-based pipelines toward data-driven modeling. At the same time, they also suggest that progress in this area has largely been driven by individual algorithmic proposals rather than by controlled comparisons of alternative estimation strategies under different evaluation settings. For the present study,

this point is particularly important because practical deployment depends not only on predictive accuracy but also on robustness under varying operating conditions.

2.1 Learning-Based WIM and BWIM for Weight Estimation

One important line of research in WIM and BWIM focuses on learning-based models for weight estimation. Earlier studies typically incorporated neural predictors into otherwise conventional weighing pipelines. For example, Xu et al. [4] combined wavelet-denoised WIM signals with a neural-network-based estimation model for gross-weight and axle-weight prediction, showing that learned mappings can improve accuracy over conventional backpropagation-based approaches. More recent work has extended this direction toward broader traffic-load analysis and more complex sensing scenarios. Zhang et al. [5] investigated deep-learning-based axle-load calculation from highway sensor data for axle-load spectrum estimation, while Szinyéri et al. [6] developed a strain-gauge-based BWIM framework using deep learning and a validated dataset. Liu et al. [7] further proposed a modular WIM system with neural-network-based axle recognition and whole-vehicle weighing, reflecting the growing interest in learned processing across multiple stages of the WIM pipeline.

Although these studies demonstrate the potential of learning-based estimation, they usually focus on a single modeling route within a single experimental setting. As a result, the reported gains are often tied to one architecture, one sensing configuration, or one train-test protocol. This makes it difficult to distinguish whether the observed improvement comes from the estimation strategy itself or from the evaluation setup under which it is tested. For the present problem, this limitation is especially important because axle-weight estimation

performance can vary substantially depending on whether operating conditions are mixed across training and testing or explicitly held out during evaluation.

2.2 Axle Detection and Temporal Signal Interpretation

A second related line of work concerns axle detection and temporal signal interpretation. In practical WIM and BWIM systems, accurate weight estimation often depends on reliable localization of axle events, since waveform segmentation, peak extraction, and downstream prediction are all sensitive to temporal alignment. Lorenzen et al. [8], for instance, proposed a virtual axle detector based on bridge acceleration measurements, continuous wavelet transforms, and a fully convolutional network, showing that learning-based temporal interpretation can reduce dependence on conventional axle detectors. Such studies suggest that signal understanding is not merely a preprocessing issue but also a key part of the overall weighing problem, especially when operating conditions vary or sensor placement is constrained.

From the perspective of the present study, axle-detection literature is relevant for two reasons. First, it highlights that axle-related waveform structure is informative but not always stable. Second, it suggests that model performance should be interpreted in relation to how strongly a method depends on explicit peak localization. In other words, the distinction between a peak-based baseline, an MLP-based regression model, and a residual correction model is not merely architectural; it also reflects different ways of using temporal structure in WIM signals. This point is particularly important in practical environments where measurement conditions change, and waveform characteristics are not fully consistent across operating scenarios.

2.3 Contrastive Learning

A third line of work comes from self-supervised representation learning, particularly contrastive learning. SimCLR [9] established a widely adopted contrastive framework in which two augmented views of the same sample are encouraged to have similar representations, while different samples are pushed apart. Although originally developed for visual data, the core idea has since been extended to time-series learning, where labeled data are often limited and robust signal representations are difficult to obtain.

In time-series research, several studies have shown that self-supervised or contrastive objectives can improve representation quality by exploiting unlabeled signals. Yang and Hong [10] proposed iterative bilinear temporal-spectral fusion for unsupervised time-series representation learning, emphasizing that both temporal and spectral information are important for robust representations. Duan et al. later introduced MF-CLR [11] for multi-frequency time series, further illustrating that contrastive learning can be adapted to settings in which signals exhibit heterogeneous temporal resolutions. These studies support the broader view that useful temporal representations can be learned before downstream supervision is introduced.

For the present study, this line of work is relevant because it provides one possible strategy for improving regression performance when labeled WIM data are limited and measurement conditions vary across operating scenarios. At the same time, the implications of contrastive pretraining for axle-weight estimation remain unclear. Existing self-supervised time-series studies are mainly concerned with generic downstream tasks such as classification, forecasting, or anomaly detection, rather than with axle-level regression under substantial condition-level variation. Accordingly, the present study evaluates pretraining not in isolation,

but within a broader four-way comparison that also includes a peak-based baseline, an MLP-based regression model, and a residual correction model. This design makes it possible to assess the practical value of pretrained representations relative to alternative estimation strategies under both standard and stricter condition-held-out evaluation settings.

3. Problem Definition

3.1 WIM Signal Representation and Notation

Let the i -th valid WIM record correspond to an n -axle vehicle and be represented by a raw waveform sequence with T sampling points. Although the formulation below is written for a general n -axle setting, the empirical evaluation in this study is conducted on a specific three-axle vehicle category. Therefore, $n = 3$ in all experiments reported in this paper.

Using vehicle-level notation, the input sequence and the ground-truth axle-weight vector are defined as

$$X_i = [x_{(i,1)}, x_{(i,2)}, \dots, x_{(i,T)}] \quad (1)$$

$$y_i = [y_{(i,1)}, y_{(i,2)}, \dots, y_{(i,n)}]^T \quad (2)$$

where X_i denotes the raw WIM waveform of the i -th vehicle and y_i contains the corresponding axle weights.

After axle-event detection, each vehicle-level record is converted into n aligned axle-level items. Each item consists of a local waveform window, amplitude-related descriptors, a condition feature vector, an axle-identity code, and the corresponding axle-weight target. The axle-level sample used throughout the remainder of this paper is written as

$$s_{(i,j)} = (w_{(i,j)}, a_{(i,j)}, c_i, e_j, y_{(i,j)}), \quad j \in \{1, 2, \dots, n\} \quad (3)$$

where $w_{(i,j)}$ is the local waveform window centered on the j -th detected axle event, $a_{(i,j)}$ denotes amplitude-related descriptors extracted from the corresponding region, c_i is a condition feature vector associated with the i -th record, and e_j is the axle-identity code for axle position j .

In addition, a rule-based baseline is extracted from the full waveform by taking the maximum response inside each detected axle region. This baseline serves both as a direct estimator and as the reference term in the residual-correction model. The resulting vehicle-level baseline vector is defined as

$$b_i = [b_{(i,1)}, b_{(i,2)}, \dots, b_{(i,n)}]^\top \quad (4)$$

Thus, the problem can be represented at two complementary levels: a vehicle-level formulation based on the full waveform X_i and the multi-axle target y_i , and an axle-level formulation based on aligned local items $s_{(i,j)}$. The former expresses the overall prediction objective, whereas the latter provides the common representation used by the compared estimation strategies.

3.2 Axle-Weight Prediction Task

The task considered in this study is axle-weight prediction from in-motion WIM signals. Given one waveform record, the objective is to estimate the loads of the n axles associated with that vehicle. Since pavement response and overload screening are directly related to axle-level loading, the problem is formulated as a supervised multi-output regression task:

$$\hat{y}_i = F_\theta(X_i) \quad (5)$$

where $F_\theta(\cdot)$ denotes a prediction function parameterized by θ , and $\hat{y}_i$ is the estimated axle-weight vector for the i -th vehicle.

Although the compared methods use different internal representations and prediction mechanisms, they share the same target variable and are evaluated on the same aligned samples. Their common optimization objective can be written as the average L_1 loss over the n axle outputs:

$$L_{reg} = \frac{1}{nN} \sum_{i=1}^N \sum_{j=1}^n |\widehat{y_{(i,j)}} - y_{(i,j)}| \quad (6)$$

where N is the number of vehicle-level records in the dataset.

4. Proposed Method

This section describes the four estimation strategies compared in this study. All methods share the same axle-event detection and axle-level sample construction framework introduced in Section 3, but they differ in how the observed signal information is transformed into the final axle-weight estimate.

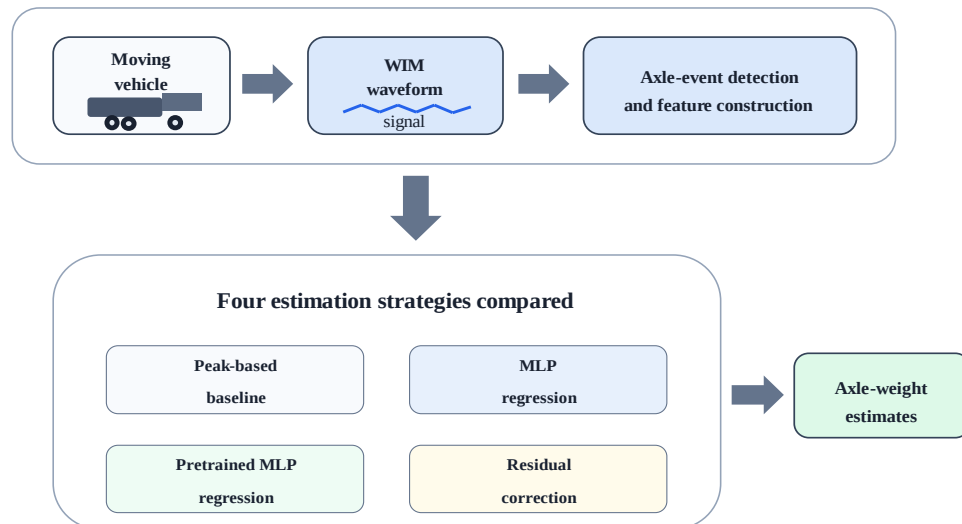


Figure 1. Workflow of WIM-Based Axle-Weight Estimation and Strategy Comparison.

As summarized in Figure 1, the four strategies can be understood as different ways of using the same WIM signal for decision support. The three-peak baseline uses the largest

waveform response around each detected axle as a simple and interpretable load estimate. The MLP-based regression model learns a direct nonlinear mapping from waveform windows, amplitude descriptors, condition features, and axle identity to axle weight. The pretrained MLP-based regression model keeps the same downstream regression structure but first initializes the waveform encoder through contrastive learning, with the aim of improving signal representation before supervised training. The residual correction model takes a different approach: it keeps the peak-based baseline as a physically meaningful starting point and learns only the correction needed to reduce its error. In this sense, the comparison is not only among algorithms, but also among different decision-support logics: direct measurement, direct learning, representation-enhanced learning, and baseline-guided correction.

4.1 Three-Peak Baseline

The first strategy is a non-parametric peak-based baseline derived directly from the detected axle regions. In the present three-axle setting, this reduces to a three-peak baseline. Once the axle-event regions are identified in the raw waveform, the maximum response within each region is used as the estimated axle load. Let $R_{(i,j)}$ denote the detected support region of the j -th axle event in the i -th waveform. The baseline estimate is then defined as

$$b_{(i,j)} = \max \{X_i(t) : t \in R_{(i,j)}\} \quad (7)$$

and the corresponding axle-weight prediction is given by

$$\widehat{y_{(i,j)}} = b_{(i,j)} \quad (8)$$

This strategy provides a transparent and easily interpretable reference because it preserves the coarse physical structure of the measured signal. However, its accuracy depends heavily on waveform stability. In practice, local overlap between adjacent axle responses,

fluctuation in peak magnitude, and imperfect temporal localization may all cause the observed peak response to deviate from the true axle load. The three-peak baseline is therefore useful as a reference estimator, but its performance is inherently limited when operating conditions vary substantially.

4.2 MLP-Based Regression Model

The second strategy predicts axle weight directly from an axle-centered representation. For each axle-level item $s_{(i,j)}$, a fixed-length local waveform window $w_{(i,j)}$ is extracted and normalized. In parallel, four amplitude descriptors are computed from the same local segment: the mean absolute value, the standard deviation, the peak-to-peak amplitude, and the root-mean-square value. These quantities are summarized as an amplitude-feature vector,

$$a_{i,j} = [\mu_{(i,j)}, \sigma_{(i,j)}, \rho_{(i,j)}, r_{(i,j)}]^T \quad (9)$$

A one-dimensional encoder is then applied to the local waveform window to obtain a compact latent representation,

$$z_{(i,j)} = \text{Enc}_\theta(w_{(i,j)}) \quad (10)$$

The final regression input is formed by concatenating the latent representation, the amplitude-feature vector, the condition feature vector, and the axle-identity code:

$$u_{(i,j)} = [z_{(i,j)}; a_{(i,j)}; c_i; e_j] \quad (11)$$

Although the downstream predictor is an MLP-based regression head, the model first uses the waveform encoder to transform the local signal into a latent feature space. The concatenated input is then passed through a two-hidden-layer multilayer perceptron. Using $\sigma(\cdot)$ to denote the activation function, the forward propagation is written as

$$h_{(i,j)} = \sigma(W_1 u_{(i,j)} + \beta_1)$$

$$g_{(i,j)} = \sigma(W_2 h_{(i,j)} + \beta_2) \quad (12)$$

$$\widehat{y_{(i,j)}} = w_3^\top g_{(i,j)} + \beta_3$$

This model corresponds to the direct supervised regression setting, in which all trainable parameters are optimized end-to-end using only labeled axle-weight data. Compared with the peak-based baseline, it does not rely explicitly on peak magnitude as the final predictor. Instead, it learns a nonlinear mapping from waveform-derived features and auxiliary contextual information to axle weight.

4.3 Pretrained MLP-Based Regression Model

The third strategy retains the same downstream regression architecture as the MLP-based regression model, but initializes the waveform encoder through contrastive pretraining on unlabeled axle-centered windows. The purpose of this strategy is to examine whether representation initialization improves downstream axle-weight prediction without changing the supervised regression head.

Given an unlabeled local waveform window w_n , two stochastic views are generated through signal augmentation:

$$\tilde{w}_n^{(a)} = T_a(w_n), \quad \tilde{w}_n^{(b)} = T_b(w_n) \quad (13)$$

where $T_a(\cdot)$ and $T_b(\cdot)$ denote augmentation operators. These two views are processed by the shared encoder and a projection head:

$$q_n = \text{Proj}_\psi \left(\text{Enc}_\theta(T_a(w_n)) \right) \quad (14)$$

$$k_n = \text{Proj}_\psi \left(\text{Enc}_\theta(\tilde{w}_n^{(b)}) \right) \quad (15)$$

The encoder is trained so that the two augmented views of the same waveform produce similar representations, while representations from different samples in the minibatch remain

distinguishable. Using cosine similarity and temperature parameter τ , the contrastive objective is written as

$$L_{con} = -\frac{1}{M} \sum_{n=1}^M \log \frac{\exp\left(\frac{\cos(q_n, k_n)}{\tau}\right)}{\sum_{m=1}^M \exp\left(\frac{\cos(q_n, k_m)}{\tau}\right)} \quad (16)$$

where M denotes the minibatch size.

After pretraining, the encoder parameters θ^* are transferred to the supervised regression stage. The pretrained latent representation is combined with the same auxiliary inputs as in the non-pretrained model:

$$\begin{aligned} u_{i,j}^{pre} &= [z_{i,j}^{pre}; a_{i,j}; c_i; e_j] \\ z_{i,j}^{pre} &= \text{Enc}_{\theta^*}(w_{i,j}) \\ \hat{y}_{i,j} &= g_{\Phi}(u_{i,j}^{pre}) \end{aligned} \quad (17)$$

where $g_{\Phi}(\cdot)$ denotes the MLP-based regression head used in the supervised stage. This formulation makes it possible to isolate the effect of representation initialization while keeping the target variable, auxiliary inputs, and overall regression pipeline comparable to those of the non-pretrained model. In this sense, the comparison between Sections 4.2 and 4.3 focuses specifically on whether contrastive pretraining provides a practical benefit for axle-weight estimation under varying measurement conditions.

4.4 Residual Correction Model

The fourth strategy predicts a residual correction relative to the peak-based baseline rather than predicting axle weight directly. The underlying motivation is that the baseline often captures the coarse magnitude of the axle load, whereas the remaining error reflects dynamic disturbance, local waveform distortion, and condition-specific bias. Instead of learning the

full mapping from signal to axle weight from scratch, this strategy learns how to refine an already informative initial estimate. The residual target is defined as

$$\delta_{(i,j)} = b_{(i,j)} - y_{(i,j)} \quad (18)$$

To estimate this residual, a correction feature vector is constructed by combining the vehicle-level baseline vector, the local amplitude descriptors, the condition feature vector, and the axle-identity code:

$$r_{(i,j)} = [b_i; a_{(i,j)}; c_i; e_j] \quad (19)$$

Here, the use of the full baseline vector b_i allows the model to exploit not only the local peak estimate for the target axle, but also the broader vehicle-level peak pattern across the three detected axle events. The correction network is implemented as a two-layer MLP:

$$v_{(i,j)} = \phi(V_1 r_{(i,j)} + \gamma_1) \quad (20)$$

$$\hat{\delta}_{(i,j)} = v_2^T \phi(V_2 v_{(i,j)} + \gamma_2) + \gamma_3 \quad (21)$$

The final axle-weight estimate is then obtained by subtracting the predicted residual from the baseline value:

$$\hat{y}_{(i,j)} = b_{(i,j)} - \hat{\delta}_{(i,j)} \quad (22)$$

Compared with direct regression, this strategy preserves the interpretable reference provided by the peak-based baseline while allowing the model to compensate for systematic bias through learned residual adjustment. This distinction is particularly important in the present study because it clarifies whether performance gains arise from replacing the baseline entirely or from refining a coarse but informative initial estimate. In practical terms, the residual correction model provides a middle ground between a fully rule-based estimator and a fully learned predictor.

5. Experiments

This section presents the main comparative results of the four axle-weight estimation strategies under two evaluation settings: a random split and a stricter condition-held-out split. To keep the presentation focused, only the principal comparative results are reported in this section. Throughout experiments, the compared methods are referred to consistently as the peak-based baseline, the MLP-based regression model, the pretrained MLP-based regression model, and the residual correction model. The purpose of this section is to compare their predictive accuracy under a unified protocol and to examine how their performance changes when the evaluation moves from a standard random split to a stricter condition-held-out setting.

5.1 Experimental Setup

The supervised experiments are conducted on the filtered fine-tuning dataset constructed from valid WIM waveform records after axle-event detection and record-level screening. In the present study, only samples corresponding to a specific three-axle vehicle category are retained for supervised comparison. The resulting dataset contains 1,500 valid vehicle-level records, corresponding to 4,500 aligned axle-level items. Under the 7:1:2 split design, this corresponds to 1,050 training records, 150 validation records, and 300 test records, or equivalently 3,150, 450, and 900 axle-level items, respectively.

Each valid vehicle-level waveform is converted into three aligned axle-level items, so that all compared methods are evaluated on the same filtered sample set. The four estimation strategies introduced in Section 4 are compared under a common experimental framework. In particular, the preprocessing procedure, axle-level sample construction, target definition, and

evaluation conditions are standardized across methods. This design ensures that the reported performance differences can be attributed primarily to the estimation strategy itself rather than to differences in input preparation or data selection.

The dataset includes multiple operating conditions, including different frequency settings such as 20 Hz and 600 Hz. These frequency settings are sensor-side acquisition conditions rather than model-side hyperparameters, and they are therefore relevant to practical deployment. Because sampling conditions affect waveform resolution, peak shape, and local signal separability, they may also influence downstream axle-weight estimation accuracy. For this reason, the present study treats frequency setting as a practically meaningful experimental factor.

5.2 Split Protocols and Metrics

Two evaluation protocols are considered in this study. The first is a random split, in which waveform records are randomly divided into training, validation, and test subsets according to the 7:1:2 ratio. This setting evaluates performance when training and test samples are drawn from largely mixed operating conditions and therefore provides a relatively standard supervised evaluation scenario.

The second is a stricter condition-held-out split, in which entire operating conditions are excluded from training and used only for testing. In the present dataset, these operating conditions reflect differences such as vehicle position states, frequency setting, and filtering configuration. Because these condition-level factors affect the shape and scale of the measured waveform, the condition-held-out split provides a more demanding evaluation of cross-condition generalization than the random split. This protocol is particularly important for practical

deployment, where models may be applied under conditions that are not fully represented in the training data. In this sense, the condition-held-out evaluation is intended to approximate a more realistic decision-support setting than the standard random split.

Performance is evaluated using mean absolute error (MAE) and mean absolute percentage error (MAPE). MAE measures the absolute magnitude of axle-weight estimation error, whereas MAPE reflects the relative error with respect to the true axle weight. Together, these two metrics provide complementary views of predictive quality and allow both absolute and percentage-based estimation performance to be compared across methods.

5.3 Main Results under the Random Split

Table 1 summarizes the main results under the random split. All three learning-based methods substantially outperform the peak-based baseline, indicating that supervised modeling is effective when the training and test samples are drawn from relatively similar operating conditions. Among the four methods, the residual correction model achieves the best overall performance, followed by the pretrained MLP-based regression model and the MLP-based regression model.

As shown in Table 1, Exp4 reduces the MAE from 267.604 kg for the peak-based baseline to 20.710 kg, and also achieves the lowest MAPE among all compared methods.

Table 1. Overall results under the random split.

Method	MAE (kg)	MAPE (%)
Exp1: Peak-based baseline	267.604	4.434
Exp2: MLP-based regression model	92.323	1.566
Exp3: Pretrained MLP-based regression model	68.925	1.169

Exp4: Residual correction model	20.710	0.362

Although both direct regression models improve substantially over the baseline, the residual correction model yields a much larger gain. These results suggest that, when the difference between training and test conditions is limited, refining a coarse but informative baseline estimate is more effective than relying on direct regression alone.

5.4 Main Results under the Stricter Condition-Held-Out Split

The stricter condition-held-out split provides a more demanding evaluation because entire operating conditions are excluded from training and used only for testing. As shown in Table 2, the overall error increases substantially for all learning-based methods relative to the random split, indicating a strong effect of condition-level distribution shift. In this setting, the residual correction model still achieves the best overall performance, whereas the pretrained MLP-based regression model shows the largest degradation among the compared methods.

Table 2. Overall results under the stricter condition-held-out split.

Method	MAE (kg)	MAPE (%)
Exp1: Peak-based baseline	261.322	3.521
Exp2: MLP-based regression model	310.240	4.325
Exp3: Pretrained MLP-based regression model	430.140	6.023
Exp4: Residual correction model	155.037	2.023

Table 2 shows that the stricter condition-held-out setting is substantially more challenging than the random split for all learning-based methods. In particular, Exp2 and Exp3 degrade markedly, and Exp3 becomes the worst-performing method among the four strategies. By contrast, Exp4 still achieves the lowest MAE and MAPE, remaining clearly better than the

peak-based baseline and both direct regression models. This result suggests that baseline-guided residual correction is more robust to condition-level variation than direct regression or pretrained regression in the present dataset.

5.5 Frequency-Wise Results under the Random Split

Figure 2 examines the effect of frequency setting under the random split. Because frequency setting is one component of the condition-held-out split design, the frequency-wise comparison is reported here for the random split, where the effect of sampling condition can be viewed more directly. For the three learning-based methods, the error is consistently larger at 20 Hz than at 600 Hz. Specifically, Exp2 increases from 72.2 kg at 600 Hz to 111.4 kg at 20 Hz, Exp3 increases from 60.3 kg to 77.2 kg, and Exp4 increases from 18.3 kg to 23.0 kg. Although the same pattern is not observed for the peak-based baseline, the learning-based methods consistently achieve lower error under the 600 Hz setting in the present dataset.

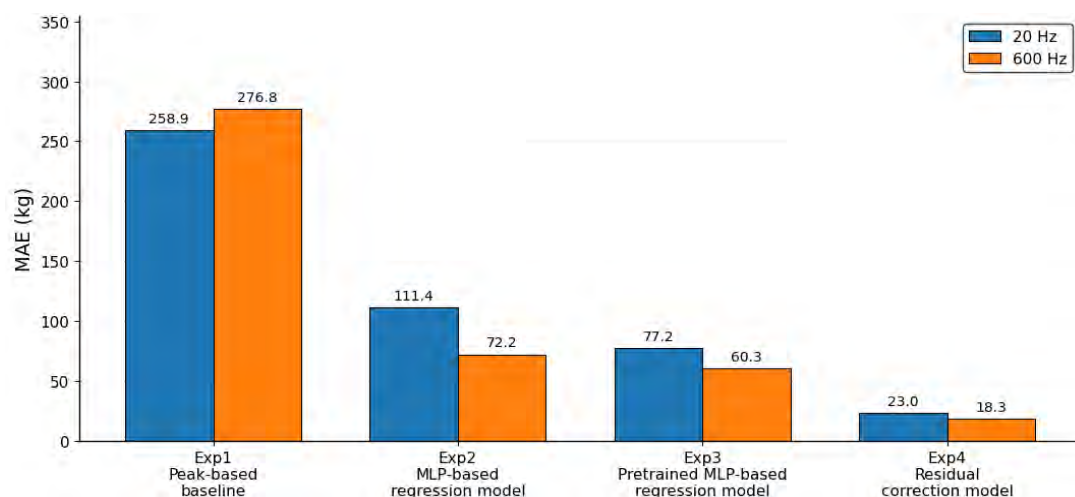


Figure 2. Random-split frequency-wise MAE comparison between 20 Hz and 600Hz across the four estimation strategies.

5.6 Summary of Main Findings

Taken together, the results reported in this section show a clear and consistent pattern across the two evaluation settings. Under the random split, all three learning-based methods

substantially outperform the peak-based baseline, and the residual correction model achieves the best overall performance. The additional frequency-wise comparison further shows that, within the random-split setting, the learning-based methods tend to achieve lower error under 600 Hz than under 20Hz. Under the stricter condition-held-out split, the task becomes substantially more difficult for all learning-based methods, yet the residual correction model still remains the strongest overall strategy.

These results suggest two main points. First, baseline-guided residual learning provides a particularly effective way to exploit the coarse but informative structure already captured by the peak-based baseline. Second, direct regression models, including the pretrained variant, are more vulnerable to condition-level distribution shift in the present experimental setting. Therefore, practical evaluation of WIM axle-weight estimation methods should consider not only predictive accuracy under mixed conditions but also robustness under stricter condition-held-out testing.

6. Analysis

This section provides a more detailed analysis of the error structures underlying the main comparison results reported in Section 5. Since the residual correction model achieves the best overall performance under both the random split and the stricter condition-held-out split, the purpose of this section is not to restate the overall ranking of the four methods, but to clarify how and why this advantage emerges under different evaluation settings. The analysis is organized into two parts. The first examines the random-split setting, in which training and test samples are drawn from mixed operating conditions. The second examines the stricter

condition-held-out split, in which entire operating conditions are excluded from training and used only for testing.

6.1 Random-Split Error Structure

As shown in Section 5, the random split yields the strongest overall performance for the residual correction model. To examine how this advantage appears at a more detailed level, Figure 3 compares the pretrained MLP-based regression model (Exp3) and the residual correction model (Exp4) through axle- and condition-wise MAE heatmaps.

Two observations are particularly important. First, Exp4 achieves lower error than Exp3 in every displayed condition cell, indicating that its advantage is broad rather than limited to a small subset of cases. Second, the largest errors for Exp3 are concentrated in several 20 Hz conditions, especially Back-20, Center-20, and Front-20. In these conditions, the MAE rises sharply for Axles 2 and 3 and, in some cases, also for Axle 1. By contrast, Exp4 substantially suppresses these condition-specific error spikes and maintains a much lower error level even under the more challenging 20Hz settings.

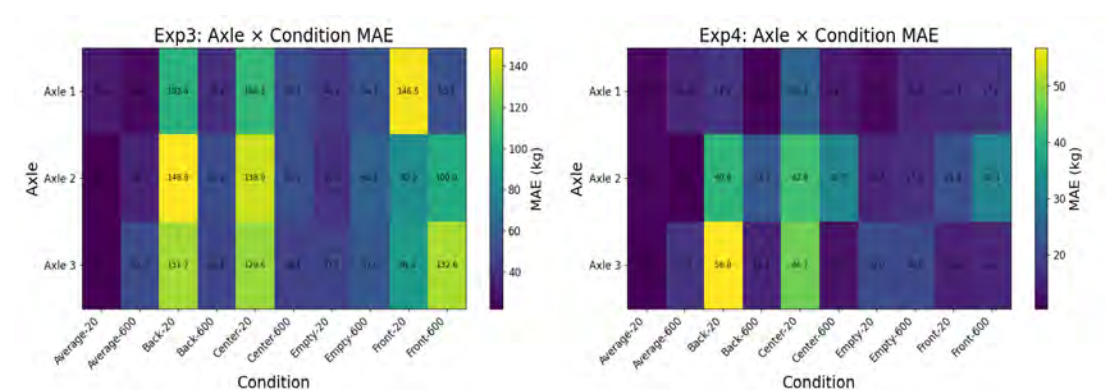


Figure 3. Random-split axle- and condition-wise MAE heatmaps for the pretrained MLP-based regression model (Exp3) and the residual correction model (Exp4).

This pattern is also consistent with the physical interpretation developed in the preceding sections. As discussed in Sections 1 and 3, later axle responses tend to be more susceptible to

waveform overlap, local distortion, and unstable peak structure than earlier ones. In particular, Axles 2 and 3 are more likely to be affected by neighboring-axle interference and residual vibration, which makes their waveform-derived cues less stable than those of Axle 1. Under the random split, however, the training data still contain similar operating conditions, so the residual correction model can learn systematic adjustments to the coarse baseline estimate. In this sense, the superiority of Exp4 under the random split does not arise only from a lower global average error.

6.2 Error Structure under the Condition-Held-Out Split

As shown in Section 5, the stricter condition-held-out split produces substantially larger errors than the random split for all learning-based methods, indicating a strong effect of condition-level distribution shift. To clarify why the residual correction model nevertheless remains the best-performing method under this setting, Figure 4 examines its improvement relative to the peak-based baseline at the sample level. Here, improvement is defined as the absolute baseline error minus the absolute Exp4 error, so positive values indicate cases in which the residual correction model outperforms the baseline.

The histogram shows that most samples lie on the positive side of zero, indicating that Exp4 improves upon the peak-based baseline in the majority of held-out cases. At the same time, the distribution is not narrowly concentrated. While some samples show little improvement or slight degradation, a substantial portion extends far into the positive region, indicating that Exp4 often produces large gains in difficult cases. This pattern suggests that the advantage of Exp4 under the stricter split is not confined to a small number of favorable examples, but appears broadly across the held-out test set.

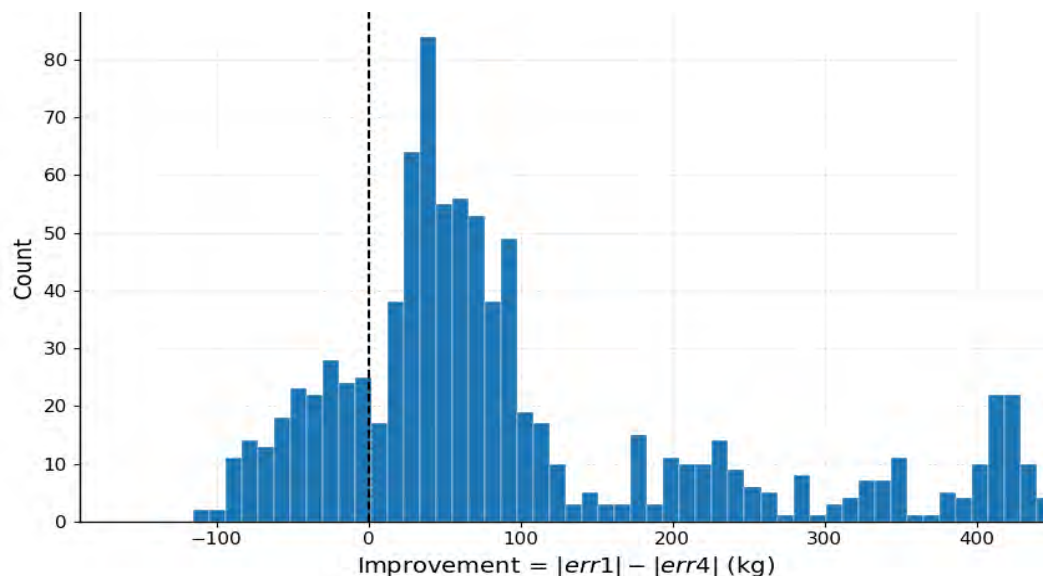


Figure 4. Distribution of Exp4 improvement over the peak-based baseline under the stricter condition-held-out split.

Figure 5 further clarifies when this improvement becomes most pronounced by relating the Exp4 win rate to the required correction magnitude, defined as the absolute difference between the peak-based baseline and the ground-truth label. When the required correction is very small, Exp4 offers little advantage over the baseline. In the 0–50 kg bin, the win rate is 0.0% ($n = 3$), and in the 50–100 kg bin, it remains only 0.8% ($n = 128$). By contrast, once the required correction becomes moderate or large, the effectiveness of Exp4 increases sharply. The win rate rises to 63.6% in the 100–200 kg bin ($n = 110$), 98.9% in the 200–400 kg bin ($n = 532$), and 100.0% in the 400+ kg bin ($n = 127$). These results indicate that the residual correction model is particularly valuable when the baseline error is substantial. In other words, Exp4 does not outperform the baseline through a uniform smoothing effect; rather, it is most effective precisely in the cases where a meaningful correction is required.

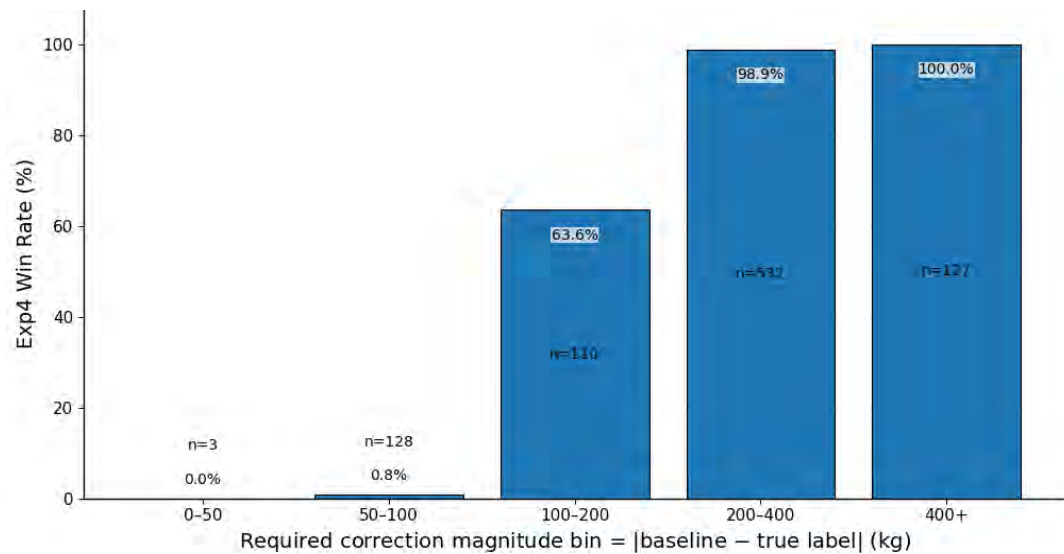


Figure 5. Win rate of Exp4 by required correction magnitude under the stricter condition-held-out split.

These findings are also consistent with the modeling rationale introduced in Section 4. The residual correction model does not attempt to replace the peak-based baseline entirely. Instead, it preserves the coarse physical reference contained in the baseline and learns to adjust it when systematic error is present. Under the stricter condition-held-out split, this design appears to be particularly advantageous. Although the held-out operating conditions are not represented in training, the baseline still provides a physically grounded starting point, and the correction network remains useful precisely when the discrepancy between the baseline and the ground truth becomes large.

Taken together, Figures 4 and 5 suggest that the superiority of the residual correction model under the stricter condition-held-out split arises from its ability to improve the peak-based baseline in cases where that baseline is most deficient. Although condition-level distribution shift makes the task substantially more difficult for all learning-based methods, Exp4 still provides the best overall performance because it preserves a coarse but informative physical reference while learning to correct large systematic errors.

7. Discussion

The results of this study indicate that axle-weight estimation in WIM should be assessed not only in terms of predictive accuracy, but also in terms of robustness under changing operating conditions. Under the random split, the residual correction model achieved the best overall performance. More importantly, it remained the strongest overall strategy under the stricter condition-held-out split. This consistency suggests that baseline-guided residual learning provides a more favorable balance between accuracy and robustness than the direct regression alternatives considered in this study.

The comparison of the four strategies also helps clarify their respective roles. The peak-based baseline is the least accurate overall, but it retains a clear physical interpretation and provides an informative reference derived directly from waveform structure. The MLP-based regression model substantially improves upon this baseline when training and test samples share similar conditions, but its performance degrades under stronger condition-level shift. In the present benchmark, contrastive pretraining does not alleviate this limitation. Instead, the pretrained MLP-based regression model shows the largest degradation under the stricter condition-held-out split, indicating that representation pretraining alone does not necessarily ensure robust cross-condition generalization.

By contrast, the residual correction model remains effective because it does not discard the peak-based baseline. Rather, it preserves the coarse physical reference contained in the baseline and learns to correct it when systematic error is present. The detailed analysis in Section 6 supports this interpretation. Under the random split, the residual correction model maintains lower error across the observed axle-condition combinations, particularly in the

more difficult 20 Hz conditions. Under the stricter condition-held-out split, its advantage is not explained by uniformly small improvements, but by its ability to correct the baseline precisely when the baseline error is large. This behavior suggests that the model is not merely smoothing predictions, but making targeted corrections in the cases where they are most needed.

These findings have direct managerial and practical implications in the Japanese context. First, for logistics operators, more reliable axle-weight estimation can reduce the need for unnecessary static weighing and help avoid avoidable stops, waiting time, and route disruption. This is particularly relevant under the logistics “2024 problem,” because even small reductions in non-driving tasks can help firms use limited driver hours more efficiently while reducing driver burden. Second, for road administrators and enforcement agencies, robust WIM estimates can support risk-based overload screening. Instead of treating all vehicles in the same way, managers can use WIM outputs to identify vehicles or operating conditions that deserve closer inspection, thereby improving the allocation of limited enforcement resources. Third, for infrastructure managers, axle-level load information can support inspection prioritization, preventive maintenance planning, and life-cycle cost management. In this sense, the practical value of the residual correction model lies not only in its lower average error, but also in its ability to provide a more stable basis for operational decisions under changing measurement conditions.

The residual correction model is also attractive from an implementation perspective because it refines a transparent baseline rather than replacing it with a fully opaque mapping. In organizational settings, this feature may improve communication between technical staff,

logistics managers, enforcement officers, and infrastructure managers. A baseline-guided correction can be explained as an adjustment to a physically interpretable peak estimate, which may make the model easier to audit and easier to incorporate into existing screening and maintenance workflows. Such interpretability is important for practical deployment because decisions about vehicle inspection, driver delay, and infrastructure maintenance involve costs and accountability, not only prediction accuracy.

Several limitations should also be noted. First, the empirical analysis is restricted to one dataset organization and one three-axle vehicle category. The present results therefore should not be interpreted as evidence that the same level of accuracy or robustness will necessarily be obtained for all vehicle types, road environments, sensor layouts, or WIM installation conditions. Second, although the stricter condition-held-out split provides a useful test of condition-level variation, it remains limited to the operating conditions available in the current dataset. Future studies should validate the proposed comparison framework across multiple sites, vehicle categories, seasons, sensor configurations, and traffic environments. Third, this study evaluates estimation accuracy but does not directly quantify business outcomes such as reduced waiting time, avoided inspection cost, improved vehicle utilization, or lower maintenance expenditure. Accordingly, the managerial implications discussed above should be understood as decision-support potential rather than measured economic effects. Fourth, the benchmark compares four representative strategies, but does not yet consider domain adaptation, uncertainty-aware prediction, or adaptive hybrid strategies that switch between direct estimation and residual correction according to signal quality or uncertainty. Future work should therefore extend the framework to more diverse vehicle categories and sensing

conditions, and should also examine how improved estimation accuracy translates into operational benefits such as inspection efficiency, maintenance prioritization, avoided maintenance cost, and risk reduction.

8. Conclusion

This study presented a unified benchmark for axle-weight estimation in WIM systems, motivated by the need for more scalable data-driven decision support under Japan's logistics "2024 problem" and infrastructure-management challenges. Four estimation strategies were compared within the same experimental framework: a peak-based baseline, an MLP-based regression model, a pretrained MLP-based regression model, and a residual correction model. To evaluate both predictive accuracy and robustness, the comparison was conducted under the random split and a stricter condition-held-out split. The results showed a clear and consistent pattern. Under the random split, the residual correction model achieved the best overall accuracy, reaching 20.710 kg MAE and 0.362% MAPE. Under the stricter condition-held-out split, it again achieved the best overall performance, with 155.037 kg MAE and 2.023% MAPE. By contrast, the direct regression models degraded much more substantially under the stricter evaluation, and the pretrained MLP-based regression model exhibited the largest overall error in that setting. These findings indicate that baseline-guided residual learning provides a stronger combination of accuracy, interpretability, and robustness than either the peak-based baseline or the direct regression alternatives considered in this study.

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Modeling Entrepreneurial Decision-Making Dynamics Based on Effectuation and Causation Toward Strategic Hypotheses for the Japanese Entrepreneurial Environment

Rokko Saito (Waseda University, Japan)

Shingo Takahashi (Waseda University, Japan)

ABSTRACT

This study proposes a normative decision-making model that formalizes the dynamic shift between effectuation and causation in entrepreneurial processes. While existing research mainly provides retrospective case studies, the precise mechanisms and timing of these shifts remain under-theorized. The integration of “venture scoping” as a mediating construct enables the formulation of a three-tiered logical framework. This framework explains how perceptions of environmental uncertainty, resource scarcity, and stakeholder pressure influence the timing of shifts in cognitive logic via the expansion or contraction of business scope. As a specific method for future mathematical modeling, the potential of using genetic algorithms as an adaptive subsystem is identified. A comparative analysis between the United States and Japan using empirical data from the Global Entrepreneurship Monitor (GEM) highlights a “structural contradiction” within Japan's entrepreneurial environment: the coexistence of robust physical infrastructure with deeply rooted social norms and a pervasive fear of failure effectively impedes the “Crazy Quilt” principle of effectuation. The findings of this study provide strategic hypotheses regarding optimal shift timings and offer normative policy recommendations to cultivate a sustainable innovation model that is unique to the Japanese context.

Keyword: Entrepreneurship, Strategy, Effectuation, Causation, Japan

1. Introduction

1.1. Research Background

Today's business environment faces significant uncertainty. This uncertainty comes from various unpredictable factors, such as the rapid advancement of digital technology, societal transformations triggered by the COVID-19 pandemic, and further instability in the international landscape and extreme weather events. In such an environment, it has become difficult to maintain innovative value creation relying solely on the causal reasoning of traditional thinking. This thinking is based on demand forecasts derived from existing market data and meticulous business plans. Particular attention must be paid to the ambiguity of objectives in circumstances where market preferences are unknown, as well as Knight's incalculable uncertainty (Knight, 1921). In response to these challenges, recent attention has been directed toward "effectuation" (Sarasvathy, 2001), a concept that has been adopted by entrepreneurs. Effectuation is a conceptual framework that involves the adaptation of available resources to manage uncertainty within a controllable range, in contrast to the causal approach.

Turning to the entrepreneurial environment in Japan, according to a survey by the Global Entrepreneurship Monitor (GEM), the National Entrepreneurial Context Index (NECI) for 2024 surged from 27th place the previous year to 15th place (Hill et al., 2025). The country's physical infrastructure and government policies supporting startups have received extremely high international acclaim. On the other hand, social and cultural norms, in addition to the perception of

entrepreneurship education in schools, persistently remain unsupportive, highlighting significant weaknesses such as the conservatism characteristic of Japanese society and an absence of educational foundations. In the context of Japan, where “infrastructure is robust but cultural and educational barriers are high,” it is essential to clarify a uniquely Japanese entrepreneurial style. This style is characterized by its ability to flexibly and dynamically adapt thinking patterns in response to the environmental shifts, thus maximizing innovation while navigating uncertainty.

1.2. Research Issues

Existing research on effectuation has primarily taken the form of case studies that retrospectively examine the application of effectuation principles in specific success stories. These studies have been largely descriptive in nature. In addition, while it has been observed that skilled entrepreneurs employ a combination of effectuation and causation in a flexible manner, depending on the circumstances (Sarasvathy, 2008), the precise mechanisms that affect these shifts, particularly the timing and contextual factors that prompt the shift from causation to effectuation, are not yet fully explained.

As a model for the effectuation process, its affinity with genetic algorithms has been noted (Nagasaka & Kato, 2022). Furthermore, attempts have been made to formulate decision-making models employing genetic algorithms (Suetsugu & Takahashi, 2024). These efforts illustrate the capacity for modeling by reproducing particular success narratives. Providing concrete guidelines for entrepreneurs on when to select or shift their logics in response to changing conditions, such as

increasing uncertainty or fluctuating resources in actual entrepreneurial settings, requires constructing a “normative model” that significantly advances existing models and enables decision-making under more generalized conditions.

In relation to effectuation, the concept of venture scoping exists as a process definition for launching new ventures (Reymen et al., 2015). Venture scoping is defined as the process of decision-making regarding the scope of technology, products, and markets. Entrepreneurs initiate and cultivate novel enterprises by expanding and contracting the venture scoping process.

1.3. Research Objectives

This paper has two main objectives:

1. This study introduces “venture scoping” as a mediating variable in the model. We will theoretically formulate a model to examine the influence of changes in the perception of environmental uncertainty, resource positions, and pressure from stakeholders on the timing of the shift between effectuation and causation through the expansion and contraction of business scope.
2. The use of the constructed model enables the execution of a scenario analysis, which is informed by empirical entrepreneurial environment data (e.g., NECI scores) pertaining to the United States and Japan. This data has been obtained from the GEM report, and it is employed for the purpose of conducting a comparative analysis between the two countries. Furthermore, by incorporating

cultural norms unique to Japan and constraints of the education system into the model's parameters, we will derive strategic hypotheses regarding the timing at which policy measures and modes of thinking should be shifted to maximize the probability of success for entrepreneurial activities within the Japanese environment.

2. Characteristics and Case Studies of Effectuation

2.1. Effectuation and Causation

Sarasvathy (2008) demonstrated that there are two distinct modes of thinking regarding how entrepreneurs approach uncertainty. She termed the approach in which entrepreneurs tolerate future uncertainty as “effectuation” and, based on that premise, combine available resources and means to create value. By concentrating on the aspects within their control—specifically, the resources available—this strategy allows for the creation of value even in highly uncertain environments where outcomes are unpredictable. In contrast, the conventional entrepreneurial mindset, based on prediction and planning, is referred to as causation. This process involves the identification of specific objectives and business opportunities, conducting marketing research (e.g., market and competitive analysis), the estimation of business outcomes based on this research, and the formulation of a business plan. This approach aims to identify the necessary elements for plan modeling and to execute the plan as intended.

The fundamental difference between the two lies in their divergent perceptions of the future. While

causation holds that “the future can be controlled to the extent that it can be predicted,” effectuation adopts a non-predictive control stance, asserting that “there is no need to predict the future as long as it can be controlled.” Furthermore, Sarasvathy (2008) posits that entrepreneurs do not employ either effectuation or causation in isolation; rather, they are highly adaptable, shifting or integrating these modes of thinking in accordance with the company's growth stage and environmental shifts.

2.2. Examples of Effectuation

Sarasvathy (2008) cites the case of Howard Schultz's business creation at Starbucks as an example of entrepreneurship based on effectuation. At the time Schultz conceived the idea of commercializing an espresso bar, overall coffee consumption in the United States was on a downward trend. From the perspective of causation, where market trends analysis serves as the primary methodological foundation, the coffee industry would have been viewed as a declining industry with a low level of investment value. Had Schultz placed a higher priority on market forecasts and acted solely on the rational judgment of maximizing expected returns, it is likely that he would not have chosen to open a new coffee shop. However, rather than focusing on overall market forecasts, he concentrated on the resources he could control, namely his knowledge and skills regarding high-quality coffee beans. He began by taking action within his capabilities, which included serving high-quality beans to customers in a café setting. The essence of effectuation, therefore, lies not in the analysis of the environment to achieve predetermined objectives, but rather in the process of establishing a novel market—the “third

place”—starting from one's own existing resources.

In contrast, as previously stated, the decision-making process of skilled entrepreneurs does not invariably depend exclusively on effectuation. Even in the case of Starbucks, as the business expanded and the organization matured, causation-based management techniques—such as resource allocation for goal achievement and efficient store operations—played an indispensable role. In essence, how these two modes of thinking are integrated and alternated is contingent upon the company's specific stage of growth and the nature of the uncertainty it confronts. The concept of “venture scoping” provides a theoretical framework for understanding the triggers that cause this shift.

3. A Preliminary Exploration of Venture Scoping and Case Studies on the Shift Between Effectuation and Causation

We introduce “venture scoping” as a mediating concept, as proposed by Reymen et al. (2015).

Preliminary studies have indicated that the expansion of business operations is associated with an increase in effectuation and a decrease in causation. In contrast, the contraction or limitation of business operations has been found to result in a decline in effectuation and an increase in causation, as illustrated in Figure 1. A comprehensive review of the existing research reveals three factors that influence these scoping decisions: changes in “environmental uncertainty,” “scarcity of resources,” and “pressure from stakeholders.” (Reymen et al., 2015)

This phenomenon can be explained through an empirical lens by examining the evolution of decision-making during Starbucks' growth process. In the nascent stages of the company, Howard Schultz, drawing on his own identity, aimed to create a new market—the espresso bar—which was nonexistent in the United States. At this stage, due to a strong perception of high “environmental uncertainty”—where market reactions were unknown—and the entrepreneur's “lack of resources,” venture scoping was employed to actively expand the business scope, and value creation based on effectuation was dominant. Specifically, this involved the establishment of diverse partnerships with limited financial resources and the identification of management talent through fortuitous encounters.

In contrast, as the company expanded its retail network and grew in scale, the logic of decision-making underwent a transformation. Examples include the instance in which the board of directors issued a statement of disapproval regarding the substantial losses incurred after entering the Chicago market, and the introduction of a systematic operational framework to support nationwide store expansion. In such circumstances, venture scoping was employed to regulate uncoordinated business expansion and promote systematic management and optimization. This approach was undertaken in response to mounting pressure from stakeholders and a decline in uncertainty, both of which were attributed to efficient resource allocation. Consequently, the predominant focus of decision-making shifted from effectuation to causation, and management methodologies grounded in prediction and planning—such as the modeling of point-of-sale systems and the formulation of real estate strategies—became prioritized.

Thus, seasoned entrepreneurs do not stick to a single logic; rather, they adjust their venture scoping in response to environmental shifts, dynamically shifting between the two modes of thinking. In this study, we model the process of shifting between these modes of thinking, as evidenced by the Starbucks case, and examine what kind of scoping can achieve an optimal shift under the different constraints of the Japanese entrepreneurial environment.

4. Synopsis of the Proposed Framework of Model

The proposed framework of model (Figure 2) is based on Reymen et al.'s shift model with regard to venture scoping. The fundamental structure of the model consists of three layers: “perception of the environment and situation,” “mediation through venture scoping,” and “selection and execution of decision-making logic.”

In the initial layer, entitled “Perception of Environment and Situation,” the external and internal environments encountered by the entrepreneur consist of three variables: (1) environmental uncertainty, (2) scarcity of available resources, and (3) pressure from stakeholders. These variables function as parameters representing the entrepreneur's subjective perceptions and serve as triggers for the subsequent decision-making process.

In the second layer, venture scoping—the process of determining whether to expand or contract the scope of the business—is carried out based on these input variables. Specifically, the model is structured in such a manner that if an increase in uncertainty or a shortage of resources is perceived in

the “Perception of Environment and Situation,” the entrepreneur will elect to expand the business's scope. In contrast, if pressure from stakeholders or environmental stabilization is perceived, the entrepreneur will elect to contract the business's scope. The direction in which the scoping process is directed will ultimately determine the thinking mode that is selected.

In the third layer, entitled “Decision-Making Logic,” the execution of either the effectuation or causation algorithm is determined by the selected scoping. Effectuation, which is defined as exploration and adaptation in an uncertain environment, is implemented as an “adaptive subsystem” using genetic algorithms or analogous methods. This simulates the process of combining available resources, which are herein referred to as “genes,” to create new value (i.e., adaptive solutions) through interaction with the environment. In contrast, causation focuses on reaching predetermined goals, thus it is executed as an “optimization subsystem” through the use of methodologies such as mathematical programming, to maximize anticipated outcomes by means of the effective distribution of constrained resources.

5. A Comparative Analysis of the Entrepreneurial Environments in the United States and Japan

The objective of this study is to examine strategic hypotheses regarding the timing for shifting policies and mindsets aimed at maximizing the success rate of entrepreneurial activities within Japan's entrepreneurial environment. To this end, we will clarify the characteristics of Japan's entrepreneurial

environment based on a comparison with that of the United States. The GEM survey data consists of two types: the NES (National Expert Survey), which is an expert assessment of the environment, and the APS (Adult Population Survey), which measures public awareness and activity levels. The integration of these two datasets allows for the identification of environmental disparities between Japan and the U.S. that should be reflected in the model's parameters.

First, based on the National Entrepreneurial Context Index (NECI), Japan's entrepreneurial environment (i.e., the framework conditions) stands at 5.1 in 2024, according to NES data. This places Japan at 15th place among 56 global economies. Specifically, categories such as “Physical Infrastructure (7.8)” and “Government Policy: Support and Relevance (6.5)” have received high ratings that rival or even surpass those of the United States (NECI: 5.3, 10th globally). In contrast, Japan received markedly low ratings in the categories of “Social and Cultural Norms (3.9)” and “Entrepreneurship Education in Primary and Secondary Education (2.7),” indicating a substantial discrepancy with the United States concerning cultural norms and the educational environment (Figure 3).

Subsequently, by employing a time-series analysis of APS data accumulated continuously since 2007, we can comprehend how the external environment described above influences individual attitudes.

While entrepreneurial spirit has historically been culturally endorsed in the United States, with “perceived opportunities” and “perceived capabilities” maintaining elevated levels, analogous indicators in Japan have remained at notably low levels for an extended period. Specifically, the “fear

of failure” is notably higher in Japan than in the United States, acting as a significant psychological impediment that hinders the “intention to start a business.”(Table 1)

A thorough examination of the available data reveals the existence of the following structural disparities between Japan and the United States. The United States is characterized by an “autonomous entrepreneurial environment,” a term coined to describe the symbiotic relationship between high cultural norms and individual self-confidence. On the other hand, while Japan has demonstrated considerable progress in the development of the “hard” components of its environment, such as government support and infrastructure, constraints on the “soft” aspects, including societal norms and individual psychological barriers, persist. Consequently, it can be posited that Japan exhibits a “structural contradiction” that impedes entrepreneurial activity.

6. Toward Strategic Hypotheses Regarding Japan’s Entrepreneurial Environment

In the preceding chapter, the differences between the entrepreneurial environments in Japan and the United States were delineated. On the basis of these differences, specific scenarios are hereby presented for testing using the decision-making model that has been constructed, along with the corresponding hypotheses.

6.1. Scenario 1: The Impact of Social Norms and Psychological Barriers on Partnership

Building

Japan has been observed to have weak social and cultural norms, as well as a high level of fear of failure. Consequently, numerous barriers exist that impede the initiation of entrepreneurial endeavors.

It can be posited that securing partnership commitments under the “Crazy Quilt” principle of effectuation is more difficult in Japan than in the United States.

Therefore, the following hypothesis is proposed: “In the Japanese context, individual psychological barriers increase the cost and time required to secure partnerships compared to those in the United States. As a result, entrepreneurial activities based on effectuation often fail, and the early-stage survival rates significantly decline.” In the event simulations demonstrate that survival rates remain constant, even with the provision of financial support, it can be deduced that the establishment of communities and the cultivation of a culture that fosters stakeholder engagement are imperative in Japan.

6.2. Scenario 2: The Impact of Bias in Perceived Capabilities on the Timing of Logic Shift

It has been posited that Japanese entrepreneurs have a low perception of their own entrepreneurial capabilities. This has been shown to lead to perceptual biases regarding environmental uncertainty and available resources. In contrast, even when uncertainty decreases, entrepreneurs may continue to perceive high levels of uncertainty, or they may be more prone to feeling a shortage of resources compared to their United States counterparts. This, in turn, can lead them to make erroneous decisions

regarding the expansion or contraction of venture scope.

The following hypothesis is formulated: “Due to their low self-perceived capabilities, Japanese entrepreneurs tend to overestimate uncertainty and underestimate their available resources.

Consequently, they employ erroneous shifts in logic—either persisting with effectuation even when they should shift to causation to improve efficiency, or, conversely, resorting to unfounded causation out of fear of unpredictable events.” The acquisition of model-based results indicating that the timely alteration of cognitive frameworks leads to optimal business expansion can substantiate the significance of decision-support instruments and mentorship programs that are meticulously designed to promote cognitive shift. These instruments and programs, when evaluated based on objective venture scoping metrics and devoid of subjective bias, serve as a distinctive entrepreneurial approach that is unique to Japan.

6.3. Scenario 3: The Utilization of Government Support

Japan's higher level of “government policy support and relevance” relative to other countries suggests that initial resources are publicly guaranteed. Consequently, the acceptable range of losses under the Effectuation principle of “Affordable Loss” expands, facilitating the continuation of resource and idea exploration.

On the other hand, the following hypothesis is formulated: “Through the modeling of robust infrastructure development and the cultivation of public support, the acceptable range of losses under

the principle of “Affordable Loss” is expected to expand, thus enabling entrepreneurs to enhance the probability of success through long-term exploration without the necessity of securing partnerships, a practice that is prevalent in the United States.” By verifying this scenario, the objective is to propose normative policies demonstrating how high levels of government support can offset the constraints posed by Japan's low social and cultural norms. Furthermore, the ultimate goal is to establish a “unique sustainable model for innovation creation” specific to Japan.

7. Conclusion

7.1. Key Findings of This Study

In this paper, we have formalized the decision-making process that serves as the logical foundation for constructing a normative framework of model capable of representing the dynamic shift between effectuation and causation. The following section will present the primary findings and arguments of the study.

First, within the hierarchical structure ranging from an entrepreneur's perception of the environment to the selection of decision-making logic, we introduced “venture scoping”—which determines the scope of technology, products, and markets—as a mediating variable and established the logical framework of a three-tiered model that describes its dynamics. This theoretical framework explains the mechanism by which uncertainty and changes in resource conditions influence the timing of shifts in thinking patterns via the expansion or contraction of business scope.

Secondly, a comparative analysis of Japan and the United States was conducted using the GEM Report. This analysis revealed structural contradictions within Japan's entrepreneurial environment. It became evident that while Japan possesses an extremely high level of “hard” infrastructure and government support, it faces serious constraints in “soft” aspects such as cultural norms and psychological barriers.

In light of the findings, the present paper puts forward three strategic hypotheses to optimize the probability of success within the Japanese context. These hypotheses include the increased costs of establishing partnerships, the misjudgment of the timing of shift due to biases in capability perception, and the expansion of the scope of exploration through government support. While these propositions currently serve as preliminary conceptual frameworks rather than empirically proven directives, this approach extends beyond the scope of conventional retrospective case studies. It aims to offer a foundational platform for deriving normative guidelines once quantitatively validated under specific environmental constraints.

7.2. Future Challenges and Prospects

The logical model constructed in this paper is, at present, a theoretical formulation. It is imperative that this model be implemented mathematically and that quantitative verification be conducted in the future.

As specific future tasks, the modeling of both the genetic algorithm as the “adaptation subsystem” and

the mathematical programming as the “optimization subsystem” will be carried out, as proposed in Chapter 4. To transition this conceptual model into a testable mathematical framework, operationalizing the key constructs is an immediate next step. For instance, "venture scoping" (widening or narrowing) will be operationalized and measured by quantifying the variance in a firm's resource allocation across different technology domains, product lines, and market segments over discrete time steps. The specific timing of the logic shift will be mathematically defined as the algorithmic trigger point where the adaptive fitness value of the genetic algorithm falls below a predetermined threshold, thereby shifting the system to the optimization subsystem. By explicitly defining these mathematical boundaries and operational rules, we aim to transform our theoretical framework into a rigorously testable simulation model. In doing so, we will incorporate empirical values, such as the NECI scores obtained from GEM data, into the model's parameters and execute simulations in a space that replicates the entrepreneurial environments of Japan and the United States. This simulation will be utilized to conduct analyses based on the three scenarios presented in this paper. The objective of this analysis is to verify the validity of the strategic hypothesis regarding the optimal timing for Japanese entrepreneurs to shift their thinking patterns. The objective of this study is to develop a decision-support tool that enables entrepreneurs to eliminate subjective perceptual biases and select and shift to optimal logic based on objective indicators. In addition, the study proposes normative policies that contribute to a “sustainable model for innovation creation” unique to Japan.

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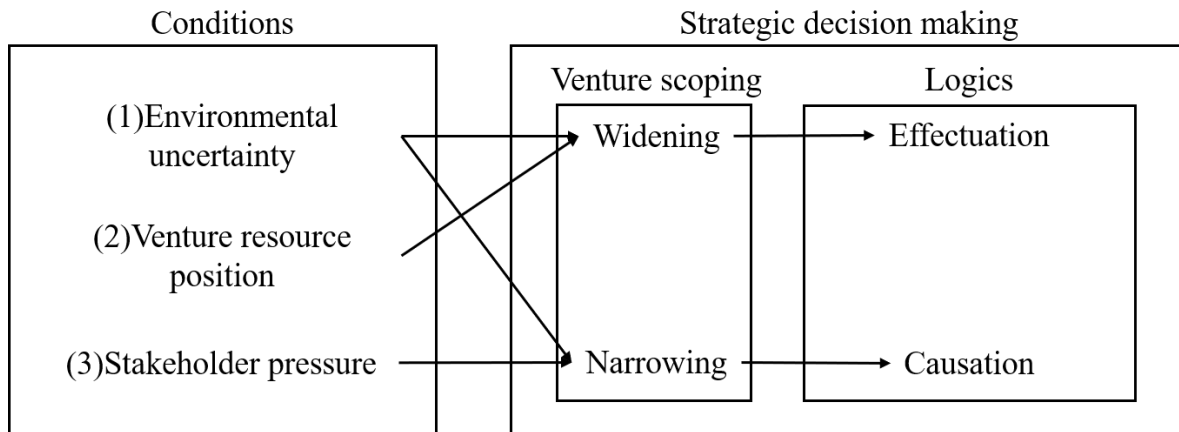


Figure 1. A Model of Decision-Making Logic Shift via Venture Scoping (Reymen et al., 2015)

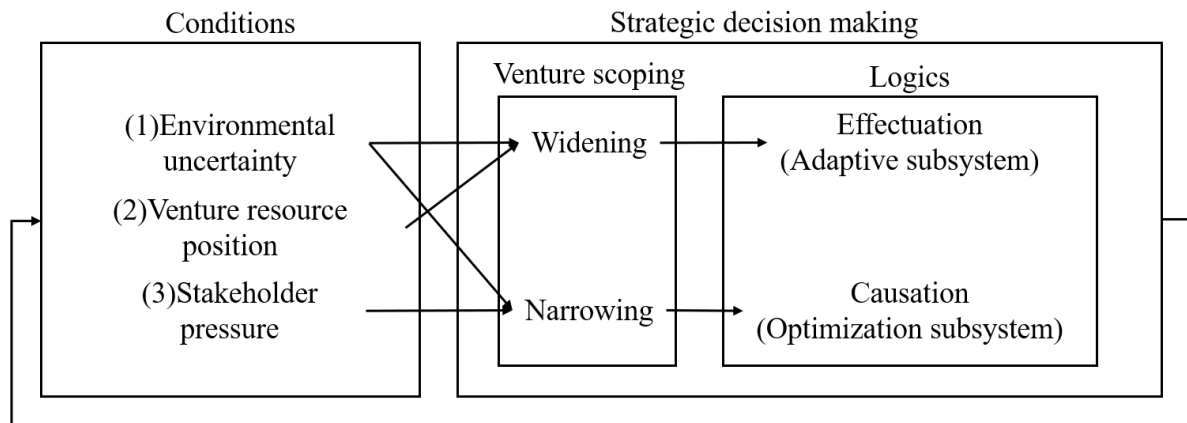


Figure 2. The Proposed Framework of Model

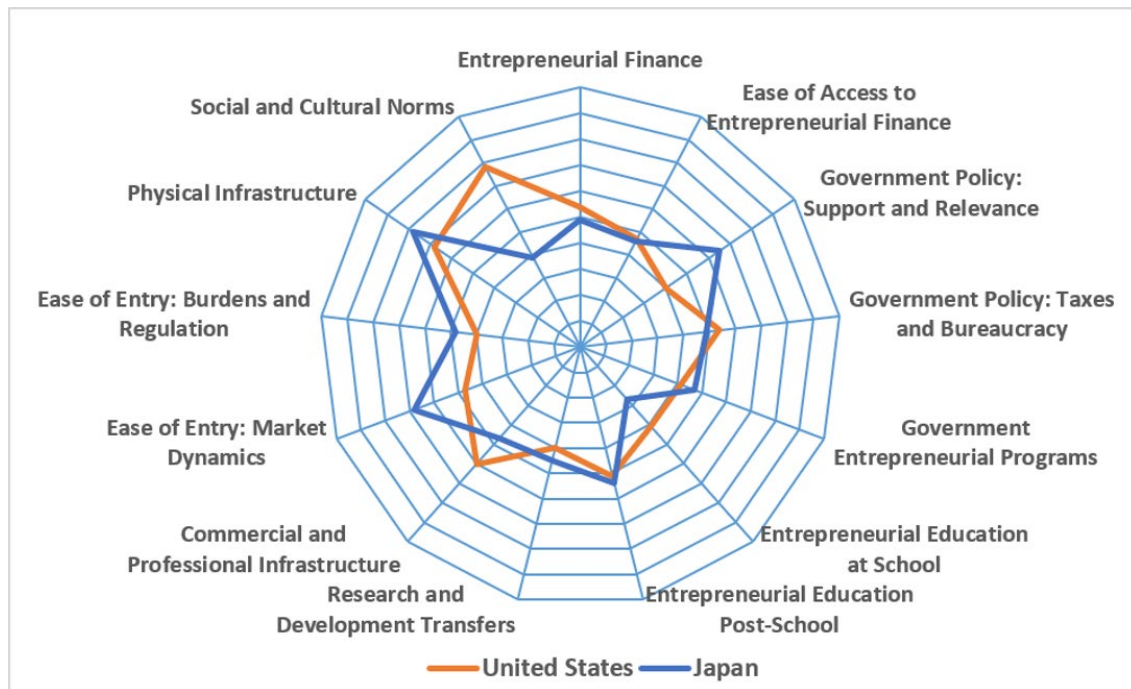


Figure 3. Entrepreneurial Environment of Japan and United States (Hill et al., 2025)

Table 1. Perception and Attitude of Japan and United States (Hill et al., 2023)

	Japan	United States
Know someone who has started a new business	20.4% (<i>Rank: 49</i>)	55.6% (<i>Rank: 21</i>)
Good opportunities to start a business in my area	12.7% (<i>Rank: 49</i>)	46.0% (<i>Rank: 37</i>)
It is easy to start a business	27.5% (<i>Rank: 44</i>)	65.8% (<i>Rank: 14</i>)
Personally have the skills and knowledge	14.9% (<i>Rank: 49</i>)	66.8% (<i>Rank: 16</i>)
Fear of failure (opportunity)	50.9% (<i>Rank: 10</i>)	43.1% (<i>Rank: 28</i>)
Entrepreneurial intentions	5.1% (<i>Rank: 48</i>)	13.6% (<i>Rank: 33</i>)

An Operational Study of Local SNS as Intermediate Communities: Trust Formation and Echo Chamber Steering

Hiroyasu Yuhashi (Shizuoka University, Japan)

Yoshimasa Ohmoto (Shizuoka University, Japan)

Junya Morita (Shizuoka University, Japan)

Ryo Yuhashi (Shizuoka University, Japan)

ABSTRACT

This paper investigates local social networking services (SNS) as intermediate communities between closed and global communication environments. The analysis draws on four operational experiments conducted in January and July of 2024 and 2025 using the Pin Plage platform in course settings at Shizuoka University. Using interaction logs, we examine how communication patterns emerge, complemented by text mining of user-generated content in selected experiments. The results show that local SNS environments foster trust through social proximity while maintaining openness to diverse participation. Interaction structures form clustered yet partially connected patterns, indicating a balance between cohesion and diversity. Echo chamber-like tendencies appear as localized and gradual phenomena rather than fully isolated structures. In addition, communication patterns are influenced not only by user behavior but also by platform design, including content visibility and sorting mechanisms. These findings suggest that local SNS can function as controllable communication environments and provide implications for the design of organizational communication platforms that support both trust and information diversity.

Keyword: Management Information System, Organizational Behavior, Web Service

INTRODUCTION

The proliferation of social media has created diverse communication environments ranging from large-scale global platforms to small, closed communities. Social networking services (SNS), referring to online platforms designed to facilitate social connections and interactions among users, such as X (formerly Twitter) and Facebook, have created diverse communication environments. In addition, prior research has shown that algorithmically mediated information environments can limit users' exposure to diverse viewpoints, reinforcing selective exposure tendencies (Bakshy et al., 2015). This phenomenon has been further discussed in terms of "information cocoons," where individuals are increasingly isolated within like-minded communities (Sunstein, 2001). In contrast, closed communication tools foster strong trust among users but tend to limit information diversity and rely on pre-existing relationships. These contrasting characteristics suggest that there may be a lack of communication spaces at an intermediate scale that can balance trust and openness. In addition, even within the same institutional context, meaningful connections among users are often limited, resulting in fragmented communication and underutilized knowledge resources.

Recent discussions have emphasized that communication patterns in social networks are shaped by network structures, platform design, and user interaction mechanisms. However, prior research has predominantly focused on identifying and analyzing echo chamber effects, with limited attention given to the design and operation of communities that occupy an intermediate position between closed and global environments. In particular, the potential of local social networking services (SNS) as intermediate communities that enable both trust formation and controlled diversity remains underexplored. In this study, intermediate communities are defined as

communication environments positioned between closed groups (characterized by high trust but limited diversity) and global platforms (characterized by high diversity but weaker interpersonal trust).

To address this gap, it is necessary to examine real-world communication environments that embody the characteristics of intermediate communities. In this context, this study focuses on a locally bounded SNS platform, Pin Plage, developed in 2019 at the Faculty of Informatics, Shizuoka University.

By combining a real-world operational setting with analytical approaches, this study aims to contribute to the literature in two ways. First, it conceptualizes local SNS as intermediate communities that bridge disconnected user groups. Second, it empirically examines how communication patterns—particularly trust formation, interaction frequency, and information diversity—emerge and can be influenced within such environments.

RELATED WORKS AND METHODS

To position local SNS within the broader spectrum of communication environments, recent studies on social media communication have increasingly emphasized the structural conditions under which different types of communities emerge. In this context, Terren and Borge-Bravo (2021) provide a foundational perspective by showing that communication patterns are largely shaped by network structures and user interaction mechanisms. Their review highlights that phenomena such as echo chambers arise from the interplay of homophily and selective exposure, but are not universally fixed across platforms.

This insight suggests that community characteristics are not binary (closed vs. global), but rather exist along a spectrum depending on network configuration. From this viewpoint, local social networks can be understood as intermediate communities, where relatively high

levels of trust coexist with a certain degree of diversity. While the mechanisms identified by Terren and Borge-Bravo imply that echo chambers may still occur, their framework also indicates that such effects can be moderated through the design of network structures and interaction patterns.

Building on this structural perspective, Cinelli et al. (2021) demonstrate that patterns of information exposure vary significantly across social media platforms, depending on their underlying design and interaction mechanisms. Through a large-scale comparative analysis, they show that user engagement structures—such as recommendation systems and content diffusion processes—shape the degree of information clustering within communities.

From this perspective, social media environments can be understood as heterogeneous communication spaces rather than uniform systems. This view supports the conceptualization of local social networks as intermediate communities, positioned between highly open global platforms and tightly closed groups. Such communities may enable a balance between trust and informational diversity by moderating the extent of content concentration.

While Cinelli et al. identify the presence of echo chamber effects across platforms, their findings also suggest that these effects are not fixed but vary with system design. This implies that appropriately structured local social networks have the potential to regulate information concentration and foster more balanced communication environments.

From a more dynamic and generative perspective, Sasahara et al. (2019) provide a theoretical foundation for understanding how communication structures evolve within social networks. Using a computational model, they demonstrate that basic interaction mechanisms—such as social influence and the selective dissolution of ties—can lead to the spontaneous

formation of clustered communities.

From this perspective, social networks naturally tend to organize into groups with relatively coherent internal structures, suggesting that community formation is an inherent property of network dynamics rather than a platform-specific anomaly. This insight supports the conceptualization of local social networks as intermediate communities, where cohesive interaction patterns emerge while maintaining partial openness to external connections.

Although Sasahara et al. highlight that such structural dynamics can result in echo chamber effects, their findings also imply that these outcomes are not fixed. Instead, they depend on how connections are maintained or diversified within the network. This suggests that local social networks may offer opportunities to manage community cohesion and diversity through deliberate network design. Empirical evidence further supports this structural tendency, showing that online social networks often exhibit ideological clustering and polarization, which reinforce homogeneous communication patterns (Barberá et al., 2015).

Taken together, these studies indicate that social networks form communities along a structural spectrum shaped by network design and interaction dynamics. From this viewpoint, local SNS can be conceptualized as intermediate communities that balance trust and diversity, while retaining the potential to moderate information concentration.

Despite these advances, several important gaps remain. While prior studies have clarified that communication patterns and community structures in social networks are shaped by network configurations, platform design, and endogenous interaction dynamics, the majority of the literature has primarily focused on identifying and measuring echo chamber effects. As a result, limited attention has been paid to the structural

positioning and design of intermediate communities that exist between closed and global environments. In particular, the role of local social networks as spaces that potentially balance trust and diversity remains underexplored. Furthermore, although previous research suggests that echo chambers are contingent on network structure, there is a lack of systematic investigation into how such effects can be intentionally moderated through the design and management of local SNS. This study addresses this gap by conceptualizing local social networks as intermediate communities and examining their potential to achieve both cohesive and diverse communication environments.

To empirically examine these theoretical perspectives in a real-world setting, this study employs a locally bounded SNS platform. The platform has been continuously operated for over six years, with approximately 500 users, and has evolved through multiple major updates. Unlike conceptual systems, Pin Plage represents a real-world, continuously operated communication infrastructure, providing a valuable setting for examining the dynamics of local SNS.

As an operational practice, SNS participation is integrated into course activities to encourage user-generated content and interaction. The accumulated posts are analyzed using text mining techniques to examine interaction patterns and information flows within the community. To interpret communication and knowledge-sharing processes within the platform, this study focuses on observable interaction patterns and textual content generated by users, enabling an empirical analysis of how information is exchanged, accumulated, and shared across the community.

The empirical analysis is based on four separate operational experiments conducted in January and July of 2024, and January and July of 2025. In each experiment, participation in the local SNS platform Pin Plage was integrated into course activities, and user

interaction data were systematically collected.

The primary dataset consists of usage logs, including threads, replies, and user participation records, collected during actual course activities.

For network analysis, user-thread interaction data were modeled as a bipartite network. Structural characteristics were evaluated using clustering-related metrics, including clumpiness, which captures the degree to which interactions concentrate within specific user groups.

For text mining, user-generated content and reflective reports were analyzed using co-occurrence network analysis and multidimensional scaling (MDS). Co-occurrence networks were constructed based on the frequency of term co-appearance within documents, and MDS was applied to visualize semantic relationships among frequently used terms.

While interaction log analysis was conducted across all four experiments, text mining analysis was applied only to the July 2024 and July 2025 experiments, where sufficient textual data were available. This selection reflects the availability of richer textual data, as these experiments included structured reflection assignments that generated more detailed user-generated content. These analyses provide qualitative insights into topic dynamics, user perceptions, and the emergence of localized communication patterns.

The introduction of the sorting function in the fourth experiment (July 2025) can be interpreted as a quasi-experimental intervention, allowing observation of changes in communication patterns associated with platform design. This setting enables a comparative perspective between pre-intervention (Experiments 1–3) and post-intervention (Experiment 4) conditions.

In addition, the introduction of AI-based automated response functions is considered as a potential mechanism to stimulate initial interactions and facilitate connections among weakly connected users. To provide

a clearer overview of the experimental design, Tab. 1 summarizes the four operational experiments conducted in January and July of 2024 and 2025. Each experiment was implemented within a course setting, where

students were required to create threads and post comments over a defined period. The table includes the number of participants, threads, replies, and key platform conditions for each experimental period.

Tab. 1 Overview of Experimental Conditions

Period	Jan 2024	Jul 2024	Jan 2025	Jul 2025
Number of users	100	40	90	30
Threads	180	80	180	60
Replies	1300	500	1000	300
Course requirements	1 thread + 5 comments/week	1 thread + 5 comments/week	1 thread + 5 comments/week	1 thread + 5 comments/week
Sorting function	No	No	No	Yes

RESULTS OF OPERATION PRACTICE

This study is based on an empirical analysis of user interaction data collected from four operational experiments conducted in January and July of 2024, and January and July of 2025, using the local SNS platform Pin Plage. Participation was integrated into course activities in each experiment, generating both interaction logs and user-generated content. Students were required to create threads and post comments over a defined period, generating both interaction logs and reflective reports. During the observation period, approximately 100 unique users contributed to around 180 threads, generating more than 1,300 replies. These data provide a comprehensive basis for analyzing both interaction patterns and communication content within

a locally bounded SNS environment.

Temporal and Participation Patterns

The temporal distribution of posts indicates that user activity was moderately influenced by the course structure, including lecture schedules and assignment deadlines (Fig. 1, the vertical axis shows user IDs, with lower numbers indicating earlier registration; the horizontal axis shows time). However, interaction was not limited to these external triggers; users continued to engage with threads beyond class sessions. Notably, some threads remained active after their initial creation, suggesting sustained engagement rather than short-lived interactions.

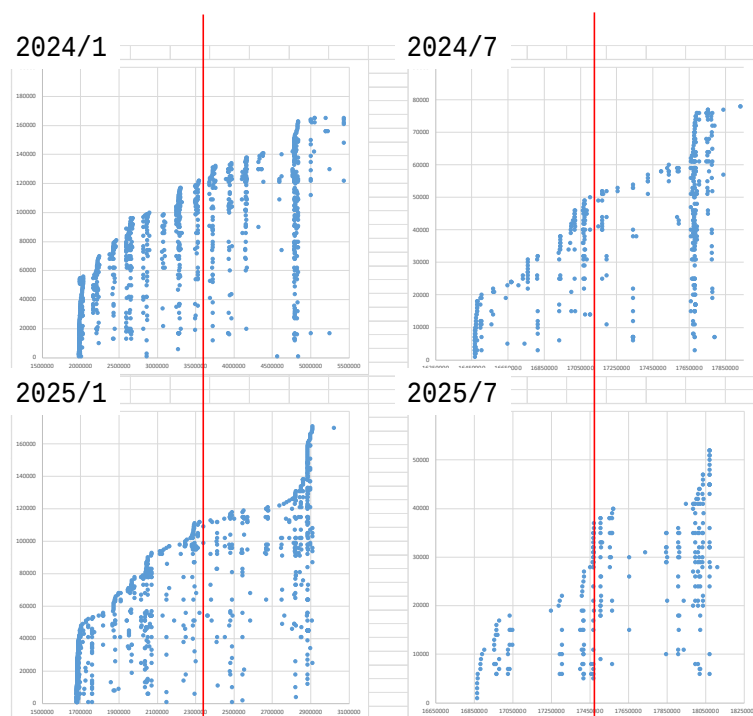


Fig. 1 Temporal Distribution of Thread Activity

User participation was not evenly distributed (Fig. 2, the vertical axis shows the posting frequency for each user ID; the horizontal axis shows time). In our dataset, a small number of users contributed actively, while a noticeable portion (approximately 15–20%)

participated only a few times. This distribution remained relatively stable across observation periods and resembles a long-tail pattern commonly observed in online communities.



Fig. 2 Distribution of User Participation

Thread-Level and Structural Interaction Characteristics

We conducted an analysis using scagnostics distributions (Wilkinson and Wills, 2008) to compare the characteristics of the scatter plots. Analysis of thread activity reveals that highly active threads often attracted repeated contributions from specific groups of users. In some cases, intensive short-term interactions were observed within particular threads, resulting in dense clusters of communication.

Network-based analysis further indicates a clear tendency toward clustered interaction structures. User-thread interactions are not randomly distributed but are organized into distinct clusters of users and topics. Structural metrics such as clumpiness were consistently high across the four experiments, indicating that interactions tended to concentrate within specific groups (Tab. 2).

Tab. 2 Clustering Metrics of Interaction Structure

Bilingual Evaluation Understudy	2024/01	2024/7	2025/1	2025/7
Outlying	0.9069	0.0894	0.9997	0.1458
Skewed	0.6558	0.4079	0.7011	0.3807
Clumpy	0.8659	0.8841	0.9632	0.869
Sparse	0.8899	0.2016	0.9161	0.2647
Striated	0.8718	0.2392	0.8703	0.315
Convex	0.2319	0.1706	0.2227	0.1783
Skinny	0.6387	0.4284	0.612	0.4604
Stringy	0.3015	0.1332	0.2366	0.1338
Monotonic	0.0768	0.0385	0.0468	0.0215

At the same time, certain users exhibited broad participation across multiple threads, while others interacted within limited subsets. These patterns indicate the coexistence of bridging users and locally concentrated interaction groups within the same environment. Overall, the communication structure can be characterized as semi-cohesive clusters interconnected by a limited number of cross-cutting interactions.

Effects of Platform Design

Comparative observations across different operational conditions suggest that platform design influences interaction patterns. In particular, a thread-sorting function based on posting activity was introduced in the July 2025 experiment, allowing

comparison with earlier conditions in which no such sorting mechanism was applied. For example, the introduction of sorting functions appears to increase the localization of interactions, with users concentrating on highly visible threads (Fig. 3, the vertical axis shows thread IDs, with lower numbers indicating earlier creation; the horizontal axis shows user IDs).

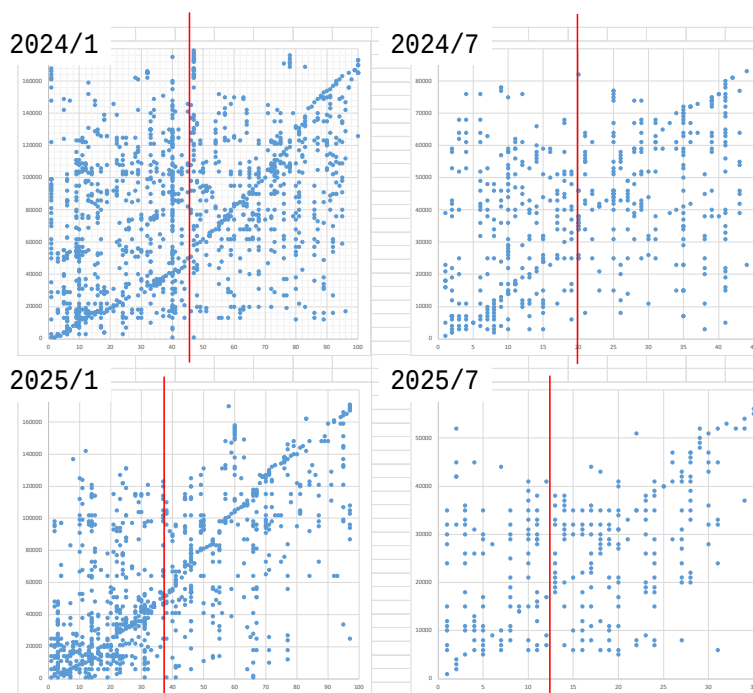


Fig. 3 Effect of Sorting Mechanisms on Interaction Localization

This indicates that system-level features can shape the degree of interaction dispersion or concentration within the community, influencing how communication is distributed across users and topics.

Content Characteristics and Topic Dynamics

Text mining analysis, conducted for the July 2024 and July 2025 experiments, provides additional insights into the qualitative characteristics of communication (Fig. 4, nodes represent frequently used terms and edges indicate co-occurrence relationships, allowing visualization of semantic connections among key topics). The analysis of user-generated reports reveals

several recurring themes. These relationships are further illustrated by multidimensional scaling (Fig. 5, the spatial distance between terms reflects their semantic similarity, with closer positions indicating stronger relationships). Co-occurrence network analysis indicates that terms related to “local,” “trust,” and “use” frequently appear together, suggesting that users perceive the platform as a relatively reliable communication environment.

Additionally, highly engaging discussions tend to focus on familiar and relatable topics, such as everyday interests and interpersonal relationships. In contrast, niche topics often fail to generate sustained interaction,

indicating that topic accessibility plays a key role in user engagement.

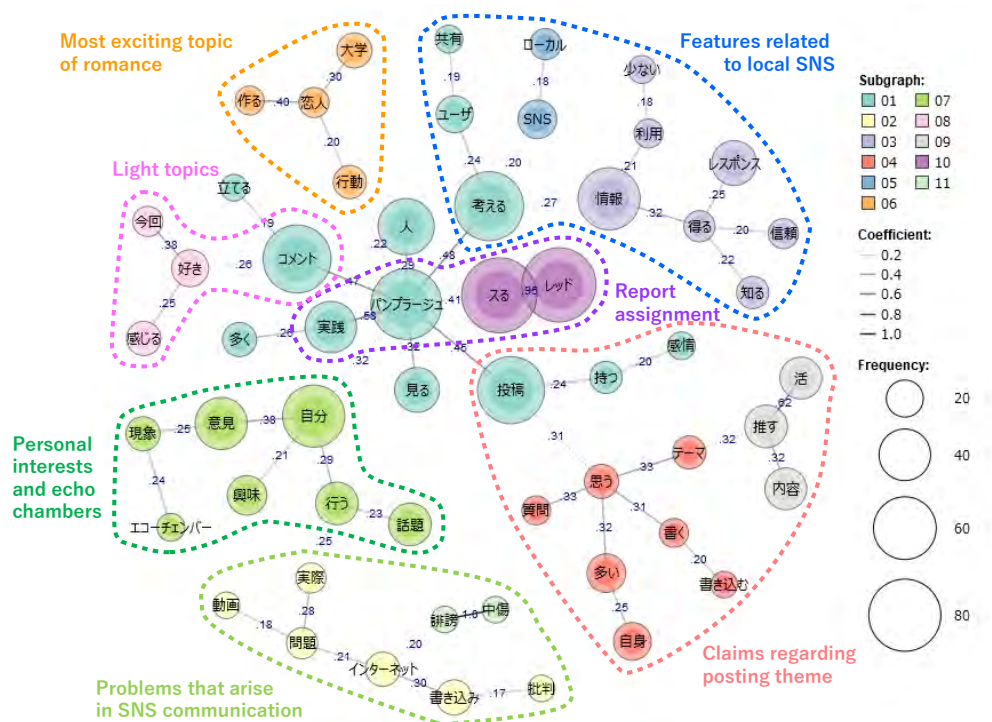


Fig. 4 Co-occurrence Network of Frequently Used Terms (2024/7)

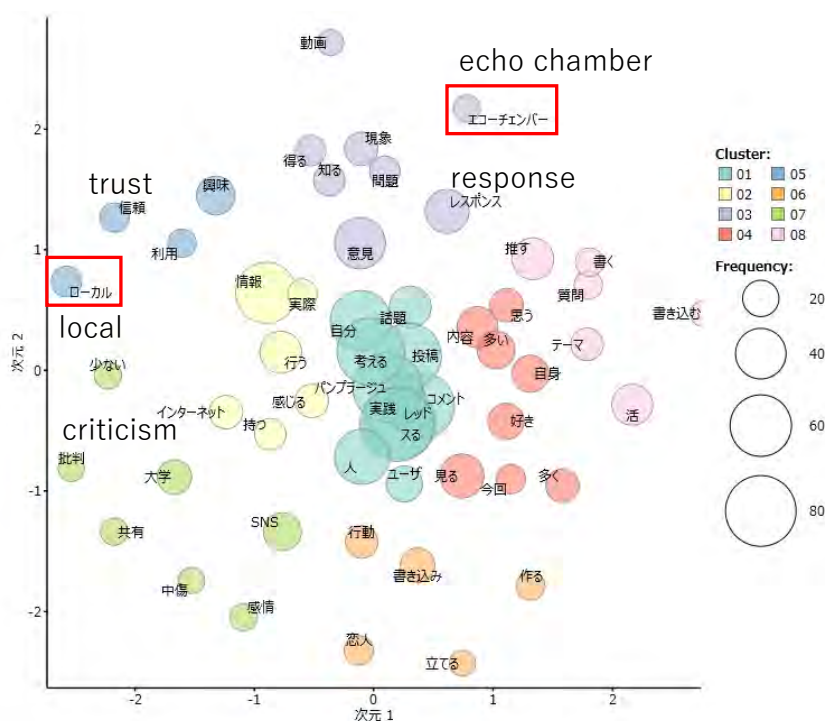


Fig. 5 Multidimensional Scaling of Term Similarities (2024/7)

Emergence of Echo Chamber-like Patterns

Qualitative analysis suggests that repeated

interactions around specific topics can lead to the formation of localized consensus. For example, discussions related to interpersonal relationships show patterns of repeated agreement and reinforcement of shared perspectives.

Furthermore, user behaviors such as selective participation, avoidance of unfamiliar topics, and preference for agreeable opinions contribute to the formation of homogeneous communication environments within certain clusters.

Behavioral Constraints and Micro–Macro Dynamics

The analysis reveals that communication behavior is influenced by implicit social constraints. Users tend to avoid conflict, refrain from posting potentially offensive content, and adjust their responses based on perceived social relationships. These tendencies reflect the influence of social proximity in a local SNS environment.

At the same time, the results indicate that individual behaviors accumulate to produce collective communication patterns. For example, repeated expressions of agreement contribute to the formation of shared norms, while low-quality or “noise” posts accumulate into broader issues of information overload.

These findings suggest that communication dynamics in local SNS are shaped by the interaction between micro-level user behavior and macro-level structural outcomes.

DISCUSSION OF LOCAL SNS

Based on observations across four experiments conducted over two years, local SNS can be interpreted as intermediate communities that exhibit characteristics of both closed and global environments. The findings are derived from multiple experimental conditions, allowing comparison across different operational settings. Unlike global platforms, where interactions are

often anonymous and fragmented, the local SNS environment fosters relatively high levels of trust due to social proximity among users. At the same time, it maintains a degree of openness that enables diverse participation.

The observed interaction structure combines clustering, which promotes cohesion, with partial connectivity across groups. This structure differs from highly polarized environments, as clusters remain permeable and interconnected rather than fully isolated.

Structural Characteristics and Bridging Connections

The clustering patterns observed in the results are consistent with prior studies suggesting that social networks naturally form communities through interaction dynamics (Sasahara et al., 2019). However, unlike large-scale platforms characterized by strong polarization (Barberá et al., 2015), the clusters identified in this study are relatively permeable.

The presence of users who participate across multiple threads suggests the existence of bridging connections that mitigate excessive fragmentation. These users play a crucial role in maintaining connectivity across clusters and preventing complete isolation of communication groups.

Trust Formation and Social Proximity

The relatively stable participation structure indicates that trust within the local SNS is supported by repeated interactions among users. In this study, trust is interpreted based on repeated interactions, sustained engagement, and the absence of conflictual communication patterns observed in user interactions. Social proximity enhances mutual recognition and lowers barriers to communication, contributing to a perception of reliability and safety within the platform.

At the same time, this trust is accompanied by

implicit behavioral constraints. Users tend to avoid conflict, refrain from posting potentially offensive content, and adjust their communication based on perceived social relationships. These tendencies result in cautious and considerate interactions but may also limit the expression of diverse viewpoints.

Echo Chamber Dynamics as a Gradual Phenomenon

The findings suggest that echo chamber effects in local SNS should not be understood as binary phenomena. Echo chamber tendencies are identified through concentrated interaction patterns within specific groups and the repeated reinforcement of similar viewpoints. While localized clusters of interaction are evident, they do not necessarily correspond to fully isolated echo chambers.

Instead, echo chamber tendencies emerge as gradual and topic-dependent patterns, where repeated interactions within specific groups reinforce shared perspectives. At the same time, cross-group interactions prevent complete isolation, indicating that echo chambers exist along a continuum shaped by both network structure and user behavior.

Trade-off Between Engagement and Diversity

An important finding is the trade-off between communication intensity and informational diversity. Topics that are widely relatable and emotionally engaging tend to generate higher levels of interaction but also reinforce homogeneous viewpoints. In contrast, niche or diverse topics often fail to attract sustained participation.

This suggests that the mechanisms driving engagement—such as shared interests and mutual understanding—may simultaneously contribute to the narrowing of information diversity within the community.

Micro–Macro Dynamics of Communication

The results highlight the importance of micro–macro dynamics in shaping communication environments. Individual behaviors, such as expressing agreement, avoiding unfamiliar topics, or responding selectively, accumulate over time to produce collective patterns, including consensus formation, clustering, and information bias.

This perspective emphasizes that macro-level phenomena, such as echo chamber formation, emerge from the aggregation of micro-level interactions.

Implications for Design and Intervention

The findings across multiple experimental settings indicate that communication structures in local SNS are influenced not only by user behavior but also by system design, as observed in the effects of sorting mechanisms and visibility structures. In particular, the fourth experiment, in which sorting was introduced, provides a comparative perspective on how platform design influences communication structures. These findings highlight the importance of platform design as an explicit factor shaping communication structures. This perspective is consistent with prior research on steering local echo chambers, which suggests that communication patterns can be influenced through targeted interventions in local network environments (Tohyama et al., 2025). In particular, such approaches emphasize the possibility of moderating information concentration while preserving community cohesion. In particular, even relatively simple design elements can significantly influence how users interact and how information is distributed within the system.

In this context, local SNS can be understood as environments in which communication dynamics are partially controllable. Design strategies such as visualizing diverse viewpoints, reducing the visibility of engagement metrics, and introducing initial responses

(e.g., automated comments) can influence user behavior and interaction patterns. Student proposals derived from the July 2025 experiment suggest several design directions, including UI/UX improvements (e.g., visualizing diversity, reducing numerical indicators, and introducing bot-based initial comments), literacy education, and institutional or technological interventions.

In particular, AI-based response mechanisms may serve as an intervention to facilitate connections among weakly connected users. By encouraging initial interactions and lowering participation barriers, such mechanisms may help distribute communication more evenly across the network. Based on the observed communication patterns, AI-based mechanisms are discussed as potential future interventions for facilitating interaction and reducing communication bias.

Toward the Steering of Local Echo Chambers

Overall, the findings suggest that local SNS provide a promising environment for the steering of communication structures. Rather than eliminating clustering, the goal should be to manage its degree and permeability, balancing cohesion and diversity.

This perspective shifts the focus from detecting echo chambers to designing systems that enable controlled interaction dynamics, offering new possibilities for socially responsible SNS design.

CONCLUSION

This study examined local social networking services (SNS) as intermediate communities positioned between closed and global communication environments. Through an empirical analysis of four operational experiments conducted over two years using the Pin Plage platform, this study investigated how communication patterns emerge and evolve in a locally

bounded SNS setting.

The results demonstrate that local SNS environments foster relatively high levels of trust through social proximity, while maintaining a degree of openness that enables diverse participation. Structurally, interactions are characterized by clustered communication patterns combined with partial connectivity across user groups, supporting the conceptualization of local SNS as intermediate communities that balance cohesion and diversity.

Furthermore, the findings indicate that echo chamber effects in local SNS are not absolute but emerge as gradual and context-dependent phenomena. While localized consensus and interaction concentration were observed, these structures remained permeable due to the presence of bridging users. These results indicate that echo chamber-like structures are not fixed, but may change depending on interaction patterns and system conditions.

Importantly, this study highlights that communication structures in SNS are shaped not only by user behavior but also by system design. Platform features such as sorting mechanisms and visibility structures influence the distribution of attention and interaction, indicating that communication dynamics can be partially steered through design and operational interventions.

Managerial Implications

In addition, the findings can be interpreted in the context of organizational communication, where internal knowledge sharing and interaction structures are critical for collaboration and innovation. From a business perspective, these findings provide several important implications for the design and management of digital platforms and organizational communication systems.

First, our findings suggest that organizations may benefit from introducing intermediate-scale

communication platforms. While global platforms maximize reach and closed systems ensure trust, local SNS can achieve a balance between the two, making them suitable for internal knowledge sharing, community engagement, and stakeholder interaction.

Second, the results suggest that trust and diversity are not mutually exclusive but can be co-designed. By structuring interaction spaces to allow clustering while maintaining cross-group connectivity, organizations can promote both cohesive collaboration and exposure to diverse perspectives. This is particularly relevant for knowledge-intensive organizations, where innovation depends on both trust and information diversity.

Third, the results observed in this study indicate that platform design can function as a practical lever for influencing communication patterns. Features such as content sorting, visibility control, and interaction prompts significantly influence user behavior. This implies that managers and platform designers can actively shape communication patterns, rather than treating them as purely emergent phenomena.

Fourth, the findings indicate that weak connections play a critical role in preventing excessive fragmentation. Encouraging interactions across groups—through design mechanisms such as recommendations, prompts, or automated responses—can enhance information flow and mitigate the risk of localized echo chambers.

Finally, the study suggests that local SNS can serve as experimental environments for communication design. Organizations can iteratively test and refine interaction mechanisms in controlled settings before scaling them to larger platforms or broader communities. From this perspective, local SNS can be positioned as tools for designing and managing organizational communication environments. These implications are particularly relevant for organizations seeking to design internal communication systems that balance

psychological safety with exposure to diverse perspectives.

Contributions and Future Research

This study contributes to the literature by (1) conceptualizing local SNS as intermediate communities that bridge disconnected user groups, and (2) providing empirical evidence from multiple operational experiments demonstrating how communication structures emerge and can be influenced in such environments.

Several limitations should be acknowledged. First, the empirical analysis is based on a university course setting, where participants share similar institutional and social contexts. Therefore, caution is required when generalizing these findings to other organizational or public SNS environments. Second, text mining analysis was conducted for a subset of experiments, and further comprehensive analysis may provide deeper insights into communication content. Future research should extend the analysis to broader organizational and industrial contexts, incorporate longitudinal design interventions, and examine the effectiveness of AI-based mechanisms in steering communication dynamics.

Overall, this study suggests that local SNS offer a promising framework for designing communication environments that balance trust, diversity, and controllability, with significant implications for both research and business practice.

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From Feedback to Action: How Entrepreneurs Recall and Reconstruct Feedback in Business Planning

Hiroko Nakajima (Graduate School of Management, Kyoto University, Japan)

Tomoki Sekiguchi (Kyoto University, Japan)

ABSTRACT

Recent research has emphasized the importance of business planning for entrepreneurs, particularly its psychological effects on cognition and learning. However, less is understood about how these effects are translated into concrete action. This study examines the cognitive processes through which entrepreneurs come to act, focusing on how feedback is recalled and reconstructed during business planning. In real-world entrepreneurial settings, feedback is complex, socially embedded, and not always interpreted as intended. Adopting a recipient-centered perspective, we analyze how entrepreneurs engage with feedback and how this shapes subsequent action. Using survey data from participants in a Japanese high school business plan competition (N = 62), we analyze open-ended descriptions of memorable feedback and classify recall patterns into how-oriented, why-oriented, and multidimensional forms. Results show that these recall patterns are associated not only with whether participants take action, but also with the nature of that action, particularly revisions to core elements such as value propositions and customer segments. These findings suggest that entrepreneurial action emerges through processes of recall and reconstruction, rather than direct responses to feedback. The study contributes to understanding entrepreneurial development as a process in which ways of responding to external evaluation are refined through business planning.

Keyword: Accounting, Organizational Behavior

Broadening the Base of Entrepreneurial Intention: Evidence from a Cross-University Entrepreneurship Education Programme in Japan

Shuichi Murakawa (Fujita Health University, Japan)

Junko Ishiguro (Toyo Gakuen University, Japan)

ABSTRACT

Universities are increasingly expected to foster entrepreneurship as a driver of innovation and regional development. Although prior studies consistently report a positive relationship between entrepreneurship education (EE) and entrepreneurial intention (EI), little is known about how such education affects different student segments. In particular, existing research tends to focus on average effects, leaving it unclear whether EE mainly benefits already-motivated students or broadens entrepreneurial intentions among a wider population. This study examines a large-scale cross-university entrepreneurship education initiative in Japan. Using survey data from approximately 6,500 undergraduate and graduate students across 20 universities, it compares the distribution of entrepreneurial intention between students who participated in EE and those who did not. The results indicate an association between EE and higher average entrepreneurial intention. More importantly, participation in EE is linked to a distributional shift that reduces the concentration of students with neutral intentions and increases the proportion of students with low-to-moderate entrepreneurial intention, which may reflect an expansion of awareness and openness toward entrepreneurship rather than fully developed commitment.

Keyword: Entrepreneurship Education; Entrepreneurial Intention; Distributional Perspective; Cross-University Programme; Japan

1. Introduction

Entrepreneurship is an increasingly important policy and agenda in higher education worldwide. Universities are expected to not only supply highly skilled human resources but also contribute to innovation, regional development, and new venture creation. In response, entrepreneurship education expanded rapidly across universities and a growing body of research examines its effectiveness, particularly in relation to students' entrepreneurial intentions.

Despite substantial empirical evidence supporting the positive association between entrepreneurship education and intentions, important questions remain unresolved. Most existing studies evaluate the effectiveness of entrepreneurship education by estimating the average treatment effects, which implicitly assumes that educational interventions affect students uniformly. However, students differ considerably in their prior interests, motivations, and career orientations. Consequently, focusing solely on average effects may obscure important heterogeneity in educational outcomes.

This issue is particularly salient in the context of higher education systems characterised by strong institutional and disciplinary specialisation. In Japan, universities are often segmented by academic fields, such as medicine, engineering, and the humanities, leaving only limited opportunities for interdisciplinary interaction. Under these conditions, entrepreneurship education implemented within a single university may reach only a narrow subset of students. Therefore, cross-university approaches may play a critical role in broadening the access to entrepreneurship education and its potential benefits.

Against this background, this study examines whether entrepreneurship education can broaden the base of entrepreneurial intention, rather than merely strengthen it, among already-motivated students. Focusing on a large-scale cross-university entrepreneurship education initiative in Japan, this study investigates how participation in entrepreneurship education is associated with changes in the distribution of entrepreneurial intention among university students. By adopting a distributional perspective, this study seeks to provide a more nuanced understanding of how entrepreneurship education operates in institutional contexts characterised by fragmentation and specialisation.

2. Institutional Background: Cross-University Entrepreneurship Education in Japan

Entrepreneurship education in Japan expanded rapidly over the past decade, driven by national and regional policy initiatives that aim to stimulate innovation, regional revitalisation, and new venture creation. Universities are increasingly encouraged to provide entrepreneurship-related learning opportunities not only to business students, but also to those enrolled in science, engineering, medicine, and other professionally oriented fields. Despite this policy momentum, the organisational structure of Japanese higher education presents persistent challenges to the effective diffusion of entrepreneurship education.

A defining feature of the Japanese higher education system is its high degree of institutional and disciplinary specialisation. Universities and faculties tend to be clearly segmented by academic field, and students often complete their programmes with limited exposure to disciplines outside their primary areas of study. While this structure supports the depth of expertise, it constrains opportunities for interdisciplinary interaction and limits access to entrepreneurship education when such programmes are available only within individual universities.

Under these conditions, entrepreneurship education offered at a single institution may primarily reach students who are already predisposed to entrepreneurial activity or enrolled in fields where entrepreneurship is more visible. Students in highly specialised or professionally oriented programmes, such as medicine or health sciences, may face both structural and cultural barriers to participation. Consequently, the potential of entrepreneurship education to foster broad-based engagement may be limited by isolated institution-specific initiatives.

Against this backdrop, cross-university entrepreneurship education emerged as an alternative institutional design. Rather than relying on individual universities to develop comprehensive programmes independently, cross-university initiatives pool educational resources, faculty expertise, and student populations across multiple institutions within a region. This model allows students to access entrepreneurship education opportunities beyond their home institutions, thereby lowering entry barriers and expanding their potential participant base.

The entrepreneurship education initiative examined in this study exemplifies the cross-university approach. Operating at the regional level and involving approximately 20 universities, the programme provides a shared platform for courses, workshops, and project-based learning related to entrepreneurship. Participation is open to students from diverse

academic backgrounds, and the programme emphasises exposure to entrepreneurial thinking and practices, rather than immediate venture creation or early-stage selection.

From an institutional perspective, this design can be understood as a deliberate shift from elite-oriented entrepreneurship education toward a more inclusive exposure-based model. The objective is not to identify a small group of future entrepreneurs at an early stage, but to reduce the informational and experiential gaps that prevent many students from considering entrepreneurship as a viable career option. This inclusive orientation aligns closely with the distributional perspective adopted in this study and provides a suitable context for examining how entrepreneurship education reshapes the patterns of entrepreneurial intention across a heterogeneous student population.

As Figure 1 illustrates, this study conceptualises entrepreneurship education not as an intervention aimed at strengthening intention among a small group of highly motivated students, but as an institutional mechanism that broadens engagement by reshaping the overall distribution of entrepreneurial intention across the student population.

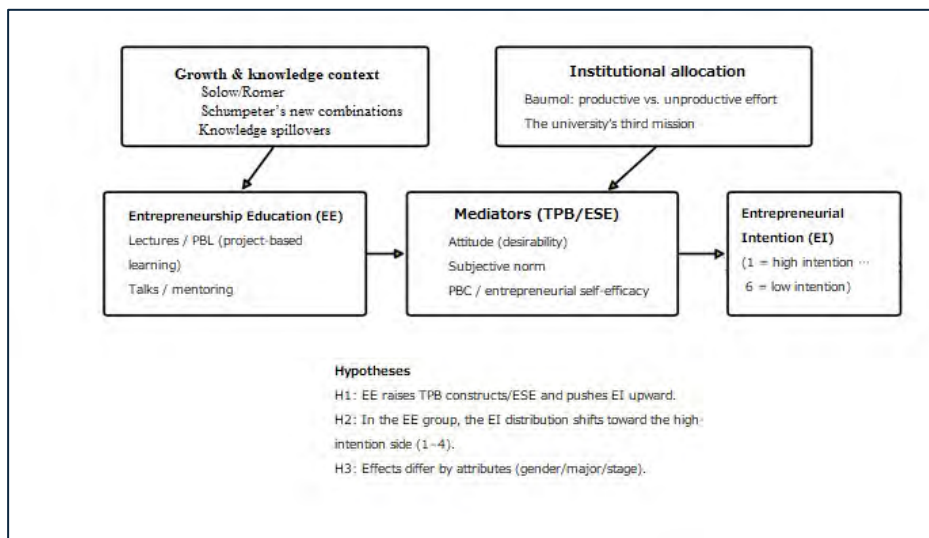


Figure 1. Conceptual framework: how cross-university entrepreneurship education provides exposure that reshapes the distribution of entrepreneurial intention among students

Note. The figure emphasises the institutional logic of the study, which highlights how educational exposure through cross-university programmes is associated with shifts in entrepreneurial intention rather than specific psychological mechanisms or estimation procedures. The figure focuses on overall distributional patterns rather than precise quantitative differences.

3. Literature Review

3.1 Entrepreneurship education and entrepreneurial intention

Many studies examine entrepreneurial intention as a central outcome of entrepreneurship education. A substantial body of research reports a positive association between participation in entrepreneurship education and students' entrepreneurial intentions, suggesting that educational interventions can shape attitudes, perceptions, and career aspirations related to entrepreneurship (Ajzen, 1991; Fayolle & Gailly, 2015; Krueger et al., 2000). This stream of research helped to legitimise entrepreneurship education in higher education and establish entrepreneurial intention as a meaningful intermediate outcome (Nabi et al., 2017; Souitaris et al., 2007).

However, much of the existing evidence is derived from analyses that focus on the mean differences between participants and non-participants. Although these studies provide valuable insights into overall effectiveness, they tend to obscure variations in how entrepreneurship education influences different segments of the student population (Rideout & Gray, 2013; Walter & Block, 2016). Given the diversity of students' prior interests, motivations, and disciplinary backgrounds, an exclusive focus on average effects offers an incomplete picture of the educational impact (Liñán & Fayolle, 2015).

3.2 Limitations of average-effect approaches in educational research

Concerns about the limitations of average-effect approaches are not unique to entrepreneurship education research. In the broader field of educational research, scholars increasingly emphasise the importance of examining heterogeneity and distributional outcomes when evaluating educational interventions (Bloom et al., 2008; Hanushek & Woessmann, 2011). Educational programmes may have limited effects on individuals who are already highly motivated while generating meaningful changes among those with lower initial engagement or awareness.

Evaluations of educational interventions often rely on mean differences to assess effectiveness, implicitly assuming that the observed average gains reflect meaningful improvements in the target population as a whole (OECD, 2017; Perna & Finney, 2014). However, these approaches may obscure important distributional dynamics, particularly in contexts where learners differ substantially in their initial levels of motivation, access, and engagement.

In many educational settings, interventions do not aim to produce uniform effects in all participants. Instead, they may function by expanding access, reducing information barriers, or increasing exposure among previously disengaged or indifferent individuals. In such cases, modest average effects may coexist with substantial shifts in the distribution of outcomes, especially among lower- or middle-performing groups (Bloom et al., 2008). Focusing exclusively on mean outcomes therefore risks underestimating the broader educational significance of these interventions.

This perspective is particularly relevant in higher education systems characterised by strong institutional and disciplinary differentiation. When access to specific forms of education is distributed unevenly across fields of study or organisational units, the primary impact of an intervention may lie in its ability to broaden participation rather than intensify outcomes among already engaged individuals. From this standpoint, distributional changes provide a more appropriate lens for evaluating whether an intervention extends beyond a narrow subgroup and contributes to more inclusive educational engagement (Fayolle et al., 2014).

Applying this logic to entrepreneurship education suggests that effectiveness should not be assessed solely by increasing the average entrepreneurial intention or by identifying a small group of highly motivated future entrepreneurs. Instead, attention should be paid to whether educational programmes reduce the concentration of neutrality or indifference and expand the range of students who actively consider entrepreneurship as a viable option (Nabi et al., 2018). Thus, a distributional perspective aligns entrepreneurship education research with broader discussions on educational evaluations concerning the inclusivity, reach, and societal role of higher education.

By situating the analysis of entrepreneurship education within this wider educational research framework, this study advances a more generalisable approach for evaluating educational interventions. Rather than treating distributional analysis as a methodological refinement specific to the Japanese context or entrepreneurship education alone, this perspective highlights its relevance in understanding how educational programmes operate across diverse institutional settings.

From this perspective, the average effects can mask important shifts within the distribution of outcomes. Nonetheless, an intervention that produces modest changes in mean values may be highly effective if it reduces indifference, increases awareness, or expands access to previously disengaged groups (Bloom et al., 2008). Applying this logic to entrepreneurship education

suggests that effectiveness should be assessed not only by identifying high-intention individuals but also by examining how education reshapes the broader configuration of entrepreneurial intention.

3.3 Towards a distributional and inclusive perspective

Recent studies call for analytical approaches that move beyond mean comparisons and consider both heterogeneous and distributional effects (Bloom et al., 2008; Hanushek & Woessmann, 2011). Such approaches are particularly relevant in higher education contexts characterised by strong institutional and disciplinary differentiation. In these settings, educational interventions may function less as mechanisms for intensifying existing intentions, and more as methods for broadening exposure and reducing informational barriers.

Adopting a distributional perspective aligns closely with the inclusive conceptions of entrepreneurship education that emphasise awareness, openness, and option value rather than immediate venture creation (Nabi et al., 2017; Pittaway & Cope, 2007). This perspective is especially pertinent for students in professionally oriented or highly specialised programmes, for whom entrepreneurship may not initially appear to be a realistic or legitimate career path. By examining the distributional changes in entrepreneurial intention, this study contributes to this emerging stream of research by providing a framework for evaluating entrepreneurship education as an institutional mechanism for broadening participation.

4. Data and Method

4.1 Data

This analysis draws on a large-scale survey of undergraduate and graduate students conducted across approximately 20 universities participating in a regional cross-university entrepreneurship education initiative in Japan. The survey was administered to students from diverse academic backgrounds, including professionally oriented and highly specialised programmes. After standard data-cleaning procedures, the final sample consists of approximately 6,500 observations.

Entrepreneurial intention is measured using an ordinal scale capturing the students' self-reported likelihood of engaging in entrepreneurial activities in the future. Participation in

entrepreneurship education is captured by an indicator reflecting students' exposure to formal entrepreneurship courses and programmes offered through cross-university initiatives.

The analysis uses harmonised survey data collected across multiple academic years, with key variables defined to ensure consistency and comparability across the survey waves. Table 1 presents an overview of the main variables and their roles in the analysis.

Table 1. Measures and Coding (AY2022–AY2024)

Variable	Measurement	Scale	Role in analysis
Entrepreneurial Intention (EI)	Intention to start a business in the future	6-point ordinal (1 = high, 6 = low)	Dependent variable
Entrepreneurship Education (EE)	Participation in any entrepreneurship-related course or programme	Binary (1 = participated)	Main explanatory variable
Field of study	Medical vs. non-medical field	Binary	Control
Educational stage	Undergraduate vs. graduate	Binary	Control
Gender	Female vs. male	Binary	Control

Note. Table 1 summarises the key variables used in the analysis and their measurements. Detailed coding rules and year-specific adjustments were harmonised to ensure consistency across survey waves.

4.2 Analytical strategy

The analysis proceeds in two steps. First, the average differences in entrepreneurial intention between participants and non-participants are examined to establish baseline effects consistent with those of previous research. Second, to move beyond mean comparisons, this study examines changes in the distribution of entrepreneurial intention across the full range of outcome measures.

This distributional approach allows for an assessment of whether entrepreneurship education primarily affects students with already high levels of intention, or whether it reshapes the broader pattern of intention among the student population. By focusing on distributional changes rather than relying exclusively on average effects, this analysis aligns with the

institutional objective of cross-university entrepreneurship education to broaden access and participation.

5. Results

5.1 Average effects

Consistent with prior studies, the results indicate that students who participated in entrepreneurship education exhibit higher average levels of entrepreneurial intention than those who did not. This finding confirms that entrepreneurship education is positively associated with entrepreneurial intention in Japanese higher education.

However, the average differences alone provide limited insight into how entrepreneurship education influences students with varying initial intentions. To address this limitation, the following section examines the distributional changes in entrepreneurial intention associated with participation in entrepreneurship education.

5.2 Distributional changes in entrepreneurial intention

Beyond the average effects, the results reveal a notable shift in the distribution of entrepreneurial intentions associated with participation in entrepreneurship education.

Specifically, participation is associated with a reduction in the concentration of students with neutral or ambiguous entrepreneurial intentions. At the same time, the proportion of students reporting low-to-moderate levels of entrepreneurial intention increased.

In Table 2, students who participated in entrepreneurship education are less concentrated in the neutral intention categories and more represented in the low-to-moderate intention groups.

Table 2. EI × EE cross-tabulation (category frequencies and group medians)

EE/EI	1	2	3	4	5	6
Attended	86	47	118	173	353	458
Not attended	85	78	265	475	1,435	3,020

Note. Table 2 presents the distribution of entrepreneurial intention categories by participation in entrepreneurship education. The comparison highlights the differences in the concentration of neutral and low-to-moderate intention levels between participants and non-participants.

While Table 2 summarises the category frequencies, Figure 2 visualises these differences more clearly by illustrating the shifts in the overall distribution of entrepreneurial intention.

Figure 2 presents a distributional comparison of entrepreneurial intentions between students who participated in entrepreneurship education and those who did not, highlighting the differences in the overall shape of the intention distribution.

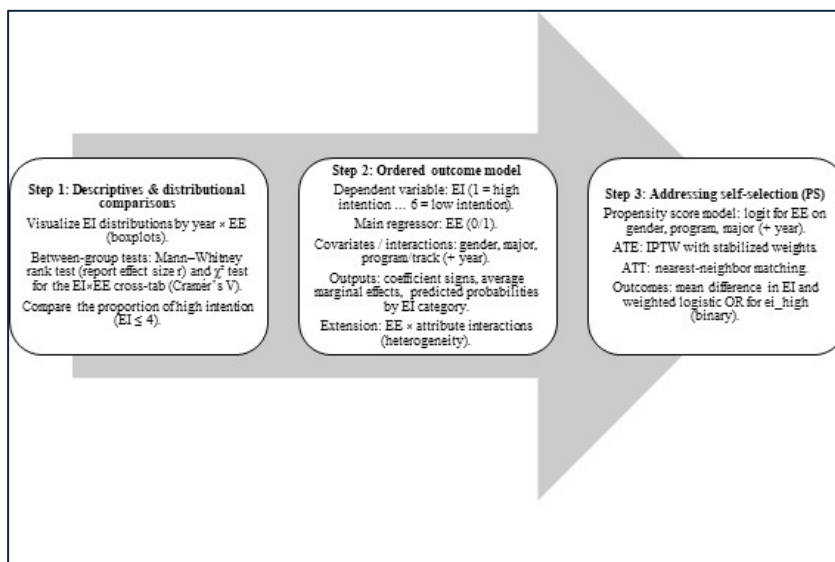


Figure 2. Distributional comparison of entrepreneurial intention between students who did and did not participate in entrepreneurship education

Note. The figure summarises the observed distributional differences in entrepreneurial intention. The results presented are descriptive and focus on observed distributional patterns rather than causal estimation. Detailed model-based analyses are beyond the scope of this study but are suggested for future research.

These patterns suggest that entrepreneurship education does not operate solely by strengthening intention among a small group of highly motivated students. Rather, it appears to be a broadening mechanism that encourages engagement with entrepreneurial ideas among students who might otherwise remain indifferent. From a distributional perspective, entrepreneurship education reshapes the overall profile of entrepreneurial intention within the student population, consistent with the inclusive objectives of the cross-university programme design.

In this study, middle-range levels of entrepreneurial intention (e.g., EI = 3–4) are interpreted not as fully developed entrepreneurial commitment, but as indicative of increased awareness, openness, and consideration of entrepreneurship as a potential career option. While these levels may not immediately translate into entrepreneurial behaviour, they represent an important intermediate stage in the entrepreneurial development process.

6. Discussion and Implications

This study examines whether entrepreneurship education functions primarily as an elite-oriented intervention or broadens the base of entrepreneurial intention among university students. By focusing on a large-scale cross-university entrepreneurship education initiative in Japan, the analysis highlights how institutional design shapes educational outcomes beyond average effects.

The results indicate that entrepreneurship education is associated not only with higher average entrepreneurial intention but also with meaningful distributional changes. Participation in entrepreneurship education reduces the concentration of students with neutral intentions, and increases engagement among those with low-to-moderate levels of entrepreneurial intention. This finding suggests that entrepreneurship education is an inclusive mechanism that exposes a wider range of students to entrepreneurial thinking rather than reinforcing pre-existing aspirations among a limited group.

Entrepreneurship education may function as an exposure mechanism that reduces informational barriers and increases the cognitive accessibility of entrepreneurship, particularly among students who were previously indifferent or unaware of entrepreneurial pathways. This mechanism helps explain why distributional shifts occur even in the absence of strong changes in average intention levels.

From a conceptual perspective, these findings invite reconsideration of the distinction between base- and elite-oriented approaches to entrepreneurship education. Much of the prior literature implicitly evaluates success by identifying future entrepreneurs or by maximising outcomes among already-motivated students. While such elite-oriented approaches are valuable in certain contexts, they may be poorly suited to higher education systems characterised by strong disciplinary specialisation and limited early exposure to entrepreneurship. By contrast, the distributional changes observed in this study suggest that entrepreneurship education can play a

complementary role by reducing indifference and fostering initial engagement among students who might not otherwise consider entrepreneurial pathways.

This distinction between the elite-oriented and base-broadening approaches has important implications for theory and practice. Conceptually, it highlights the value of moving beyond average effects in examining how educational interventions reshape the overall configuration of intentions within a population. Practically, this result suggests that the success of entrepreneurship education should not be judged solely by the number of start-ups created, but also by its capacity to cultivate entrepreneurial awareness, openness, and option value across a broad student base.

The observed distributional effects are closely linked to the role of cross-university institutional design in shaping the patterns of participation and exposure. Cross-university programmes differ fundamentally from single-university initiatives in that they pool students from diverse disciplinary and organisational backgrounds. In the Japanese context, where universities are often segmented by field and professional orientations, this design lowers structural barriers to participation and increases the likelihood of students encountering entrepreneurial ideas at an early stage.

By operating at the regional level, cross-university entrepreneurship education can function as an institutional bridge between otherwise isolated academic communities. This bridging role is particularly relevant for students enrolled in professionally oriented programmes, such as medicine or other specialised fields, where entrepreneurship is not traditionally emphasised. Exposure through cross-university platforms may, therefore, generate distributional shifts not because such students are predisposed toward entrepreneurship but because the institutional design makes initial engagement possible.

Although this study is grounded in the Japanese higher education system, its implications extend beyond the country. Many countries have higher education systems characterised by increasing specialisation, professionalisation, and institutional differentiation. In such an environment, entrepreneurship education implemented within individual institutions may struggle to reach a sufficiently diverse student population. Cross-university and regional approaches may offer viable institutional solutions to expand access and foster inclusive engagement in entrepreneurship.

Taken together, these findings suggest that entrepreneurship education should be understood not only as a tool for developing future entrepreneurs but also as a mechanism for shaping the

distribution of entrepreneurial intention within higher education. By broadening the base of engagement, cross-university entrepreneurship education can contribute to more inclusive entrepreneurial ecosystems and create conditions under which diverse forms of entrepreneurial activities may emerge over time.

7. Limitations and Future Research

Appendix Table A1 reports a non-parametric comparison of entrepreneurial intention distributions by participation in entrepreneurship education.

This study has several limitations. First, the analysis relies on cross-sectional survey data, which limits causal interpretation and precludes an examination of long-term behavioural outcomes. In particular, the observed relationships may be affected by self-selection bias, as students who choose to participate in entrepreneurship education may differ systematically from those who do not. Therefore, the findings should be interpreted as descriptive associations rather than causal effects.

Second, entrepreneurial intention is measured through self-reported responses, which may not fully capture subsequent entrepreneurial behaviour.

Future research could employ econometric approaches, such as ordered logit models or propensity score matching, to more rigorously examine the relationship between entrepreneurship education and entrepreneurial intention while accounting for individual-level heterogeneity. In addition, longitudinal designs could further examine how distributional changes in entrepreneurial intention translate into actual entrepreneurial activities over time. Further studies could explore the heterogeneity across academic fields, such as comparisons between medical and non-medical students, as well as the role of entrepreneurial competencies as potential mechanisms linking education and intention.

By extending the analysis in these directions, future research can deepen the understanding of how institutional design and educational contexts interact to shape entrepreneurial pathways.

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Compliance with Ethical Standards

Conflicts of Interest

The author declares no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Research Involving Human Participants

Ethical approval: This study was deemed exempt from ethical review by the Ethics Review Committee of Fujita Health University (review confirmed on October 8, 2025) because the analysis used fully anonymized secondary data.

Data Availability Statement

Due to institutional and ethical restrictions, the datasets are not publicly available. De-identified data may be made available by the corresponding author upon reasonable request and subject to prior ethics approval and/or a data use agreement.

Informed Consent

Consent to participate: Informed consent was obtained from all participants through an online consent form prior to survey participation.

Consent for publication: Not applicable. This manuscript contains no identifiable personal information, images, or case details.

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Appendix: Supplementary Analysis of Entrepreneurial Intention

Distributions

This supplementary analysis is provided to enhance transparency regarding distributional differences and should be interpreted as descriptive rather than causal.

Table A1 reports a supplementary non-parametric comparison of entrepreneurial intention between students who did and did not participate in entrepreneurship education. Because entrepreneurial intention is measured as an ordinal outcome, the Mann–Whitney U test was employed to assess differences in the overall distribution without relying on assumptions of normality or equal variances. This approach is appropriate for examining distributional differences when central tendency measures alone may not fully capture the variations across response categories.

In addition to the U statistic and the associated p-value, Table A1 reports the rank–biserial correlation coefficient as an effect size measure. This coefficient indicates the extent to which the entrepreneurial intention scores for students who participated in entrepreneurship education tend to differ from those of non-participants. Reporting an effect size alongside statistical significance provides additional context for interpreting the magnitude of observed distributional differences.

The results presented in Table A1 are intended to be descriptive and supportive of the main analysis rather than to introduce additional hypotheses or independent findings. Consistent with the study’s focus on distributional changes, this supplementary analysis offers greater transparency regarding how differences in entrepreneurial intentions manifest across the student population. By complementing the main results with a distribution-sensitive non-parametric comparison, the appendix clarifies the relationship between entrepreneurship education participation and shifts in entrepreneurial intention without extending beyond the scope of the primary analysis.

Table A1. Mann–Whitney U test of EI by EE participation (ordinal outcome)

Attended (n)	Not attended (n)	U statistic	p- value	Rank– Biserial Correlation Coefficient	Median (attended)	Median (not attended)
1,235	5,358	2,493,904	<.001	0.246	5	6

Note. Entrepreneurial intention (EI) is coded from 1 (high-intention) to 6 (low-intention).

Entrepreneurship education (EE) participation is coded as attended or not attended.

Reported statistics include the U statistic, p-value, and rank–biserial correlation coefficient (effect size).

Non-responders (N = 7) were excluded.

Sense of Belonging, Work Engagement, and Growth Expectations among SME Owner-Managers in Japan: Evidence from Two-Wave Panel Data

Satoshi Yamamoto (TOYO University, Japan)

ABSTRACT

This study examines how SME owner-managers' sense of belonging influences their growth expectations through the mediating role of work engagement. While previous studies on SME growth have mainly emphasized economic resources, market conditions, and strategic capabilities, relatively little attention has been paid to the psychological resources of SME owner-managers. Using two-wave panel data collected from Japanese SME owner-managers in 2024 and 2025, this study analyzes the relationships among sense of belonging, work engagement, and growth expectations. Structural equation modeling (SEM) is employed to examine the temporal stability and longitudinal relationships among these variables. The results show that sense of belonging significantly enhances work engagement, and work engagement positively influences SME owner-managers' growth expectations. In contrast, the direct effect of belonging on growth expectations becomes non-significant when work engagement is included in the model. These findings indicate that belonging affects growth expectations indirectly through engagement, highlighting the importance of psychological resources in shaping entrepreneurial expectations.

Keyword: Entrepreneurship, Management, Human Resource Management, Panel Data, Structural Equation Modeling

“Effects of Government Subsidies on Entrepreneurial Firm Performance” -Testing Moderating Effects of Subsidies on Entrepreneurial Effectuation and Causation Behaviors-

Nobuhiko Hibara (Waseda Business School, Japan)

Atsushi Nagashima (Waseda University, Japan)

ABSTRACT

This study investigates how government subsidies influence the relationship between entrepreneurial behavioral logics—effectuation and causation—and firm performance. Effectuation emphasizes flexibility and control, whereas causation emphasizes prediction and planning. These two behavioral logics are expected to affect firm performance differently, and their effectiveness may depend on whether to receive government subsidies. While previous studies have reported inconsistent findings regarding the effect of government subsidies on firm performance, the role of government subsidies in shaping the relationship between entrepreneurial behavioral logic and firm performance has not been adequately investigated. To address this gap, we conducted a survey of 300 Japanese startups established during 2015-2024. We measured entrepreneurs' use of effectuation and causation and empirically analyzed how government subsidies influence the relationship between behavioral logic and firm performance. While the analysis revealed no significant direct effect of government subsidies on firm performance, we found that the interactions between government subsidies and entrepreneurial behavioral logic significantly influenced performance. Specifically, entrepreneurs who received subsidies and employed causation demonstrated positive effects on firm performance, whereas those who employed effectuation exhibited negative effects. These findings highlight the non-uniform nature of subsidy effects, suggesting that their effect depends on the entrepreneurial behavioral logic employed. This study offers new perspectives on the integration of policy effects (the relationship between public support and firm performance) and entrepreneurial behavior (the relationship between behavioral logic and firm performance) and provides policymakers with insights for designing more effective subsidy programs.

Keyword: Entrepreneurship, Effectuation

1. Introduction

There has been active research on the behavioral logic used by entrepreneurs to launch and grow new businesses. In particular, in recent years, there has been a robust discussion over two different approaches: causation and effectuation. Effectuation is a behavioral logic proposed by Sarasvathy (2001) that emphasizes flexibility and control, whereas causation emphasizes prediction and planning. These two behavioral logics have been suggested to affect firm performance in different environments and situations (Brettel et al. 2012; Chandler et al. 2011).

In examining the relationship between entrepreneurial behavioral logic and firm performance, a number of studies have shown that the use of effectuation and causation has a positive effect on firm performance (e.g., Laskovaia, Shirokova, and Morris 2017; Peng et al. 2020; Shirokova et al. 2021; Smolka et al. 2018). Furthermore, on the assumption that each behavioral logic proves effective under different conditions, researchers have investigated various factors that influence the relationship between behavioral logic and firm performance. Existing evidence indicates that institutional and cultural factors influence this relationship (Cowden et al., 2023; Shirokova et al., 2021). However, these studies primarily focus on macro-level institutional factors, and the influence of specific policy instruments on entrepreneurial behavioral logic has not been sufficiently explored.

Among such policy instruments, government subsidies represent the primary form of startup support. Empirical evidence on whether subsidies positively affect firm performance remains inconsistent. Given that entrepreneurs employ different behavioral logics at various stages, subsidies may influence firm performance through their impact on entrepreneurial behavioral logic. The effect of subsidy programs may depend on their emphasis on planning and compliance, which align with causation as it emphasizes planning, but may conflict with effectuation as it emphasizes flexibility. We focus on Japanese government subsidies, which are notably planning-oriented. These subsidies are administered under strict regulations that prohibit funding for unplanned expenses, disburse funds only after rigorous verification procedures, and require approval for plan modifications. This emphasis on plan adherence makes Japanese subsidies particularly suitable for examining how government subsidies influence the relationship between entrepreneurial behavioral logic and firm performance.

Given this research gap, this study aims to investigate how government subsidies influence the relationship between entrepreneurial behavioral logic—effectuation and causation—and firm performance. To do so, we surveyed 300 Japanese entrepreneurs

who have been managing firms founded within the past 10 years. Using this sample, we measured entrepreneurs' use of effectuation and causation, examined whether government subsidies had been received, and analyzed the role of these subsidies in the relationship between entrepreneurial behavioral logic and firm performance.

This study offers a new perspective for comprehensively understanding policy effects (the relationship between government subsidies and firm performance) and entrepreneurial behavior (the relationship between behavioral logic and firm performance), which have traditionally been studied separately. Furthermore, it provides practical insights for designing entrepreneurship and startup policies effectively.

This paper is organized into seven sections. Section 1 outlines the background and objectives of the study. Section 2 reviews previous studies on entrepreneurial behavioral logic, with a focus on effectuation, as well as the effect of government subsidies on entrepreneurs and startups. Section 3 develops the hypotheses, and Section 4 describes the data and variables for the empirical analysis. Section 5 presents the results of the empirical analysis, followed by a discussion in Section 6. Finally, Section 7 presents the conclusions of this study.

2. Literature review

2.1. Effectuation

2.1.1. Effectuation and venture performance

Effectuation is a decision-making logic under uncertainty, discovered by Saras Sarasvathy through her experiments with expert entrepreneurs. Causation, in contrast, is a structured process that begins with a predefined goal. The causation process involves analyzing the environment to achieve the goal, formulating a strategy, procuring resources, and executing the plan to realize the initial objective. On the other hand, effectuation does not start with a specific goal but instead focuses on identifying available means (i.e., who I am, what I know, and whom I know). Entrepreneurs employing effectuation create markets by developing new means and goals through leveraging contingencies and interacting with effectual stakeholders. Sarasvathy (2008) also outlines five principles that form the foundation of the effectuation logic: "Bird-in-hand", "Affordable loss," "Lemonade", "Crazy-quilt", and "Pilot-in-the-plane".

Since the conceptualization of effectuation by Sarasvathy (2001), early studies on effectuation have focused on understanding how the use of effectuation affects firm performance. For instance, Read, Song, and Smit (2009) conducted a meta-analysis of 9,897 sample data from 403 previous studies on effectuation published in the *Journal of Business Venturing* (JBV) between 1996 and 2007. They found a positive association between effectuation principles—excluding affordable loss—and the quantitative financial performance of venture firms. Similarly, Wiltbank et al. (2009) measured the predictive and control orientations of 121 angel investors using a scenario-based questionnaire and analyzed the results of 1,038 venture investments made by them. Their findings indicated that a non-predictive control orientation was associated with fewer investment failures.

The subsequent development of effectuation studies was significantly advanced by the creation of measurement scales by Chandler et al. (2011) and Brettel et al. (2012). Chandler et al. (2011) examined entrepreneurial behavior during the venture creation process and proposed that effectuation is a formative construct comprising three sub-dimensions—experimentation, affordable loss, and flexibility—and one shared dimension with causation, namely pre-commitments. They also developed a one-sided scale to measure effectuation and causation as independent constructs. In contrast, Brettel et al. (2012) created a two-sided scale that contrasts causation and effectuation across four dimensions: (1) goal-driven vs. means-driven, (2) expected return vs. affordable loss, (3) competitive market analysis vs. partnership, and (4) overcome the unexpected vs. acknowledge the unexpected. Their scale enables the assessment of both higher and lower level of effectuation and causation with each principle.

Along with the development of the measurement scale, another contribution of Chandler et al. (2011) and Brettel et al. (2012) is the extension of the scope to which effectuation can be applied. Although the logic of effectuation was originally conceptualized from decision-making experiments in the creation of new ventures by expert entrepreneurs, these studies applied it to the decision-making processes of founding teams in venture firms and R&D managers in corporate projects. Their findings suggest that effectuation can be positioned as a general decision-making logic for both teams and organizations.

Since the development of two scales, five studies have utilized the Brettel et al. (2012) scale, 11 studies have used the Chandler et al. (2011) scale, and six studies have employed newly developed scales (McKelvie et al., 2020). For instance, empirical studies using international samples from the Global University Entrepreneurial Spirit Students' Survey (GUESSS)—which included over 2,000 student entrepreneurs from more than 20 countries and employed Chandler et al.'s (2011) scale—found that both

causation and effectuation positively affect venture performance (Laskovaia et al., 2017; Peng et al., 2020; Shirokova et al., 2021; Smolka et al., 2018).

Recent studies have investigated factors influencing the relationship between behavioral logic and performance. For instance, Cowden et al. (2023) surveyed 990 entrepreneurs in emerging economies (Ghana, Bangladesh, and Vietnam) and found that gender inequality moderates the relationship between effectuation and firm performance. Similarly, Shirokova et al. (2021) demonstrated that national institutional factors such as regulatory, normative, and cultural-cognitive institutions moderate the relationship between entrepreneurial behavioral logic and performance. However, while these studies analyzed the effects of macro-level institutional factors, the effects of individual policies on the behavioral logic of entrepreneurs have not been sufficiently studied. In particular, to the best knowledge, there has been no studies on how government subsidies affect the relationship between the behavioral logic of entrepreneurs and firm performance.

2.1.2. Effectuation and transition of behavioral logics

The logic of effectuation, as conceptualized by Sarasvathy, views effectuation as a process. However, later influential empirical studies (e.g., Brettel et al. 2012; Read et al. 2009; Wiltbank et al. 2009) have primarily approached effectuation from the perspective of variable theory (McKelvie et al., 2020). As a result, most subsequent studies have focused on quantitatively analyzing effectuation as a variable theory. Although studies on the process of effectuation are limited, Fisher (2012), for instance, conducted an analysis of six Internet ventures and explored the relationships, similarities, and differences among three distinct behavioral logics: causation, effectuation, and bricolage. Additionally, Jiang and Rüling (2019), aiming to uncover the internal processes of effectuation, performed a longitudinal comparative case study of six high-tech ventures in China. They identified five characteristics of the effectuation process and proposed two dominant process types.

Regarding the transition between the behavioral logics of effectuation and causation, Reymen et al. (2015) analyzed the development process of decision-making logic in nine high-tech ventures. They found that the turning point in decision-making logic occurred after significant changes in the scope of the ventures concerning technology, product offerings, and markets. These studies suggest that effectuation and causation are distinct process models and that entrepreneurs utilize the two behavioral logics differently depending on the passage of time and the stage of business development. However, there remains insufficient research on whether entrepreneurs can simultaneously employ both behavioral logics.

2.2. Government subsidies for entrepreneurs and startups

Government support for entrepreneurs and startup firms can be divided into two categories: entrepreneurship policy for individual entrepreneurs (entrepreneurs who aim to start a business) and small and medium enterprise (SME) policy for startup firms after their establishment (Kato 2022)¹. The former covers the period from the pre-startup phase, including the awareness phase (when entrepreneurs discover business opportunities) and the nascent phase (when they begin preparations for launching their companies), to the startup phase. The latter primarily targets firms in the post-startup phase. Entrepreneurship policies are mainly aimed at fostering entrepreneurial mindset and increasing learning opportunities, such as entrepreneurship education and introduction of role models, and most of them provide non-monetary support. Conversely, SME policies are designed to promote the growth of startup firms and primarily involve financial support, such as subsidies and tax incentives.

Focusing on financial support, particularly government subsidies, many studies have explored the relationship between government subsidies and firms' performance indicators. For instance, Lerner (1999) demonstrated that firms receiving government subsidies through the U.S. Small Business Innovation Research (SBIR) program exhibited faster growth compared to others. In the context of Japanese SMEs, Harada and Honjo (2005) found that government support including subsidies under the Creative Business Promotion Law (CBPL), increased capital investment rates. Similarly, Honjo and Harada (2006), analyzing the effects of CBPL, reported a significant rise in fixed asset values. Furthermore, Okamuro and Nishimura (2015) identified an indirect mediating effect of subsidies on innovation outcomes in industry-academia collaborations, achieved through trust-building by the government. On the other hand, many studies have found no significant relationship between the receipt of government subsidies and output indicators or firm performance (management outcomes). For example, Inoue and Yamaguchi (2017), who analyzed the outcomes of firms adopting the Japanese version of the SBIR program, found no significant improvement in sales growth, employee numbers (management outcomes), or patent applications (technological outcomes) compared to non-adopters. Similarly, Suzuki (2017), who

¹ In practice, startup policies targeting ventures with high growth potential are clearly distinguished from SME policies aimed at supporting SMEs in general. For instance, subsidies provided by NEDO (New Energy and Industrial Technology Development Organization) are specifically tailored for deep-tech startups. On the other hand, subsidies designed to promote productivity improvement in manufacturing, commerce, and services are focused on enhancing the overall productivity of SMEs. Consequently, while a wide range of government subsidies are available to startups, the policy objectives of these subsidies vary significantly, spanning from startup-specific initiatives to broader SME support.

studied firms certified under the Strategic Foundational Technology Improvement Support Operation (SAPOIN), reported limited effects of subsidy receipt on outcomes such as shipment volumes and employee numbers. Sekizawa et al. (2020) also found no significant policy effects of manufacturing subsidies on the average growth rates of employee numbers, tangible fixed assets, labor productivity, or value-added amounts. In summary, the results of studies on the effect of government subsidies on firm performance remain inconsistent, and the mechanisms through which government subsidies contribute to improving firm performance have not yet been fully elucidated.

3. Hypothesis development

We constructed hypotheses based on findings from previous studies. Previous studies have not reached a consistent conclusion regarding the effect of government subsidies on firm performance. On the other hand, previous studies on effectuation have shown that the choice of the behavioral logic of entrepreneurs affects firm performance. Drawing from these insights, it is plausible that government subsidies indirectly effect firm performance by influencing the relationship between entrepreneurial behavioral logic and firm performance. Entrepreneurs receiving government subsidies might be able to execute their plans more effectively by procuring resources earlier. Conversely, these subsidies might impose restrictions on experimental efforts and flexibility. Therefore, in this study, we first formulated hypotheses on the direct effect of entrepreneurial behavioral logics (effectuation and causation) on firm performance. Subsequently, we developed hypotheses on how the receipt of government subsidies influences the relationship between the two behavioral logics and firm performance. Finally, we empirically tested these hypotheses to provide a deeper understanding of the interaction between government subsidies, entrepreneurial behavior, and firm performance.

3.1. Relationship between entrepreneurial behavioral logic (Effectuation or Causation) and firm performance

Many previous studies have shown that the behavioral logic of both effectuation and causation has a positive effect on firm performance (e.g., Laskovaia et al. 2017; Peng et al. 2020; Shirokova et al. 2021; Smolka et al. 2018). Although these studies are based on large international samples and not on Japanese entrepreneurs, the behavioral logic of effectuation has developed as a general behavioral logic that is not limited to expert entrepreneurs (Brettel et al. 2012; Chandler et al. 2011). This suggests that similar conclusions may reasonably apply to Japanese entrepreneurs as well. Therefore,

the following hypotheses can be formulated regarding the relationship between the behavioral logic of effectuation and causation and firm performance.

Hypothesis 1: Entrepreneurial behavior based on causation positively affects firm performance.

Hypothesis 2: Entrepreneurial behavior based on effectuation positively affects firm performance.

3.2. Moderating effect of government subsidies

Japanese government subsidies are administered under the Act on Regulation of Execution of Budget Pertaining to Subsidies, which imposes strict institutional constraints prioritizing plan adherence over flexibility. First, the monitoring regime includes regular progress reports and detailed final inspections that verify expenditures against the original plan. Critically, subsidies are disbursed only after passing these inspections, compelling recipients to execute projects precisely according to their business plans. Second, expenses not included in the original plan are ineligible for subsidy support and plan modifications require prior approval from authorities. Third, the Act requires approval for disposing of property acquired through subsidized projects. Finally, grant guidelines of ministries under the Act typically mandate the return of revenues generated from subsidized projects to the national treasury. To confirm the applicability of this framework, we asked respondents to specify which subsidies they had received through an open-ended question. Among the responses, the Manufacturing, Commerce, and Service Productivity Improvement Promotion Subsidy was identified as one of the utilized programs, and this particular subsidy indeed employs the comprehensive framework described above.

Given these structural constraints, applying for government subsidies requires entrepreneurs to submit detailed business plans and report project results. This process involves predicting the future, setting goals, and procuring the resources—key elements of causation, which emphasizes prediction and planning. In other words, for entrepreneurs who employ causation, receiving government subsidies facilitates resource acquisition based on planned activities, potentially leading to more effective implementation of the causation process. Therefore, it is reasonable to assume that the receipt of subsidies by entrepreneurs who employ causation improves firm performance.

In contrast, effectuation is a logic that emphasizes flexibility and control without reliance on forecasting or planning. This logic is fundamentally incompatible with the process of receiving government subsidies.

Some might counter this incompatibility argument by suggesting that ventures can reconcile planning requirements with operational flexibility. Karlsson and Honig (2009) argue that venture firms can maintain execution flexibility while enjoying the benefits of planning by loosely coupling business plans and execution. This concept of loose coupling, a cornerstone of institutional theory, suggests that organizations can achieve ceremonial conformity to institutional demands such as detailed planning requirements for subsidies while preserving flexibility in their actual operations. In the context of government subsidies, this would mean startups create formal business plans to satisfy legitimacy requirements and secure funding, while maintaining entrepreneurial flexibility in day-to-day decision-making. However, considering the structural characteristics of Japan's subsidy system described above, the feasibility of this loose coupling strategy is significantly constrained. The multilayered control mechanisms create an institutional environment that does not tolerate divergence between planning and execution. The strict compliance requirements effectively prevent the decoupling of symbolic planning from actual operations. Therefore, entrepreneurs adopting effectuation face structural constraints in maintaining business flexibility within Japan's subsidy framework.

Another potential counterargument concerns behavioral flexibility. One might argue that if entrepreneurs could flexibly switch between behavioral logics depending on the project, receiving government subsidies would not negatively affect effectuation-based behavior. However, while previous studies (Jiang and Rüling, 2019; Reymen et al., 2015) suggest that entrepreneurs shift behavioral logics depending on their stage of business development, they provide no evidence of concurrent switching between logics for specific projects. Given that effectuation and causation are processes with different starting and ending points, it is more plausible to assume that entrepreneurs transition between these behavioral logics in response to changes in the external environment over time, rather than switching between them flexibly and concurrently based on specific projects. Accordingly, receiving government subsidies during the phase of effectuation would require entrepreneurs to act predictably and systematically for certain projects, which may reduce the outcomes associated with effectuation. In other words, it is reasonable to assume that, for entrepreneurs who employ effectuation, the receipt of subsidies decreases firm performance.

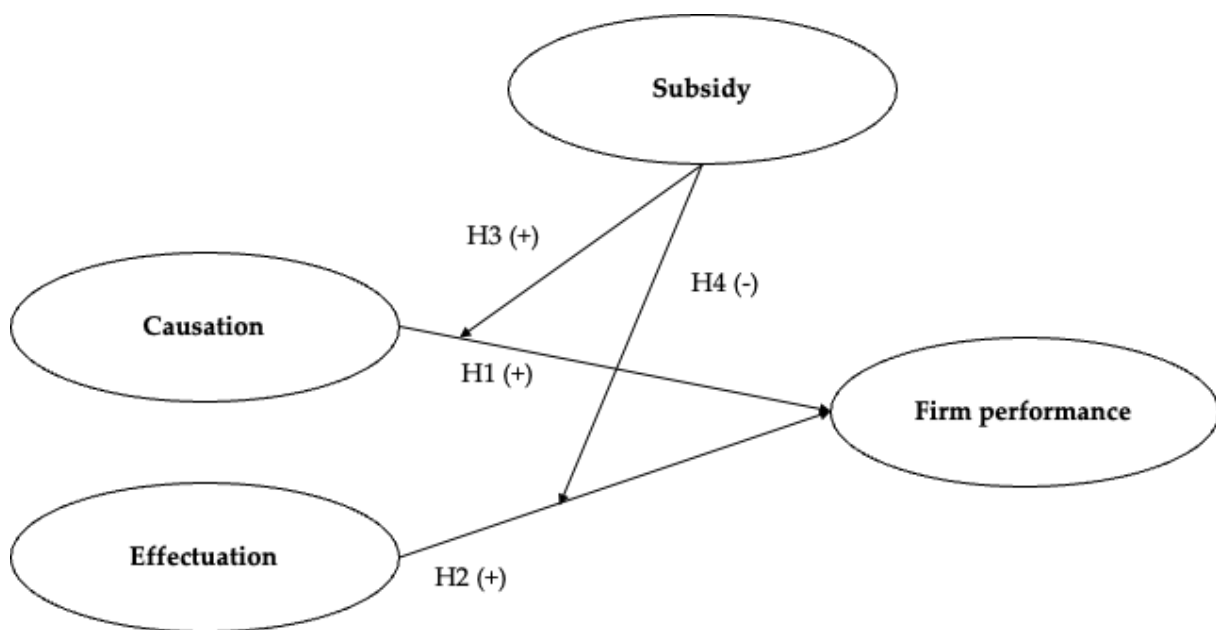
Based on this analysis of the structural compatibility between behavioral logics and subsidy requirements, we propose the following hypotheses.

Hypothesis 3: Receiving government subsidies positively moderates the relationship between entrepreneurial behavior based on causation and firm performance (the interaction between causation and subsidies positively affects firm performance).

Hypothesis 4: Receiving government subsidies negatively moderates the relationship between entrepreneurial behavior based on effectuation and firm performance (the interaction between effectuation and subsidies negatively affects firm performance).

The research model incorporating Hypotheses 1 through 4 is presented in Figure 1.

Figure 1: Research model



4. Methods

4.1. Samples

To test the hypotheses, we analyzed data from a sample of 300 Japanese founder-executives whose firms were less than 10 years old. The data were collected via an online survey administered from November 29 to December 2, 2024, using INTAGE's online panel. Specifically, we leveraged the "Business Personnel Panel," targeting respondents who reported their job title as "executive" and a firm size of 2–99

employees. This initial criterion yielded 16,935 potential participants. We restricted participation to founder-executives (owner-managers) through screening questions in the survey. Eligibility required that respondents (i) be the founder of the firm they currently manage and (ii) have established their firm in or after January 2015. Founders with various executive titles were included. Sole proprietors were excluded through the firm size criterion. Although startups are often defined as firms established within six to eight years (Cefis & Marsili, 2011), Japanese startup subsidy programs—such as NEDO's Deep Tech Startup Support Program—commonly target firms operating for less than 10 years. We adopted this 10-year threshold to align with Japanese policy practice. Of the 16,935 potential participants, 43% responded. After screening for founder status and firm establishment year, 398 respondents completed the full questionnaire. To address response set bias, we removed 96 cases that provided identical responses across all items of the seven-point causation and effectuation scales, leaving 302 cases. Finally, we identified outliers by estimating the regression models and computing standardized residuals. Two observations with absolute standardized residuals exceeding 3 were excluded. The final analytic sample comprised 300 respondents.

4.2. Variables

4.2.1. Dependent variables: Firm performance

According to previous studies, interpreting firm performance using objective measures in new ventures is challenging (Chandler and Hanks, 1993). Moreover, it has been demonstrated that objective and subjective evaluations of firm performance are highly correlated (Stam and Elfring, 2008), and subjective evaluations can serve as reliable performance indicators (Dess and Robinson, 1984). Indeed, subjective evaluations have been widely employed in previous studies on effectuation to measure firm performance (Cowden et al., 2023; Peng et al., 2020; Shirokova et al., 2021; Smolka et al., 2018). Based on these findings, this study measured firm performance using subjective ratings provided by survey respondents.

Specifically, drawing on the aforementioned studies, we measured three dimensions of firm performance—growth in sales, growth in profit, and growth in market share—relative to competitors, using a 7-point Likert scale ("1" = "very poor" to "7" = "very good"). The specific items are listed in the Appendix at the end of this paper. To minimize order bias, the order of the items presented to respondents was randomized. Cronbach's alpha was calculated to assess the internal consistency of the performance indicators. According to Nunnally (1978), a Cronbach's alpha of at least

0.7 is the minimum criterion for a reliable scale. The three items—growth in sales, growth in profit, and growth in market share—yielded a Cronbach's alpha of 0.8841. This indicates a high level of internal consistency. Consequently, the average score of these three items was calculated and used as the measure of firm performance.

4.2.2. Independent variables

4.2.2.1. Effectuation and Causation

In this study, we focus on the series of decision-making processes in firms established within the past 10 years, under the assumption that entrepreneurs utilize both effectuation and causation. Many previous studies investigating the relationship between entrepreneurial behavioral logics and firm performance in newly established firms (e.g., Cowden et al., 2023; Laskovaia et al., 2017; Peng et al., 2020; Shirokova et al., 2021; Smolka et al., 2018) have employed the measurement scale developed by Chandler et al. (2011). Following this approach, we also measured entrepreneurial behaviors based on effectuation and causation using Chandler et al.'s (2011) scale. Respondents were asked to rate their decisions with statements regarding management decisions since the firm's establishment, using a 7-point Likert scale ("1" = "strongly disagree," "7" = "strongly agree"). The specific items are listed in the Appendix at the end of this paper. To mitigate order bias, the sequence of questions within each category was randomized for causation, and for effectuation, both the sequence of categories and the questions within each category were randomized.

According to Chandler et al. (2011), causation is conceptualized as a unidimensional construct, while effectuation is regarded as a formative construct comprising three dimensions: experimentation, affordable loss, and flexibility, along with pre-commitments, which is shared with causation. The reliability of the scales was assessed using Cronbach's alpha: causation (7 items) yielded an alpha of 0.9035, while for effectuation, experimentation (3 items) had an alpha of 0.6497, affordable loss (3 items) was 0.8799, flexibility (4 items) was 0.8558, and pre-commitments (2 items) was 0.8349.

Since Chandler et al. (2011), empirical studies on effectuation have differed in whether pre-commitments is included as a dimension of effectuation (e.g., Cowden et al., 2023; Smolka et al., 2018) or excluded (e.g., Laskovaia et al., 2017; Peng et al., 2020; Shirokova et al., 2021). Although experimentation should theoretically be included as well, its Cronbach's alpha in this study fell below 0.7, raising concerns about reliability. Consequently, confirmatory factor analysis (CFA) with structural equation modeling (SEM) was conducted to validate the constructs of effectuation and causation. Drawing

on both theoretical and empirical considerations, effectuation and causation were regarded as independent two-dimensional constructs. The effectuation construct was then tested in four configurations:

- Model 1: effectuation comprises two dimensions: affordable loss and flexibility (excluding experimentation and pre-commitments).
- Model 2: effectuation comprises three dimensions: affordable loss, flexibility, and pre-commitments (excluding experimentation).
- Model 3: effectuation comprises three dimensions: experimentation, affordable loss, and flexibility (excluding pre-commitments).
- Model 4: effectuation comprises four dimensions: experimentation, affordable loss, flexibility, and pre-commitments.

The goodness-of-fit indices for these models are presented in Table 1. Previous studies (e.g., Bentler & Bonett, 1980; Hu & Bentler, 1998; Hu & Bentler, 1999) suggest that CFI and TLI values exceeding 0.90 (or 0.95 for stricter criteria) indicate good model fit, while RMSEA values below 0.05 represent a good fit, and those between 0.05 and 0.10 are acceptable. Similarly, SRMR values below 0.08 are considered good (Hu & Bentler, 1998), and values below 0.10 are acceptable (Kline, 2023). Comparison of the four models revealed that Models 1 and 2 exhibited better fit, with minimal differences in goodness-of-fit indices. Considering the theoretical consistency proposed by Chandler et al. (2011), Model 2, which includes pre-commitments, was deemed the most appropriate. Consequently, this study adopts a model where effectuation comprises three dimensions—affordable loss, flexibility, and pre-commitments—and treats effectuation and causation as two independent constructs.

Table 1: Goodness-of-fit indices for each model with respect to the constructs of effectuation and causation

Model	χ^2	DF	χ^2/DF	CFI	TLI	RMSEA	SRMR
Model 1	190.334	74	2.572	0.954	0.944	0.073	0.046
Model 2	237.363	100	2.374	0.953	0.944	0.068	0.046
Model 3	-	-	-	-	-	-	-
Model 4	410.756	147	2.794	0.921	0.908	0.077	0.059

*Model 3 is nonconvergent

Based on previous studies (Cowden et al., 2023; Smolka et al., 2018), which utilized the mean of all items comprising effectuation as the effectuation score, this study also

employed the mean score of nine items from the three dimensions of affordable loss, flexibility, and pre-commitments to represent the effectuation score. Cronbach's alpha was calculated for these items, yielding a value of $\alpha = 0.8969$, which indicates strong internal consistency. To address multicollinearity among the independent variables in the interaction terms, we mean-centered the effectuation and causation variables by subtracting their respective mean values prior to analysis.

4.2.2.2. Government subsidies

In this analysis, we distinguished between ordinary subsidies (those unrelated to COVID-19) and COVID-19 specific subsidies. This distinction was necessary because the survey period overlapped with the distribution of COVID-19 subsidies. For our study, only ordinary subsidies were included, represented as a dummy variable indicating whether a firm received government subsidies. Table 2 provides an overview of receipt of subsidies in the sample. Of the 300 firms, 97 (32.3%) received COVID-19 subsidies, and 40 (13.3%) received ordinary subsidies, 23 (7.7%) received both types, and 186 firms (62.0%) did not receive any subsidies.

Table 2: Receipt or non-receipt of subsidies

	COVID-19 subsidies		
Ordinary subsidies	Non-receipt	Receipt	Total
Non-receipt	186(62%)	74(24.6%)	260(86.6%)
Receipt	17(5.7%)	23(7.7%)	40(13.3%)
Total	203(67.7%)	97(32.3%)	300(100%)

The distinction between ordinary subsidies and COVID-19 subsidies is significant because their objectives differ. COVID-19 subsidies target businesses that experienced temporary revenue declines or required employment adjustments, aiming to support business continuity or maintain employment. In contrast, ordinary subsidies primarily focus on promoting business growth. In this survey, we used an optional entry method to identify the names of the subsidies and found that Subsidy Program for Sustaining Businesses and Employment Adjustment Subsidy were utilized as COVID-19 subsidies. The Subsidy Program for Sustaining Businesses supports firms whose sales have decreased by 50% or more compared to the same month of the previous year, while the Employment Adjustment Subsidy (under the COVID-19 special measure) helps firms that have been forced to reduce operations maintain employee employment. By contrast, we confirmed the use of a manufacturing subsidy (a subsidy for promoting productivity improvements in manufacturing, commerce, and services) as an ordinary

subsidy. This subsidy is designed to support SME's capital investments, fostering business growth through productivity enhancement.

As shown in Table3, we compared the performance of firms under each subsidy category in our sample. Although statistical tests did not reveal significant differences likely due to the small sample size, firms that received only COVID-19 subsidies had a lower average relative performance value compared to firms that received only ordinary subsidies. This finding suggests potential differences in the nature and effect of COVID-19 subsidies compared to ordinary subsidies.

Table3: Comparison of firm performance by subsidies receipt pattern

Receipt Pattern of Subsidies	Number of observations	Average firm performance	Standard deviation	Minimum firm Performance	Maximum firm performance
No subsidies	186	4.19	0.985	2	7
Ordinary subsidies × No COVID-19 subsidies	17	4.235	1.632	1.667	7
No ordinary subsidies × COVID-19 subsidies	74	3.95	1.153	1	6.333
Both subsidies	23	4	1.333	1.333	6.333

Based on the above, in this study, we determined that it is necessary to make a distinction between COVID-19 subsidies for business continuity and ordinary subsidies for business growth. Therefore, in this study, only the ordinary subsidies are used as explanatory variables, and COVID-19 subsidies are added to the model as a control variable to control for their effects.

The supplemental analysis of the overall status of subsidies receipt is summarized in Tables 4 through 6, and figure 2 and 3². Table 4 presents the period between the start of business and the most recent receipt of subsidies. Tables 5 illustrates the relationship between the year of establishment and the year of the most recent receipt of subsidies. Figures 2 and 3 depict the usage of the subsidies.

² In the questionnaire survey, we also examined how the subsidies were used— categorized as capital investment and service development, employment and recruitment, sales and marketing, PoC, R&D, IP, and others— and recorded the date of the most recent receipt. We then analyzed these findings accordingly.

Table 4: Years from firm establishment to the receipt of most recent subsidies

	Mean	Standard deviation	Min	Max
Ordinary subsidies	2.592	2.082	0.083	7.083
COVID-19 related subsidies	2.703	1.741	0.083	7.333

Table 5: Relationship between year of firm establishment and year of the most recent receipt of subsidies³

Firm established	Most recent receipt of subsidies															
	2017		2019		2020		2021		2022		2023		2024		Total	
	Ordinary	COVID-19	Ordinary	COVID-19	Ordinary	COVID-19	Ordinary	COVID-19	Ordinary	COVID-19	Ordinary	COVID-19	Ordinary	COVID-19	Ordinary	COVID-19
2015	0	-	0	-	1	11	3	1	0	1	0	0	0	-	4	14
2016	1	-	0	-	1	3	0	3	0	1	1	0	0	-	4	9
2017	0	-	2	-	2	8	1	2	0	1	0	0	1	-	6	15
2018	0	-	1	-	1	4	0	7	1	3	1	0	0	-	4	15
2019	0	-	0	-	3	8	1	7	2	2	0	0	0	-	6	18
2020	0	-	0	-	2	5	1	4	1	4	1	1	0	-	5	15
2021	0	-	0	-	0	0	1	2	0	2	1	1	0	-	2	6
2022	0	-	0	-	0	0	0	0	2	0	3	1	0	-	7	2
2023	0	-	0	-	0	0	0	0	0	0	1	3	1	-	2	3
Total	1	-	3	-	10	39	7	26	6	14	8	6	2	-	37	97

³ Some respondents reported receiving COVID-19 subsidies before 2019—i.e., prior to the establishment of those subsidies. Others reported receiving subsidies before the firm was even established. While it is technically possible to receive subsidies before the start of business, the timing in some responses deviated from the actual start of business. Consequently, we uniformly treated the reported subsidy receipt time (year and month) as missing values in cases where COVID-19 subsidies were reportedly received in 2019 or where subsidies were reportedly received before the firm's establishment (Table 5).

Figure 2: Usage of ordinary subsidies

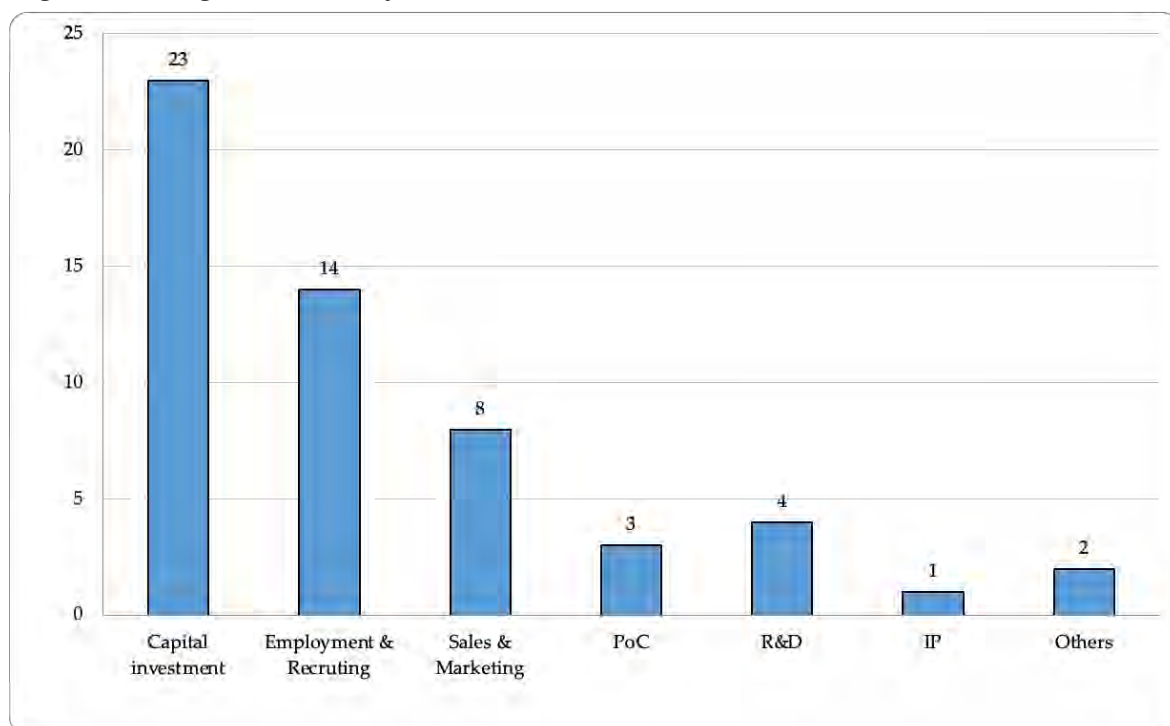
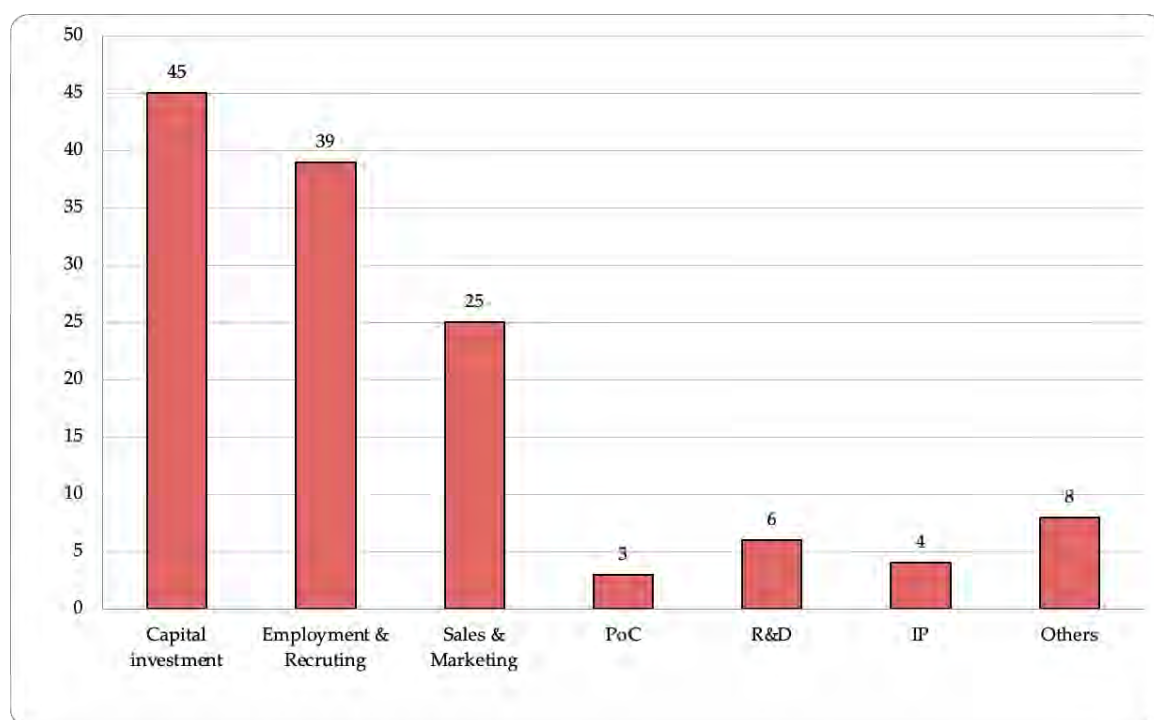


Figure 3: Usage of COVID-19 subsidies



4.2.3. Control variables

To control for variables affecting firm performance, we adopted three categories of control variables based on previous studies that examined the relationship between

entrepreneurial behavioral logic (effectuation and causation) and firm performance (e.g., Laskovaia et al. 2017; Smolka et al. 2018).

The first group is entrepreneurial characteristics, which includes age, gender (dummy variable; female = 1), education level, prior entrepreneurial experience (dummy variable), relevant work experience (dummy variable), and team size (number of co-founders). Based on a previous study (Cowden et al. 2023), the education level was categorized into five levels: "1" = "Less than high school," "2" = "High school or vocational school graduate," "3" = "University graduate (bachelor's degree)," "4" = "Graduate school graduate (master's degree)," "5" = "Doctoral degree."

The second group is firm characteristics, which includes firm age, firm size (number of employees), and industry classification. Firm age was calculated by calculating the period from the date of establishment to November 2024 (as of the time of the survey). Firm size was defined as the sum of the number of full-time directors and full-time employees as of November 2024. The number of employees ranged from a minimum of 2 to a maximum of 90, with a mean of 6.8 and a standard deviation of 12.2. Given this wide variation, logarithmic transformation was applied to the data, following previous studies (Laskovaia et al. 2017; Shirokova et al. 2021). As for the industry classification, this study followed the definition of SMEs provided by the Small and Medium Enterprise Agency, which categorizes SMEs into four groups: manufacturing and others, wholesale, retail, and services. Based on this classification, firms in this study were grouped into three categories: (1) Manufacturing and others (dummy variable), (2) Wholesale and retail (dummy variable), (3) Service (dummy variable). We combined wholesale and retail into one category because the dataset did not differentiate between these two categories.

The third is external environment. It includes environmental uncertainty, measured using six items adapted from McKelvie, Haynie, and Gustavsson (2011). These items assess perceptions of uncertainty regarding changes in demand and technology. Respondents rated each item on a five-point Likert scale ("1" = "Strongly disagree" to "5" = "Strongly agree"). The reliability of these six items was evaluated, resulting in a Cronbach's alpha of 0.7474, indicating acceptable internal consistency.

In addition to these variables, this study also includes variables potentially associated with the receipt of government subsidies as control variables. Specifically, in addition to the aforementioned receipt of COVID-19 subsidies (dummy variable), the following variables were included:

- External financing: A dummy variable indicating whether the firm had received funding from venture capital, corporate venture capital, or angel investors.

- Business startup support utilization: A dummy variable indicating whether the firm utilized business startup related loan and guarantee programs from institutions such as the Japan Finance Corporation, Credit Guarantee Associations, or local governments.
- Public institutions customers: A dummy variable indicating whether the firm has customers from public entities, including government agencies, local governments, national research and development corporations, and other public institutions.

4.2.4. Common method variance (CMV) test

This study relies on self-reported measures for key constructs (causation, effectuation, firm performance, and environmental uncertainty) obtained from the same respondents. As a result, systematic errors caused by the measurement method may artificially inflate correlations between variables. To address this potential issue, we controlled for common method variance (CMV) by employing procedural controls and statistical tests based on previous studies (Peng et al., 2020; Shirokova et al., 2021; Podsakoff, MacKenzie, & Podsakoff, 2012).

For procedural controls, the order of individual questions within each construct was randomized. Additionally, for effectuation, the sequence of the four sub-dimensions (experimentation, affordable loss, flexibility, and pre-commitments) was also randomized. Furthermore, to prevent causal relationships from being implied among the questions, items were not arranged in the order of independent variables, dependent variables, and control variables.

Following Podsakoff et al. (2003), we conducted Harman's single-factor test to assess common-method bias. An exploratory factor analysis using the unrotated Principal Component Method (PCM) was performed on all construct items included in the model. Five distinct factors with eigenvalues greater than 1 were extracted. The cumulative variance explained by these five factors was 64.38%, while the first factor accounted for 37.55% of the total variance, which is below the 40% threshold suggested by Malhotra, Kim, and Patil (2006). Furthermore, as part of confirmatory factor analysis, we compared a one-factor model, where all items are linked to a single construct, with a four-factor model comprising causation, effectuation, firm performance, and environmental uncertainty. The one-factor model ($\chi^2 = 1706.653$; $DF = 275$; $\chi^2/DF = 6.21$; $RMSEA = 0.132$; $CFI = 0.649$; $TLI = 0.617$; $SRMR = 0.099$) demonstrated significantly poorer fit compared to the four-factor model ($\chi^2 = 797.995$; $DF = 269$; $\chi^2/DF = 2.97$; $RMSEA = 0.081$; $CFI = 0.870$; $TLI = 0.855$; $SRMR = 0.068$).

Based on these findings, we conclude that common method variance bias does not pose a concern in this study.

5. Results

5.1. Descriptive statistics and correlation matrix

The descriptive statistical table is presented in Table 6. A Shapiro-Wilk normality test was performed on both the dependent and explanatory variables. For the dependent variable, the test yielded a p-value > 0.05 , indicating that it could not be determined as non-normally distributed; therefore, it was concluded to follow a normal distribution. Conversely, for the explanatory variables, the p-values were < 0.05 , suggesting they did not follow a normal distribution. Since the explanatory variables were not normally distributed, Spearman's rank correlation coefficient, a nonparametric approach, was calculated. The results are summarized in Table 7. The correlation coefficient between causation and effectuation was found to be 0.7, which is consistent with a previous study (Smolka et al., 2018) that reported a positive correlation between the constructs of causation and effectuation.

Table 6: Descriptive statistics of variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Firm performance	300	4.119	1.1	1	7
Causation	300	4.408	.939	1	6.857
Effectuation	300	4.476	.856	1.4	7
Subsidy dummy	300	.133	.341	0	1
Age	300	51.997	8.478	27	65
Gender dummy: Female	300	.123	.329	0	1
Education	300	2.593	.819	1	5
Entrepreneurial experience dummy	300	.237	.426	0	1
Relevant work experience dummy	300	.697	.46	0	1
Number of co-founders	300	.927	1.076	0	6
Firm age	300	4.701	2.619	.333	9.833
Number of employees (log)	300	.601	.367	.301	1.954
Environmental uncertainty	300	3.155	.482	1	4.833
COVID-19 subsidy dummy	300	.323	.469	0	1
External financing dummy	300	.067	.25	0	1
Business startup support dummy	300	.313	.465	0	1
Public institutions customers dummy	300	.147	.354	0	1

Retail & wholesale industry dummy	300	.13	.337	0	1
Service industry dummy	300	.627	.484	0	1
Manufacturing & other industry dummy	300	.243	.43	0	1

Table 7: Correlation matrix

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
(1) Firm performance	1.00																			
(2) Causation	0.46	1.00																		
(3) Effectuation	0.46	0.70	1.00																	
(4) Subsidy	-0.00	0.05	0.11	1.00																
(5) Age	-0.24	-0.12	-0.11	0.01	1.00															
(6) Gender: Female	0.02	-0.04	-0.04	0.00	-0.09	1.00														
(7) Education	-0.11	0.04	0.11	0.05	0.05	-0.11	1.00													
(8) Entrepreneurial experience	0.08	0.07	0.04	0.08	0.08	-0.09	-0.03	1.00												
(9) Relevant work experience	0.00	0.08	0.12	0.05	-0.08	-0.17	0.08	0.03	1.00											
(10) Number of co-founders	-0.05	0.04	-0.03	0.15	-0.03	0.13	-0.10	0.10	-0.04	1.00										
(11) Firm age	-0.16	-0.14	-0.11	0.14	0.09	0.04	0.05	0.04	-0.06	-0.06	1.00									
(12) Employees	0.17	0.21	0.22	0.12	0.02	-0.11	0.00	0.18	0.02	0.08	0.19	1.00								
(13)	0.03	0.20	0.29	0.03	-0.00	-0.08	0.11	0.02	0.00	-0.08	0.02	0.13	1.00							
Environmental Uncertainty																				
(14) COVID-19 subsidy	-0.07	-0.06	-0.05	0.21	-0.05	-0.02	-0.00	0.03	-0.02	0.01	0.43	0.12	0.09	1.00						
(15) External financing	0.09	0.06	0.07	0.21	-0.06	-0.02	-0.06	0.17	0.12	0.10	0.04	0.24	0.15	0.04	1.00					
(16) Business startup support	0.04	0.04	0.05	0.22	-0.05	-0.01	-0.07	0.06	0.12	-0.00	0.05	0.08	-0.05	0.21	0.25	1.00				
(17) Public institutions customers	0.14	0.11	0.14	0.20	-0.04	-0.07	0.01	0.04	0.09	0.03	-0.11	0.13	0.11	0.02	0.19	0.09	1.00			
(18) Retail & wholesale	-0.00	0.05	-0.02	0.05	0.12	-0.14	-0.01	0.09	-0.03	-0.11	0.05	0.05	0.06	-0.01	-0.02	0.08	0.06	1.00		

(19) Service	0.05-0.01	0.05-0.04-0.01	0.16	0.12-0.09	0.02-0.00-0.07-0.16	0.01-0.04-0.04-0.03-0.09-0.50	1.00			
(20)	-0.06-0.03-0.04	0.01-0.09-0.07-0.13	0.03	0.00	0.09	0.04	0.14-0.06	0.06	0.07-0.03	0.05-0.22-0.731.00
Manufacturing										
& others										

Spearman's rank correlation coefficient = -0.73

5.2. Regression analysis

To test the hypotheses, regression analysis using the Ordinary Least Squares (OLS) method was conducted, following the previous studies (Laskovaia et al., 2017; Peng et al., 2020). The analysis was carried out using Stata MP18.0, and the results are presented in Table 8. Model 1 serves as the baseline model, containing only control variables. Model 2 expands upon this by adding the explanatory variables, namely causation, effectuation, and subsidy. Model 3 further incorporates interaction terms: one between causation and subsidy, and the other between effectuation and subsidy.

The test of heterogeneity of variance of errors for models 1 through 3 showed that the p-values for all models were much higher than 0.05 for the null hypothesis that the variance is uniform, and thus the variance can be interpreted as being uniform. The Shapiro-Wilk normality test was used to test the normal distribution of the errors. The p-values for all models were significantly greater than 0.05 for the null hypothesis that the errors were normally distributed, and thus the errors were considered to be normally distributed. The VIF (Variance Inflation Factor) values were calculated to determine the presence of multicollinearity. Since the maximum VIF value for all models were well below the threshold of 4, it was concluded that multicollinearity was not observed.

Hypotheses 1 and 2 propose that causation and effectuation are positively associated with firm performance. Models 2 and 3 confirm statistically significant positive relationships for both constructs. In Model 2, both causation and effectuation are significant at the 1% level. In Model 3, causation remains significant at the 5% level, while effectuation continues to be significant at the 1% level. Therefore, Hypotheses 1 and 2 are supported.

Hypothesis 3 assumes that the interaction between causation and subsidy is positively associated with firm performance. Model 3 shows that the interaction between causation and subsidy was statistically significant and positively associated with firm performance at the 1% level. Hypothesis 4 assumes that the interaction between effectuation and subsidy is negatively associated with firm performance.

Model 3 shows that the interaction between effectuation and subsidy was found to be statistically significant and negatively associated with firm performance at the 5% level. Therefore, hypotheses 3 and 4 are supported.

The interaction effects are visualized in Figures 4 and 5. Specifically, for the interaction between effectuation and subsidy, Model 3 showed that the coefficient for effectuation alone was 0.422, while the coefficient for the interaction term between effectuation and subsidy was -0.562. These findings indicate that, for entrepreneurs who did not receive subsidies, entrepreneurial behavior based on effectuation positively affected firm performance. For instance, a one-unit increase in effectuation from its mean value improved firm performance by 0.422. However, for entrepreneurs who received subsidies, entrepreneurial behavior based on effectuation negatively affected firm performance, reducing it by 0.14 (calculated as 0.422 minus 0.562) for a one-unit increase in effectuation from the mean.

The results also revealed that subsidy alone was not statistically significant, suggesting that subsidies by themselves do not directly affect firm performance. This finding is consistent with previous studies, including those by Sekizawa et al. (2020), Inoue and Yamaguchi (2017), and Suzuki (2017), which similarly concluded that subsidies do not have a significant effect on firm performance.

Regarding the control variables, several variables were statistically significant. Age exhibited a negative but very small coefficient, ranging between -0.02 and -0.03, indicating that its effect on firm performance is negligible. This finding aligns with previous studies, such as Smolka et al. (2018), which also reported a negative relationship between age and firm performance. Education level, on the other hand, had a statistically significant negative coefficient, suggesting that higher education levels are associated with lower firm performance. This counterintuitive result may be explained by factors such as the type and quality of education, as highlighted in a meta-analysis by Unger et al. (2011), which suggests that the effectiveness of education varies depending on its characteristics. It is also possible that specific aspects of education, not accounted for in the sample used in this study, may have adversely influenced the relationship between education level and firm performance. Firm age also showed a statistically significant negative coefficient in Model 1 and 3, though the magnitude of the effect was relatively small, ranging from -0.04 to -0.07. Finally, environmental uncertainty exhibited a statistically significant negative coefficient in Models 2 and 3, reflecting the generally understood notion that higher environmental uncertainty tends to negatively affect firm performance.

Table 8: Results of regression analysis (N=300)

Variables	Firm performance		
	Model 1	Model 2	Model 3
	Control	Explanatory	Interaction
	Variables model	variables main effect model	model
Causation		0.301*** (0.0863)	0.204** (0.0894)
Subsidy dummy		-0.143 (0.171)	-0.173 (0.171)
Subsidy dummy × Causation			1.183*** (0.304)
Effectuation		0.361*** (0.0961)	0.422*** (0.102)
Subsidy dummy × Effectuation			-0.562** (0.259)
Age	-0.0307*** (0.00737)	-0.0227*** (0.00659)	-0.0231*** (0.00647)
Gender dummy: Female	0.0676 (0.196)	-0.00182 (0.174)	-0.0351 (0.170)
Education	-0.143* (0.0763)	-0.162** (0.0679)	-0.180*** (0.0667)
Entrepreneurial experience dummy	0.127 (0.147)	0.0782 (0.130)	0.0795 (0.128)
Relevant work experience dummy	-0.0576 (0.135)	-0.169 (0.120)	-0.209* (0.118)
Number of co-founders (team size)	-0.0903 (0.0594)	-0.0700 (0.0532)	-0.0807 (0.0521)
Firm age	-0.0674** (0.0265)	-0.0390 (0.0238)	-0.0439* (0.0233)
Number of employees (log)	0.572*** (0.186)	0.193 (0.170)	0.139 (0.167)
Environmental uncertainty	0.0810 (0.134)	-0.278** (0.125)	-0.245** (0.122)
COVID-19 Subsidy dummy	-0.151 (0.146)	-0.0608 (0.131)	-0.0453 (0.128)
External financing dummy	0.0265 (0.271)	0.267 (0.243)	0.214 (0.240)

Business startup support dummy	0.0263 (0.140)	-0.0787 (0.126)	-0.0607 (0.123)
Public institutions customers dummy	0.219 (0.178)	0.167 (0.160)	0.258 (0.158)
Retail & wholesale industry dummy	-	-	0.0888 (0.187)
Service industry dummy	0.0791 (0.190)	0.0874 (0.169)	0.152 (0.130)
Manufacturing & other industry dummy	-0.172 (0.214)	-0.0833 (0.191)	-
Constant	5.885*** (0.656)	6.816*** (0.591)	6.785*** (0.545)
Observations	300	300	300
R-squared	0.156	0.345	0.380

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: The variables of causation and effectuation used in the interaction terms have been centered.

Figure 4: Interaction effect between causation and subsidy

Figure 5: Interaction effect between effectuation and subsidy

5.3. Robustness test

To address potential endogeneity issues, a robustness test was conducted using propensity score matching (PSM), following a previous study (Cowden et al., 2023). The analysis involved comparing a treatment group, comprising firms that received subsidies, with a control group, comprising firms that did not receive subsidies. The PSM ensured that the treatment and control groups were matched on key characteristics, including age, gender, education level, prior entrepreneurial experience, relevant work experience, team size, firm age, firm size, industry classification, environmental uncertainty, receipt of COVID-19 subsidy, external financing, business startup support, and public institutions customers.

Cenzer, Boscardin, and Berger (2020) recommend a 1:1 matching ratio for medium-sized samples ($N = 100\text{--}300$), whereas a 1:5 matching ratio is suggested for small sample sizes ($N = 25\text{--}50$). Because the sample size of firms receiving subsidies was 40, this study applied both 1:1 and 1:5 nearest-neighbor matching methods. Following Cowden et al. (2023), we set the caliper distance to 0.25 times the standard deviation of the propensity score as the selection threshold. After excluding unmatched observations, the final sample sizes were 69 for the 1:1 matching and 143 for the 1:5 matching.

Regression analysis using ordinary least squares (OLS) was conducted, applying weights derived from the propensity score matching. The results of this analysis are presented in Tables 9 and 10. In Model 2 (the main effect model), the coefficients for causation alone were directionally consistent and statistically significant under the 1:5 matching method. However, in Model 3 (the interaction term model), no statistically

significant results for causation were obtained using either the 1:1 or 1:5 matching methods.

In contrast, for effectuation alone and for the interaction terms between the subsidy and either causation or effectuation, the direction of the coefficients remained consistent, and statistical significance was observed under both the 1:1 and 1:5 matching methods. Although effectuation alone and the interaction term between subsidies and effectuation were significant at the 10% level under the 1:1 matching, all other coefficients were significant at either the 5% or 1% levels.

These findings indicate that the conclusions about the effects of subsidies on firm performance differ only in the case of causation for firms that did not receive subsidies. However, the conclusions remain consistent for causation when subsidies were received, effectuation when subsidies were not received, and effectuation when subsidies were received.

Table 9: Regression results after propensity score matching (1:1) (N=69)

Variables	Firm performance		
	Model 1	Model 2	Model 3
	Control	Explanatory	Interaction
	Variables model	variables main effect model	model
Causation		0.485 (0.378)	-0.340 (0.412)
Subsidy dummy		-0.0338 (0.334)	0.0126 (0.284)
Subsidy dummy × Causation			2.002*** (0.545)
Effectuation		0.302 (0.327)	1.284* (0.736)
Subsidy dummy × Effectuation			-1.486* (0.774)
Age	-0.0201 (0.0219)	-0.0268 (0.0212)	-0.0257 (0.0225)
Gender dummy: Female	0.463 (0.664)	0.0549 (0.604)	-0.0339 (0.526)
Education	-0.373* (0.198)	-0.482** (0.201)	-0.496*** (0.175)
Entrepreneurial experience dummy	0.0299	0.0432	0.0421

	(0.353)	(0.338)	(0.291)
Relevant work experience dummy	0.0554	-0.101	-0.377
	(0.472)	(0.439)	(0.398)
Number of co-founders (team size)	-0.156	-0.176	-0.224*
	(0.135)	(0.130)	(0.114)
Firm age	-0.0650	-0.0207	-0.0332
	(0.0695)	(0.0602)	(0.0530)
Number of employees (log)	1.143	0.334	-0.0884
	(0.694)	(0.690)	(0.657)
Environmental uncertainty	-0.0335	-0.509	-0.551
	(0.378)	(0.441)	(0.386)
COVID-19 Subsidy dummy	-0.263	-0.0379	0.0794
	(0.411)	(0.408)	(0.380)
External financing dummy	-0.0621	0.143	0.415
	(0.549)	(0.571)	(0.609)
Business startup support dummy	0.384	0.147	0.136
	(0.384)	(0.385)	(0.361)
Public institutions customers dummy	-0.0235	0.0242	0.219
	(0.412)	(0.403)	(0.385)
Retail & wholesale industry dummy	-	-0.131	-0.231
		(0.525)	(0.507)
Service industry dummy	0.195	-0.138	-0.531
	(0.430)	(0.448)	(0.449)
Manufacturing & other industry dummy	0.316	-	-
	(0.548)		
Constant	5.643***	8.453***	9.204***
	(1.905)	(2.095)	(1.915)
Observations	69	69	69
R-squared	0.287	0.405	0.539

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: The variables of causation and effectuation used in the interaction terms have been centered.

Table 10: Regression results after propensity score matching (1:5) (N=143)

Variables	Firm performance		
	Model 1	Model 2	Model 3
	Control Variables		Interaction model

	model	Explanatory variables main effect model	
Causation		0.534*** (0.534***)	0.00784 (0.193)
Subsidy dummy		-0.0442 (0.216)	-0.106 (0.192)
Subsidy dummy × Causation			1.482*** (0.344)
Effectuation		0.172 (0.194)	0.592** (0.234)
Subsidy dummy × Effectuation			-0.794** (0.325)
Age	-0.0394*** (0.0143)	-0.0333** (0.0145)	-0.0299** (0.0135)
Gender dummy: Female	0.768** (0.381)	0.483 (0.323)	0.269 (0.303)
Education	-0.124 (0.134)	-0.239* (0.125)	-0.317*** (0.110)
Entrepreneurial experience dummy	0.0132 (0.278)	-0.0317 (0.229)	-0.0355 (0.220)
Relevant work experience dummy	-0.205 (0.290)	-0.316 (0.272)	-0.429* (0.243)
Number of co-founders (team size)	-0.133 (0.0960)	-0.150 (0.0910)	-0.164* (0.0826)
Firm age	-0.0486 (0.0551)	-0.0304 (0.0441)	-0.0398 (0.0349)
Number of employees (log)	1.029** (0.399)	0.468 (0.366)	0.282 (0.336)
Environmental uncertainty	-0.158 (0.241)	-0.479** (0.239)	-0.451** (0.222)
COVID-19 Subsidy dummy	-0.271 (0.312)	-0.0361 (0.280)	0.0255 (0.249)
External financing dummy	0.0446 (0.496)	0.180 (0.465)	0.145 (0.424)
Business startup support dummy	0.0715 (0.249)	-0.0253 (0.232)	-0.00209 (0.222)
Public institutions customers dummy	-0.00965	-0.0186	0.206

	(0.281)	(0.265)	(0.254)
Retail & wholesale industry dummy	-0.170	-0.239	-0.270
	(0.389)	(0.363)	(0.326)
Service industry dummy	0.110	-0.0191	-0.193
	(0.310)	(0.301)	(0.292)
Manufacturing & other industry dummy	-	-	-
Constant	6.821***	8.182***	8.458***
	(1.156)	(1.126)	(0.968)
Observations	143	143	143
R-squared	0.297	0.433	0.522

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: The variables of causation and effectuation used in the interaction terms have been centered.

6. Discussion

6.1. Findings

The results of the empirical analysis supported several hypotheses. Specifically, the effects of effectuation alone, as well as the interactions between subsidy and causation and between subsidy and effectuation, remained statistically significant even in robustness tests, strongly supporting Hypotheses 2, 3, and 4. These findings support the theoretical expectation that subsidies influence firm performance through entrepreneurs' behavioral logic.

However, the effect of causation alone (Hypothesis 1) did not yield consistent results across the original model and the robustness test. In the original model, the coefficient for causation was positive and statistically significant, whereas in the robustness test, it was not significant in several models. Therefore, hypothesis 1 cannot be conclusively supported and requires further investigation.

The results of the hypothesis testing are summarized as follows.

- There is no evidence that subsidies alone directly affect firm performance.
- Subsidies influence firm performance differently depending on whether entrepreneurs employ the behavioral logic of causation or effectuation.

- When entrepreneurs who receive subsidies employ causation, it leads to improving firm performance.
- When entrepreneurs who receive subsidies employ effectuation, it results in reducing firm performance.

While the interaction effects are statistically significant, the interpretation that effectuation leads to negative performance outcomes under subsidies should be considered preliminary, as it is based on the specific context and sample of this study. Nevertheless, this study has successfully established that the interaction between subsidies and the entrepreneurs' behavioral logic affects firm performance.

6.2. Contributions

6.2.1. Implications for researchers

This study examines how government subsidies affect the relationship between the behavioral logic of entrepreneurs (i.e., causation and effectuation) and firm performance, challenging three fundamental assumptions in entrepreneurship and policy research. First, it questions the policy evaluation literature's assumption that government subsidies have uniform effects across all recipients, demonstrating instead that behavioral heterogeneity among entrepreneurs leads to divergent outcomes. Second, it challenges the effectuation literature's focus on macro-level institutional environments by showing how specific policy instruments directly shape behavioral logic outcomes. Third, it contradicts the common policy assumption that stricter planning and accountability requirements improve subsidy effectiveness, revealing that such requirements can impair performance for effectuation-oriented entrepreneurs. The primary theoretical contribution lies in integrating two traditionally separate research streams: policy effects (public support and firm performance) and entrepreneurial behavior (behavioral logic and firm performance). For effectuation researchers, this study provides new insights into the paradoxical effects of planning-oriented subsidies: while intended to support entrepreneurship, rigid planning requirements can harm entrepreneurs who rely on iterative flexibility. This suggests that future effectuation research should examine how various micro-level policy interventions influence entrepreneurial behavioral logic. For researchers studying startup firms, our findings highlight the importance of incorporating entrepreneurial behavioral logic alongside traditional factors such as entrepreneur attributes and firm characteristics. This approach enables more nuanced analyses of success factors and opens new directions for evaluating policy effectiveness through the lens of behavioral compatibility rather than merely resource provision. While our

findings emerge from the Japanese context, they raise fundamental questions about subsidy design that warrant comparative research across different institutional settings.

6.2.2. Implications for practitioners

This study also provides implications for both entrepreneurs and policymakers.

Implications for Entrepreneurs: The finding indicate that entrepreneurs should strategically consider the timing of receiving government subsidies, not only based on resource needs but also in light of their behavioral mode of action. Our evidence suggests that the performance impact of subsidies varies depending on behavioral logic—positively for causation-oriented entrepreneurs but negatively for those employing effectuation. While government subsidies are an effective means of resource acquisition, the logic of effectuation emphasizes the expansion of resources through interactions with various stakeholder under conditions of uncertainty— a fundamentally different approach from a planned resource acquisition. In other words, entrepreneurs' decision to receive government subsidies should align with their shifts between effectuation and causation. For instance, in the early stages of customer and market development, entrepreneurs may operate in an effectuation mode, making investment decisions based on affordable losses. Once business goals, markets, and customers become clearly defined, they can transition to a causation mode, seeking business expansion based on forecasts and plans while efficiently acquiring resources through government subsidies.

Implications for Policymakers: For policymakers, the study highlights the potential to design government subsidy programs that accommodate the diverse behavioral logics of entrepreneurs. Based on our findings about the constraining effects of planning requirements, we suggest two specific directions for policy innovation. First, beyond the traditional planning-oriented subsidies targeting capital investments for productivity improvements, there may be opportunities to develop milestone-based micro-grants that do not require detailed ex-ante planning, enabling more exploratory activities by entrepreneurs. Second, policymakers could consider portfolio-based support schemes where entrepreneurs receive funding for multiple small experiments rather than single large projects, allowing for pivots and learning without violating subsidy conditions. While implementing such flexible schemes may face administrative and compliance challenges, pilot programs could demonstrate their feasibility and effectiveness. By offering subsidy options that flexibly respond to different behavioral logics, policymakers can enable more effective entrepreneurial support. Given that our findings emerge from Japan's institutional context characterized by strong planning orientation, the observed tensions between effectuation and subsidy requirements may

be particularly pronounced. Future research should examine whether similar patterns emerge in entrepreneurial ecosystems with different institutional characteristics.

6.3. Limitations

This study has several limitations. First, the findings are situated within Japan's specific institutional context, characterized by strict subsidy regulations that prohibit funding for unplanned expenses and require detailed receipt-based verification before subsidies are paid to firms. While this rigid framework provides a clear setting for examining the tensions between planning-oriented subsidies and effectuation, it may limit the generalizability of our findings. Entrepreneurial ecosystems with more flexible subsidy administration might exhibit different patterns of interaction between behavioral logics and policy interventions.

Second, the boundary conditions under which the findings are applicable to different types of entrepreneurs remain unclear. Entrepreneurs can be broadly categorized into bootstrap entrepreneurs, who start and run businesses using their own capital, and VC-backed startups, which rely on external funding from venture capital firms (Higashide, 2023). Moreover, the behavioral logic of entrepreneurs and their decisions regarding whether to receive government subsidies are likely to differ between R&D-intensive startups and non-R&D startups. In this study, we focused on general managers of self-established firms operating for fewer than 10 years, without considering such variations in startup types or firm characteristics. Future research should thus clarify the conditions under which the present findings hold.

Third, while this study distinguishes between ordinary subsidies and COVID-19 subsidies, it does not examine other important differences in how subsidies can be utilized. Different subsidy programs may come with unique conditions that could influence entrepreneurial behavior and firm performance. Future studies should investigate these differences in more detail—for instance, by examining the specific purposes for which subsidies are intended and the eligibility criteria they require—to better understand how particular policy interventions interact with entrepreneurial decision-making processes.

Forth, while this study examines entrepreneurial behavior throughout the entire venture creation process, it does not analyze the underlying mechanisms that drive shifts between effectuation and causation, nor how government subsidies influence firm performance via these behavioral logics. We treated effectuation as a system of variables and tested hypotheses based on observed patterns. Future research should

investigate the mechanisms by which government subsidies interact with entrepreneurial behavioral logics to affect firm performance.

Finally, there are challenges with the measurement scale for effectuation. In this study, the internal consistency of the experimentation construct did not align well with its theoretical definition. Although the Chandler et al. (2011) scale was translated as closely as possible to the original text, some translation nuances may have led to differences in the interpretation of the questions. Additionally, criticisms have been raised that the Chandler et al. (2011) scale does not fully align with Sarasvathy's (2001) original conceptualization. Future research should incorporate these discussions and validate effectuation models that are applicable across different contexts, including Japan, where this study is focused.

7. Conclusion

This study investigated the effect of government subsidies on the relationship between entrepreneurial behavioral logic (effectuation and causation) and firm performance. The analysis revealed that government subsidies alone do not significantly affect firm performance. However, they do influence how entrepreneurial behavioral logic affects firm performance. Specifically, when entrepreneurs receiving government subsidies employ causation, firm performance improves. In contrast, when they employ effectuation, firm performance declines.

These findings indicate that the effectiveness of government subsidies varies according to entrepreneurial behavioral logic in play. This study provides a novel integrated perspective by bridging two previously distinct streams of research: policy effects (the relationship between public support and firm performance) and entrepreneurial behavior (the relationship between behavioral logic and firm performance). It contributes to the advancement of entrepreneurship research and offers valuable insights for policymakers to design more effective subsidy programs.

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Appendix

Constructs and items

Constructs	Items
Firm Performance ($\alpha=0.8841$)	Growth in sales
	Growth in profits
	Growth in market share
Causation ($\alpha=0.9035$)	We analyzed long run opportunities and selected what we thought would provide the best returns.
	We developed a strategy to best take advantage of resources and capabilities.
	We designed and planned business strategies.
	We organized and implemented control process to make sure we met objectives.
	We researched and selected target markets and did meaningful competitive analysis.
	We had a clear and consistent vision for where we wanted to end up.
	We designed and planned production and marketing efforts.
Experimentation* ($\alpha=0.6497$)	We experimented with different products and/or business models.
	The product/service that we now provide is substantially different than we first imagined.
	We tried a number of different approaches until we found a business model that worked.
Affordable loss ($\alpha=0.8799$)	We were careful not to commit more resources than we could afford to lose.
	We were careful not to risk more money than we were willing to lose with our initial idea.
	We were careful not to risk so much money that the company would be in real trouble financially if things didn't work out.
Flexibility ($\alpha=0.8558$)	We allowed the business to evolve as opportunities emerged.
	We adapted what we were doing to the resources we had.
	We were flexible and took advantage of opportunities as they arose.

	We avoided courses of action that restricted our flexibility and adaptability.
Pre-commitments ($\alpha=0.8349$)	We used a substantial number of agreements with customers, suppliers and other organizations and people to reduce the amount of uncertainty.
	We used pre-commitments from customers and suppliers as often as possible.
Environmental Uncertainty ($\alpha=0.7474$)	The rate of demand for your product will fluctuate significantly.
	Future technological innovations affecting the viability of the product are likely to be frequent and major, including changes to the underlying technologies related to product usage.
	It is not possible to predict in advance demand changes affecting the viability of the product.
	It is not possible to predict with any certainty the kinds or timing of future technological innovations that will affect the viability of the product.
	It is not possible to foresee the ability of your firm to sustain viability in this product market through further radical and/ or incremental innovations.
	You have no insights as to how your competitors will react in response to your product introduction, and therefore you cannot predict how long your product will enjoy advances before a competitive response erodes profits.

*Item deleted: The product/service that we now provide is essentially the same as originally conceptualized.