Journal of Innovative and Creativity
Journal Homepage: https://joecy.org/index.php/joecy
e-mail: journaljoecy@gmail.com

Faculty of Education
University of Pahlawan Tuanku Tambusai
ISSN 2775-771X (Online)
ISSN 2962-570X **(Printed)**
5 (3) 2025, Page 14563-14572

Industrial Transition at the Border: A Qualitative Inquiry into Workforce Adaptation and Institutional Collaboration in Batam City

Timbul Dompak[1], Karol Teovani Lodan[2], Risman Sarifudin[3]
[1,2] Department of Public Administration, Faculty of Social and Humanities, Universitas Putera Batam, Batam, Indonesia,
[3]Department of Governemnt Studies, Faculty of Social and Politics, Universitas Tompotika Luwuk
Corresponding Author: Dompak, Timbul, e-mail: Timbul.Dompak@puterabatam.ac.id

Published: Desember, 2025

ABSTRAK

Tujuan penelitian ini adalah untuk mengkaji bagaimana Kota Batam—yang terletak di perbatasan internasional Indonesia dan berfungsi sebagai zona industri perdagangan bebas—menavigasi transisi industri yang sedang berlangsung dan bagaimana transformasi ini memengaruhi adaptasi tenaga kerja dan kolaborasi antarlembaga. Penelitian ini juga ingin mengetahui bagaimana lembaga pemerintah, bisnis, dan pusat pelatihan melihat masalah yang muncul ketika pola investasi berubah, otomatisasi terjadi, dan kebutuhan tenaga kerja berubah. Dengan berfokus pada aspek ini, penelitian ini menawarkan wawasan komprehensif tentang dinamika tata kelola yang memengaruhi ketahanan industri di Batam. Bahan dan metode. Penelitian ini menggunakan metodologi studi kasus kualitatif. Data dikumpulkan melalui wawancara mendalam semi-terstruktur dengan pejabat dari instansi pemerintah daerah, perwakilan dari sektor manufaktur dan jasa, instruktur dari sekolah kejuruan, dan pekerja yang sedang menjalani transformasi industri. Hasil. Hasil penelitian menunjukkan tiga tema utama: (1) adaptasi tenaga kerja masih tidak merata karena ketidaksesuaian keterampilan dan kurangnya kesempatan untuk mempelajari keterampilan baru; (2) kolaborasi kelembagaan sulit dilakukan karena koordinasi yang terputus, mandat yang tumpang tindih, dan kebijakan yang tidak selalu sesuai; dan (3) meskipun masalah-masalah ini ada, jaringan informal dan kemitraan lintas sektor yang baru menunjukkan potensi untuk meningkatkan kemampuan Batam dalam beradaptasi selama transisi industri. Kesimpulan. Studi ini menemukan bahwa transformasi industri Batam tidak hanya membutuhkan cara yang lebih baik untuk meningkatkan keterampilan pekerja, tetapi juga cara yang lebih kuat dan lebih formal bagi masyarakat untuk bekerja sama dalam pengambilan keputusan. Untuk membuat perekonomian di wilayah perbatasan lebih tangguh, mendorong peningkatan industri, dan memastikan pertumbuhan jangka panjang, penting untuk memperkuat kerja sama antara lembaga publik, industri, dan pusat pelatihan.

Kata kunci: Kota Batam; Transisi Industri; Adaptasi Tenaga Kerja; Tata Kelola Kolaboratif; Kolaborasi Kelembagaan; Ekonomi Perbatasan

ABSTRACT

The study purpose was to examine how Batam City—located at Indonesia's international border and functioning as a free-trade industrial zone—navigates its ongoing industrial transition and how this transformation influences workforce adaptation and inter-institutional collaboration. The study also wanted to find out how government agencies, businesses, and training centers see the problems that come up when investment patterns change, automation happens, and labor needs change. By concentrating on this aspect, the study offers a comprehensive insight into the governance dynamics influencing industrial resilience in Batam. Materials and methods. This study utilized a qualitative case study methodology. Data were collected via semi-structured in-depth interviews with officials from local government agencies, representatives from the manufacturing and service sectors, instructors from vocational training schools, and workers undergoing industrial transformation. Results. The results show three main themes: (1) workforce adaptation is still uneven because of skill mismatches and a lack of opportunities to learn new skills; (2) institutional collaboration is difficult because of broken coordination, overlapping mandates, and policies that don't always match; and (3) even though these problems exist, new informal networks and partnerships across sectors show promise for improving Batam's ability to adapt during industrial transition. Conclusions. The study finds that Batam's industrial transformation needs not only better ways to improve workers' skills but also stronger and more formal ways for people to work together to make decisions. To make the economy in a border region more resilient, encourage industrial upgrading, and ensure long-term growth, it is important to strengthen cooperation between public institutions, industries, and training centers.

Keywords: Batam City; Industrial Transition; Workforce Adaptation; Collaborative Governance; Institutional Collaboration; Border Economy

© The Author(s). 2025 Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. To view a copy of this licence, visit http://creativecommons.org/licenses/by/4.0

INTRODUCTION

In an economy that is becoming more international, cities near borders are frequently important centers for industrial and economic change. Batam is a strategic island city in Indonesia that is close to Singapore and is part of the Indonesia–Malaysia–Singapore Growth Triangle. It is a good example of this kind of environment. Batam's designation as a free-trade and export zone has traditionally drawn significant manufacturing investment, influencing its labor market and institutional framework (Negara & Hutchinson, 2018). But recent changes in global supply chains, technology, and investor preferences have started a phase of industrial transition that Batam's workers and institutions must adapt to. This study examines the local experience of this transformation, emphasizing workforce adaptation and institutional partnership.

Batam has historically served as an industrial center, encompassing shipbuilding, electronics, and light manufacturing, capitalizing on advantageous investment regulations and its classification as a free-trade zone (FTZ) (Negara & Hutchinson, 2018). Recent statistics from the local statistical bureau indicate that Batam excels in regional economic performance, with its Gross Regional Domestic Product (GRDP) demonstrating contributions from the industrial and trade sectors, underscoring the city's position as an economic gateway (Badan Pusat Statistik Kota Batam, 2024). Moreover, foreign and domestic investment inflows remain significant, demonstrating the city's ongoing appeal to investors (BP Batam Authority, 2025).

Notwithstanding these advantages, economic growth in Batam has recently encountered obstacles. According to Negara and Hutchinson (2018), the conventional foundations of manufacturing have diminished over the last decade; investments have decreased, productivity growth has decelerated, and employment insecurity has escalated. This downturn underscores the need for Batam to diversify its economic base and to upgrade its industrial capabilities — transitions that demand adaptable human capital and effective governance.

A central challenge in Batam's industrial transition is the mismatch between workforce qualifications and evolving industry demands. A study on workforce qualification levels in Batam identifies a worrying trend: many workers possess only basic skills (e.g., traditional welding) insufficient to meet the technical requirements of modern industries, leading to elevated levels of unemployment. Recent data show that the Open Unemployment Rate (TPT) in Batam reached 8.14% (2023), reflecting underutilization of labor and a gap in skills alignment (BPS Batam, 2023; Qualification Levels Study, 2024). This scenario echoes broader concerns across Southeast Asia: as work becomes more complex

and technology-driven, the demand for higher-order skills rises, making traditional low-skilled labor inadequate for supporting sustainable industrial growth (International Labour Organization [ILO], 2018).

The challenge is not merely about increasing the number of skilled workers, but about equipping them with relevant competencies aligned to current industrial standards. As argued by the ILO, a future-skills strategy must consider not only "what skills" are needed, but also "who gets access to training" and whether skills translate into improved employment outcomes (ILO, 2018). For Batam, this implies that reskilling and upskilling programs must be inclusive, accessible, and aligned with the needs of both industry and the broader economy. The industrial transformation in a border-economy scenario such as Batam is not exclusively contingent upon workforce adaptation. The role of institutional coordination among government agencies, vocational training institutes, and private industries is equally crucial in promoting seamless transitions, aligning regulation with economic realities, and assuring sustainable investment. Recent policy reforms embody this ambition: new laws for economic zones, supervised by BP Batam, intend to invigorate investment growth and enhance governance inside the industrial zone (BP Batam, 2025).

However, in practice, stakeholder cooperation remains disjointed. The convergence of institutional mandates, bureaucratic inertia, and the absence of long-term strategic planning frequently obstructs the successful execution of programs designed to enhance workforce development and industrial advancement (Negara & Hutchinson, 2018). In the absence of strong institutional coordination, initiatives for reskilling or vocational training may become misaligned with industry requirements or remain disconnected from policy frameworks. This corresponds with extensive findings in industrial relations research throughout Asia: as labor systems transform due to globalization and technological disruption, institutional change—encompassing governance reform, social dialogue, and multi-stakeholder collaboration—becomes essential (Change and Transformation in Asian Industrial Relations, 2025).

Despite prior research detailing Batam's economic deterioration and emphasizing the necessity for economic diversification (Negara & Hutchinson, 2018), there is a scarcity of empirical studies investigating the evolution of workforce adaptation and institutional collaboration during industrial transition, especially from a qualitative standpoint that reflects the lived experiences of pivotal stakeholders. The majority of current research depends on quantitative economic or production indicators (e.g., export-import rates, GRDP) (Adinda, Yusrizal & Harahap, 2023), whereas a limited number of studies investigate the human and governance aspects that support adaptation.

Furthermore, whereas global literature underscores the significance of skills development and governance within the "future of work" framework (ILO, 2018; Setyadi, 2025), localized case studies in Southeast Asia, particularly in border industrial zones, are scarce. Spatial-spillover research in high-tech clusters (e.g., Wang et al., 2021) indicates that labor mobility and the influx of high-skilled workers can

propel industrial agglomeration; however, these dynamics may differ in peripheral or border cities such as Batam, where institutional contexts and skill-base limitations vary. This study fills a distinct gap by providing a qualitative, stakeholder-focused examination of the on-the-ground experiences of industrial transition: the perceptions and responses of workers to changing demands; the coordination (or lack thereof) between industries and training institutions regarding skills development; and the adaptability (or resistance to change) of governance structures.

This research aims to elucidate the processes, challenges, and potential trajectories of industrial transition in Batam with two interconnected objectives: (1) to comprehend how the local workforce adjusts — or fails to adjust — to evolving industrial requirements; and (2) to analyze how institutional collaboration among government entities, vocational training institutions, and private sectors influences (and is influenced by) that adjustment. This study enhances scholarship on industrial transformation, workforce adaptation, and collaborative governance in border economies. It provides insights that can drive policy and program design, such as directing integrated reskilling initiatives, enhancing cooperation among stakeholders, and aligning institutional mandates with labor market conditions. In a city like Batam, which is pivotal to Indonesia's strategic industrial growth, such insights are essential for guaranteeing that the advantages of industrialization are inclusive, flexible, and sustainable.

METHOD

This study utilized a qualitative case study methodology to investigate the experiences of key stakeholders regarding Batam City's industrial transition and to examine the dynamics of workforce adaptability and institutional collaboration within this border-region economy. The research, conducted in Batam's primary industrial zones under BP Batam—including Muka Kuning, Batu Ampar, and Tanjung Uncang—utilized purposive and snowball sampling to select 30 participants, consisting of government officials, industry representatives, vocational training instructors, and workers directly impacted by industrial changes. Data were gathered via semi-structured in-depth interviews, focus group discussions, and the examination of pertinent policy papers, vocational training curricula, and regional economic data. All interviews and focus group discussions were videotaped with consent and transcribed for analytical purposes. Thematic analysis, utilizing Braun and Clarke's (2006) six-step paradigm, was employed to code and analyze the data, facilitated by NVivo 12 software for dataset management and organization. The study employed Lincoln and Guba's (1985) criteria for trustworthiness by utilizing data triangulation, member checking, comprehensive contextual descriptions, reflexive memoing, and preserving an audit trail of analytical conclusions. Ethical considerations were upheld by obtaining institutional approval, guaranteeing voluntary participation, and anonymizing all identifiable data. The study, as a qualitative inquiry, lacks generalizability but offers profound, contextually rich insights into the governance and workforce difficulties influencing industrial change in Batam City.

FINDING AND DISCUSSION

An NVivo Comparison Diagram was developed to visually examine how different stakeholder groups—government officials, industry representatives, vocational training institutions, and workers—perceive Batam City's industrial transition. The comparison diagram highlights areas of convergence and divergence across four major thematic clusters: (1) Workforce Adaptation Challenges, (2) Institutional Coordination, (3) Training and Skills Development, and (4) Emerging Collaborations.

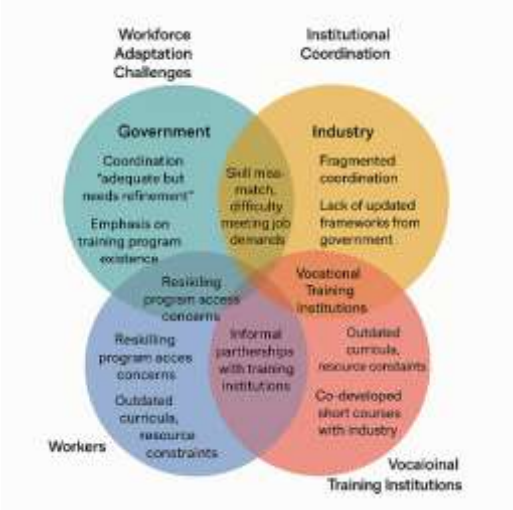


Figure 1. NVivo Comparison Diagram: Stakeholder Perspectives Comparison

Source: Authors (2025)

The NVivo comparison analysis revealed distinct yet overlapping perspectives among government officials, industry actors, vocational training institutions, and workers regarding Batam City's industrial transition. Workers and industry representatives consistently identified skill mismatch and difficulty meeting new technical job demands as the central workforce challenges, aligning with earlier findings by Negara and Hutchinson (2018), who noted that Batam's industries increasingly require digitally oriented competencies that the local labor force struggles to provide. Workers in our study described limited access to reskilling pathways, often citing barriers such as cost, outdated training equipment, and long waiting lists. One worker shared during an interview, "I tried to register for the automation class, but it was full for months, and even when I got in, the tools were old. How can we compete with workers from outside?" Industry representatives echoed this concern, emphasizing that existing training programs fail to match rapidly evolving technological needs. In contrast, government actors tended to view coordination efforts as "adequate but needing refinement," focusing more on the presence of training programs rather than their relevance—an attitude that mirrors the policy-intent gap identified in earlier studies on Indonesian governance and industrial zones (ILO, 2018; Setyadi, 2025). Vocational training institutions expressed a blended perspective: while agreeing with industry on the outdated nature of curricula and resource constraints, they also highlighted their emerging but informal collaborations with companies to co-develop short, targeted training modules. This collaborative tendency corresponds with

findings from regional studies on workforce-industrial partnerships in transitional economies, which suggest that informal networks often precede formal policy alignment (Wang et al., 2021). Overall, the comparison demonstrates that while stakeholders agree on the urgency of skill upgrading, their interpretations of responsibility, readiness, and coordination differ significantly—suggesting that Batam's industrial transformation is not constrained by a lack of awareness, but by an absence of shared strategic alignment across key actors.

Discussion

This study's findings emphasize that Batam City's industrial transition is influenced by workforce preparedness, institutional collaboration, and the development of cooperative behaviors among principal stakeholders. These findings demonstrate that Batam's change cannot be perceived merely as an economic transition, but as a complex governance challenge wherein institutions, policies, training systems, and labor dynamics are intricately interconnected. This section synthesizes empirical findings with pertinent theoretical frameworks—Human Capital Theory, Collaborative Governance Theory, Institutional Theory, and the Adaptive Capacity Framework—while contextualizing them within prior research conducted in Indonesia and other industrializing areas.

Human Capital Theory asserts that the abilities and competencies of workers directly impact productivity, technological advancement, and economic competitiveness. The findings indicate a distinct disparity between Batam's current labor skills and the competencies increasingly required by companies experiencing automation, digitization, and global supply chain integration. Participants in this survey uniformly articulated difficulties in obtaining updated skills, with one respondent remarking, "We desire to learn the new machinery, but the courses are at capacity and the equipment is outdated." We perceive ourselves as neglected. This indicates a discrepancy between labor supply and demand, suggesting that Batam's human capital is not advancing at the necessary rate to support industrial enhancement. This corresponds with ILO (2018) research indicating that regional industrial hubs in Southeast Asia experience a "transition deficit," resulting in workers being inadequately equipped for technological advancements. Negara and Hutchinson (2018) also identified that Batam's industrial standstill is partially attributable to restricted human capital renewal. This study elucidates that workers' challenges stem not just from skill deficiencies but also from structural impediments, including restricted access to training, obsolete equipment, and a deficiency of industry-relevant curriculum. Consequently, the issues related to human capital in Batam are rooted in institutional constraints rather than individual decisions.

The study's findings indicate disjointed institutional cooperation among BP Batam, the Manpower Office, local government entities, and training institutes. Collaborative Governance Theory posits that successful cross-sector collaboration necessitates clearly delineated roles, continuous communication, resource sharing, and mutually established objectives (Ansell & Gash, 2008). Nevertheless, the empirical evidence indicates that Batam's institutions face challenges in meeting these conditions. Government

officials often saw coordination as satisfactory, whereas industries viewed it as ineffective and responsive. Training institutions reflected the industry's perspective, indicating postponed governmental directions and inadequate participation in curriculum development.

These findings correspond with research emphasizing governance fragmentation within Indonesia's decentralized framework (Setyadi, 2025) and affirm that overlapping mandates persist as a systemic obstacle to successful policy execution. This study distinctly demonstrates the direct impact of institutional fragmentation on labor preparedness and industrial competitiveness. When agencies fail to coordinate on skill requirements, training frameworks, or labor oversight, both workers and industries suffer the repercussions. Consequently, the lack of collaborative governance in Batam is both a governance challenge and a workforce development concern.

This study offers a more cohesive perspective that connects workforce development, governance practices, and institutional constraints compared to previous research. Negara and Hutchinson (2018) emphasized the fall in investment and macroeconomic stagnation, although they did not investigate the experiences of training institutions and people throughout industrial transition. The ILO (2018) highlighted skill gaps but did not investigate the role of governance fragmentation in exacerbating these gaps. Wang et al. (2021) discovered that informal partnerships arise during the initial stages of industrial transformation, which aligns with this study's observation that industries and training centers in Batam depend on flexible, informal collaboration due to the lack of comprehensive policy frameworks.

This study's findings provide significant theoretical, practical, and policy implications for comprehending industrial transformation in Batam City and analogous border-region economies. The results theoretically enhance Human Capital Theory by illustrating that workforce capability gaps arise not solely from individual skill deficiencies but also from structural impediments, including obsolete training curricula, restricted access to reskilling opportunities, and inadequate alignment between training providers and industry requirements. The institutional embeddedness of human capital further substantiates Collaborative Governance Theory, as the research indicates that fragmented mandates and inconsistent communication among BP Batam, the Manpower Office, and vocational institutions obstruct the establishment of shared objectives and coordinated workforce strategies, corroborating Ansell and Gash's claim that collaboration necessitates well-defined roles and trust-building mechanisms. Institutional Theory is further reinforced, as the data demonstrate that regulatory uncertainty and sluggish policy adaptation within Batam's dual-governance framework result in delays in curriculum updates and training reforms, constraining the system's responsiveness to industry changes. The study, viewed through the lens of the Adaptive Capacity Framework, demonstrates that disparate responsiveness among stakeholders—characterized by rapid adaptation in industries, moderate adjustments in training institutions, and sluggishness in government agencies—diminishes systemic resilience and extends Batam's transition delay. These findings underscore the pressing necessity to modernize training facilities,

revise industry-aligned curricula, broaden access to reskilling, formalize relationships between business and training institutions, and offer workers flexible and cheap avenues to obtain new competencies. The study presents significant policy implications, necessitating a cohesive workforce development framework that harmonizes decision-making among agencies, the formulation of a Batam Industrial Skills Roadmap 2030, obligatory industry participation in curriculum updates, investment in the modernization of vocational infrastructure, and the establishment of a real-time labor market intelligence system to facilitate evidence-based decision-making. The conclusions collectively highlight that Batam's industrial shift necessitates not just the increase of technical skills but also substantial institutional reform, coordinated governance, and strategic policy alignment to cultivate a resilient and competitive workforce.

CONCLUSIONS

This study analyzed Batam City's industrial transition from the viewpoints of government agencies, industries, vocational training institutions, and workers, demonstrating that the city's transformation is influenced by interconnected challenges concerning workforce preparedness, institutional fragmentation, and disparate stakeholder adaptability. As sectors transition to automation and digital production, Batam's workforce encounters ongoing skill mismatches and restricted access to pertinent reskilling opportunities, a situation intensified by obsolete training curricula and limited institutional resources. The analysis revealed that fragmented governance, particularly the overlapping mandates between BP Batam and local government, results in policy misalignment and diminishes the institutions' capacity to respond cohesively to industry demands. Notwithstanding these institutional limitations, the study revealed nascent informal connections between industries and vocational institutions, indicating preliminary signals of innovation and multi-stakeholder partnerships that may be enhanced through more formalized governance. This study theoretically enhances Human Capital Theory, Collaborative Governance Theory, Institutional Theory, and the Adaptive Capacity Framework by illustrating the interplay of human capital development, governance transparency, institutional adaptability, and stakeholder collaboration in influencing industrial transformation within a border-region economy. The findings highlight the necessity for cohesive workforce strategies, modernization of vocational infrastructure, regulatory alignment, and the creation of a holistic skills roadmap to enhance long-term industrial resilience. This study demonstrates that Batam's industrial transformation is not merely an economic difficulty but also a governance issue necessitating strategic alignment, collaborative procedures, and proactive policy planning to achieve inclusive, sustainable, and future-ready industrial development.

REFERENCES

Adinda, S. Z., Yusrizal, & Harahap, M. I. (2023). The effect of import–export activity on economic growth in Batam City. International Journal of Economics Development Research, 4(3), 1273–1285.

Ansell, C., & Gash, A. (2008). Collaborative governance in theory and practice. Journal of Public Administration Research and Theory, 18(4), 543–571. https://doi.org/10.1093/jopart/mum032

Aspinall, E., & Berenschot, W. (2020). Democracy for sale: Elections, clientelism, and the state in Indonesia. Cornell University Press.

Badan Pusat Statistik Kota Batam. (2024). Gross Regional Domestic Product of Batam Municipality by industry 2019–2023. BPS Kota Batam.

Becker, G. S. (1993). Human capital: A theoretical and empirical analysis, with special reference to education (3rd ed.). University of Chicago Press.

Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.), Handbook of theory and research for the sociology of education (pp. 241–258). Greenwood.

BP Batam (Badan Pengusahaan Batam). (2025). Annual investment and workforce report. BP Batam Publications.

Bryson, J. M., Crosby, B. C., & Bloomberg, L. (2014). Public value governance: Moving beyond traditional public administration and the new public management. Public Administration Review, 74(4), 445–456.

Creswell, J. W., & Poth, C. N. (2018). Qualitative inquiry and research design: Choosing among five approaches (4th ed.). Sage Publications.

Djalante, R., Holley, C., & Thomalla, F. (2011). Adaptive governance and managing resilience to natural hazards. International Journal of Disaster Risk Science, 2(4), 1–11.

Giddens, A. (1984). The constitution of society: Outline of the theory of structuration. University of California Press.

Hutchinson, F. E., & Chong, T. (Eds.). (2016). The SIJORI Cross-border Region: Transnational politics, economics and culture. ISEAS Publishing.

International Labour Organization. (2018). Skills and the future of work: Strategies for inclusive growth in Asia and the Pacific. ILO Regional Office for Asia and the Pacific.

Kurniawan, T., & Wicaksono, A. (2022). Workforce transformation in Indonesia's manufacturing sector: Challenges and opportunities. Asian Journal of Public Policy, 14(2), 211–230.

Lincoln, Y. S., & Guba, E. G. (1985). Naturalistic inquiry. Sage Publications.

Negara, S. D., & Hutchinson, F. E. (2018). Batam: Life after the FTZ? ISEAS–Yusof Ishak Institute.

North, D. C. (1990). Institutions, institutional change and economic performance. Cambridge University Press.

Peachey, K. (2024). The Riau Islands and economic cooperation: Boundary and territorial briefing. Durham University Centre for Borders Research.

Setyadi, A. (2025). Governance reform and industrial competitiveness in Indonesia's economic zones. Sustainability, 17(13), 6167–6182.

Wang, J., Li, X., & Sun, Y. (2021). Industrial clustering and skill upgrading in transitional economies: Evidence from Southeast Asia. Journal of Development Studies, 57(10), 1658–1674. https://doi.org/10.1080/00220388.2020.1786639

World Bank. (2020). The future of work in ASEAN: Trends, challenges, and opportunities. World Bank Publications.

Yin, R. K. (2018). Case study research and applications: Design and methods (6th ed.). Sage Publications.

Zulkifli, F., & Madjid, A. (2021). Institutional coordination in Indonesia's special economic zones: A governance perspective. Journal of Southeast Asian Economies, 38(1), 1–20.