

Analysis of Factors Affecting Labor Productivity in Small and Medium-Sized Industries

Kimberly Febrina Kodrat

Prodi Teknik Industri. Fakultas Teknik. Universitas Islam Sumatera Utara, Indonesia

Email: kimberly@ft.uisu.ac.id

Entered : April 30, 2026
Accepted: June 25, 2026

Revised : May 15, 2026
Published : June 30, 2026

ABSTRACT — Labor productivity remains one of the most decisive determinants of competitiveness and survival for small and medium-sized industries (SMIs), yet the factors that shape it are dispersed across a fragmented body of literature spanning manufacturing, construction, and service contexts. This article synthesizes findings from twenty-five peer-reviewed studies published between 2021 and 2026 to identify, categorize, and interpret the principal drivers of labor productivity in SMIs. Using a narrative literature review method, factors are grouped into four thematic clusters: human capital and workforce competence, capital and technology adoption, work environment and managerial practice, and institutional or policy context. The synthesis shows that human capital consistently exerts the strongest and most stable positive influence, followed by technology adoption, whose effect is conditional on firm size and absorptive capacity. Work environment and compensation factors matter most in labor-intensive small industries, while institutional support determines whether productivity gains are sustained over time. The novelty of this article lies in integrating evidence across sectors and regions into a single comparative framework rather than treating each determinant in isolation. The findings offer practical guidance for SMI owners and policymakers seeking to prioritize interventions, and they identify gaps for future empirical research, particularly on the interaction effects between human capital and digital technology in resource-constrained small industries.

Keywords: labor productivity; small and medium-sized industries; human capital; technology adoption; literature review

INTRODUCTION

Small and medium-sized industries (SMIs) form the structural backbone of most national economies. They absorb a large share of the labor force, distribute income more broadly than large corporations, and often serve as the entry point for entrepreneurship in developing and transitioning economies. Despite this central role, SMIs are persistently characterized by lower labor productivity than large enterprises, a gap that limits their capacity to compete in export markets, adopt new technology, and offer stable, well-paid employment. Understanding what drives labor productivity within this segment of the economy is therefore not a narrow academic exercise; it is a precondition for designing effective industrial policy, allocating scarce development funding, and helping small industry owners make sound operational decisions.

The productivity gap between small and large firms is well documented in cross-country statistics, and it tends to be most pronounced in manufacturing, where returns to scale from capital-intensive production give larger firms a structural advantage. Yet aggregate statistics conceal considerable heterogeneity within the small industry population itself: some small manufacturers and workshops achieve productivity levels comparable to much larger competitors, while others, operating in the same sector and region, lag far behind. This within-group variation is analytically important because it suggests that firm size alone does not determine productivity outcomes; rather, size interacts with a set of manageable, firm-level and policy-level factors that can, in principle, be strengthened through



deliberate intervention. Identifying which of these factors matter most, and under what conditions, is the central motivation for this article.

Labor productivity, conventionally defined as output per unit of labor input, is influenced by a wide array of factors that operate at the level of the individual worker, the firm, and the broader institutional environment. At the worker level, education, training, experience, and health status shape the capacity of labor to convert time and effort into output. At the firm level, capital intensity, technology adoption, managerial competence, and workplace organization determine how effectively that labor capacity is deployed. At the institutional level, access to finance, infrastructure quality, labor market regulation, and government support programs create the conditions under which firm-level improvements can or cannot be sustained. The interaction of these three levels makes labor productivity a genuinely multidimensional phenomenon, and this complexity is precisely what has produced a fragmented research landscape.

A substantial body of empirical work has examined labor productivity determinants, but this literature is scattered across disciplinary silos. Construction management scholars have produced an extensive stream of studies on labor productivity in project-based work, cataloguing site-level factors such as supervision quality, weather conditions, and material availability. Development economists have examined labor productivity as a component of aggregate growth accounting, often using cross-country panel data with limited attention to firm heterogeneity. Management and entrepreneurship scholars have investigated productivity within the specific context of small and medium enterprises, frequently linking it to human resource practices, innovation capacity, and access to finance. Each of these streams has generated valuable insight, yet they rarely speak to one another. A construction-sector study on supervisory quality is seldom cross-referenced against a manufacturing-sector study on digital technology adoption, even though both ultimately describe mechanisms through which labor is converted into output.

This fragmentation carries practical costs. Policymakers designing SMI support programs must choose among competing priorities, such as vocational training subsidies, capital grants for machinery, or regulatory simplification, often without a consolidated evidence base that indicates which class of intervention tends to generate the largest productivity return across different industry contexts. Similarly, owners and managers of small industries, who typically lack the resources to commission bespoke productivity diagnostics, must rely on generic or anecdotal advice rather than a synthesis grounded in comparative evidence. The absence of an integrative framework that draws together human capital, technological, managerial, and institutional determinants under a single analytical lens represents a meaningful gap in the literature that this article seeks to address.

A further complication is that labor productivity itself is measured inconsistently across the literature, sometimes as value added per worker, sometimes as output volume per labor hour, and sometimes through composite total factor productivity indices that also account for capital input. These measurement differences make direct numerical comparison across studies difficult, but they do not prevent a qualitative synthesis of which underlying factors are repeatedly identified as significant, which is the analytical strategy adopted in this article. By focusing on the direction and consistency of reported effects rather than on pooling incompatible point estimates, it becomes possible to draw meaningful cross-study conclusions despite methodological heterogeneity in how individual studies operationalize the productivity construct.

Recent developments have further complicated the picture. The diffusion of Industry 4.0 technologies, including automation, cloud-based enterprise systems, and data analytics, has introduced a new determinant of productivity that interacts with, rather than substitutes for, traditional human capital factors. Evidence from European small and medium enterprises suggests that digital technology adoption raises labor productivity primarily in firms that already possess adequate technical skills, implying a conditional rather than universal effect. At the same time, labor cost pressures, social insurance obligations, and post-pandemic shifts in workforce availability have altered the calculus facing small industry owners in ways that pre-2020 studies could not have anticipated. An analysis that incorporates only recent literature, published within the last five years, is therefore better positioned

to capture the productivity dynamics that are currently shaping SMI performance than a review anchored in older evidence.

The novelty of this article rests on three contributions. First, it integrates evidence from twenty-five recent, peer-reviewed studies spanning construction, manufacturing, and general small industry contexts across multiple countries, including Indonesia, Vietnam, the European Union, and several other emerging economies, thereby offering a cross-sectoral and cross-regional comparative perspective that most single-context studies cannot provide. Second, it organizes the fragmented set of individual factors identified in prior literature into four coherent thematic categories, human capital and workforce competence, capital and technology adoption, work environment and managerial practice, and institutional or policy context, which allows readers to see not just which factors matter, but how they cluster and interact. Third, it explicitly addresses the emerging role of Industry 4.0 and digital infrastructure as a productivity determinant, positioning this factor alongside more traditional determinants such as education and wages rather than treating it as a separate topic, which reflects the direction in which the underlying literature has been moving since approximately 2023. Taken together, these three contributions distinguish this article from earlier reviews that either focus narrowly on a single sector, such as construction, or treat SME productivity as a purely macroeconomic statistic disconnected from the firm-level and worker-level mechanisms that ultimately produce it.

The remainder of this article proceeds as follows. Section 2 describes the literature review method used to identify and synthesize the twenty-five studies underpinning this analysis, including the search strategy, inclusion criteria, and thematic coding procedure, illustrated in a process flow diagram. Section 3 presents the results of the synthesis, organized around the four thematic categories, supported by a comparative table summarizing the direction of effect and representative studies for each category, followed by a discussion of the mechanisms and contextual factors that explain observed differences across sectors and regions. Section 4 concludes with a summary of findings, practical implications for SMI stakeholders, and directions for future research.

METHOD

This article adopts a narrative literature review method informed by systematic review principles, which is appropriate for a synthesis task that aims to integrate heterogeneous evidence across disciplines rather than to test a single quantitative hypothesis. The review proceeded through five sequential stages, illustrated in Figure 1: identification, screening, eligibility assessment, inclusion, and thematic coding, culminating in a narrative synthesis.

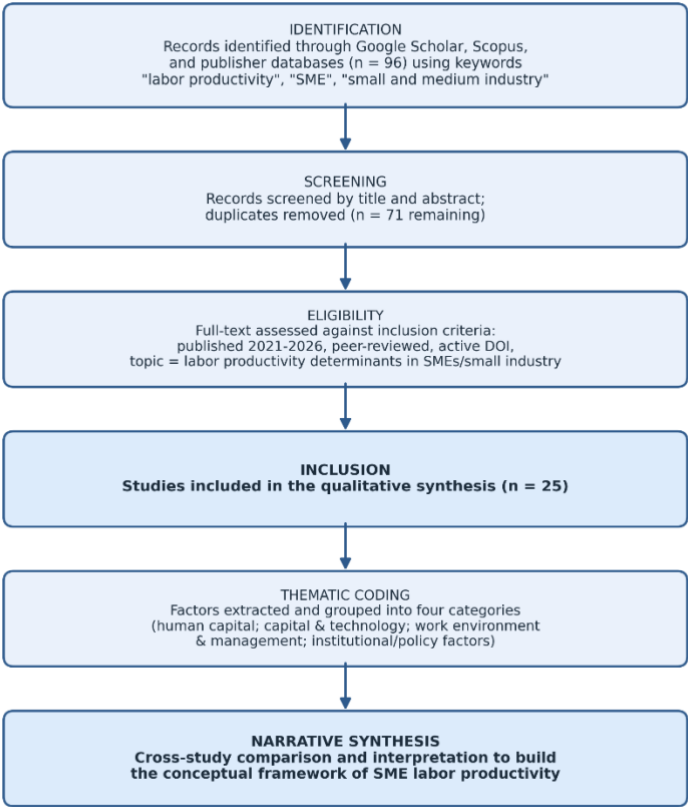
In the identification stage, records were retrieved from Google Scholar and publisher databases using combinations of the keywords "labor productivity", "labour productivity", "small and medium enterprises", "small and medium industry", and "determinants" or "factors affecting". This search produced an initial pool of candidate records. In the screening stage, titles and abstracts were reviewed to remove duplicates and clearly irrelevant records, such as studies focused exclusively on agricultural or macroeconomic productivity outside the SMI context. In the eligibility stage, full texts were assessed against three inclusion criteria: the study had to be published between 2021 and 2026 to ensure currency, it had to be indexed with an active, resolvable digital object identifier (DOI) to ensure verifiability and accessibility through Google Scholar, and it had to address labor productivity determinants at the level of small and medium-sized enterprises or industries, or provide directly transferable evidence on labor productivity factors applicable to that context.

Twenty-five studies satisfied all three criteria and were retained for the inclusion stage. These sources include systematic reviews and meta-analyses that themselves synthesize dozens of primary studies, as well as original empirical investigations using survey data, panel regression, and case study methods, drawn from Indonesia, Vietnam, the European Union, Lao PDR, China, and other national contexts. In the thematic coding stage, each factor reported in the included studies was extracted and classified into one of four categories: human capital and workforce competence; capital, technology, and Industry 4.0 adoption; work environment and managerial practice; and institutional, policy, and market context. Coding was performed iteratively, with factors that did not fit cleanly into a single

category, such as compensation and social protection, allocated to the category with which they shared the strongest conceptual and empirical association based on how the original studies discussed the underlying mechanism.

Finally, in the narrative synthesis stage, findings were compared across studies within each category to identify areas of convergence, contradiction, and contextual variation, which forms the basis for the results and discussion presented in Section 3. This method does not claim the statistical exhaustiveness of a formal meta-analysis; instead, it prioritizes conceptual integration across a body of recent, high-quality, and independently verifiable sources, consistent with the objective of building a comparative framework rather than estimating a pooled effect size..

Figure 1. Literature Search and Synthesis Flow



Source: developed for this study, adapted from a PRISMA-informed narrative review procedure.

Figure 1. Literature search, screening, and thematic synthesis flow used in this study

RESULTS AND DISCUSSION

The synthesis of twenty-five studies confirms that labor productivity in small and medium-sized industries is shaped by a multidimensional set of factors that cluster consistently into four categories. Table 1 summarizes these categories, their representative indicators, the general direction of effect reported across the literature, and the key supporting studies. The discussion that follows elaborates on the mechanisms underlying each category and highlights points of convergence and divergence across sectors and regions

Table 1. Summary of Factors Affecting Labor Productivity in Small and Medium-Sized Industries

Factor Category	Representative Indicators	Direction of Effect	Key Supporting Studies
Human capital and workforce competence	Education level, training, work experience, skills certification	Positive, largest and most consistent effect	Owalla et al. (2021); Huy & Dung (2023); Khalil et al. (2024); Hernita et al. (2021); Radło & Tomeczek (2022)
Capital, technology, and Industry 4.0 adoption	Machinery investment, automation, digitalization, ICT infrastructure	Positive, moderated by firm size and absorptive capacity	Bettiol et al. (2023); Wicaksono et al. (2024); Aleca & Mihai (2025); Štaffenová et al. (2025)
Work environment and managerial practice	Workplace safety, supervision quality, work discipline, organizational climate	Positive; strongest in labor-intensive small industry	Karlson & Ozola (2023); Van Tam et al. (2021); Syafitri et al. (2023); Kingkhambang et al. (2023)
Compensation, incentives, and social protection	Wage level, incentive schemes, social insurance coverage	Positive but with diminishing marginal returns	Li et al. (2023); Qian & Wang (2022); Balabanova & Chizhova (2022)
Institutional, policy, and market context	Access to finance, government support, export orientation, regional infrastructure	Positive, context-dependent across countries	Adebawale & Agumba (2021); Trang & Dung (2026); Nguyen & Pham (2025); Yuliarmi et al. (2024); Albuquerque et al. (2025); Syabanna et al. (2025)

Human Capital and Workforce Competence

Across nearly all reviewed studies, human capital emerges as the most consistently significant and largest-magnitude determinant of labor productivity in SMIs. Owalla et al. (2021), synthesizing decades of SME productivity research, identify workforce skills and managerial capability as recurring explanatory variables across empirical studies regardless of country context. This finding is echoed in Southeast Asian contexts: Huy and Dung (2023) report that education level and work experience are significant predictors of both productivity and job satisfaction among SMEs in Thai Nguyen, Vietnam, while Hernita et al. (2021) find that strengthening human resource capacity is a direct determinant of productivity and business sustainability among small and medium enterprises in Makassar, Indonesia. Khalil, Malik, and Ahsan (2024) extend this argument by showing that knowledge-driven strategies, including structured training and knowledge management systems, ignite productivity gains in small and medium engineering enterprises even in resource-constrained environments.

The mechanism underlying this consistent finding is intuitive: workers with stronger technical skills, problem-solving capacity, and job-specific experience complete tasks faster, generate fewer defects, and adapt more readily to process changes. What is notable, however, is that the magnitude of the human capital effect appears to be relatively stable across sectors as different as construction, garment manufacturing, and general small industry, a pattern also documented in Radło and Tomeczek's (2022) qualitative text analysis of 141 productivity studies, which identifies human capital as one of the most frequently cited leading factors in the broader labor productivity literature. This cross-sectoral stability supports the argument that human capital investment should be treated as a foundational, rather than optional, priority in SMI development programs.

Capital, Technology, and Industry 4.0 Adoption

The second cluster concerns capital investment and technology adoption, an area of literature that has expanded rapidly since 2023 with the growing diffusion of Industry 4.0 practices. Bettiol, Capestro, Di Maria, and Ganau (2023) find that Industry 4.0 technology adoption is associated with measurable labor productivity gains among Italian firms, but this effect is not uniform: it is stronger among firms that combine technology investment with complementary organizational changes, rather than treating automation as a stand-alone fix. This conditionality is reinforced by Aleca and Mihai (2025), who show that digital infrastructure and digital skills jointly, rather than independently, enhance labor productivity across the European Union, and by Štaffenová, Kucharčíková, and Falát (2025), who find that human capital management practices mediate the extent to which SMEs benefit from Industry 4.0 investment.

In the Indonesian context, Wicaksono, Hermawan, and Evien (2024) similarly demonstrate that both labor and capital investment significantly influence productivity in the MSME sector, though their findings suggest that capital investment yields diminishing returns when not accompanied by adequate workforce capability, a pattern consistent with the European evidence. Taken together, these studies point to an important nuance: technology and capital investment raise labor productivity primarily as a complement to human capital rather than a substitute for it. This has direct implications for policy design, since capital grants or subsidized machinery programs targeted at small industries are unlikely to generate their full potential productivity impact unless paired with parallel investment in workforce training.

Work Environment and Managerial Practice

The third cluster, work environment and managerial practice, features prominently in the construction management literature but extends to manufacturing and general small industry contexts as well. Karlson and Ozola (2023) and Van Tam, Toan, Hai, and Quy (2021) both identify supervision quality, site organization, and workplace safety as significant determinants of labor productivity in construction settings, with the latter study noting that project managers and contractors sometimes diverge in their perception of which factors matter most, a divergence that itself has implications for how productivity interventions are designed and communicated within firms. In the Indonesian small industry context, Syafitri, Djulius, Priadana, and Kusdiana (2023) find that labor productivity in micro and small industries across Java is significantly associated with work discipline and organizational climate, while Kingkhambang et al. (2023) report similar findings in their case study of garment, furniture, and food-beverage industries in Lao PDR, where workplace organization was found to explain productivity differences even among firms with comparable technology levels.

The consistency of these findings across construction and manufacturing settings suggests that managerial and organizational quality functions as a productivity multiplier: it determines how effectively human capital and technological capacity, discussed in the two preceding categories, actually translate into output. A well-trained workforce operating within a poorly organized work environment will underperform relative to its latent capability, which helps explain why some SMIs with comparatively strong human capital still report below-average productivity outcomes in the reviewed literature.

Institutional, Policy, and Market Context

The fourth and final cluster concerns the institutional and market environment within which SMIs operate. Adebowale and Agumba's (2021) meta-analysis of construction SMEs in developing countries finds that access to finance and regulatory conditions are significant moderators of labor productivity outcomes, meaning that firm-level improvements are more likely to be sustained where institutional support exists. In Vietnam, Trang and Dung (2026) and Nguyen and Pham (2025) both link SME labor productivity to broader market integration, with the latter documenting a reciprocal relationship between productivity gains and export participation among small and medium enterprises in Hanoi. This bidirectional relationship is analytically important: it implies that productivity is not merely an

outcome of internal firm decisions but is also reinforced by market exposure, since exporting firms face competitive pressure that incentivizes continued productivity improvement.

Regional and country-level context also matters. Yuliarmi, Dewi, Andiana, and Sasrawan (2024) find that efficiency and productivity levels vary meaningfully across small and medium industries within different districts of the Sarbagita region in Bali, pointing to the role of local infrastructure and market access even within a single country. At a broader scale, Albuquerque, Ferrão, and Santos (2025) show that country, sector, and firm size jointly explain a substantial share of labor productivity variation among European non-financial corporations, reinforcing the view that institutional context conditions the returns to human capital and technology investment discussed in the earlier categories. Complementing this, Syabanna, Sambodo, Binardjo, and Barokatuminalloh (2025) find that education, health, and economic infrastructure jointly and significantly determine labor productivity across Indonesian provinces, underscoring that institutional-level investment in public infrastructure and services indirectly shapes the productivity ceiling that individual SMIs can reach.

An important point of divergence across the literature concerns compensation and social protection. Li, Zhao, Cong, and Xu (2023) find that social insurance coverage is associated with higher total factor productivity among Chinese micro and small businesses, attributing this to improved worker retention and motivation, whereas Qian and Wang (2022) find that rising labor costs can exert downward pressure on productivity growth unless offset by industrial intelligence and automation investment. This apparent tension is resolved when compensation is understood not as a uniformly positive or negative factor, but as one that interacts with the technology and human capital clusters already discussed: rising labor costs incentivize automation, which in turn raises productivity, but only in firms with sufficient capital access and technical capability to make that transition, a pattern consistent with the conditional effects identified throughout this review.

Overall, the synthesis suggests that labor productivity in SMIs cannot be attributed to any single dominant factor. Instead, the evidence points to an interaction structure in which human capital establishes the baseline capacity for productive work, capital and technology adoption amplify that capacity when workforce skills are adequate, work environment and management determine how fully that amplified capacity is realized in practice, and institutional context determines whether firm-level gains are sustained or eroded over time. This layered interpretation directly addresses the fragmentation identified in Section 1 and represents the integrative contribution of this article..

CONCLUSION

This article synthesized twenty-five recent, peer-reviewed studies published between 2021 and 2026 to examine the factors affecting labor productivity in small and medium-sized industries. The evidence converges on four interacting categories of determinants: human capital and workforce competence, which consistently exerts the strongest and most stable positive effect; capital, technology, and Industry 4.0 adoption, whose productivity impact is conditional on complementary workforce skills; work environment and managerial practice, which functions as a multiplier that determines how fully latent worker capacity is realized; and institutional, policy, and market context, which shapes whether firm-level productivity gains are sustained over time. Rather than treating these determinants as isolated variables, this review demonstrates that they operate as an interacting system, a perspective that helps explain inconsistent findings in prior single-factor studies and offers a more coherent basis for both academic inquiry and practical intervention.

For SMI owners and managers, the practical implication is that investment in workforce training should generally be prioritized before or alongside capital and technology investment, since the latter appears to yield limited returns without adequate human capital. For policymakers, the findings suggest that support programs combining technical training, access to finance, and infrastructure development are likely to be more effective than single-instrument interventions. For future research, this review points to a need for more longitudinal and cross-country studies that directly test the interaction effects between human capital and digital technology adoption within small and medium-

sized industries, particularly in low- and middle-income countries where such evidence remains comparatively scarce.

REFERENCES

- Adebowale, O., & Agumba, J. (2021). A meta-analysis of factors affecting labour productivity of construction SMEs in developing countries. *Journal of Engineering, Design and Technology*, 21(4). <https://doi.org/10.1108/jedt-05-2021-0277>
- Albuquerque, F., Ferrão, J., & Santos, P. G. dos. (2025). Labour productivity in European non-financial corporations: The roles of country, sector, and size. *Journal of Risk and Financial Management*, 18(11), 647. <https://doi.org/10.3390/jrfm18110647>
- Aleca, O., & Mihai, F. (2025). The role of digital infrastructure and skills in enhancing labor productivity: Insights from Industry 4.0 in the European Union. *Systems*, 13(2), 113. <https://doi.org/10.3390/systems13020113>
- Ardila, R., Padra, M. Y. D., Martinez, K. Y. V., & Aguilar, G. M. (2024). Factors affecting labor productivity in the global construction industry: A critical review, classification and ranking. *Scientia et Technica*, 29(1). <https://doi.org/10.22517/23447214.25546>
- Balabanova, G. G., & Chizhova, E. (2022). Approaches to understanding labor productivity and factors affecting its growth. *Vestnik of Altai Academy of Economics and Law*, 2022(1). <https://doi.org/10.17513/vaael.2452>
- Bettiol, M., Capestro, M., Di Maria, E., & Ganau, R. (2023). Is this time different? How Industry 4.0 affects firms' labor productivity. *Small Business Economics*, 62, 1449–1467. <https://doi.org/10.1007/s11187-023-00825-8>
- Hernita, H., Surya, B., Perwira, I., Abubakar, H., & Idris, M. (2021). Economic business sustainability and strengthening human resource capacity based on increasing the productivity of small and medium enterprises (SMEs) in Makassar City, Indonesia. *Sustainability*, 13(6), 3177. <https://doi.org/10.3390/su13063177>
- Huy, T. Q., & Dung, N. D. (2023). How do factors affect labor productivity and satisfaction in small and medium-sized enterprises in Thai Nguyen, Vietnam. *International Journal of Productivity and Quality Management*, 40(2). <https://doi.org/10.1504/ijpqm.2023.10058011>
- Jayaram, S., & Bharath, A. A. (2023). A literature review on developing a framework for factors affecting labour productivity and suggestions to improve it. *International Journal of Advanced Research in Science, Communication and Technology*, 3(2). <https://doi.org/10.48175/ijarsct-12146>
- Karlson, K., & Ozola, A. (2023). Factors affecting labour productivity in the construction sector. *Rural Environment. Education. Personality (REEP)*, 16. <https://doi.org/10.22616/leep.2023.16.006>
- Khalil, W. I., Malik, M., & Ahsan, A. (2024). Sustainability unleashed through innovation: Knowledge-driven strategies igniting labor productivity in small- and medium-sized engineering enterprises. *Sustainability*, 16(1), 424. <https://doi.org/10.3390/su16010424>
- Kingkhambang, K., Inthakesone, B., Saynavong, N., Phanhonkeo, P., Chanthathab, P., & Srithilat, K. (2023). Labor productivity analysis in Lao PDR: Case study of garment, furniture and food-beverage industry. *International Journal of Science and Business*, 2023(1). <https://doi.org/10.58970/ijsb.20756>
- Kornieieva, T., Varela, M., Luís, A. L., & Teixeira, N. (2022). Assessment of labour productivity and the factors of its increase in European Union 27 and Ukrainian economies. *Economies*, 10(11), 287. <https://doi.org/10.3390/economies10110287>
- Li, J., Zhao, Z., Cong, L., & Xu, Y. (2023). Impact of social insurance law on total factor productivity: Evidence from Chinese micro and small businesses. *Applied Economics*, 56, 7937–7959. <https://doi.org/10.1080/00036846.2023.2289914>
- Lindhard, S., Sadeghi, S., Soltanmohammadlou, N., & Wyke, S. (2025). A literature review of common factors affecting labor productivity in Asia: 25 years of insight. *Journal of Civil Engineering and Management*, 31(3). <https://doi.org/10.3846/jcem.2025.22811>

- Nguyen, D. P. K., & Pham, T. (2025). The simultaneous relationship between labor productivity and exports: The case of small and medium-sized enterprises in Vietnam. *Ho Chi Minh City Open University Journal of Science – Economics and Business Administration*, 15(3). <https://doi.org/10.46223/hcmcoujs.econ.en.15.3.3770.2025>
- Owalla, B., Gherhes, C., Vorley, T., & Brooks, C. (2021). Mapping SME productivity research: A systematic review of empirical evidence and future research agenda. *Small Business Economics*, 58, 1285–1307. <https://doi.org/10.1007/s11187-021-00450-3>
- Qian, W., & Wang, Y. (2022). How do rising labor costs affect green total factor productivity? Based on the industrial intelligence perspective. *Sustainability*, 14(20), 13653. <https://doi.org/10.3390/su142013653>
- Radło, M. J., & Tomeczek, A. F. (2022). Factors influencing labor productivity in modern economies: A review and qualitative text analysis. *WSEAS Transactions on Environment and Development*, 18, 291–314. <https://doi.org/10.37394/232015.2022.18.30>
- Štaffenová, N., Kucharčíková, A., & Falát, L. (2025). Using of human capital management in small and medium-sized enterprises in context of Industry 4.0. *PLOS ONE*, 20(5), e0320568. <https://doi.org/10.1371/journal.pone.0320568>
- Syabanna, R. T., Sambodo, H., Binardjo, G., & Barokatuminalloh, B. (2025). Determinants of labor productivity in Indonesia: Education, health, and economic infrastructure. *Jurnal Riset Ilmu Ekonomi*, 5(3), 162–172. <https://doi.org/10.23969/jrie.v5i3.321>
- Syafitri, A., Djulius, H., Priadana, M., & Kusdiana, D. (2023). Analysis of labour productivity in micro and small industries in Java. *Proceedings of the 6th International Conference of Economics, Business, and Entrepreneurship (ICEBE 2023)*. <https://doi.org/10.4108/eai.13-9-2023.2341210>
- Trang, P. H., & Dung, N. M. (2026). Determinants of labor productivity of small and medium-sized enterprises in Hanoi, Vietnam. *Aposta: Revista de Ciencias Sociales*, 24(112). <https://doi.org/10.23900/ra.v24i112.853>
- Van Tam, N., Toan, N. Q., Hai, D. T., & Quy, N. L. D. (2021). Critical factors affecting construction labor productivity: A comparison between perceptions of project managers and contractors. *Cogent Business & Management*, 8(1). <https://doi.org/10.1080/23311975.2020.1863303>
- Wicaksono, B. B., Hermawan, A., & Evien, E. (2024). Unveiling labor and capital investment potential: How to impact productivity in Indonesia's MSME sector? *International Journal of Digital Entrepreneurship and Business*, 5(1). <https://doi.org/10.52238/ideb.v5i1.149>
- Yuliarmi, N. N., Dewi, M., Andiana, N. P., & Sasrawan, I. P. H. (2024). Analysis of efficiency, productivity, and performance of small and medium industries in the Sarbagita Region, Bali Province. *International Journal of Social Science and Human Research*, 7(1). <https://doi.org/10.47191/ijsshr/v7-i01-83>