

DIGITAL TRANSFORMATION, PATHWAYS TO SME PERFORMANCE

TRANSFORMASI DIGITAL, JALUR MENUJU KINERJA UKM

R. Muh. Deddy Hanif Sardjito¹, Osly Usman², Reimond Napitupulu³

Faculty of Business and Management, State University of Jakarta (UNJ)^{1,2}

Master of Management, Sekolah Tinggi Manajemen Asuransi (STMA) Trisakti³

deddy.mywork.mm@gmail.com¹, oslyusman@unj.ac.id², reimondnapitupulu@stma-trisakti.ac.id³

ABSTRACT

This study investigates how digital transformation improves the performance of small and medium-sized enterprises in Jakarta, Indonesia. Responding to inconsistent evidence on the performance value of digital adoption, the study develops an integrative model that positions digital literacy as an antecedent, and low-cost strategy, differentiation strategy, and adaptive capability as mediating mechanisms. A quantitative cross-sectional survey was administered to 500 SME owners and managers who had implemented at least one form of digital transformation, including e-commerce, digital marketing, digital payment, cloud-based systems, accounting systems, or simple data analytics. A total of 425 valid responses were analyzed using SPSS v.26 for descriptive statistics and SmartPLS v.4 for partial least squares structural equation modeling. The findings support all six hypotheses. Digital transformation directly improves SME performance, digital literacy significantly drives digital transformation, and digital transformation mediates the link between digital literacy and performance. Low-cost strategy, differentiation strategy, and adaptive capability also significantly mediate the digital transformation-performance relationship. The study concludes that digital adoption creates stronger performance outcomes when combined with human digital skills, competitive positioning, and organizational adaptability.

Keywords: Digital Transformation, Digital Literacy, Low-Cost Strategy, Differentiation Strategy, Adaptive Capability, SME Performance, Jakarta, Indonesia

ABSTRAK

Studi ini meneliti bagaimana transformasi digital meningkatkan kinerja usaha kecil dan menengah (UKM) di Jakarta, Indonesia. Menanggapi bukti yang tidak konsisten tentang nilai kinerja adopsi digital, studi ini mengembangkan model integratif yang menempatkan literasi digital sebagai anteseden, dan strategi biaya rendah, strategi diferensiasi, dan kemampuan adaptif sebagai mekanisme mediasi. Survei kuantitatif lintas sektoral dilakukan kepada 500 pemilik dan manajer UKM yang telah menerapkan setidaknya satu bentuk transformasi digital, termasuk e-commerce, pemasaran digital, pembayaran digital, sistem berbasis cloud, sistem akuntansi, atau analitik data sederhana. Sebanyak 425 tanggapan valid dianalisis menggunakan SPSS v.26 untuk statistik deskriptif dan SmartPLS v.4 untuk pemodelan persamaan struktural kuadrat terkecil parsial. Temuan mendukung keenam hipotesis. Transformasi digital secara langsung meningkatkan kinerja UKM, literasi digital secara signifikan mendorong transformasi digital, dan transformasi digital memediasi hubungan antara literasi digital dan kinerja. Strategi biaya rendah, strategi diferensiasi, dan kemampuan adaptif juga secara signifikan memediasi hubungan transformasi digital-kinerja. Studi ini menyimpulkan bahwa adopsi digital menciptakan hasil kinerja yang lebih kuat ketika dikombinasikan dengan keterampilan digital manusia, posisi kompetitif, dan kemampuan adaptasi organisasi.

Kata Kunci: Transformasi Digital, Literasi Digital, Strategi Biaya Rendah, Strategi Diferensiasi, Kemampuan Adaptasi, Kinerja UKM, Jakarta, Indonesia

INTRODUCTION

Digital transformation (DT) has become a consequential force reshaping organizational operations, business models, and competitive landscapes. The integration of digital technologies into the value chain changes how firms create, deliver, and capture value. For small and medium-sized enterprises (SMEs), DT

provides access to e-commerce platforms, cloud-based applications, digital payment systems, digital marketing, and simple artificial intelligence or data analytics tools. These technologies can improve operational efficiency, expand market reach, strengthen customer experience, and support more timely decision-making.

Indonesia provides an important context for examining DT among SMEs. Jakarta is the national economic capital and one of the most active SME ecosystems in Southeast Asia. SMEs in Indonesia account for most business units, contribute substantially to gross domestic product, and absorb a large share of the workforce. In Jakarta, post-pandemic shifts toward digital commerce, government digitalization programs, and growing internet penetration have accelerated adoption. Nevertheless, empirical research on how DT translates into SME performance in the Jakarta context remains limited.

Prior research has produced mixed evidence. Some studies report a positive association between DT and performance, while others find neutral or negative outcomes among SMEs that lack absorptive capacity, digital skills, or implementation readiness. This suggests that DT does not automatically generate performance benefits. Its value depends on human capability, strategic alignment, and the ability to adapt to changing market and technological conditions.

The present study addresses this gap by integrating digital literacy, competitive strategy, and adaptive capability in a single model. Digital literacy is treated as a foundational antecedent that enables SME owners and employees to adopt, evaluate, and apply digital tools. Low-cost strategy and differentiation strategy are positioned as competitive pathways that translate digital investments into market advantage. Adaptive capability is positioned as a dynamic mechanism through which SMEs sense technological changes, seize market opportunities, and reconfigure routines.

The study is grounded in the Resource-Based View and Dynamic Capability Theory. From the Resource-Based View perspective, digital literacy

and digital infrastructure can be strategic resources when they are valuable and embedded in operational routines. From the dynamic capability perspective, superior performance depends not only on resource possession but also on the ability to deploy and reconfigure those resources in turbulent environments.

The research questions are as follows: (1) What is the direct effect of digital transformation on SME performance in Jakarta? (2) Does digital literacy drive digital transformation, and does digital transformation mediate the effect of digital literacy on SME performance? (3) Do low-cost strategy, differentiation strategy, and adaptive capability mediate the relationship between digital transformation and SME performance?

The research objectives are to investigate the direct relationship between digital transformation and SME performance, examine the effect of digital literacy on digital transformation and performance, and determine the mediating roles of low-cost strategy, differentiation strategy, and adaptive capability in the DT-performance relationship.

1.1 Theoretical Foundation and Hypothesis Development

DT refers to the integration of digital technologies into business operations and value creation. In the SME context, it includes social media platforms, mobile applications, e-commerce solutions, digital payment systems, cloud computing, simple accounting systems, and basic AI or analytics tools. For Jakarta SMEs, these forms of transformation are generally practical, accessible, and incremental rather than highly complex or capital intensive.

Digital literacy is the capacity to use digital tools correctly, evaluate digital

information critically, and evolve with technological change. It is particularly important for SME owners and managers because it affects readiness to adopt digital technologies and sustain implementation. Inadequate digital literacy has been identified as a major barrier to SME modernization and online market expansion in Indonesia.

SME performance is multidimensional. It covers financial outcomes, such as profitability, revenue, return on investment, and return on assets, as well as non-financial outcomes, such as customer satisfaction, customer loyalty, market share, innovation, and operational responsiveness. Perceptual multi-item measures are widely used in SME studies where objective financial data are limited or difficult to obtain.

Competitive strategy is represented by low-cost strategy and differentiation strategy. A low-cost strategy emphasizes cost control, process efficiency, reduced labor intensity, and price competitiveness. A differentiation strategy emphasizes uniqueness, product or service quality, innovation, customization, and superior customer value. DT can support both strategies by automating processes, improving

customer insight, widening market reach, and enabling more personalized offerings.

Adaptive capability refers to the ability to alter strategy, processes, and routines in response to technological turbulence and changing customer needs. For SMEs that operate in volatile markets, adaptive capability enables sensing, seizing, and reconfiguring. It helps firms transform digital investments into resilience and stronger performance outcomes.

Accordingly, the hypotheses tested in this study are: H1, digital transformation has a significant positive effect on SME performance. H2, digital literacy positively and indirectly affects SME performance through digital transformation. H3, digital literacy has a significant positive effect on digital transformation. H4, digital transformation positively affects SME performance through the mediation of low-cost strategy. H5, digital transformation positively affects SME performance through the mediation of differentiation strategy. H6, digital transformation positively affects SME performance through the mediation of adaptive capability.

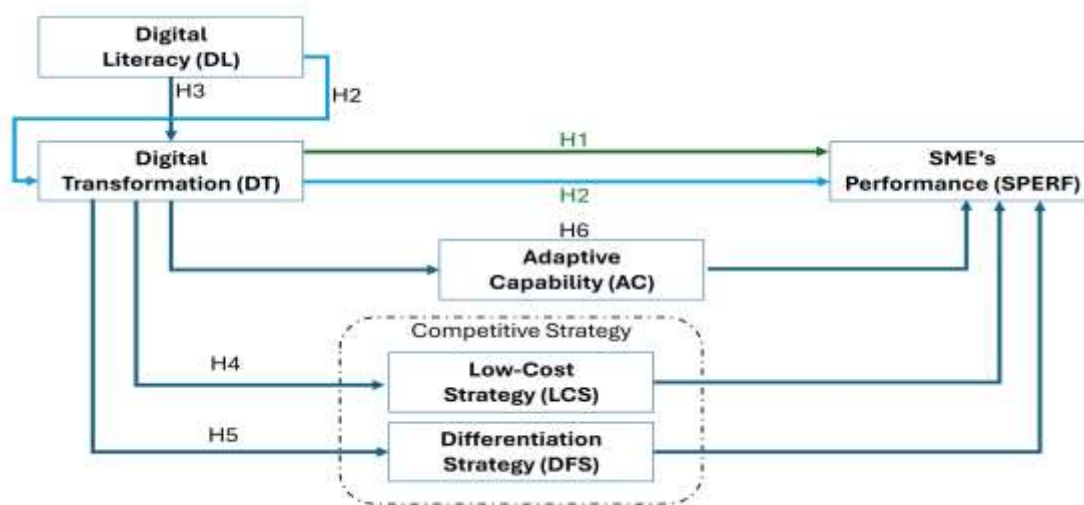


Figure 1. Conceptual Research Model

Source: Authors' own work (2026).

RESEARCH METHODS

This study employed a quantitative cross-sectional survey design. The design was suitable for testing the relationships among digital literacy, digital transformation, competitive strategy, adaptive capability, and SME performance at one point in time. A structured questionnaire was used because the model contained several latent constructs and required comparable responses from a broad sample of SME owners and managers.

The target population consisted of SMEs operating in Jakarta, Indonesia. A screening criterion was applied: only SMEs that had implemented at least one form of DT were included. Eligible digital implementation included e-commerce or digital marketing, simple cloud-based systems, digital payment systems, simple accounting systems, or simple AI and data analytics. This screening ensured that respondents had relevant experience to evaluate DT-related constructs.

Convenience sampling was selected because a complete, publicly accessible sampling frame of all digitally transforming SMEs in Jakarta was unavailable. The study distributed 500 questionnaires and obtained 425 valid, complete responses, producing an 85% response rate. The sample size was adequate for PLS-SEM and exceeded the minimum requirement for testing a model with multiple mediators.

The questionnaire contained two sections. The first section collected demographic information, including gender, age, education, years of operation, number of employees, and type of DT implementation. The second section measured the latent constructs using a five-point Likert scale ranging from 1, strongly disagree, to 5, strongly agree. The constructs were digital literacy, digital transformation, low-cost

strategy, differentiation strategy, adaptive capability, and SME performance.

Digital transformation was measured through eight items covering the integration of digital technologies, business model innovation, digitalized operations, and technology-enabled value creation. Digital literacy items covered digital tool proficiency, information evaluation, and learning capacity. Low-cost strategy items covered cost control, automation, efficiency, resource utilization, and price competitiveness. Differentiation strategy items covered uniqueness, innovation, service quality, and customization. Adaptive capability items covered environmental scanning, opportunity sensing, and operational reconfiguration. SME performance items covered profitability, sales revenue, customer satisfaction, market share, and innovation.

Content validity was assessed by two senior academics with expertise in digital transformation and strategic management. A pretest with 30 respondents led to minor revisions in item wording. Procedural remedies for common method bias included clear sectional separation of constructs and careful item wording. Harman's single-factor test and full collinearity VIF checks were also used as statistical remedies. Non-response bias was assessed by comparing early and late respondents, and no significant differences were found at $p > 0.05$.

Data analysis was conducted using SPSS v.26 and SmartPLS v.4. SPSS was used for demographic profiling and descriptive statistics. SmartPLS was used for partial least squares structural equation modeling. The analysis followed a two-step procedure: first, the measurement model was examined for reliability, convergent validity, and discriminant validity; second, the structural model was tested using

bootstrapping with 5,000 resamples to estimate direct and indirect effects.

The research procedure followed these stages: literature review and model development, construct operationalization, questionnaire validation and pretest, respondent

screening, survey distribution, data cleaning, descriptive analysis in SPSS, measurement model assessment in SmartPLS, structural model and mediation testing, and interpretation of theoretical and practical implications.

Table 1. Demographic Profile of Respondents (n = 425)

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	248	58.4
	Female	177	41.6
Age	< 20 years	12	2.8
	20-29 years	102	24.0
	30-39 years	156	36.7
	40-49 years	118	27.8
	50 years and above	37	8.7
Education	Elementary	8	1.9
	Junior High School	24	5.6
	Senior High School	98	23.1
	Diploma (D3)	87	20.5
	Bachelor's Degree (S1)	208	48.9
Years of Operation	Less than 2 years	42	9.9
	2-5 years	138	32.5
	6-10 years	143	33.6
	More than 10 years	102	24.0
Number of Employees	1-10 employees	219	51.5
	11-20 employees	143	33.7
	21-30 employees	63	14.8
DT Implementation Type	Simple E-commerce/Digital Marketing	152	35.8
	Simple Cloud-Based Systems	62	14.6
	Simple Digital Payment Systems	97	22.8
	Simple Accounting Systems	56	13.2
	Simple AI/Simple Data Analytics	58	13.6

Source: Authors' own work (2026).

RESULTS AND DISCUSSIONS

The results are presented in three stages. First, the demographic profile and descriptive statistics describe the research sample and the general level of each construct. Second, the measurement model confirms reliability and validity.

Third, the structural model reports hypothesis testing and mediation results.

The demographic profile indicates that male respondents represented 58.4% of the sample, while female respondents represented 41.6%. The dominant age group was 30-39 years at 36.7%,

followed by 40-49 years at 27.8%. Most respondents held a Bachelor's degree, and the majority of enterprises employed 1-10 employees. The most common DT implementation was simple e-commerce or digital marketing, followed by digital payment systems.

The descriptive statistics show moderately high levels across all constructs. Digital transformation

recorded the highest mean score, indicating that the screened sample possessed meaningful digital transformation engagement. Adaptive capability had the lowest mean but still remained above the scale midpoint, suggesting that respondents recognized some ability to respond to changing technological and market conditions.

Table 2. Descriptive Statistics of Latent Constructs (n = 425)

Construct	N	Min	Max	Mean	Std. Dev.
Digital Literacy (DL)	425	1.00	5.00	3.82	0.641
Digital Transformation (DT)	425	1.00	5.00	3.97	0.589
Low-Cost Strategy (LCS)	425	1.00	5.00	3.74	0.672
Differentiation Strategy (DFS)	425	1.00	5.00	3.81	0.654
Adaptive Capability (AC)	425	1.00	5.00	3.69	0.698
SME Performance (SPERF)	425	1.00	5.00	3.88	0.621

Source: Authors' own work (2026). Analyzed using SPSS v.26.

The measurement model demonstrated acceptable reliability and validity. Cronbach's alpha values exceeded 0.70 for all constructs, and composite reliability values also exceeded 0.70, confirming internal consistency. All average variance

extracted values were above 0.50, confirming convergent validity. The discriminant validity results were also acceptable because the square root of the AVE for each construct exceeded its correlations with other constructs.

Table 3. Measurement Model - Reliability and Validity

Construct	Items	Cronbach's Alpha (CA)	Composite Reliability (CR)	Average Variance Extracted (AVE)
Digital Literacy (DL)	5	0.841	0.883	0.601
Digital Transformation (DT)	8	0.872	0.901	0.558
Low-Cost Strategy (LCS)	5	0.813	0.860	0.553
Differentiation Strategy (DFS)	4	0.826	0.875	0.579
Adaptive Capability (AC)	7	0.889	0.912	0.579
SME Performance (SPERF)	7	0.878	0.906	0.573

Source: Authors' own work (2026). Analyzed using SmartPLS v.4.

Table 4. Discriminant Validity - Fornell-Larcker Criterion

	DL	DT	LCS	DFS	AC	SPERF
DL	0.776					
DT	0.541	0.747				
LCS	0.432	0.498	0.744			
DFS	0.421	0.487	0.524	0.761		
AC	0.463	0.512	0.496	0.508	0.761	
SPERF	0.398	0.579	0.547	0.538	0.553	0.757

Note: Diagonal elements represent the square root of AVE; off-diagonal elements are inter-construct correlations. Source: Authors' own work (2026).

The structural model produced strong explanatory power. The model explained 62.3% of the variance in SME performance, 24.8% of the variance in digital transformation, 24.8% of low-cost strategy, 23.7% of differentiation strategy, and 26.2% of adaptive capability. These values indicate that the model provides a meaningful explanation of how DT creates performance value among Jakarta SMEs.

All six hypotheses were supported. Digital transformation had a significant

positive direct effect on SME performance, confirming H1. Digital literacy had a significant positive effect on DT, confirming H3. The indirect effect of digital literacy on SME performance through DT was also significant, confirming H2. Low-cost strategy, differentiation strategy, and adaptive capability were significant mediators of the DT-performance relationship, confirming H4, H5, and H6.

Table 5. Structural Model Results - Hypothesis Testing

Hypothesis	Path	Beta (β)	t-Statistic	p-Value	95% CI	Decision
H1	DT -> SPERF	0.312	6.842	0.000	[0.221, 0.401]	Supported
H2	DL -> DT -> SPERF (indirect)	0.189	5.213	0.000	[0.116, 0.263]	Supported
H3	DL -> DT	0.498	10.741	0.000	[0.402, 0.591]	Supported
H4	DT -> LCS -> SPERF (indirect)	0.143	4.872	0.000	[0.083, 0.205]	Supported
H5	DT -> DFS -> SPERF (indirect)	0.137	4.618	0.000	[0.076, 0.198]	Supported
H6	DT -> AC -> SPERF (indirect)	0.128	4.341	0.000	[0.068, 0.188]	Supported

Note: R^2 (SPERF) = 0.623; R^2 (DT) = 0.248; R^2 (LCS) = 0.248; R^2 (DFS) = 0.237; R^2 (AC) = 0.262. Bootstrap with 5,000 resamples. Source: Authors' own work (2026). Analyzed using SmartPLS v.4.

3.1 Discussion of Findings

The confirmation of H1 demonstrates that DT directly strengthens SME performance in Jakarta. Digital adoption helps SMEs reduce transaction costs, improve market access, support faster communication with customers,

and increase operational efficiency. This finding is consistent with evidence that digital adoption can improve domestic sales, productivity, and customer reach when implementation is aligned with business needs.

The support for H3 confirms that digital literacy is a central antecedent of DT. SME owners and employees with stronger digital literacy are more capable of selecting digital tools, using them appropriately, evaluating digital information, and sustaining implementation. In this study, the path coefficient from digital literacy to DT was strong, suggesting that digital skill development should be treated as a core managerial priority rather than a peripheral training activity.

The significant indirect relationship in H2 confirms that digital literacy improves performance through DT. This finding is important because it shows that training alone does not automatically improve performance. Digital literacy must be converted into actual transformation of business activities, including digital marketing, digital payment, online selling, cloud-based administration, and data-informed decisions. Capacity-building programs should therefore combine skills training with implementation support.

The mediation findings for H4 and H5 show that competitive strategy is an important pathway between DT and performance. DT can support a low-cost strategy by automating tasks, reducing manual errors, lowering administrative costs, and improving resource use. DT can also support differentiation by improving service quality, enabling personalization, strengthening customer engagement, and helping SMEs develop distinctive offerings. In Jakarta's competitive and price-sensitive market, both pathways are relevant.

The mediation finding for H6 confirms the importance of adaptive capability. SMEs obtain stronger value from DT when they can sense technological changes, seize digital opportunities, and reconfigure routines. The effect size of adaptive capability was

significant but slightly lower than the competitive strategy mediators, suggesting that capability development may require a longer time horizon and more deliberate organizational learning.

Overall, the findings extend the Resource-Based View by showing that digital literacy and DT infrastructure can function as strategic resources. They also extend Dynamic Capability Theory by demonstrating that adaptive capability and competitive positioning are mechanisms that convert digital resources into performance outcomes. The Jakarta context adds empirical specificity to the growing literature on SME digital transformation in emerging economies.

CONCLUSION AND SUGGESTION

4.1 Conclusion

This study developed and tested a model explaining how digital transformation improves SME performance in Jakarta, Indonesia. The findings confirm that digital transformation has a significant positive direct effect on SME performance. Digital literacy is also a significant driver of digital transformation, and digital transformation mediates the relationship between digital literacy and performance. In addition, low-cost strategy, differentiation strategy, and adaptive capability significantly mediate the relationship between digital transformation and SME performance.

The main theoretical contribution is the integration of digital literacy, competitive strategy, and adaptive capability into one model. The study demonstrates that DT creates value through a layered process: digital literacy enables adoption, DT changes the way business is conducted, competitive strategy translates digital tools into market positioning, and adaptive capability helps firms respond to turbulence. This contribution is relevant

to both Resource-Based View and Dynamic Capability Theory.

For SME owners and managers, the findings suggest that DT should be pursued deliberately, even through simple and affordable tools. Digital literacy training should be combined with concrete implementation assistance. SMEs should use digital tools not only for operational automation but also for cost leadership, differentiation, customer engagement, and organizational learning.

For policymakers and support institutions, the findings suggest the need for integrated programs that combine digital literacy training, affordable digital infrastructure, advisory support, and assistance in competitive strategy formulation. Public digitalization initiatives should not stop at encouraging technology adoption; they should help SMEs convert adoption into measurable performance gains.

This study has limitations. The cross-sectional design limits causal inference. Convenience sampling limits generalizability. Self-reported measures may contain response bias, although procedural and statistical safeguards were applied. Future studies should use longitudinal designs, probability-based sampling, objective performance data, and comparative samples across Indonesian cities or Southeast Asian economies. Future research may also examine additional mediators such as innovation capability, knowledge management, organizational resilience, and government digital support.

4.2 Suggestion

Future research should refine the model by testing sector differences, firm age, digital maturity, and government support as moderators. Studies may also compare SMEs that use basic digital tools with those that adopt more advanced AI, analytics, or integrated cloud systems.

Practically, SMEs should conduct periodic digital capability assessments, align digital investments with cost and differentiation objectives, and build adaptive routines through continuous learning. Policy programs should prioritize implementation mentoring so that digital skills are transformed into business process improvement and measurable performance outcomes.

REFERENCES

- [1] Otopah, A. A., Tulasi, E. E., Amofah, O., and Asare-Yeboah, I. T. (2026). Driving SMEs performance through digital transformation: The mediating role of competitive strategy and adaptive capability. *Journal of Strategy and Management*, 19(2), 251-269. <https://doi.org/10.1108/JSMA-03-2025-0089>
- [2] Susanto, P., Hoque, M. E., Dwita, V., Fitria, Y., Lestari, D., Nofirda, F. A., and Fauzihardani, E. (2026). Digital literacy as a resource: Driving SME performance through digital technology and digital transformation. *Journal of Science and Technology Policy Management*. <https://doi.org/10.1108/JSTPM-05-2025-0216>
- [3] Rahman, M. H., Shin, J., and Makhmatjonovich, M. M. (2026). Digital transformation of SMEs: The nexus of entrepreneur orientation, artificial intelligence adoption and digital literacy. *Digital Policy, Regulation and Governance*. <https://doi.org/10.1108/DPRG-01-2026-0060>
- [4] Samara, I., Almohtaseb, A., and Aldehayyat, J. (2026). Strategic CSR and digital transformation: Pathways to SME performance in a turbulent emerging market. *Journal of Strategy and Management*.

- <https://doi.org/10.1108/JSMA-10-2025-0391>
- [5] Zairbani, A., and Kumar, J. P. (2026). How can SMEs enhance their competitive strategies? A mediation analysis. *Competitiveness Review: An International Business Journal*, 36(2), 337-357. <https://doi.org/10.1108/CR-03-2025-0086>
- [6] Treves, L., Hallikas, J., and Pynnönen, M. (2026). Digital leadership and maturity as drivers of information sharing: Building resilience and performance in SMEs. *Journal of Enterprise Information Management*. <https://doi.org/10.1108/JEIM-08-2025-0758>
- [7] Hernandez Castorena, O., Lopez-Torres, G. C., and Carbajal Sandoval, A. R. (2026). Strategic innovation in operations management to enhance SME performance. *Measuring Business Excellence*. <https://doi.org/10.1108/MBE-06-2025-0127>
- [8] Masudin, I., Pangestuti, R. E., Zulfikarijah, F., Restuputri, D. P., and Widayat, W. (2026). Unpacking sustainability performance through IoT, reverse logistics and green supply chain management in Indonesian poultry SMEs. *Management and Sustainability: An Arab Review*. <https://doi.org/10.1108/MSAR-10-2025-0429>
- [9] Sohu, J. M., Shaikh, S. N., Makhdoom, Q., Shakeel, S. R., and Kherazi, F. Z. (2026). AI-driven digital transformation in SMEs: Pathways to resilience, value co-creation, and sustainable performance. *Journal of Enterprise Information Management*. <https://doi.org/10.1108/JEIM-09-2025-0879>
- [10] Wheelen, T. L. (2018). *Strategic management and business policy: Globalization, innovation, and sustainability*. Pearson.
- [11] Hair, J. F., Jr., Page, M., and Brunsveld, N. (2020). *Essentials of business research methods* (4th ed.). Routledge.