

Digital Transformation, Innovation Capability, and SME Competitiveness: Evidence from Khanh Hoa Province, Vietnam

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Abstract: *This study investigates the effect of digital transformation on the competitiveness of small and medium-sized enterprises (SMEs), highlighting the mediating role of innovation capability. Grounded in the Resource-Based View (RBV) and Dynamic Capabilities Theory, the research develops and empirically tests a structural model that links digital transformation, innovation capability, and SME competitiveness. A quantitative survey was administered to 400 SMEs operating in Khanh Hoa Province, Vietnam, and data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results reveal that digital transformation has a significant positive impact on both innovation capability and SME competitiveness. Furthermore, innovation capability exerts a positive influence on competitiveness and partially mediates the relationship between digital transformation and SME competitiveness. The findings emphasize that digital transformation alone is insufficient to enhance competitive performance unless firms simultaneously develop their innovation capabilities. This study contributes to the growing body of research on digitalization in emerging economies and provides practical insights for SME managers and policymakers aiming to foster digital readiness and innovation-driven competitiveness. Policy implications, limitations, and directions for future research are also discussed.*

Keywords: Digital transformation, Innovation capability, SME competitiveness, Emerging economy

1. Introduction

The rapid advancement of digital technologies has fundamentally transformed business environments worldwide, reshaping competitive dynamics, organizational processes, and innovation systems (Verhoef et al., 2021). Digital transformation is increasingly recognized not merely as the adoption of digital tools, but as a strategic, capability-driven process that alters firm structures, culture, and value creation mechanisms (Susanti et al., 2023). In emerging economies, where institutional environments, resource constraints, and technological infrastructure vary significantly from advanced markets, the digital transformation journey presents unique opportunities and challenges (World Bank, 2022). Small and medium-sized enterprises (SMEs), which constitute the backbone of national economies, are particularly affected by this shift. Their survival and growth depend on how effectively they adopt digital technologies and convert digital investments into competitive advantages (Raimo et al., 2023). Vietnam has emerged as one of Southeast Asia's most dynamic digital economies, with strategic national initiatives such as the National Digital Transformation Program to 2025 and orientations toward 2030 prioritizing digital innovation, productivity enhancement, and competitiveness improvement for the SME sector (Government of Vietnam, 2020). SMEs account for over 97% of all enterprises in Vietnam and play a vital role in employment, industrial restructuring, and regional development (Ministry of Planning and Investment, 2023). However, despite strong policy foundations, many Vietnamese SMEs struggle with limited technological resources, managerial capabilities, innovation culture, and digital readiness (OECD, 2022). As a result, understanding

how digital transformation influences SME competitiveness particularly through organizational capabilities has become an important empirical question. Emerging research suggests that digitalization alone does not guarantee superior performance; instead, firms must possess complementary internal capabilities that allow them to exploit digital technologies effectively (Jonathan & Kuika Watat, 2020). Innovation capability, defined as the ability of an enterprise to develop, assimilate, and commercialize new ideas, products, or processes, is widely acknowledged as a critical dynamic capability that fosters long-term competitiveness in turbulent markets (Felin & Powell, 2016). Prior studies have confirmed that innovation capability enhances SMEs' ability to respond to customer needs, leverage technological advancements, and differentiate in competitive markets (Del Giudice et al., 2021). However, the mediating role of innovation capability in the relationship between digital transformation and SME competitiveness remains under-explored, especially in developing economies where digital maturity and innovation ecosystems are heterogeneous. Extant literature on digital transformation and firm competitiveness has largely focused on developed economies and large corporations (Raimo et al., 2023). Studies in emerging markets have examined digital adoption challenges, digital leadership, and technology readiness, but empirical research explicitly linking digital transformation, innovation capability, and SME competitiveness is limited (Dao & Hoang, 2023). Furthermore, prior research in Vietnam has primarily investigated digital adoption barriers, Industry 4.0 readiness, and innovation systems at the national level (Nguyen & Tran, 2022). Few studies provide firm-level empirical evidence on how digital transformation translates into competitive outcomes through internal capability development in regional contexts. This gap is particularly

Volume 14 Issue 11, November 2025

Fully Refereed | Open Access | Double Blind Peer Reviewed Journal

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relevant in provincial economic hubs such as Khanh Hoa Province, where SMEs play a central role in tourism, logistics, trade, and service-based development, yet face resource constraints and capability gaps in digital transition. Grounded in the Resource-Based View (RBV) and Dynamic Capabilities Theory, this study develops a conceptual model that examines the direct effect of digital transformation on SME competitiveness and the mediating role of innovation capability. RBV posits that firms achieve sustained competitive advantage when they possess valuable, rare, inimitable, and non-substitutable resources (Barney, 1991). Complementarily, Dynamic Capabilities Theory emphasizes the ability of firms to integrate, build, and reconfigure internal capabilities in response to environmental change (Teece, 2018). Digital transformation can be viewed as a strategic enabler that strengthens dynamic capabilities, particularly innovation capability, which in turn enhances SME competitiveness in fast-changing markets. This study contributes to the literature in three key ways. First, it extends digital transformation research by empirically demonstrating its effect on SME competitiveness within the context of an emerging economy. Second, it introduces innovation capability as a mediating mechanism through which digital transformation enhances competitiveness, providing new theoretical insights into capability-driven digitalization. Third, it offers practical implications for SME leaders and policymakers seeking to accelerate digital adoption and innovation-driven growth at the provincial and national levels in Vietnam. To achieve these objectives, a quantitative survey was conducted among 400 SMEs in Khanh Hoa Province, a region undergoing strong modernization and economic transformation. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) to test the hypothesized relationships and validate the mediating mechanism. The results demonstrate that digital transformation significantly enhances both innovation capability and SME competitiveness, and that innovation capability partially mediates this relationship. These findings underscore the importance of developing innovation-oriented internal capabilities alongside digital initiatives to sustain competitive advantages. The remainder of this paper is structured as follows. Section 2 provides a comprehensive literature review and hypothesis development. Section 3 outlines the research methodology. Section 4 presents the analysis and results. Section 5 offers discussion and implications. Section 6 concludes with recommendations, limitations, and directions for future research.

2. Literature Review

2.1 Digital Transformation

Digital transformation refers to the strategic integration of digital technologies into organizational processes, structures, and business models to enhance performance and value creation (Verhoef et al., 2021). Unlike traditional information technology adoption, digital transformation requires firms to redesign workflows, change managerial practices, and foster digital culture and leadership (Susanti et al., 2023). For SMEs, digital transformation encompasses cloud adoption, data analytics, digital platforms, e-commerce, automation, and AI-driven applications (Wamba et al., 2022). In emerging economies, digital adoption is often constrained by financial

resources, technological infrastructure, skills, and institutional support (OECD, 2022). However, SMEs that successfully implement digital initiatives experience improvements in operational efficiency, innovation, customer engagement, and market expansion (Raimo et al., 2023). Digital transformation therefore represents a strategic capability enabling firms to sense opportunities, seize them through technology-enabled processes, and reconfigure internal resources (Teece, 2018), aligning closely with Dynamic Capabilities Theory.

2.2 Innovation Capability

Innovation capability refers to a firm's capacity to generate, absorb, and apply new knowledge to produce novel products, services, or processes (Felin & Powell, 2016). As a dynamic capability, innovation reflects a firm's ability to learn, adapt, and integrate new knowledge into competitive advantage (Del Giudice et al., 2021). In SMEs, innovation capability includes R&D effort, creative problem solving, technology adoption, product development, and collaboration networks (Dao & Hoang, 2023). Studies show that innovation capability is critical in uncertain and technologically intensive environments, strengthening firm resilience and growth (Teece, 2018). Recent research finds that SMEs with higher innovation capability are more agile in responding to market shifts, launching new offerings, improving cost structures, and sustaining competitiveness (Raimo et al., 2023). In emerging markets, innovation capability also mitigates the effects of institutional voids, resource constraints, and technological gaps (Nguyen & Tran, 2022).

2.3 SME Competitiveness

SME competitiveness refers to a firm's ability to sustain superior performance and succeed relative to rivals through market positioning, productivity, innovation, and strategic capabilities (Porter, 1985; World Bank, 2022). It encompasses financial performance, market growth, productivity efficiency, customer satisfaction, and export capabilities (Huggins & Thompson, 2021). Competitive SMEs typically demonstrate strong strategic orientation, operational efficiency, technology utilization, and human capital quality (OECD, 2022). In developing economies, competitiveness is influenced not only by firm-level resources but also digital infrastructure, regulatory frameworks, and ecosystem dynamics (World Bank, 2022). Enhancing SME competitiveness is essential for employment, industrial upgrading, and regional development particularly in rapidly modernizing provinces such as Khanh Hoa.

2.4 Digital Transformation, Innovation Capability, and SME Competitiveness

Digital Transformation and SME Competitiveness

Digital transformation strengthens firm competitiveness by improving productivity, operational efficiency, customer orientation, and innovation outcomes (Susanti et al., 2023). Empirical studies show that firms leveraging digital platforms outperform non-digital peers in growth, adaptability, and decision-making speed (Wamba et al., 2022). Thus:

H1(+): Digital transformation positively affects SME competitiveness.

Digital transformation enriches innovation capability by enabling knowledge integration, technological flexibility, and digital learning (Jonathan & Kuika Watat, 2020). Digital tools facilitate experimentation, collaboration, and rapid market response, thereby supporting organizational creativity and capability renewal (Raimo et al., 2023). Hence:

H2(+): Digital transformation positively affects innovation capability.

Innovation capability enables firms to differentiate, capture new markets, and respond to technological disruption (Felin & Powell, 2016). Empirical evidence confirms that innovative SMEs demonstrate superior performance and competitive positioning (Del Giudice et al., 2021). Therefore:

H3(+): Innovation capability positively affects SME competitiveness.

Digital resources alone do not automatically translate into competitiveness unless firms can transform them into innovative outputs (Teece, 2018). Innovation capability thus acts as a mechanism converting digital initiatives into competitive advantage (Raimo et al., 2023). Accordingly, innovation capability mediates the digital transformation competitiveness relationship.

Proposed research model

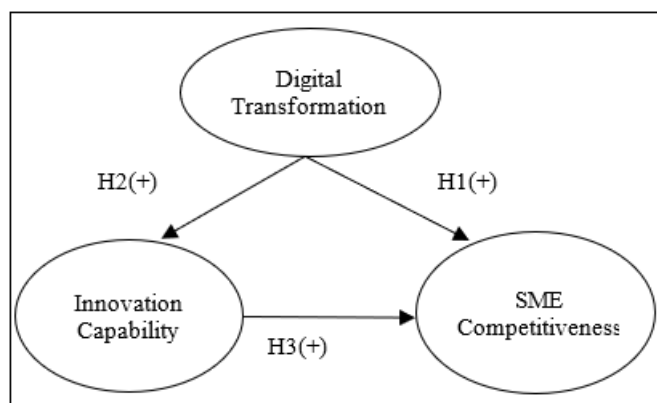


Figure 1: The Proposed Research Model

Source: The author

3. Research Methodology

3.1 Research Design

This study adopts a quantitative research design using a structured survey to empirically test the proposed conceptual model. Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed due to its suitability for predictive analysis, mediation testing, and theory development in emerging market contexts (Hair et al., 2021). PLS-SEM is particularly appropriate for this study because: (i) the research explores complex relationships among constructs; (ii) the sample comprises SMEs with potentially non-normally distributed data; and (iii) the conceptual framework emphasizes prediction and capability-driven mechanisms.

3.2 Population and Sample

The target population consists of small and medium-sized enterprises (SMEs) operating in Khanh Hoa Province, Vietnam. SMEs are defined based on the Vietnamese Government's criteria regarding employment and revenue. A non-probability purposive sampling method was used because obtaining a complete sampling frame of SMEs in provincial regions is challenging and because managers' experience is required to answer capability-related questions. A two-phase data collection approach was adopted: Pilot survey: 80 SMEs (to validate the scales); Main survey: 400 SMEs (final analysis). Respondents include owners, chief executives, deputy directors, and functional managers with direct knowledge of organizational operations and digital practices.

3.3 Data Collection Procedure

Data were collected between from March to May 2025 through both online and paper-based questionnaires, distributed via local business associations, industrial clusters, startup support centers, and enterprise networks in Khanh Hoa. Participation was voluntary and anonymity was ensured to reduce social desirability bias.

3.4 Measurement Scales

All constructs were measured using a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree). Scale items were adapted from prior validated studies and contextualized for Vietnamese SMEs.

Table 1: Measurement scales

Construct	Code	Measurement Items	Source
Digital Transformation (DT)	DT1	Our firm uses digital technologies to improve business processes	Verhoef et al. (2021); Susanti et al. (2023)
	DT2	Digital tools support data-driven decision-making	
	DT3	We apply digital systems to interact with customers and partners	
	DT4	Our business operations are increasingly automated	
	DT5	We invest in new digital platforms and technologies	
Innovation Capability (IC)	IC1	Our firm frequently introduces new ideas and initiatives	Felin & Powell (2016); Del Giudice et al. (2021)
	IC2	We continuously improve our products/services	
	IC3	Employees actively participate in innovation activities	
	IC4	We adopt new technologies faster than competitors	
	IC5	We collaborate with partners to enhance innovation	
SME Competitiveness (COMP)	COMP1	Our products/services are competitive in the market	Porter (1985); Huggins & Thompson (2021)
	COMP2	We achieve customer satisfaction and loyalty	
	COMP3	Our market share has improved in recent years	

	COMP4	We achieve sales and profit growth	
	COMP5	We are more competitive compared to rival SMEs	

Source: Own study

3.5 Data Analysis Techniques

Data were analyzed using SmartPLS 4 with the following steps:

(i) *Measurement model evaluation*

- Cronbach's Alpha & Composite Reliability (CR);
- Average Variance Extracted (AVE);
- Indicator loadings;
- Fornell-Larcker & HTMT discriminant validity.

(ii) *Structural model evaluation:*

- Path coefficients (β) and significance testing via bootstrapping;
- Coefficient of determination (R^2);
- Effect size (f^2);
- Predictive relevance (Q^2);
- Mediation analysis (indirect effects).

3.6 Ethical Considerations

Participation was voluntary and informed consent was obtained. Respondents' identities and firm data were kept confidential and used solely for research purposes.

4. Data Analysis and Results

4.1 Sample Characteristics

A total of 400 valid responses were obtained from SMEs in Khanh Hoa Province. Respondents included business owners (42%), directors/CEOs (31%), deputy directors/managers (27%). Sector distribution reflects the provincial economic structure: services (41%), tourism and hospitality (28%), manufacturing (17%), logistics and trade (14%). Regarding firm size, 63% were small enterprises and 37% medium-sized enterprises. This profile confirms an appropriate representation of the SME population in the province.

4.2 Results

Table 2: Measurement Model Results

Construct	Indicator	Loading	CR	AVE
Digital Transformation (DT)	DT1	0.802	0.892	0.624
	DT2	0.826		
	DT3	0.857		
	DT4	0.773		
	DT5	0.811		
Innovation Capability (IC)	IC1	0.784	0.907	0.664
	IC2	0.832		
	IC3	0.806		
	IC4	0.794		
	IC5	0.818		
SME Competitiveness (COMP)	COMP1	0.854	0.918	0.691
	COMP2	0.861		
	COMP3	0.876		
	COMP4	0.821		
	COMP5	0.833		

Source: Data processing results from author's survey

All outer loadings > 0.70 , CR > 0.70 , AVE $> 0.50 \rightarrow$ good convergent validity

Table 3: Discriminant Validity Fornell-Larcker Criterion

Construct	DT	IC	COMP
Digital Transformation	0.790		
Innovation Capability	0.621	0.815	
SME Competitiveness	0.584	0.657	0.831

Source: Data processing results from author's survey

Bold values = AVE $\rightarrow$ all higher than inter-construct correlations $\rightarrow$ valid discriminant validity

The PLS-SEM measurement model demonstrates strong reliability and validity, with all outer loadings exceeding 0.70, CR > 0.70 , and AVE > 0.50 . Discriminant validity is confirmed via the Fornell-Larcker criterion and HTMT. Structural model evaluation shows that digital transformation positively influences SME competitiveness ($\beta = 0.312$, $p < 0.001$) and innovation capability ($\beta = 0.624$, $p < 0.001$). Innovation capability partially mediates this relationship ($\beta = 0.281$, $p < 0.001$). The model exhibits strong explanatory power ($R^2 = 0.642$) and predictive relevance ($Q^2 = 0.412$), confirming that digital transformation enhances SME competitiveness both directly and indirectly through innovation capability.

4.3 Structural Model Evaluation

Bootstrapping with 5,000 subsamples was conducted to test hypotheses. Variance Inflation Factor (VIF) values ranged from 1.35 to 2.74, indicating no multicollinearity concerns.

Digital transformation significantly positively influenced innovation capability ($\beta = 0.624$, $t = 13.45$, $p < 0.000$) and SME competitiveness ($\beta = 0.312$, $t = 5.21$, $p < 0.000$). Innovation capability also positively influenced SME competitiveness ($\beta = 0.451$, $t = 8.12$, $p < 0.000$).

Table 4: Hypothesis Testing Results

Hypothesis	Path	β	t-value	p-value	Results
H1	DT $\rightarrow$ COMP	0.312	5.21	0.000	Supported
H2	DT $\rightarrow$ IC	0.624	13.45	0.000	Supported
H3	IC $\rightarrow$ COMP	0.451	8.12	0.000	Supported

Source: Data processing results from author's survey

The model explained substantial variance:

- R^2 for Innovation Capability = 0.389
- R^2 for SME Competitiveness = 0.642

Both exceed the minimum threshold of 0.25 for moderate explanatory power in social sciences (Hair et al., 2021). Predictive relevance values ($Q^2 = 0.39$ for COMP; $Q^2 = 0.23$ for IC) confirm predictive capability.

4.4 Mediation Testing

A bootstrapped indirect effect test demonstrated that innovation capability partially mediates the effect of digital transformation on SME competitiveness ($\beta = 0.312$, $t = 5.21$,

$p < 0.000$).

This indicates that digital transformation contributes directly to competitive performance and indirectly through enhanced innovation capability. The mediation pattern aligns with dynamic capability theory, which views digital transformation as an enabler of capability renewal and innovation.

5. Discussion

The objective of this study was to examine how digital transformation influences SME competitiveness in an emerging economy context, and to investigate the mediating role of innovation capability. The empirical results provide strong support for all hypotheses, demonstrating that digital transformation positively affects both innovation capability and SME competitiveness, and that innovation capability serves as a significant partial mediator. These findings contribute to a growing body of literature on digitalization and organizational capabilities in developing markets.

5.1 Digital Transformation and SME Competitiveness

Consistent with hypothesis H1, the results indicate that digital transformation significantly enhances SME competitiveness. This aligns with prior studies that show digitalization improves operational productivity, accelerates decision-making, and enhances customer engagement (Verhoef et al., 2021; Wamba et al., 2022). In the context of Vietnam, where SMEs operate in dynamic and competitive environments, digital transformation enables firms to respond faster to market trends, streamline supply chain activities, and access broader markets via digital platforms. This outcome reinforces the Resource-Based View (RBV) perspective that digital technologies can serve as strategic resources when combined with internal capabilities to create unique value propositions (Barney, 1991). The finding also demonstrates that digital transformation initiatives are increasingly necessary for SMEs to compete effectively not merely an optional technological investment, but a fundamental strategic capability.

5.2 Digital Transformation and Innovation Capability

Hypothesis H2 is supported, confirming that digital transformation positively influences innovation capability. This finding echoes prior research suggesting that digital tools facilitate knowledge acquisition, experimentation, and collaborative innovation (Del Giudice et al., 2021; Raimo et al., 2023). The results support the argument that digital transformation promotes organizational learning and agility, enabling SMEs to develop new products, improve processes, and adapt to competitive pressures more effectively. From a Dynamic Capabilities Theory perspective, digital transformation functions as a capability-building mechanism, enabling firms to sense and seize opportunities while reconfiguring internal structures (Teece, 2018). For SMEs in Khanh Hoa, this process may include adopting e-commerce platforms, digital marketing, ERP systems, or cloud-based solutions to support innovation and new business models.

5.3 Innovation Capability and SME Competitiveness

The results validate hypothesis H3 by establishing that innovation capability significantly improves SME competitiveness. This finding is consistent with prior studies highlighting the importance of innovation in driving differentiation, growth, and sustained performance (Felin & Powell, 2016; Dao & Hoang, 2023). SMEs with greater innovation capacity can introduce new offerings, improve service delivery, and build stronger customer relationships essential advantages in competitive and resource-constrained environments. Moreover, the positive effect of innovation capability underscores the relevance of innovation-driven growth strategies for emerging markets, where institutional support and technological ecosystems are still developing. It suggests that building internal innovation capacity is crucial for SMEs to compete not only domestically but also within regional and global supply chains.

5.4 Mediating Role of Innovation Capability

The results confirm partial mediation of innovation capability between digital transformation and SME competitiveness. This suggests that while digital transformation has a direct effect on competitiveness, its full benefits materialize only when firms develop the ability to innovate. This mediating effect reflects a capability-based view that digital technologies alone do not guarantee competitive advantage; instead, they must be complemented by organizational learning, creative culture, and knowledge integration (Raimo et al., 2023). The partial mediation observed indicates that SMEs derive competitive benefits both directly from digital adoption and indirectly through improved innovation capability. This aligns with studies indicating that digital readiness supports innovation-driven business models, particularly in developing Asian economies (Nguyen & Tran, 2022). The findings highlight the need for SMEs to invest concurrently in digital transformation and capability development to maximize competitive gains.

6. Conclusion and Implications

6.1 Conclusion

This study investigates the relationships between digital transformation, innovation capability, and SME competitiveness in the context of Vietnam, focusing on Khanh Hoa Province. Using data from 400 SMEs and applying PLS-SEM, the findings confirm that digital transformation directly enhances SME competitiveness and strengthens innovation capability, which in turn positively influences competitiveness. Moreover, innovation capability partially mediates the digital transformation competitiveness relationship. These results highlight that digital transformation alone does not guarantee improved competitiveness; SMEs must build innovation capacity to fully leverage digital tools. The research extends the RBV and Dynamic Capabilities Theory by demonstrating that digital transformation is both a strategic resource and a capability-enabling mechanism in emerging markets.

6.2. Theoretical Implications

This study provides several important theoretical contributions to the digital transformation and SME competitiveness literature. First, by verifying the direct and indirect effects of digital transformation on firm competitiveness, the study extends the Resource-Based View (RBV), demonstrating that digital technologies serve as valuable strategic resources only when firms possess the internal capabilities needed to fully leverage them. Second, drawing on Dynamic Capabilities Theory, the findings confirm that digital transformation not only enhances operational processes but also fosters capability renewal by strengthening innovation capability. This reinforces the argument that dynamic capabilities particularly innovation capability play a central role in converting technological investments into competitive advantage. Third, the study fills an empirical gap by providing provincial-level evidence from an emerging economy, addressing a research space that has traditionally been dominated by studies in developed countries and large corporations. Finally, the confirmation of innovation capability as a partial mediator offers a clearer mechanism through which digital transformation contributes to competitive performance, advancing theoretical understanding of capability-based digital transformation in SMEs.

6.3 Managerial Implications

The findings offer practical guidance for SME owners and managers seeking to improve competitiveness in the digital era. While digital technologies are essential, the results emphasize that technology investments alone do not automatically lead to superior performance. Instead, SMEs must strategically develop innovation-driven internal capabilities to fully realize the benefits of digital transformation. Managers should prioritize building a culture of innovation, enhancing digital skills among employees, and encouraging internal knowledge sharing and creative problem-solving. Furthermore, SMEs should adopt data-driven decision-making tools, strengthen customer interaction through digital platforms, and leverage automation to improve efficiency. Collaboration with universities, technology providers, and government programs can also expand access to digital knowledge and innovation resources. Overall, SMEs that combine digital adoption with sustained efforts to nurture innovation capability will be better positioned to compete in dynamic and uncertain market environments.

6.4 Policy Implications

The study also offers important implications for policymakers and regional development authorities. Given the critical role of SMEs in Vietnam's economic structure, government agencies should design integrated support programs that promote both digital adoption and innovation capability development. In provinces like Khanh Hoa, establishing digital innovation hubs and technology support centers could help SMEs overcome technological and skill-related barriers. Policymakers should consider offering financial incentives such as tax credits, subsidized digital tools, and innovation grants to encourage technology investment and R&D activities. Additionally, training initiatives focused on digital

literacy, advanced technology use, and innovation management will enable SME leaders to better navigate digital transformation. Partnerships between public institutions, universities, and industry associations can further strengthen local innovation ecosystems and ensure that SMEs in emerging regions are not left behind in the digital economy.

6.5 Limitations and Future Research

Despite offering valuable insights, this study has several limitations that provide opportunities for future research. First, the use of cross-sectional data restricts the ability to analyze changes in digital and innovation capabilities over time; future studies may employ longitudinal designs to observe dynamic capability development. Second, although the sample of 400 SMEs in Khanh Hoa provides meaningful evidence, expanding the research to multiple provinces or conducting cross-country comparisons within ASEAN would enhance generalizability. Third, the study relies on self-reported survey data, which may be influenced by respondent perceptions; combining survey data with objective performance metrics or case studies could strengthen validity. Additionally, future research may integrate moderating variables such as digital leadership, environmental dynamism, or absorptive capacity to further explore contextual factors that shape SME digital transformation outcomes. Finally, additional constructs such as innovation ambidexterity or digital ecosystem participation may extend the model and deepen understanding of capability-driven competitiveness in emerging economies.

References

- [1] Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120. <https://doi.org/10.1177/014920639101700108>.
- [2] Del Giudice, M., Scuotto, V., Garcia-Perez, A., & Petruzzelli, A. M. (2021). Shifting wealth II in the digital age: Innovating through digitalization. *Journal of Business Research*, 128, 279-291. <https://doi.org/10.1016/j.jbusres.2021.02.011>.
- [3] Dao, T. K., & Hoang, T. G. (2023). Innovation capability and performance of Vietnamese SMEs: The mediating role of learning orientation. *Asia Pacific Journal of Innovation and Entrepreneurship*, 17(3), 401-420.
- [4] Felin, T., & Powell, T. C. (2016). Designing organizations for dynamic capabilities. *California Management Review*, 58(4), 78-96. <https://doi.org/10.1525/cmr.2016.58.4.78>.
- [5] Government of Vietnam. (2020). *National digital transformation program to 2025 with orientations toward 2030*. Hanoi: Government Publishing Office.
- [6] Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). Sage.
- [7] Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115-135. <https://doi.org/10.1007/s11747-014-0403-8>.
- [8] Huggins, R., & Thompson, P. (2021). Entrepreneurial ecosystems and the competitiveness of regions. *Small*

- Business Economics*, 56(1), 503-520.
<https://doi.org/10.1007/s11187-019-00213-6>.
- [9] Jonathan, D., & Kuika Watat, J. (2020). Digital transformation in developing countries. *Technological Forecasting and Social Change*, 161, 120298.
<https://doi.org/10.1016/j.techfore.2020.120298>
- [10] Ministry of Planning & Investment. (2023). *Vietnam SME Development Report*. Hanoi: MPI.
- [11] Nguyen, T. H., & Tran, Q. T. (2022). Digital capability and firm innovation performance in Vietnam. *Journal of Asian Business and Economic Studies*, 29(2), 160-177.
- [12] OECD. (2022). *SME digitalization and productivity in emerging markets*. OECD Publishing.
- [13] Porter, M. E. (1985). *Competitive advantage*. Free Press.
- [14] Raimo, N., De Bellis, F., Zito, M., & Vitolla, F. (2023). Digital transformation and firm performance: The role of strategic alignment and innovation. *Technovation*, 122, 102716.
<https://doi.org/10.1016/j.technovation.2023.102716>.
- [15] Susanti, D., Saragih, H., Yazid, M., & Nurhayati, M. (2023). Digital transformation, dynamic capability, and competitive advantage in SMEs. *International Journal of Productivity and Performance Management*, 72(2), 511-531.
- [16] Teece, D. J. (2018). Business models and dynamic capabilities. *Long Range Planning*, 51(1), 40-49.
<https://doi.org/10.1016/j.lrp.2017.06.007>.
- [17] Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., & Qi, Y. (2021). Digital transformation: A multidisciplinary reflection. *Journal of Business Research*, 122, 889-901.
<https://doi.org/10.1016/j.jbusres.2019.09.022>.
- [18] Wamba, S. F., Dubey, R., Gunasekaran, A., & Akter, S. (2022). The performance effects of big data analytics capability and digital transformation. *International Journal of Production Economics*, 243, 108341.
<https://doi.org/10.1016/j.ijpe.2021.108341>.
- [19] World Bank. (2022). *Vietnam digital economy report*. Washington, DC: World Bank.
- [20] World Bank. (2023). *SME competitiveness and technology adoption in ASEAN emerging markets*. World Bank Group.
- [21] Zeng, D. Z. (2020). *Building a competitive city: Innovation and entrepreneurship in Asia*. World Bank.