



Digital Transformation and Export Performance of Smes: The Mediating Role of Innovation Capability in Emerging Markets

Yijia Guo

Macau University of Tourism, Macau, China

18306513257@163.com

Abstract. This research paper examines how digital transformation has affected the export performance of small and medium-sized enterprises (SMEs) operating within emerging markets while focusing on the mediating influence of innovation capability. Employing a quantitative survey method with a sample size of 280 and SPSS analysis, this research demonstrates that organisational readiness contributes to digital adoption. Additionally, the research provides evidence that digital transformation directly affects business export intensity and that innovation capability plays a key role in mediating this relationship. In concluding the study, the authors speculate that SMEs will need to convert their technological investments into strategic innovation capacities in order to achieve sustainable global competitiveness as the world becomes increasingly digitised and competitive.

Keywords: Digital Transformation, SME Export Performance, Innovation Capability, Emerging Market, Organisational Readiness, SPSS, Internationalisation, TOE Framework, RBV Model

1 Introduction

SMEs in emerging markets face pressures associated with an increasingly digital and globally integrated export environment. Digital transformation has become more than just adopting technology; it is about leveraging digital tools for greater market intelligence, improved communications, more efficient production processes, better customer responsiveness, and strengthened cross-border coordination. Recent research suggests that digital transformation capabilities are important for determining SME export outcomes, especially when firms can convert their digital investment into innovation capability to upgrade their market position [5]. An example of this is that through enhancing digitalisation and innovation capabilities, SMEs have been able to increase their export intensity in transition economies. Equally, digital capabilities improve export performance through a capability upgrade [12]. This shows that digitalisation is reshaping the global value chain and thus imposing a strong impact on the export performance

of small and medium enterprises. Additionally, in the case of Vietnamese SMEs, innovation-based digital transformation has also been linked to improved export performance through innovation capability [19]. This provides a compelling reason to assert that digital transformation not only affects export performance rates directly but also likely works indirectly through innovation capability to assist SMEs in creating new products, updating processes, and responding more rapidly to foreign market demands.

1.1 Rationale and Problem Statement

Although digital transformation is increasingly important for export-oriented SMEs, there is still a lack of consistent evidence from recent studies across emerging market countries. While some studies have found that digital transformation positively affects export intensity, export performance, marketing performance, and competitiveness, digital investment alone is not enough unless firms convert it into stronger capabilities, such as innovation, GVC upgrading, or market-expansion capabilities [1], [3]. The problem is that a limited number of empirical studies have isolated innovation capability as the mechanism through which digital transformation can create export growth for SMEs in emerging markets. This study addressed that gap by simultaneously testing both the direct and indirect impact of innovation capability on the export success of SMEs through a comprehensive model.

1.2 Aims and Objectives

The study aims to analyse how digital transformation influences the export performance of SMEs in emerging markets and to test whether innovation capabilities mediate the relationship.

Objectives:

- To assess SME's level of digital transformation in the selected emerging market
- To examine the direct effect of digital transformation on an SME's export performance
- To test the mediating role of innovation capability in the relationship between an SME's digital transformation and its export performance
- To provide practical implementations for SME managers and policymakers on strengthening export competitiveness through digital or innovation capabilities.

1.3 Research Questions

- What is the current level of digital transformation among exporting SMEs in the selected emerging market?
- To what extent does the digital transformation directly influence the export performance of the SMEs?
- How do innovation capabilities mediate the relationship between digital transformation and export performance?

- What specific digital innovation-driven strategies can managers and policymakers implement to strengthen the global competitiveness of emerging markets?

1.4 Research Significance

This research is significant as it shifts the focus from traditional digital adoption to strategic conversion of technology into innovation capability. By identifying the mediating pathway, the study provides a practical roadmap for SME managers and policymakers to focus their investments to improve the organization's agility, ultimately driving higher value export performance in the competitive global value chain.

2 Literature Review

2.1 Digital Transformation and Export Performance

Digital transformation is increasingly linked to improved export performance capabilities, as well as their capabilities to export. Digital capabilities improve a firm's ability to reach international markets, providing for better information gathering and also resulting in improved cross-border coordination. The study, which focuses on the analysis of 131 export-related SMEs, found that digital capability improvements enhance export performance through greater GVC Upgrading. This shows that technology must be transformed into a strategic capability to create export performance [12]. This finding is also supported by broader data from across countries. The study, which involved 8,048 SMEs from 16 transitional economies, found that SMEs that leverage digitalisation along with their innovative capabilities in their export strategy can create more export intensity [5]. This data supports the idea that the translation of digitalisation into capability development yields a higher probability of improved exports rather than viewing digitalisation as a separate technology investment. Hence, based on these studies, it can be evaluated that the improvement of export through improved digital transformation results in strengthening access to export markets, trade response time, and overall international competitiveness. Therefore, it is reasonable to hypothesise that digital transformation positively influence SME's export performance.

H1: Digital transformation positively influences SME export performance

2.2 Organisational Readiness for Digital Transformation in Emerging Market SMEs

Organisational readiness is a prerequisite for the digital transformation because SMEs can only integrate digital tools when they are ready and have the necessary skills, infrastructure, leadership support, and technical capability. A recent study with 307 SME owners and managers in Malaysia using a cross-sectional survey found that digital entrepreneurship adoption was driven by employee knowledge, compatibility, and competitive pressure, while technology readiness had a significant impact on the digital transformation process [13]. Thus, organisational readiness is not just a status given to

an organisation prior to it adopting digital tools; it is an active force driving an organisation towards digital transformation. This is reinforced by another study, which argues that SME digital organisational readiness should be measured using behaviours, digital capability, and the extent to which technology-related capabilities are embedded in the firm [16]. This means that to realise the maximum value from transformation projects, SMEs must have measurable technical readiness to undertake transformation, not just access to tools. Similarly, del Socorro Encinas-Grijalva et al. (2024) discovered that the key components of SME digital transformation readiness include strategy, culture, organisation, and technical capability [4]. Thus, based on this evidence, it is evaluated that organisational readiness, such as strong technical, organisational, and human resource preparedness, is the key antecedent of digital transformation in SMEs. Therefore, it is reasonable to hypothesize that organisational readiness positively influences the level of digital transformation.

H2: Organisational readiness (technical adoption) positively influences the level of digital transformation

2.3 Mediating Role of Innovation Capability

Digital transformation can translate into stronger international outcomes when firms possess innovation capability. A recent study used data from Chinese publicly traded companies over 10 years (from 2012 to 2022) and found that firms with digital transformation are not only faster in their first instance of internationalization, but also more likely to expand internationally (in both speed of initial internationalization and speed of post-first internationalization) [9]. Therefore, it is identified that digital transformation helps firms to adapt to uncertainty, using internal knowledge sharing, and building an innovation ecosystem that facilitates their international growth. Additionally, the study that explored 428 Ugandan SMEs using covariance-based SEM, showed that internal digital capabilities enable firms to innovate through a conversion process, confirming that both readiness and digital inputs matter because they are transformed into innovation performance [2]. Similarly, another study examined company information from more than 10 years of data and determined that innovation capability positively impacts the complexity of technology used to export to international markets, while digital transformation acts as a mechanism of connecting innovation to improved international export performance [20]. Thus, these studies provide clear evidence that digital transformation strengthens a firm's innovation capability, which allows the firm to maximise the exportation of its products. Therefore, it is conceivable to hypothesise that innovation capability mediates the relationship between digital transformation and SME export performance

H3: Innovation capability mediates the relationship between digital transformation and SME export performance

2.4 Theoretical Framework

This research is based on three theoretical frameworks: Technology-Organization-Environment Model Theory, Resource-Based View, and Dynamic Capabilities Theory.

The first of which, according to SME literature, indicates that technology (cybersecurity and IT integration), organization (top management support and governance), and environment (clients or partnerships) have an influence on whether SMEs will adopt digital technologies [7]. Next, the Resource-Based View shows that the innovation results of SMEs are determined by the internal capabilities of the firm level (what SMEs have). Using this theory, the application of digital technology is a resource that contributes to the overall competitive advantage, as it will be difficult for competing firms to replicate the capacity or bundle of capacities [11]. Finally, the Dynamic Capabilities Theory describes the mediating pathway because research conducted on SMEs in Ghana modelled the use of digital capabilities and digital strategies as mediators of the digital transformation process in their operations [6]. In summary, based on the evidence, these three theoretical frameworks help to explain how an organisation's readiness relates to digital transformation, how digital resources can be converted into strategic assets, and how an organisation's innovative capacity relates to the export performance of its digital transformations (Figure 1).

2.5 Conceptual Framework

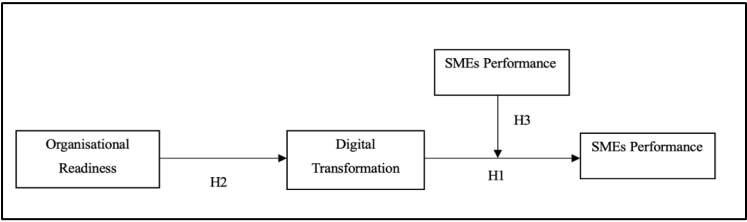


Fig. 1. Conceptual Framework

2.6 Research Gaps

Despite the recognised impact of digital transformation (DT) on small and medium-sized enterprises (SME), a significant gap persists in understanding the internal mechanism that translates digital tools to participate globally. Recent literature demonstrates a positive relationship between DT and overall performance [14], [15] but does not fully explore the mediating role of innovation capability in linking digital adoption and export-specific outcomes [5]. Thus, many studies view the relationship between DT and exports as a direct connection, without considering that the use of both product and process innovations can help resource-constrained SMEs overcome complex barriers to international market entry. This research will address this knowledge gap by testing the existence of the mediation pathway.

3 Methodology

The study adopts a quantitative approach to investigate the relationship between digital transformation and export performance of SMEs located in an emerging market, with

innovation capability serving as the principal mediating variable. Under this framework, the study investigates the way technological integration and digital capabilities affect the strategic capability to innovate and compete in the international market.

3.1 Research Design

This research employs a cross-sectional survey design, which is suitable for the researcher to view and measure all three of the variables: digital transformation (X1), innovation capability (X2), and export performance (Y), and their relationship across diverse SMEs. The cross-sectional design is appropriate as it provides a snapshot of multiple variables and their effects at a specified point in time [10]. Therefore, using cross-sectional data can help to identify the current digital landscape in the emerging markets and identify significant associations between the constructs.

3.2 Sampling Technique and Sample Size

This research utilized purposive sampling, which is a non-probability sampling method, to select participants based on direct knowledge and certain characteristics related to the research purpose and variables. Purposive sampling is used as it helps to provide rich context-specific insights and prioritise depth and specificity over generalisability [18]. For gaining in-depth knowledge, this research focuses on the SME Manager or Owner with Export Experience and demonstrable digital activity, so that the data collected is based on a valid assessment of the impact of digital tools on global trade. There is, on average, between 300 and 400 total responses needed to have the necessary statistical power to conduct the required complex modelling. Initially, 350 questionnaires were sent out to participants through professional networks and industry associations. After removing invalid or incomplete responses, 280 valid responses were used for analysis.

3.3 Research Instrument

The survey instrument is a structured online questionnaire that consists of 26 closed-ended questions. This questionnaire is divided into multiple sections based on the variables. The study uses a 5-point Likert-type scale (ranging from “Strongly Disagree to “Strongly Agree”) for measuring responses. The Likert scale is a tool that helps to measure subjective responses and is often used as a visual evaluation to produce quantitative estimates in systematic reviews [17]. This format is suitable because measuring the constructs or variables from a survey helps to provide quantitative estimates from an experienced person. To ensure validity, the researcher also conducted a pilot test using a small section of participants through an online platform to ensure the relevance of the questionnaire.

3.4 Data Analysis Procedure

The study employs statistical analysis using SPSS because it is well-suited for evaluating complex mediation models using relatively low sample sizes. SPSS efficiently manages large datasets and performs reliable statistical analyses with user-friendly tools; hence, it is a useful tool for conducting statistical analysis [8]. For testing hypotheses 1 and 2, the analysis also focuses on descriptive analysis, correlation, regression, testing the reliability and validity of all measures using Cronbach's alpha, and the KMO score. For testing hypothesis 3, the mediation analysis. Therefore, this analysis helps to evaluate the relationship between digitalisation and export performance.

4 Findings

4.1 Introduction

This chapter gives the empirical results of the study obtained from the collected survey data. It starts by descriptive statistics and demographic analysis, followed by reliability and validity testing of the scale measurements. The chapter also discusses correlations and regression analysis and ends by testing the hypotheses, including mediation analysis, to test the relationship between the main variables.

4.2 Demographic Profile of the Respondents

Table 1. Demographic Profile of Respondents (N = 280)

Variable	Category	Frequency (n)	Percentage (%)
Position	Owner	105	37.5
	Manager	75	26.8
	Export Manager	71	25.4
	Other	29	10.4
Business Age	Less than 3 years	54	19.3
	3–5 years	51	18.2
	6–10 years	85	30.4
	Over 10 years	90	32.1
Employees	1–9	63	22.5
	10–49	136	48.6
	50–249	74	26.4
	250+	7	2.5
Industry	Manufacturing	120	42.9
	Service	64	22.9
	Agriculture/Food	44	15.7
	Retail/Wholesale	40	14.3
	Other	12	4.3
Export Experience	Less than 1 year	30	10.7
	1–3 years	75	26.8

Variable	Category	Frequency (n)	Percentage (%)
Export Markets	4–6 years	102	36.4
	Over 6 years	73	26.1
	Only One Emerging Market	78	27.9
	Two Emerging Markets	99	35.4
	More than 2 Emerging Markets	88	31.4
	Other	15	5.4

There were 280 respondents in the sample, most of whom were owners (37.5%), managers (26.8%), and export managers (25.4%) (Table 1). Most of the firms were well established, 62.5% running for over 6 years. In size, almost half (48.6%) had 10–49 employees, highlighting the presence of small businesses. The manufacturing sector dominated the sample (42.9%), with service businesses coming a distant second (22.9%). The export experience for most firms was found to be moderate, and in particular, moderate experience was reported at 36.4% for 4–6 years. When it comes to market presence, 35.4% of them were active in two emerging markets, while 31.4% were active in more than two, suggesting a fairly widespread international presence.

4.3 Reliability and Validity

Table 2. Reliability Analysis of Measurement Scales

Construct	Number of Items	Cronbach's Alpha
Digital Transformation	5	.895
Innovation Capability	5	.850
Organisational Readiness	5	.857
Export Performance	5	.863

The internal consistency of measurement scales was evaluated with a reliability analysis based on Cronbach's alpha. All constructs showed high reliability (alpha ranging from .850 to .895), which is higher than the recommended alpha value of .70. The highest reliability was found for Digital Transformation ($\alpha = .895$), and this was followed by Export Performance ($\alpha = .863$), Organisational Readiness ($\alpha = .857$) and Innovation Capability ($\alpha = .850$) (Table 2). The results show that the items in each construct are all measuring the intended construct, which suggests the reliability of the scales that were used in this study.

Table 3. KMO and Bartlett's Test of Sampling Adequacy

Test	Value
Kaiser-Meyer-Olkin (KMO) Measure	.957
Bartlett's Test of Sphericity χ^2 (df = 190)	3095.953
Significance (p-value)	< .001

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .957, which is considered excellent suitability of data for factor analysis. The result of .90 or higher represents "excellent adequacy" (based on the standard benchmarks). Also, Bartlett's test of sphericity was statistically significant, χ^2 (190) = 3095.953, $p < .001$, which

demonstrates that the correlation matrix is not an identity matrix (Table 3). The results indicate that these variables have good correlation and are suitable for factor analysis, making the construct validity of the measurement scales in this study valid.

4.4 Correlation Analysis

Table 4. Correlation Matrix of Study Variables

Variable	1	2	3	4
1. Digital Transformation	1			
2. Organisational Readiness for Digital Transformation	.632**	1		
3. Innovation Capability	.691**	.483**	1	
4. Export Performance	.768**	.508**	.627**	1

Note. ** $p < .01$ (2-tailed).

The results of the correlation indicate that all the variables studied are positively and significantly correlated at the 0.01 level. The digital transformation showed a significant and positive correlation with export performance, $r = .768$, $p < .001$, meaning that the higher the digital transformation of an SME, the better the export performance. Innovation capability was also strong, $r = .691$, $p < .001$, and organisational readiness, $r = .632$, $p < .001$, with digital transformation (Table 4). The results revealed that the relationship between innovation capability and export performance was positively significant ($r = .627$; $p < 0.001$).

4.5 Hypothesis Testing

Table 5. Regression Analysis Results for the Effect of Digital Transformation on Export Performance

Variable	B	SE	β	t	p
Constant	1.299	0.132	—	9.862	< .001
Digital Transformation	0.676	0.034	0.768	19.970	< .001

Model Summary: $R = .768$, $R^2 = .589$, Adjusted $R^2 = .588$, $F(1, 278) = 398.814$, $p < .001$

The regression results indicate that digital transformation is statistically significantly related to SME export performance and has a positive effect, $\beta = .768$, $p < .001$ (Table 5). The model accounts for 58.9% of the variance in export performance, which is a high proportion. SMEs that have higher digital transformation scores are also more likely to experience better export sales, profitability, market reputation, and export performance. Therefore, H1 was supported.

Table 6. Regression Analysis Results for the Effect of Organisational Readiness on Digital Transformation

Variable	B	SE	β	t	p
Constant	1.138	0.201	—	5.664	< .001
Organisational Readiness	0.752	0.055	0.632	13.595	< .001

Model Summary: $R = .632$, $R^2 = .399$, Adjusted $R^2 = .397$, $F(1, 278) = 184.834$, $p < .001$

Organisational readiness significantly and positively influenced the digital transformation, $\beta = .632$, $p < .001$ (Table 6). The model accounted for 39.9% of the variance of digital transformation. Overall, it suggests that SMEs with better digital infrastructures, digital skills of their employees, management support, and financial and technical resources are more prone to use and integrate digital technologies in their daily business. Thus, H2 was supported.

Table 7. Mediation Analysis Results (PROCESS Model 4)

Path	Effect	SE	t	p	LLCI	ULCI
DT → IC	0.5820	0.0365	15.927	< .001	0.5100	0.6539
DT → EP (Direct Effect)	0.5630	0.0458	12.284	< .001	0.4728	0.6532
IC → EP	0.1935	0.0544	3.556	< .001	0.0864	0.3005

Table 8. Mediation Analysis Results (EFFECT)

Effect	Boot SE	Boot LLCI	Boot ULCI
DT → IC → EP	0.1126	0.0347	0.0474

Note. The indirect effect is significant as the confidence interval does not include zero (95% CI).

The PROCESS mediation result in table 7 indicated that there was an indirect effect of digital transformation on export performance through the mediation of innovation capability, effect = .1126, 95% CI [.0474, .1824] (Table 8). The confidence interval does not contain zero; therefore, mediation is supported. The direct effect was also notable, $B = .5630$, $p < .001$, indicating that innovation capability partially mediates the effect of digital transformation on export performance of SMEs. Therefore, H3 was supported.

4.6 Hypothesis Summary

Table 9. Hypothesis and its decision

Hypothesis	Full hypothesis statement	Decision
H1	Digital transformation positively influences SME export performance.	Supported
H2	Organisational readiness (technical adoption) positively influences the level of digital transformation.	Supported
H3	Innovation capability mediates the relationship between digital transformation and SME export performance.	Supported

5 Discussion & Implication

5.1 Discussion

From Table 9, the support for hypothesis 2 (H2) confirms the assertion that organisational readiness is the critical antecedent of digital transformation in organisations, validating the support for the first research objective. This shows that an organisation must

have both adequate technical and human resource readiness (on the part of the employees) if it intends to implement digital tools successfully. Furthermore, addressing the second objective, the validation for hypothesis 1 (H1) establishes that digital transformation directly enhances SME export performance. These findings reinforce the results of [5], which show that leveraging digitalisation in export strategies leads to higher export intensity. This suggests that digital tools provide enhanced market intelligence and improved coordination across border operations and allow for more effective navigation of the internationalization barriers that exist today. Most significantly, the support for hypothesis 3 (H3) achieves the third objective, which substantiates that the primary mechanism by which this happens is through innovation capacity. The findings reinforce the study of [12], which supports the idea that digital transformation acts as a mechanism connecting innovation to improved export success. This means that while digital inputs do not directly result in increased export volume, they will result in a greater capacity to innovate, which ultimately creates the opportunity for digital tools to be converted to innovative new products or improved, updated processes. The studies regarding the relationship between innovation transformation and export intensity in transition economies also support this mediating mechanism. The aggregate findings indicate that the digital transformation of an organisation provides SMEs with the ability to innovate and therefore increase their competitiveness in the global marketplace.

5.2 Implications

This study conceptually synthesizes the models of TOE, RBV, and Dynamic Capabilities to demonstrate how internal preparation leads to the accumulation of resources and the outcomes of strategic innovation. In terms of practice, to achieve the final goal, SME managers need to emphasize the importance of technical training and develop a culture of innovation in order to maximise the ROI from digital investments. Also, policymakers should move their focus away from general infrastructure to developing digital innovation ecosystems, providing R&D grants, and providing training in resilience. By implementing these types of interventions, SMEs will be able to turn the adoption of technology into sustainable international competitiveness through the global value chain.

6 Conclusion

This research examined the relationship between digital transformation and export performance in small to medium-sized enterprises (SMEs) located in emerging markets, to identify innovation capabilities as an important intermediary mechanism. The results of this study demonstrate that organisational readiness is the fundamental antecedent to the adoption of digital tools, which assists with improving export performance through improved market intelligence and cross-border coordination. In addition, innovation capability was found to partially mediate this relationship as the engine for converting digital inputs into sustainable competitive advantages within a global context. By integrating three theoretical perspectives (Technology-Organization-Environment [TOE],

Resource-Based View [RBV], and Dynamic Capabilities), this study provides evidence that digital tools must be paired with internal innovative capabilities to ensure long-term global competitiveness for SMEs. To achieve global success, managers and policymakers should place priority on developing digital innovation ecosystems that support the long-term agility of SMEs in the international marketplace, thereby enhancing their success in exporting. However, this research relies upon cross-sectional survey data obtained from SMEs operating in specific emerging market sectors, thereby making it difficult for researchers to generalise results or causally interpret their findings. In order to extend this thesis into future research directions, it is required to use either longitudinal or comparative cross-country methods so that research can better understand how digital transformation and innovative capability develop over time.

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