Digital platform capabilities for sustainable competitive advantage: A moderated mediation model of knowledge acquisition and leadership in emerging market SMEs

Keywords: Digital transformational leadership; platform capability; knowledge acquisition; sustainable competitive advantage; manufacturing SMEs

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Introduction

The digital revolution has reshaped the competitive landscape for manufacturing small and medium enterprises (SMEs) in emerging markets, where resource constraints and digital divides pose significant challenges (Kumar et al., 2020). This study investigates how digital platform capability (DPC) drives sustainable competitive advantage (SCA) in these SMEs, with digital knowledge acquisition (DKA) as a mediating mechanism and digital transformational leadership (DTL) as a moderating factor. Drawing on the dynamic capabilities view (DCV) (Teece et al., 1997), we propose a time-lagged research model to examine the interplay of these factors in resource-constrained contexts.

DPC is conceptualized as a firm's ability to deploy ICT-based resources alongside internal and external assets to address dynamic market needs (Nambisan et al., 2019). It integrates platform integration and reconfiguration competencies, enabling SMEs to transform data into actionable insights. DKA, defined as the process of locating, evaluating, and acquiring external information (Boroomand and Chan, 2022), mediates the relationship between DPC and SCA by converting platform-driven insights into competitive knowledge. DTL, combining transformational leadership with digital orientation, moderates this relationship by fostering innovation and supporting employees through digital change (Schiuma et al., 2024).

Recent studies highlight that analytics-based capabilities, such as big data and IoT, enhance SCA through improved coordination and agility (Vafaei-Zadeh et al., 2024). However, technology alone is insufficient without organizational adaptations, and leadership plays a critical role in enhancing dynamic capabilities (Abdeen et al., 2025). Our model posits that DPC positively influences DKA, which in turn drives SCA, with DTL strengthening these relationships.

Using a time-lagged design with data from 385 emerging market manufacturing SMEs, this study makes several contributions. Theoretically, it extends DCV by clarifying how DPC translates into SCA in resource-constrained settings, addressing the temporal dimension of capability development. It also advances leadership theory by demonstrating DTL’s moderating role in digital transformation. Practically, it offers SME managers actionable insights for leveraging DKA and DTL to enhance digital capabilities and achieve SCA in digitalized markets.

Qualitative study

This qualitative study explores the interplay of DPC, DKA, SCA in emerging market manufacturing SMEs through semi-structured interviews with 15 senior managers, selected via purposive sampling for their experience in digital technology implementation. Conducted via video conferencing, the 45-60 minute interviews were analyzed using reflexive thematic analysis, following a six-phase process and coding procedures, with NVivo 15 software ensuring coding reliability ($\kappa = 0.79$). Four thematic clusters emerged: DPC enhances operational efficiency through integration and scalability; DKA drives tacit and explicit learning for process optimization; DTL fosters transformation via vision articulation and innovation support; and SCA manifests through market differentiation and adaptive capacity. Findings highlight DTL’s moderating role in strengthening the DPC-DKA relationship and DKA’s mediating role in

translating platform capabilities into SCA, offering nuanced insights into digital transformation dynamics in resource-constrained contexts.

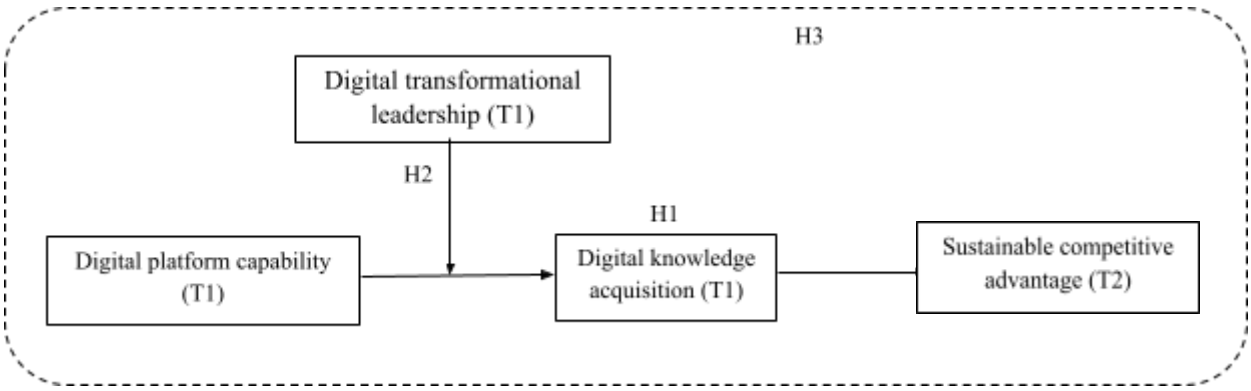

Figure 1. Research model

Source: Authors' proposal

Quantitative study

Literature review and hypothesis development

This study leverages the DCV to examine how DPC fosters SCA in emerging market manufacturing SMEs, with DKA as a mediator and DTL as a moderator. DPC, defined as the ability to deploy ICT-based resources for operational flexibility and market responsiveness, enables SMEs to integrate and reconfigure resources amidst resource constraints and market volatility (Nambisan et al., 2019). DKA mediates this relationship by transforming platform-derived insights into actionable knowledge, crucial for SCA (Boroomand and Chan, 2022). DTL, as a higher-order capability, enhances DPC's effectiveness and the DPC-DKA relationship by providing vision and fostering innovation. The time-lagged model tests three hypotheses:

H1. DPC positively affects DKA, which enhances SCA.

H2. DTL moderates the DPC-DKA relationship;

H3. DTL moderates the mediated pathway from DPC to SCA via DKA.

By addressing theoretical debates on whether digital capabilities alone suffice or require knowledge and leadership orchestration, this study elucidates how SMEs overcome institutional voids and digital transformation barriers to achieve SCA.

Research method

This study employed a time-lagged survey design to test a moderated mediation model examining DPC, DKA, DTL, and SCA in Vietnamese manufacturing SMEs, a context ideal for studying digital transformation due to rapid industrial growth (Vo Thai et al., 2024). A survey instrument, validated through a field test with 30 executives, measured DPC (Cenamor et al., 2019), DTL (Chen and Chang, 2013), DKA (Boroomand and Chan, 2022), and SCA (Chang, 2011) using a 5-point Likert scale, achieving reliability above 0.7. Data were collected from 385

SMEs within the Keieijuku Vietnam Community, using a two-phase approach (six-month interval) to minimize common method bias. Surveys, translated into Vietnamese with back-translation, were distributed online and in-person, yielding a 37.7% response rate. Respondents, including managers and executives with over three years of experience, provided robust data to analyze how DPC, mediated by DKA and moderated by DTL, drives SCA.

Measurement validation

To ensure measurement validity and address common method bias (CMB) in testing the moderated mediation model of DPC, DKA, DTL, and SCA, we conducted Harman's single-factor test, which showed the first factor accounted for 36.381% of variance, below the 50% threshold, indicating minimal CMB. Confirmatory factor analysis confirmed excellent model fit ($\chi^2/df = 1.731$, RMSEA = 0.044, CFI = 0.968) with strong reliability (Cronbach's alpha: 0.800-0.923) and convergent and discriminant validity (AVE: 0.626-0.665; HTMT: 0.053-0.690) (Hair et al., 2021).

Results of hypotheses testing

Table 1. Results of hypothesis testing

Hypothesis	**PLS-SEM**				**PROCESS Macro**		**Results**
	Path coefficient	**t value**	**p value**	**f^2**	**Effect**	**95% CI [LL, UL]**	
H1: DPC → DKA → SCA	0.371	15.054	0.000	-	0.169	[0.111, 0.226]	Accept
H2: DTL x DPC → DKA	0.109	5.656	0.000	0.123	0.149	[0.106, 0.192]	Accept
H3: DTL x DPC → DKA → SCA	0.059	5.054	0.000	-	0.073	[0.042, 0.099]	Accept

	Adjusted R^2	Q^2	RMSE	MAE
DKA	0.893	0.888	0.336	0.213
SCA	0.455	0.456	0.742	0.521

Note: CI = Confidence interval; LL = Lower limit; UL = Upper limit.

Source: Authors' calculation

Table 2. fsQCA findings

Model: SCA = f(DKA, DTL, DPC)
INTERMEDIATE SOLUTIONS
Frequency cutoff: 5
Consistency cutoff: 0.926793
Solution coverage: 0.934697
Solution consistency: 0.901493

	Raw coverage	Unique coverage	Consistency
DTL	0.851057	0.191248	0.906747
DKA*DPC	0.743448	0.0836391	0.942275

Source: Authors' calculation

The PLS-SEM analysis explained 89.3% of DKA variance and 45.5% of SCA variance, with strong predictive relevance (Q^2 = 0.888 and 0.456). H1 confirmed DPC enhances SCA through DKA ($\beta = 0.371$, $p < 0.001$). H2 verified DTL moderates the DPC-DKA relationship ($\beta = 0.109$, $p < 0.001$). H3 supported DTL's moderation of the DPC-DKA-SCA pathway ($\beta = 0.059$, $p < 0.001$). Complementary fsQCA revealed two pathways to SCA: DTL (coverage: 0.851057, consistency: 0.906747) and DKA*DPC (coverage: 0.743448, consistency: 0.942275), confirming equifinality in digital transformation.

Discussion and conclusion

This study validates that DPC enhances SCA in emerging market manufacturing SMEs through DKA, with DTL moderating this relationship (Van Hoang et al., 2025). PLS-SEM and fsQCA confirm DPC drives SCA via DKA (H1), amplified by DTL's moderation of the DPC-DKA link (H2) and the DKA-mediated pathway (H3) (Rifqi et al., 2024). These findings highlight DTL's catalytic role in overcoming digital transformation barriers in resource-constrained contexts, supporting incremental capability development for SCA (Kumar et al., 2020).

Theoretical implications

This study advances dynamic capabilities theory by elucidating how DPC drives SCA in emerging market manufacturing SMEs through DKA, establishing knowledge processes as critical microfoundations (Kumar et al., 2020). It enhances leadership theory by showing DTL catalyzes the DPC-DKA relationship and knowledge-to-advantage pathway (Uzorka and Kalabuki, 2024). The time-lagged design captures temporal dynamics, addressing methodological gaps, while bridging digital transformation and knowledge management literature, contextualizing findings for SMEs in resource-constrained settings (Vafaei-Zadeh et al., 2024).

5.2. Practical implications

This study provides actionable insights for emerging market manufacturing SMEs, emphasizing that managers should treat DPC as a strategic asset to enhance SCA through DKA (Rifqi et al., 2024). Leaders must cultivate DTL behaviors to foster innovation and psychological safety (Sacramento et al., 2024), while establishing formal DKA processes to integrate external insights (Boroomand and Chan, 2022). Incremental capability development and metrics tracking knowledge pathways are recommended to overcome transformation barriers and sustain competitive positioning (Behl et al., 2022).

Limitations and future research

This study's focus on one emerging market limits generalizability; future research should explore diverse contexts. Extended longitudinal and mixed-method designs could deepen insights into digital capability evolution and leadership's role (Verhoef et al., 2021). Examining specific leadership dimensions and knowledge application would enhance understanding.

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