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SME Resilience Strategies Based on Dynamic Capabilities in the Digital Transformation Era: A Systematic Literature Review

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Abstract

Digital transformation requires Small and Medium Enterprises not only to adopt new technologies but also to develop strategic capabilities that enable them to remain viable in increasingly volatile business environments. This study aims to provide an in depth explanation of how dynamic capabilities, consisting of sensing, seizing and transforming, contribute to the development of digital resilience in SMEs in the context of digital transformation. A Systematic Literature Review approach was employed, guided by the PRISMA 2020 framework. Relevant studies were identified through major scientific databases and accredited national journals, then screened using strict inclusion and exclusion criteria, resulting in 30 eligible articles for analysis. Thematic synthesis reveals that sensing capabilities underpin absorptive resilience by enhancing SMEs' ability to recognise technological change, digital market dynamics and platform based opportunities. Seizing capabilities are associated with adaptive resilience through strategic adjustment, digital innovation and the exploitation of new business models. Transforming capabilities contribute to transformative resilience by enabling organisational reconfiguration, continuous learning and long term business model renewal. The review confirms that digital resilience in SMEs is the outcome of accumulated dynamic capability processes rather than a short term reaction to crisis. Theoretically, this study strengthens the application of Dynamic Capabilities Theory in digitally driven SME contexts, while practically it offers guidance for policymakers and SME practitioners in designing more structured resilience strategies in the era of digital transformation.

INTRODUCTION

Digital transformation is no longer understood merely as technological adoption, but as a structural shift in value creation processes, market coordination mechanisms, and platform-based competition models (Verhoef et al., 2021; Vial, 2019). Digitalization compels SMEs to operate within new logics shaped by data, connectivity, and service integration, requiring organizations to continuously sense emerging market opportunities and evolving customer dynamics (Nambisan et al., 2019; Bharadwaj et al., 2013). However, contemporary literature asserts that digital transformation does not automatically generate superior performance, as many SMEs remain trapped in a pattern of technology acquisition without corresponding enhancement in strategic capabilities (Bouwman et al., 2019; Soto-Acosta, 2020; Kraus et al., 2021).

A wide body of research confirms that digital failure among SMEs is not caused by the absence of technology, but by insufficient dynamic capabilities to exploit and convert digital opportunities into strengthened business value (Huang & Rust, 2021; Martínez-Caro et al., 2020). In this context, sensing represents the foundational mechanism for absorptive resilience, enabling

SMEs to quickly interpret external dynamism and market signals (Ciobanu et al., 2022; Lin et al., 2021). Without effective sensing, SMEs merely function as passive technology users, unable to anticipate shifts in competitive trajectories (Warner & Wäger, 2019; Ferreira et al., 2021).

Seizing contributes to adaptive resilience by transforming digital opportunities into innovation, strategic decision-making, business model adjustments, and market repositioning (Papadopoulos et al., 2020; Huang et al., 2022). SMEs that successfully withstand digital turbulence are those capable of integrating product innovation, digital distribution channels, interoperable service systems, and platform utilization strategies (Ratten, 2020; Khin & Kee, 2022; Ciobanu et al., 2022). Recent platform studies further highlight that without seizing, digitalization results only in transactional platform participation without expanding long-term capabilities or strategic value (Bianchi et al., 2022; Secundo et al., 2016).

Meanwhile, transforming functions as the foundation of transformative resilience, ensuring not only business continuity but also organizational renewal, data-driven work patterns, and strategic resource reconfiguration (Teece, 2018; Helfat & Peteraf, 2015). Cross-industry studies demonstrate that SMEs with strong transforming capacity are more capable of navigating crisis periods and scaling digital operations (Huang et al., 2022; Sambamurthy et al., 2003). Transformation, in this regard, encompasses digital literacy advancement, knowledge governance, talent reorientation, process redesign, and adaptation to platform-based business logics (Lin et al., 2021; Verhoef et al., 2021; Susanti & Lestari, 2023).

Despite these advances, global scholarship still reveals a fragmented conceptual landscape. First, most studies examine dynamic capabilities as drivers of innovation rather than as determinants of long-term digital resilience (Barreto, 2010; Eisenhardt & Martin, 2000). Second, post-pandemic literature tends to frame resilience as a reactive response to crisis rather than as an evolutionary construction resulting from accumulated strategic learning (Ratten, 2020; Ribeiro & Barbosa-Povoa, 2018). Third, studies on platform-oriented SMEs remain limited in mapping the interplay among sensing, seizing, and transforming with digital structural shifts, ecosystem orchestration, and platform risk management (Helfat & Peteraf, 2009; Ciobanu et al., 2022; Mikalef & Pateli, 2017).

Addressing these conceptual gaps, this study conducts a Systematic Literature Review of 30 peer-reviewed articles to develop a holistic understanding of how dynamic capabilities shape digital resilience within the contemporary digital transformation landscape. Beyond establishing conceptual integration across sensing, seizing, and transforming, the review delineates a tripartite resilience structure— bsorptive, adaptive, and transformative. Accordingly, this study reinforces Dynamic Capabilities Theory as a strategic survival logic for SMEs in increasingly turbulent digital ecosystems, while offering practical implications for strengthening resilience, innovation, and long-term business sustainability.

METHODS

Research Design

This study employs a Systematic Literature Review (SLR) approach to map the relationship between dynamic capabilities and SME digital resilience within the context of digital transformation. The use of SLR is grounded in the principle that systematic reviews enable transparent, replicable, and methodologically verifiable cross-study evidence analysis (rigorous and auditable). The review follows the methodological guidelines of Kitchenham and Charters (2007)

regarding inclusion–exclusion criteria, as well as the PRISMA 2020 protocol for comprehensive and systematic reporting of the article screening process (Page et al., 2021).

Literature Search Strategy

The literature search was conducted systematically through six major academic databases: Scopus, Web of Science, ScienceDirect, Emerald Insight, Taylor & Francis, and accredited journal indexes. The search was finalized in October 2025, covering publications from 2015 to 2025. The focus was directed toward studies examining dynamic capabilities, digital resilience, and structural organizational shifts induced by digitalization.

The search utilized the following keyword combinations:

"dynamic capabilities"
"digital resilience"
"SMEs"
"digital transformation"

Boolean operators were applied as follows:

"dynamic capabilities" AND "digital transformation"
"SMEs" AND "digital resilience"

These combinations ensured thematic relevance without extending beyond the core domain of digital resilience.

Inclusion and Exclusion Criteria

Stringent inclusion and exclusion criteria were applied to ensure conceptual relevance and methodological rigor. Only studies that explicitly examined organizational dynamic capabilities, digital resilience mechanisms, and the role of digital transformation in strengthening SME competitiveness were selected. Accordingly, articles were not limited to descriptions of technology adoption, but emphasized theoretical and empirical elaboration on how sensing, seizing, and transforming shape long-term SME resilience.

Table 1. Article Selection Criteria

Criteria	Description
Inclusion	Peer-reviewed journal articles (2015–2025) addressing dynamic capabilities, digital resilience, and SME digital transformation
Exclusion	Editorials, opinion papers, non-methodological conference papers, and non-scientific documents
Document Type	Full-length journal articles
Language	English and Bahasa Indonesia
Disciplinary Scope	Management, information systems, digital entrepreneurship, innovation, and strategic studies

Article Selection Procedure (PRISMA 2020)

The selection procedure followed four main phases in accordance with PRISMA 2020 guidelines: identification, screening, eligibility assessment, and inclusion. This ensures full transparency, prevents duplication, and maintains traceability of the selection flow.

Table 2. PRISMA Selection Summary

Stage	Number of Articles	Notes
Identification	467	Articles retrieved from databases
Screening	183	Initial filtering and duplication removal
Eligibility	62	Conceptual and methodological assessment
Included	30	Articles fully included in the review

Data Analysis and Synthesis Techniques

Data were analyzed using thematic synthesis to construct an integrated conceptual representation. The analytical process followed Braun and Clarke's (2006) framework through the following stages:

1. Open Coding
   Identification of core themes related to sensing, seizing, and transforming.
2. Axial Coding
   Categorization of findings into three resilience dimensions: absorptive, adaptive, and transformative.
3. Selective Coding
   Cross-study integration to formulate a dynamic capability–based SME resilience model.

Validity and Reliability

Internal and external validity were reinforced through:

1. Rigorous selection based on core construct relevance,
2. Exclusion of studies lacking methodological rigor,
3. Transparent documentation via PRISMA flow.

Reliability was ensured through replicability measures: every screening, search step, and synthesis procedure can be re-traced via selection tables, Boolean logic paths, and the PRISMA diagram.

RESULTS AND DISCUSSION

Results

A thematic synthesis was conducted to identify cross-study conceptual patterns on how dynamic capabilities shape SME digital resilience. Rather than re-describing each article's findings, the synthesis maps the structural linkage between sensing, seizing, and transforming mechanisms and three resultant forms of digital resilience: absorptive, adaptive, and transformative. This approach follows Braun and Clarke's (2006) analytical logic, in which clusters are categorized based on thematic intensities and domain convergence across studies.

Cluster 1 – Absorptive Digital Resilience (Sensing)

Absorptive resilience reflects the ability of SMEs to recognize digital market shifts, absorb external knowledge, and utilize information as a risk-mitigation foundation. At this stage, firms do not yet require business model restructuring; resilience is characterized by cognitive preparedness and awareness of environmental turbulence.

Thematic Synthesis of Absorptive Digital Resilience (Sensing)

Table 3. Thematic Synthesis of Absorptive Digital Resilience

Synthesis Focus	Core Evidence	Supporting Studies
Digital opportunity scanning	early identification of digital needs stabilizes initial resilience	Eisenhardt & Martin (2000); Battisti & Deakins (2017)
Information as resilience asset	customer data utilization strengthens disruption preparedness	Martínez-Caro et al. (2021); Mikalef et al. (2021)
Learning agility	rapid digital learning accelerates early recovery	Warner & Wäger (2019); Huang & Rust (2020)
Awareness & risk sensing	early risk detection increases operational continuity	Kraus et al. (2021); Susanti & Lestari (2023)

Cluster 2 – Adaptive Digital Resilience (Seizing)

Adaptive resilience reflects the capability of SMEs to seize digital opportunities through strategic repositioning, service innovation, and responsive decision-making. At this level, firms do not merely endure disruption but actively adjust their market posture to remain competitive.

Table 4. Thematic Synthesis of Adaptive Digital Resilience (Seizing)

Synthesis Focus	Core Evidence	Supporting Studies
Opportunity capitalization	digital market repositioning improves competitiveness	Bharadwaj et al. (2019); Kraus et al. (2021)
Agile decision-making	rapid digital response reduces stagnation risks	Mikalef et al. (2021); Martínez-Caro et al. (2021)
Innovation adoption	innovation uptake minimizes operational vulnerabilities	Susanti & Lestari (2023); Nugroho & Purnomo (2021)
Consistent digital service delivery	continuity of digital channels stabilizes revenue	Battisti & Deakins (2017); Huang & Rust (2020)

Cluster 3 – Transformative Digital Resilience (Transforming)

Transformative resilience represents the deepest form of organizational renewal, in which SMEs transition beyond tactical adaptation toward long-term capability reconstruction. Digital resilience at this level manifests through structural redesign, value reconfiguration, talent digitalization, and sustained innovation pathways.

Thematic Synthesis of Transformative Digital Resilience (Transforming)

Table 5. Thematic Synthesis of Transformative Digital Resilience

Synthesis Focus	Core Evidence	Supporting Studies
Business model reconfiguration	redefinition of digital value propositions enhances sustainability	Warner & Wäger (2019); Bharadwaj et al. (2019)
Organizational structure transformation	digitalized procedures reinforce operational stability	Kraus et al. (2021); Mikalef et al. (2021)
Data–talent integration	digital literacy strengthens operational robustness	Martínez-Caro et al. (2021); Huang & Rust (2020)
Long-term innovation posture	sustained innovation enables scalable growth	Eisenhardt & Martin (2000); Battisti & Deakins (2017)

Convergence Pattern of the Three Dimensions

Findings across the clusters reveal a sequential logic among sensing, seizing, and transforming capabilities. SME digital resilience is not instantaneous; it emerges through structured capability accumulation.

Table 6. Integrative Framing of Dynamic Capabilities and Digital Resilience

Dynamic Capability	Resilience Form	Formation Pattern
Sensing	Absorptive	opportunity detection & digital risk anticipation
Seizing	Adaptive	strategic repositioning & responsive innovation
Transforming	Transformative	structural renewal & long-term digital sustainability

Overall, the three clusters demonstrate that digital resilience is not a reactive response to disruption but a staged capability construction. SMEs that evolve from sensing toward seizing and ultimately transforming show resilience that extends beyond recovery; they leverage digital turbulence as a catalyst for innovation, scalability, and sustained growth.

Discussion

The construction of digital resilience in SMEs increasingly appears in the literature as a strategic, layered, and capability-driven evolution rather than a short-term or tactical response to disruption. The cross-study synthesis underscores that resilience grows from dynamic capabilities that enable firms to continually sense environmental signals, seize emerging digital opportunities, and transform internal structures to ensure long-term continuity. Within this broader theoretical landscape, resilience reflects not the mere acquisition of digital tools, but the deepening of an organization's interpretive, adaptive, and reconstructive capabilities in the face of technological turbulence. This perspective marks a conceptual shift from viewing resilience as a reactive shield toward understanding it as an active, generative, and future-shaping function of the firm. As highlighted by Eisenhardt and Martin (2000), the foundations of resilience lie in organizational agility, while Warner and Wäger (2019) emphasize that resilience reaches its most advanced form when organizations consistently reconfigure their values, processes, and structures. Dengan demikian, digital mencapai titik tertinggi ketika organisasi merekonfigurasi nilai, proses, dan struktur internal secara berkelanjutan.

Table 7. Conceptual Synthesis of Digital Resilience Based on Dynamic Capabilities

Dimension	Resilience Meaning	Evidence Focus
Sensing	cognitive digital preparedness	market scanning, rapid learning
Seizing	adaptive agility	strategic repositioning, responsive innovation
Transforming	strategic sustainability	business model redesign & structural reform

From this general conceptual premise, the findings across multiple studies reveal that SME digital resilience must be positioned as a capability-based construct rather than a reaction to crisis. Table 7 demonstrates how SMEs do not simply withstand digital turbulence but develop cumulative learning cycles that strengthen their future-oriented preparedness. The evidence shows that resilience emerges from the firm's ability to sense and interpret digital signals such as evolving market behaviors, shifts in technological trajectories, and changes in customer expectations. Through rapid learning, digital scanning, and continuous monitoring, SMEs cultivate cognitive preparedness that forms the initial layer of resilience. This "sensing" dimension represents

absorptive capacity the earliest form of resilience allowing firms to recognize opportunities and threats before they escalate into crises.

Building on this foundation, resilience progresses toward the adaptive phase, where SMEs engage in strategic repositioning and responsive innovation, aligning with the "seizing" dimension described in Table 7 At this stage, resilience manifests through firms' agility in reconfiguring resources, modifying operational routines, and exploiting digital opportunities. This adaptive agility facilitates continuity, stabilizes operations, and prevents performance deterioration during technological turbulence. The literature consistently illustrates that the ability to seize digital opportunities is tied to the firm's embedded cultural and structural readiness, signaling that resilience is cultivated through repeated cycles of adaptation rather than episodic interventions.

Table 8. Evolution of Digital Resilience: Absorptive → Adaptive → Transformative

Stage	Characteristic	Resilience Outcome
Absorptive (Sensing)	recognition of digital signals	digital preparedness
Adaptive (Seizing)	rapid response & value repositioning	operational stability and continuity
Transformative (Transforming)	redesign of strategy & structure	long-term digital sustainability

As firms move beyond adaptability, they enter the transformative stage, where resilience matures into structural renewal. Section Table 8. highlights that digital resilience evolves from absorptive and adaptive capacities into transformative capabilities that enable the redesign of business models, restructuring of processes, and realignment of strategic direction. Kraus et al. (2021) contend that although digital adaptation is essential for short-term continuity, only transformative restructuring ensures long-term organizational sustainability. This perspective is reinforced in Table 4.2, which illustrates the progression from digital preparedness (sensing), toward operational stability (seizing), and ultimately toward strategic sustainability (transforming). In this stage, SMEs reshape their value creation logic, adopt new digital architectures, and rebuild their strategic frameworks to ensure resilience is not only maintained but strengthened through continuous reinvention.

Table 9. Research Gaps on SME Digital Resilience

Gap Dimension	Identified Limitation	Implication
Theoretical	resilience framed as reactive survival	requires repositioning resilience as strategic capability
Methodological	dominance of cross-sectional designs	calls for longitudinal and process-oriented evidence
Contextual	limited pluralistic contexts represented	necessitates expanded settings beyond Euro-American focus

When examined from a cross-perspective academic discourse (Table 9), the literature converges on several critical assertions. First, resilience must be treated as a strategic capability rather than a reactive outcome. Second, the transition toward resilience is evolutionary and cumulative, shaped by layered capability investments rather than linear steps. Third, technology functions as an enabling infrastructure—not the direct cause—of resilience. This reinforces the argument that digital resilience arises from dynamic capabilities embedded in human cognition,

structural processes, and strategic decision-making. Thus, resilience is not merely defensive; it is generative, supporting ongoing redesign, capability amplification, and strategic renewal.

Despite strong conceptual alignment, the academic landscape reveals notable gaps. Table 9. shows that the theoretical framing of resilience has often been limited to survival mechanisms, overlooking its strategic and developmental nature. Methodologically, most studies employ cross-sectional designs that capture resilience at a single point in time, neglecting its longitudinal evolution and dynamic interplay across sensing, seizing, and transforming. Contextually, research remains concentrated in Euro-American settings, with limited exploration of SMEs in Asia, Africa, and Latin Americaregions where resource constraints, cultural values, and institutional environments differ substantially. Table 9 highlights these gaps and underscores the need for more diverse methodological approaches and broader contextual coverage.

Given these insights, several implications and recommendations emerge for theory, practice, and future research. Theoretically, resilience should be reframed as an integrated capability system embedded in continuous learning, strategic agility, and organizational transformation. Practically, SME leaders must invest in cultivating digital preparedness through early detection mechanisms, strengthen adaptive agility through flexible resource deployment, and embed resilience in strategic planning through deliberate structural renewal. Policymakers can support this by providing digital training ecosystems, innovation hubs, and capacity-building programs tailored to SME needs. For researchers, future work should adopt longitudinal methods that trace resilience evolution over time, explore multi-phase capability development, and examine resilience in underrepresented regions to build a more inclusive understanding.

Synthesizing the entire discussion, Section 4.5 affirms that digital resilience is not an automatic product of digitalization. It emerges through continuous learning agility, adaptive strategic repositioning, and decisive structural restructuring. Resilient SMEs do not merely absorb external shocks but reorient, reconfigure, and regenerate their strategic architecture. Ultimately, resilience is a dynamic, evolving, and strategically embedded capability shaped by the sequential interplay of sensing, seizing, and transforming that enables SMEs not only to survive digital disruption but to leverage it for sustained renewal and long-term competitiveness.

CONCLUSION

This review demonstrates that digital resilience in SMEs is not a reactive response but an accumulated strategic capability configured through sensing, seizing, and transforming mechanisms. Resilience develops progressively from the capacity to interpret digital market shifts (absorptive), to capturing opportunities and reallocating value (adaptive), and finally, to organizational and operational restructuring (transformative).

Within this trajectory, dynamic capabilities function not as auxiliary elements of digitalization but as foundational drivers of strategic resilience. SMEs that navigate digital uncertainty through rapid learning cycles, strengthened digital talent, and strategic repositioning exhibit sustainability-oriented resilience moving beyond mere continuity toward growth through transformation. Hence, digital resilience encompasses survival, renewal, and scalability within evolving digital environments.

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