

Digital Transformation in SMEs: How Strategic Orientation and Digital Capabilities Drive Value Creation and Innovation

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Abstract: This paper examines how small and medium-sized enterprises (SMEs) generate value and innovation through digital transformation, focusing on the interplay between strategic orientation and digital capability development. While digital transformation is widely recognized as a strategic imperative, existing studies remain largely centered on large firms or linear technology adoption models. This means the ongoing, adaptive, and resource-limited experiences of SMEs have received less attention. Drawing on qualitative data from in-depth interviews with five SME leaders in Switzerland, this study investigates how SMEs frame digital value, develop enabling capabilities, and translate constrained resources into innovation outcomes. The study identifies four empirical themes: strategic framing of digital value, capabilities as catalysts, co-creation and network innovation, and resource constraints and strategic trade-offs. These themes show that SME digital transformation is not simply a process of adopting digital tools, but an adaptive journey in which strategic intent, technological integration, managerial learning, and external collaboration are continuously aligned. Building on these themes, this research proposes the Digital Synergy Loop—a conceptual framework capturing the iterative alignment of strategy and capability as the foundation for digital value creation. The framework comprises five interconnected stages: strategic intent and direction, capability development, digital synergy formation, value creation and innovation outcomes, and strategic refinement and feedback. By integrating the Resource-Based View, Dynamic Capabilities Theory, and effectuation logic, the study contributes to SME digital transformation literature by explaining how firms mobilize existing resources, build capabilities iteratively, and use stakeholder relationships to compensate for internal constraints. It therefore reframes digitalization as a strategic, relational, and feedback-driven capability process rather than merely a one-off technological investment. Practically, the findings suggest that SMEs should approach digital transformation through focused strategic intent, incremental capability building, co-creation with partners, and reflective feedback mechanisms. The study also offers policy implications, highlighting the need for adaptive capability-building support rather than technology subsidies alone.

Keywords: Digital Capabilities; Digital Transformation; Value Creation; SMEs; Innovation

1. Introduction

In an increasingly digitalized economy, small and medium-sized enterprises (SMEs) face both significant opportunities and constraints in pursuing digital transformation. While digitalization is now a strategic imperative for competitiveness and growth, SMEs must navigate this process with limited financial, technological, and human resources. This study examines how resource-constrained SMEs enact digital transformation, focusing on strategy, capability development, and innovation outcomes. Three research questions guide the inquiry: (1) How do SMEs strategize for digital value creation under resource constraints? (2) Which technological, managerial, and relational capabilities enable digital synergies? and (3) How do the interactions between strategy and capabilities drive innovation?

Despite growing interest in digital transformation, the literature remains largely centred on large firms, leaving SME-specific dynamics underexplored. Existing perspectives tend to frame digital transformation either as a technology adoption problem (Vial, 2019) or as a linear capability maturity process (Warner and Wäger, 2019). These approaches overlook the iterative and feedback-driven nature of SME transformation, where strategy and capabilities co-evolve under constraint. To address this gap, this study proposes the Digital Synergy Loop, a conceptual framework that characterizes SME digital transformation as a non-linear, recursive process grounded in the co-alignment of strategic intent and organizational capabilities. This framework extends Resource-Based View (RBV) and Dynamic Capabilities Theory (DCT) by incorporating the adaptive, means-driven logic of resource-constrained firms, and integrates strategy, capabilities, and innovation into a unified model.

Recent disruptions, particularly the COVID-19 pandemic, alongside the broader trajectory of the Fourth Industrial Revolution, have accelerated digital adoption and heightened the need for agility and resilience (Gavrila and de Lucas Ancillo, 2021; Niewöhner et al, 2020). In this context, digital transformation has evolved from an efficiency-oriented activity to a key driver of long-term value creation (Yang and Cui, 2022; Wang, Cao

and Wang, 2022). For SMEs, digital transformation is not merely a matter of technology adoption, but a strategic, practice-based process of mobilizing constrained resources, developing capabilities, and aligning digital initiatives with entrepreneurial objectives. This perspective highlights digital transformation as an ongoing, adaptive journey shaped by continuous learning and strategic reconfiguration.

2. Literature Review

2.1 Digital Transformation, Strategic Orientation, and Dynamic Capabilities

Digital transformation has become a critical strategic imperative, reshaping firm competitiveness and innovation capabilities (Vial, 2019; Peng and Tao, 2022). For SMEs, adopting digital technologies enhances operational efficiency, customer engagement, and market accessibility (Li et al, 2023; Konopik et al, 2021). Unlike large firms, SMEs often pursue digital transformation in incremental and adaptive ways, reflecting their size, flexibility, and contextual embeddedness (Chen and Liu, 2022). Transformation must therefore be analyzed in terms of both strategic intent and organizational capabilities, not technology adoption alone (Vial, 2019; Schiuma et al, 2024).

Strategic orientation reflects the firm's foundational philosophy guiding long-term competitive positioning (Wiklund and Shepherd, 2003). In SMEs, digital strategy tends to be emergent and adaptive, driven by founder vision and ecosystem opportunities (Liang and Li, 2022; Sahi, Gupta and Cheng, 2020). The Resource-Based View (RBV) posits that sustainable competitive advantage derives from valuable, rare, inimitable, and non-substitutable (VRIN) resources (Barney, 1991). In SMEs, these often include specialized knowledge, founder expertise, and customer relationships (Arsawan et al, 2020). Dynamic Capabilities Theory (DCT) extends the RBV by focusing on the firm's ability to integrate, build, and reconfigure competences to address rapidly changing environments (Teece, Pisano and Shuen, 1997; Teece, 2007)—making it especially apt for analyzing SME digital transformation.

2.2 Co-Creation, Network Innovation and Resource Constraints

In digital environments, value creation is increasingly distributed and collaborative. The shift from value chains to value networks is well-documented in service-dominant logic (Vargo and Lusch, 2004) and open innovation (Chesbrough, Vanhaverbeke and West, 2006). Digital transformation empowers SMEs to transition from passive users of digital tools to proactive participants in innovation ecosystems (Benitez, Ayala and Frank, 2020), enabling product, process, and business model innovation (Radicic and Petković, 2023). Effectuation theory (Sarasvathy, 2001) offers a complementary lens: SMEs innovate through means-oriented, trust-based, iterative partnerships rather than centralized R&D (Pundziene and Geryba, 2024).

SMEs often face significant resource constraints—limited finance, specialized expertise, and infrastructure—influencing digital investment decisions (Ruiz-Palomo, Fernández-Gámez and León-Gómez, 2022; Yao and Yang, 2022). However, these constraints can catalyze innovation by compelling firms to make strategic trade-offs and pursue selective digitalization (Yao and Yang, 2022). Incremental change, adaptive prioritization, and the effectual logic of affordable loss—investing only what can be risked without jeopardizing core operations—are key strategies (Sambamurthy, Bharadwaj and Grover, 2003; Sarasvathy, 2001).

2.3 Toward the Digital Synergy Loop

Traditional linear models of digital maturity fail to capture the iterative, recursive nature of digital transformation in SMEs (Warner and Wäger, 2019; Priyono, Moin and Putri, 2020). Building on these critiques and on the recognition that SME strategic learning unfolds through cycles of action, feedback, and adaptation (Sarasvathy, 2001; Baker and Nelson, 2005), this study introduces the Digital Synergy Loop—an integrative framework capturing how SMEs iteratively align strategic intent and capabilities through continuous experimentation, feedback, and refinement (Barragan et al, 2024).

3. Methodology

This study adopts a qualitative exploratory research design to investigate how SMEs strategize for digital value creation and develop innovation-enabling capabilities. Qualitative methods are suited to uncovering underlying mechanisms and interpretive meanings through rich, empirical insights from practitioners' lived experiences (Creswell and Poth, 2016; Eisenhardt, 1989). More specifically, this study employs a multiple case study design following the principles of Yin (2018), who emphasizes case study methodology for investigating contemporary

phenomena within their real-life context, and Stake (1995), who highlights the importance of thick description and naturalistic generalization in qualitative case inquiry. The case study approach is appropriate for this study because the research questions are explanatory in nature (“how” questions) and address a complex, context-bound phenomenon, SME digital transformation, that cannot be adequately captured through survey instruments alone (Yin, 2018).

In-depth, semi-structured interviews were selected as the primary data collection method. This approach allows for detailed, context-specific insights while maintaining thematic consistency across cases and sufficient flexibility to explore emergent issues (Kvale and Brinkmann, 2009). A purposive sampling strategy was employed to recruit SME leaders in Switzerland with substantial experience in digital transformation (Creswell and Poth, 2016). Switzerland offers a pertinent setting due to its strong SME sector and innovation-driven environment. The final sample comprised five senior leaders, including founders, managing directors, and operations managers, across diverse sectors (Table 1).

A sample of five cases is consistent with established norms for qualitative case study research: Yin (2018) recommends between four and six cases for replication logic in multiple case designs, while Eisenhardt (1989) notes that four to ten cases are typically sufficient to achieve theoretical saturation. The cases were purposively selected to maximize variation across sector, firm age, and size, enabling cross-case comparison and analytical generalization (Stake, 1995). Firms varied in size (10–250 employees) and age, ranging from legacy companies established in the late 19th century to post-2015 start-ups, enabling comparative insights into how firm maturity, leadership, and sectoral context shape digital transformation trajectories.

Table 1: Participant and Firm Demographic Profiles

No.	Role	Industry	Employees	Founded	Code
1	Managing Director	Luxury Goods / Jewellery Manufacturing	30–40	1923	D.K
2	Operating Manager	Telecommunications Equipment	200–220	2018	T.K
3	Company Founder	Digital Marketing / Web Services	10–15	2018	K.B.
4	Company Founder	Hardware / Security & Access Solutions	100–110	1952	A.S.
5	Company Founder	Textiles / Natural Fibres	50–60	1892	M.C

Primary data were collected over three months through semi-structured interviews lasting 45–60 minutes, conducted face-to-face or online. All interviews were audio-recorded with consent, transcribed verbatim, and anonymized. The interview protocol covered four themes: (1) digital strategy formulation, (2) capability development, (3) innovation practices, and (4) ecosystem engagement. Data were analyzed thematically using Braun and Clarke's (2012) six-phase framework, with NVivo supporting systematic coding. To enhance validity, coding was peer-reviewed and reflective memos captured analytical decisions (Bringer, Johnston and Brackenridge, 2004).

4. Findings

Thematic analysis yielded five core themes capturing how SMEs engage with digital transformation. Table 2 provides an overview; subsequent sections discuss each theme in relation to existing theory.

Table 2: Thematic Analysis Summary

Theme	Description	Illustrative Quotations
1. Strategic Framing of Digital Value	Aligning digitalisation with long-term goals such as quality, transparency, and sustainability	"The goal was always to create more clarity..." — AS; "We were really trying to change..." — DK

Theme	Description	Illustrative Quotations
2. Capabilities as Catalysts of Digital Synergy	Developing digital capabilities to enhance effectiveness, operational efficiency, and adaptability	"MES software tracks material consumption..." — TK; "Our machines collect more and more data..." — MC
3. Co-Creation and Network Innovation	Collaborating and co-creating with clients and partners in digitally enabled product/service development	"Customers can directly comment via Markup.io..." — KB; "We need several partnerships..." — AS
4. Resource Constraints and Strategic Trade-Offs	Managing limitations through phased digitalisation and pragmatic decision-making	"It took us seven years..." — AS; "ERP for all at once—don't do it..." — TK
5. The Digital Synergy Loop (Emergent Framework)	An emergent loop of strategic alignment, capability development, adaptation, and innovation	"Change never ends..." — MC; "Prepare in advance..." — TK; "We became the industry standard..." — DK

4.1 Theme 1: Strategic Framing of Digital Value

Participants consistently emphasized aligning digital initiatives with broader strategic goals. Digitalisation was driven not by novelty or efficiency alone, but by a value-oriented logic focused on clarity, traceability, and long-term adaptability:

"The goal was always to create more clarity in each process... mistakes were made less... data is entered only one time instead of several times." — AS

"We are B2B... the ultimate driver is the end consumer. We were trying to change that even if it upset current clients." — DK

This reflects a shift from technology-push to strategy-pull digitalisation, aligning with the RBV (Barney, 1991), which asserts that competitive advantage arises when digital tools are embedded within firm-specific competencies (Parida et al, 2016; Li et al, 2023). Strategic framing serves as the foundational input for the Digital Synergy Loop, initiating the journey by defining the purpose and scope of digital initiatives.

4.2 Theme 2: Capabilities as Catalysts of Digital Synergy

SMEs that succeeded with digitalisation developed the right internal capabilities—digital literacy, leadership with a digital mindset, and agile experimentation—enabling integration of systems (ERP, MES, CRM) across operations:

"The MES software tracks material consumption and gives feedback to the ERP... this gives better quality and financial control." — TK

"Our machines collect more and more data about production and quality... customers receive yarn produced according to their specific needs." — MC

This aligns with Dynamic Capabilities Theory (Teece, 2007), where sensing, seizing, and reconfiguring capabilities are essential for sustaining innovation. Digital systems created organizational transparency facilitating internal consistency and downstream customer visibility—a form of digital maturity contributing to operational agility and the basis of digital synergies (Chanas and Hess, 2016).

4.3 Theme 3: Co-Creation and Network Innovation

SMEs leveraged co-creation with customers, suppliers, and technology partners to generate innovation, especially where internal R&D was limited:

"With Markup.io, customers can comment directly on the website interface. This improved the user experience and saved time." — KB

"We need partners... not just one. One direction is too risky. We develop in several directions." — AS

This supports open innovation (Chesbrough, Vanhaverbeke and West, 2006) and digitally enabled value co-creation (Ramaswamy and Ozcan, 2016). The iterative, trust-based nature of these partnerships reflects effectuation theory (Sarasvathy, 2001)—particularly means orientation and pre-commitments—enabling SMEs to co-develop ideas and share uncertainty despite resource constraints. Co-creative practices represent the outward extension of the Digital Synergy Loop, leveraging external networks to accelerate innovation cycles.

4.4 Theme 4: Resource Constraints and Strategic Trade-Offs

All SMEs faced resource constraints in capital, expertise, and infrastructure, necessitating strategic trade-offs. Rather than halting digitalisation, firms responded with selective, phased approaches:

"It took us seven years to slowly implement digitalisation... older employees found it very difficult." — AS

"We implemented ERP everywhere at once—do not do this. Start with one module like finance." — TK

Challenges related to change management, employee buy-in, and data governance were salient. Firms applied effectual logic—prioritizing initiatives based on affordable loss and available capabilities (Sarasvathy, 2001)—and demonstrated the "digitally enabled organisational agility" of Sambamurthy, Bharadwaj and Grover (2003). Navigating constraints through strategic trade-offs illustrates the iterative feedback and recalibration inherent in the Digital Synergy Loop.

4.5 The Digital Synergy Loop: A Framework for SME Digital Transformation

Drawing on the four empirical themes, this study proposes the **Digital Synergy Loop**—a dynamic, iterative framework capturing how strategic intent, organisational capabilities, and digital value creation are continuously re-aligned through internal feedback learning. The loop comprises five interconnected stages (Figure 1):

- **Stage 1—Strategic Intent and Direction:** SMEs articulate a strategic vision aligned with business goals and stakeholder demands, framing the scope of digital initiatives (Barney, 1991).
- **Stage 2—Capability Development:** SMEs develop technical (ERP, MES, analytics), organisational (change management, process integration), and relational (partnerships, supplier engagement) capabilities, often path-dependent and means-driven (Teece, 2007; Sarasvathy, 2008).
- **Stage 3—Digital Synergy Formation:** Combinatory value emerges from coordinating people, processes, and digital technologies. SMEs transition from digital implementation to digital integration, gaining organisational coherence and innovation readiness.
- **Stage 4—Value Creation and Innovation Outcomes:** Digital synergy yields measurable gains (cost savings, process efficiency) and intangible outcomes (enhanced customer experience, faster innovation cycles, brand legitimacy). This validates strategic assumptions and reflects value co-creation logic (Vargo and Lusch, 2004; Chesbrough, Vanhaverbeke and West, 2006).
- **Stage 5—Strategic Refinement and Feedback:** Feedback from digital outcomes is analysed, lessons codified, and strategic direction updated. This reflective capacity enables continuous adaptation—consistent with effectual reasoning where goals evolve in response to stakeholder input and unfolding opportunities (Sarasvathy, 2001, 2008).

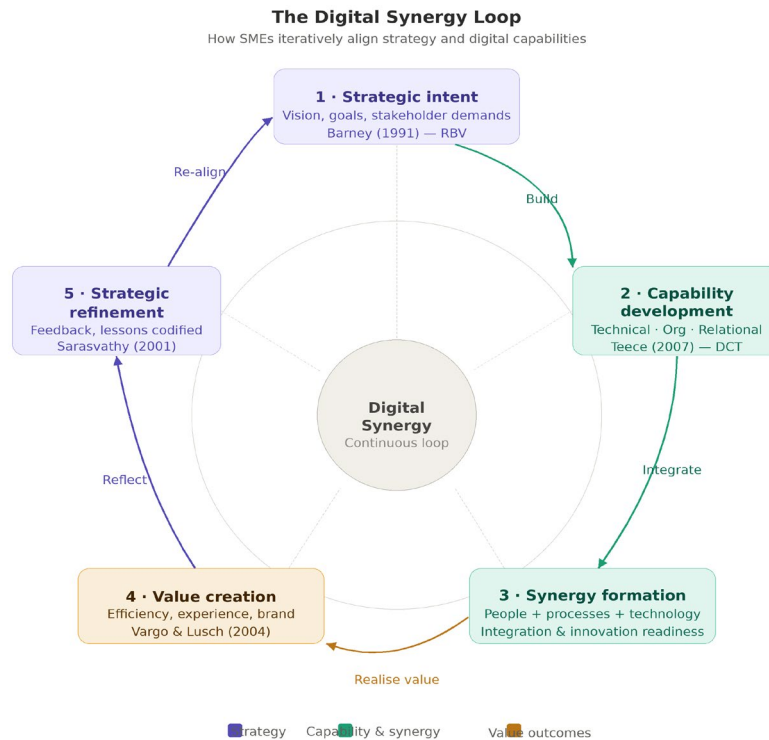


Figure 1: The Digital Synergy Loop — SME Digital Transformation Framework

Figure 1: The Digital Synergy Loop

Note: The Digital Synergy Loop depicts five iteratively connected stages—Strategic Intent and Direction, Capability Development, Digital Synergy Formation, Value Creation and Innovation Outcomes, and Strategic Refinement and Feedback—through which SMEs continuously re-align strategy and capabilities. Arrows indicate the cyclical, feedback-driven nature of the process. Grounded in RBV (Barney, 1991), DCT (Teece, 2007), and Effectuation Theory (Sarasvathy, 2001, 2008).

5. Discussion

The findings presented above reveal a coherent and empirically grounded picture of how SMEs strategize and develop capabilities for digital transformation. This section discusses those findings in relation to existing theory, differentiating between confirmatory contributions—where findings reinforce established knowledge—and novel contributions—where findings extend, challenge, or reframe prior understanding.

5.1 Confirmatory Contributions

Several findings are consistent with established theory. The centrality of strategic alignment in driving digital value (Theme 1) confirms prior work positioning digital strategy as a prerequisite for transformation success (Bharadwaj et al, 2013; Vial, 2019). The role of dynamic capabilities in enabling sensing, seizing, and reconfiguration (Theme 2) aligns with Teece (2007), reinforcing the applicability of DCT to SME contexts. The use of ecosystem partnerships to compensate for internal resource deficits (Theme 3) is consistent with open innovation theory (Chesbrough, Vanhaverbeke and West, 2006) and also reflects effectual reasoning, specifically the logic of building opportunities through stakeholder commitments rather than relying solely on internally controlled resources (Sarasvathy, 2001, 2008). The phased, selective digitalization approach under resource constraints (Theme 4) corroborates findings by Yao and Yang (2022) and Priyono, Moin and Putri (2020), who document incremental digitalization as the dominant SME pattern.

5.2 Novel Contributions

Several contributions go beyond confirmation to extend, integrate, and theorize anew. First, while RBV and DCT are well-established individually, this study shows how they can be meaningfully connected with effectual reasoning in the context of SME digital transformation. Rather than treating resources, capabilities, and entrepreneurial action as separate perspectives, the findings suggest that SMEs often transform digitally through

a combined logic: they mobilize existing resources, develop capabilities iteratively, and use stakeholder relationships to compensate for internal constraints. Second, the Digital Synergy Loop (Theme 5) is a novel theoretical contribution: unlike linear digital maturity models (Warner and Wäger, 2019), it theorizes transformation as a recursive, iterative loop where strategic intent and capability development are continuously co-aligned through feedback cycles. This cyclical architecture remains underdeveloped in existing SME digital transformation frameworks. Third, the study introduces the concept of “digital synergy formation”—the stage at which coordinated people, processes, and technologies produce combinatory organizational value—as a theoretically distinct and empirically meaningful construct that bridges capability development and innovation outcomes. Together, these novel insights provide a richer, more nuanced account of how SME digital transformation unfolds in practice, and lay the groundwork for future quantitative validation.

5.3 Analytical Propositions

Drawing on the empirical themes and the Digital Synergy Loop framework, three analytical propositions are advanced for future theoretical and empirical elaboration:

- **Proposition 1 (Strategic Alignment):** SMEs that establish explicit strategic intent as the initiating condition of their digital transformation journey will exhibit higher levels of digital synergy formation and sustainable innovation outcomes than those adopting a purely technology-driven approach.
- **Proposition 2 (Capability Iteration):** The iterative cycling between capability development and strategic refinement, as operationalized in the Digital Synergy Loop, positively moderates the relationship between resource constraints and innovation performance in SMEs.
- **Proposition 3 (Network Co-Creation):** SMEs that actively engage in digitally enabled co-creation networks will demonstrate accelerated innovation cycles, as stakeholder commitments and collaborative ecosystems substitute for the internal R&D capacity constraints characteristic of smaller firms.

6. Conclusions and Implications

This study advances theory, practice, and policy in SME digital transformation through the Digital Synergy Loop. It reconceptualises digitalisation as a recursive, adaptive process rather than a linear progression. Theoretically, it makes three contributions: (1) it bridges strategic framing and capability development as co-evolving elements, enriching the RBV (Barney, 1991); (2) it extends DCT by illustrating how SMEs engage in sensing, seizing, and reconfiguring through iterative experimentation; and (3) it challenges linear digital maturity models, positioning transformation as a non-linear loop involving reflection, recalibration, and reimplementation.

For practitioners, four actionable pathways emerge: (1) initiating digital transformation through clear strategic intent rather than technology-centric approaches; (2) adopting incremental capability development to mitigate risk; (3) actively engaging in co-creation with customers and partners; and (4) cultivating organisational reflexivity—the capacity for continuous learning and adaptation based on feedback.

From a policy perspective, interventions should extend beyond subsidized technology acquisition to develop modular, adaptive capability-building programs tailored to SME contexts. Policies fostering ecosystem collaboration and safe experimentation—through innovation sandboxes or phased implementation support—better align with the iterative, feedback-driven nature of SME digital journeys.

7. Limitations and Future Research

This research draws from a small, context-specific sample of Swiss SME leaders, making findings non-generalizable but analytically valuable. Future research should quantitatively validate the Digital Synergy Loop across broader SME populations and diverse sectors. Comparative and longitudinal designs are particularly valuable for examining how the loop evolves over time and how leadership styles, organisational culture, and sectoral dynamics influence the digital transformation process. Exploring the interplay between digital transformation pathways and specific innovation outcomes (e.g., radical vs. incremental) also warrants attention.

Ethics Declaration

This research has obtained the university’s ethical approval.

AI Declaration

The authors used Grammarly for proofreading and language refinement only.

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