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ENTREPRENEURSHIP

DIGITAL TRANSFORMATION, ENTREPRENEURIAL ORIENTATION AND SME PERFORMANCE: AN ANALYTICAL SCIENTIFIC EXAMINATION OF RELATIONSHIPS, PATTERNS AND CAUSAL MECHANISMS

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ABSTRACT

Purpose of the study: This study systematically examined how digital transformation and entrepreneurial orientation interact to influence the performance of small and medium-sized enterprises (SMEs), with a particular focus on uncovering the underlying causal relationships, mechanisms, and contextual conditions that shape performance outcomes.

Problem statement: Although digital transformation is widely recognized as a key driver of competitiveness among SMEs, existing evidence reveals inconsistent and uneven performance outcomes. A significant proportion of SMEs, particularly in developing economies, adopt digital technologies without realizing measurable gains, highlighting a persistent gap between adoption and value creation. This inconsistency points to the limitations of linear perspectives and underscores the need to understand how strategic orientation, innovation processes, and contextual constraints jointly influence SME performance.

Method/methodology: The study adopts a systematic literature review (SLR) approach, guided by PRISMA 2020 protocols, to synthesize peer-reviewed studies published between 2010 and 2025. Relevant literature was sourced from major academic databases including Scopus, Web of Science, ScienceDirect, and Google Scholar. A thematic and narrative synthesis was employed to identify patterns, contradictions, and causal mechanisms across studies.

Results of the study: The findings reveal that digital transformation does not directly enhance SME performance but operates through innovation capability as a central mediating mechanism. Entrepreneurial orientation emerges as a critical strategic driver that shapes both the adoption and effectiveness of digital transformation initiatives. Additionally, financial capacity significantly moderates these relationships, influencing the extent to which SMEs can translate digital

investments into tangible performance gains. Overall, the results highlight that SME performance is shaped by complex, non-linear interactions rather than isolated factors.

Conclusion and policy recommendation: The study concludes that a mechanism-based and context-sensitive approach is essential for understanding SME performance in the digital era. Policymakers should prioritize improving access to finance, strengthening digital infrastructure, and fostering innovation capabilities among SMEs. Practitioners are encouraged to align digital transformation efforts with strong entrepreneurial orientation and innovation strategies to maximize value creation.

Keywords: *Digital transformation, entrepreneurial orientation, SME performance, innovation capability, financial capacity*

1. INTRODUCTION

Small and Medium-sized enterprises (SMEs) are important in the advancement of an either a developed or a developing economy, SMEs also enhance innovation and creation of employment opportunities. The environment in which these SMEs operate on are highly dynamic hence the need to constantly balance between challenges and opportunities, their performance is not just restricted to making profits but also to ensure their operations run efficiently, they compete effectively in the market, ability to innovate and how fast they adapt to change (Prihandono et al., 2024).

Entrepreneurship has grown to be a diverse field of study with more and more scholars trying to understand what it is that mainly influence the performance of businesses especially the SMEs as evidenced by the high number of literature present in this field. This is also exacerbated by the fact that many economies acknowledge the vital role that SMEs play in ensuring economic stability, growth, job creation and social cohesions besides development. Their importance notwithstanding, SMEs continue to face a number of challenges including but not limited to insufficient operational funds, stiff competition especially from developed firms, socio-economic factors just to mention but few (Sigey et al., 2023).

The onset of Digital Transformation has fundamentally defined the organizational culture and business operations especially through innovation processes and changing marketing models making digitalization an increasingly disruptive power within business activities (Muhammad Jamil Khan et al., 2025). Digital transformation is considered to be one a long-term complex system engineering process, more so given the fact that most SMEs have limited resources (Teng et al., 2022). Entrepreneurial Orientation (EO) is a multidimensional perspective that expresses the innovation, proactiveness and the risk-taking tendencies of the organization. Empirical research reveals that businesses that contain a strong EO possess a competitive advantage in the business ecosystem as opposed to those with a conventional approach (Cvijić Čović et al., 2023). Studies show that attributes such as innovativeness, pro-activeness and risk taking have an effect on the performance of a firm, and this may vary positively or negatively depending on the nature of the market or sector the firm operates in (Chenuos & Maru, 2015) .

2. STATEMENT OF THE PROBLEM

A desk reviews of empirical literature highlight the fact that despite the general agreement on the importance of digital transformation as a crucial driver of entrepreneurial competitiveness its impact is still uneven, complex and at times confusing. SMEs consist of approximately 75% of businesses globally and account for 50% of employment stressing their fundamental importance in economic development (Dwiputra Hutama et al., 2024). This importance notwithstanding, the rate at which firms leverage digital technology still varies considerably. Empirical evidence reveal that a considerable number of SMEs have gone ahead to initiate some level of digital transformation, however, around 30% are reported to not have achieved measurable productivity gains highlighting a persistent rift between adoption and value realization (Pratamansyah, 2024).

This difference is materially evident in developing countries where structural and organizational limitations further define outcomes. In areas such as the Sub-Saharan Africa, the rapid growth of mobile technologies and digital technologies continuously create new opportunities for SMEs yet only a rough estimate of between 20%-25% of the SMEs report significant improvements directly related to digitalization (Mwangi & Kyallo, 2023). These results are mostly limited by infrastructural inadequacies, limited digital capabilities and restricted access to funding. Similarly, some SMEs experience progress in terms of efficient operations, market growth and growth in terms of revenue while others have to grapple with implementation, incremental costs of operations as they attempt to switch towards digital models (Shee et al., 2023).

These variances reveal a crucial limitation within the main body of research which by extension has theorized the relationship between digital transformation and SME performance as direct, linear and universally beneficial. Such a view does not capture the intrinsically multi-dimensional and liable nature of digital transformation, which is revealed within a complex interplay of institutional capabilities, strategic bearing and environmental conditions. Practically, digital transformation is not merely a technological undertaking but a strategic and organizational process that requires alignment between technological investments and firm-specific capabilities (Karikari et al., 2025).

Additionally, although entrepreneurial orientation (EO) is widely recognized as a fundamental determinant of an enterprise's performance, its interactive role within the digital transformation process remains underdeveloped in the literature. SMEs featured by higher levels of innovativeness, proactiveness and risk taking are generally better positioned to identify and exploit digital opportunities. However, the mechanisms through which EO shapes, amplifies or conditions the effectiveness of digital transformation initiatives are not yet fully understood. Similarly, the ability to innovate has often been treated as an outcome of digital transformation, rather than as a central mediating mechanism through which digital investment are translated into performance gains (Chen, 2025). Emerging evidence suggests digital technologies alone are not enough, without well-developed innovation capabilities, SMEs may fail to convert digital inputs into tangible outputs such as new products, improved processes and enhanced competitiveness (Sonkar

et al., 2025). Access to capital and funds is yet to be acknowledged as a strategic moderating factor, for a long time this has always been treated as a background condition. Previous literature suggests that up to 40% of SMEs in emerging economies recognize financial constraints as the main limit to growth and digital investment, hence financial capacity is fundamental in determining the level, depth and sustainability of digital transformation efforts (Widayanto & Nafis, 2025).

Cumulatively the above limitations refer to the absence of integrative frameworks capable of explaining why digital transformation influences major performance improvement in some SMEs but not in others, how entrepreneurial orientation and innovation capability interact to shape the results and under what conditions specifically in relation to capital access these relationships are strengthened or constrained (Sonkar et al., 2025). In light of the above, this study proposes a causal mechanism-based perspective of SMEs performance. Instead of hypothesizing digital transformation as an isolated driver, it places SMEs performance as the result of interdependent technological, strategic and financial perspectives extending beyond linear assumptions, the current study contributes to a more nuanced, analytically robust and contextually grounded understanding of SME performance in the digital age.

3. RESEARCH OBJECTIVES

The main objective of this study was to systematically synthesize existing studies and develop a clear perspective of how digital transformation and entrepreneurial orientation interrelate to impact SME performance with particular prominence on recognizing underlying causal relationships, contextual conditions and emergent patterns.

The specific objectives were to:

i. To synthesize empirical evidence on the causal effect of digital transformation on SME performance.

ii. To examine how entrepreneurial orientation causally shape SMEs performance.

iii. To analyse the causal mechanisms that translate into SMEs performance

iv. To evaluate the contextual conditions under which the causal effects of digital transformation on SMEs performance are either strengthened or constrained.

4. RESEARCH QUESTIONS

i. What causal relationships are established in the literature between digital transformation and SMEs performance?

ii. How does entrepreneurial orientation causally impact SME performance?

iii. Through what underlying mechanisms does innovation capability lead to changes in SME performance?

iv. Under what contextual conditions do the causal effects of digital transformation on SME performance vary across SMEs.

5. THEORITICAL REVIEW/ FRAMEWORK

Resource Based View (RBV)

The Resource Based View (RBV) highlights a critical perspective of how internal firms' resources determine SMEs performance outcomes. Centrally, RBV posits that sustainable competitive advantages arises from resources that are valuable rare, inimitable and not-substitutable (barney, 1991: Fahy,2000). In the context of SMEs operating in increasingly digital environments resources such as digital skills, data analytics capabilities, technological platforms and integrated information systems are often viewed as strategic systems.

However, contemporary literature indicate that the mere ownership or implementation of digital technologies does not automatically result in improved SME performance, rather, the value of these resources is appreciated only when they are successfully integrated within organizational procedures and assisted by managerial competencies and knowledge-based capabilities (Mikalef et al., 2021). This is in line with the increased appreciation that digital transformation is not distinctly a technological undertaking but a socio-technical venture that needs orientation between human capital, organizational processes and technological infrastructure.

Past literature further validates that SMEs that efficiently integrate digital tools with strong knowledge management practices and skilled human resources tend to perform better than those that adopt technology in isolation (Rialti et al., 2019). This emphasizes the RBV perspective that it is not distinct resources, but rather a number of resources and configurations, that drive performance disparities. In this regard, RBV helps explain why some digitally active SMEs fail to achieve performance gains, as highlighted in the problem statement, due to a lack of alignment between technological investments and internal capabilities.

Dynamic Capabilities Theory

Dynamic Capabilities Theory (DCT) extends the resource possession perspective by concentrating on the firm's capability to acclimatize, assimilate, and realign resources as per to dynamic business environments (Teece, 2018). This distinction is specifically beneficail in the context of digital transformation, which is inherently dynamic, iterative, and uncertain.

Digital transformation in SMEs can therefore be understood as an appearance of evolving capabilities, encouraging firms to identify new opportunities, capitalize on them through strategic investments, and reform their operations in alignment (Warner & Wäger, 2019). Practically this involves nonstop learning, institutional adaptability, and being able to restructure business models as per the digital disruption. Recent empirical evidence suggests that SMEs with strong dynamic capabilities such as absorptive capacity, organizational learning, and managerial agility are better positioned to convert digital investments into tangible performance outcomes (Li et al., 2022).

Conversely, firms that lack these adaptive capabilities often experience implementation challenges, cost inefficiencies, and limited returns from digital initiatives (Ahmad et al., 2024).

This perspective directly addresses the inconsistencies highlighted in the problem statement, where digital transformation yields uneven outcomes across SMEs. It suggests that performance gains are not driven by digital adoption alone, but by the firm's ability to continuously reconfigure its resource base in alignment with evolving technological and market conditions. Thus, DCT provides a critical explanatory layer for understanding the causal pathway between digital transformation and SME performance.

Entrepreneurial Orientation Theory

The Entrepreneurial Orientation (EO) describes the association of strategic and behavioral perspectives of entrepreneurship and how the SMEs perceive digital transformation and ultimately how it achieves performance outcomes. EO is often hypothesized as a multifaceted idea consisting of innovativeness, proactiveness and risk-taking (Lumpkin & Dess, 1996). Causally, EO impacts not just SME performance directly but also reforms how firms recognize, adopt, and explore digital technologies. Entrepreneurs with a strong EO are likely to try emerging technological innovations that seek to proactively respond to market dynamics and take calculated risks in tracking innovation driven opportunities (Covin & Wales, 2019). This strategic orientation develops their resolve to leverage on digital transformation as a source of competitive advantage.

Reviewed literatures confirm that EO materially strengthens the effectiveness of digital transformation initiatives, specifically in uncertain and resource-constrained environments (Kraus et al., 2021). Additionally, EO is seen to encourage innovation ability, which is a fundamental aspect in as far as digital investments are translated into improved products, services, and processes (Ferreira et al., 2020). Previous Literature on EO highlights why SMEs facing identical technological situations experience differing performance results. Organizations with higher levels of innovativeness and proactiveness are well positioned to align digital strategies with market opportunities, compared to those with lower EO that struggle to move beyond basic adoption toward value creation. In summary, EO serves as a strategic catalyst, reforming both the process and efficiency of digital transformation efforts, and ultimately impacting SME performance both directly and indirectly in as far as causality is concerned.

6. EMPIRICAL REVIEW

This section discusses some of the previous studies that have been conducted to establish the Impact of digital transformation and Entrepreneurial Orientation on the performance of SMEs. This review reveals a developing but fragmented body of research on the association between digital transformation, entrepreneurial orientation, and SME performance. As opposed to presenting a uniform chronicle, existing studies reveal a convergence around three broad yet insufficiently unified collection of evidence (Ayu Widiarti et al., 2025).

One line of evidence extensively reveals a positive relationship between digital transformation and SME performance. A considerable number of scholars have linked digital adoption to developments in operational effectiveness, market influence, and customer engagement. For example, Verhoef et al. (2021) theorize digital transformation as a strategic course that enhances value creation through customer-centric and data-driven business models. Similarly, Bharadwaj et al. (2013) argue that digital business strategies enable firms to reconfigure their competitive positioning in increasingly digitalized markets. Within the SME context, these benefits often manifest through reduced transaction costs, enhanced visibility, and access to broader markets. However, this dominant perspective tends to assume a linear and universally beneficial relationship, implicitly suggesting that increased digitalization will inevitably lead to improved performance. Such an assumption sits uneasily with emerging empirical realities, particularly in resource-constrained environments, where the outcomes of digital transformation are far less predictable (Edi et al., 2025).

Another line of evidence introduces a more contingent and context-sensitive perspective, highlighting that the performance effects of digital transformation are uneven across firms. Kraus et al. (2021), in their systematic review, demonstrate that many SMEs struggle to translate digital adoption into measurable performance gains, often due to limited organizational capabilities, inadequate strategic alignment, and insufficient managerial expertise. This reinforces the widely observed disconnect between digital adoption and value realization, a concern that is particularly pronounced in developing economies (Harini et al., 2023). Additional empirical work supports this view by showing that digital transformation can, in some cases, increase operational complexity and costs without delivering proportional benefits, especially when firms lack the internal capacity to effectively integrate new technologies (Warner & Wäger, 2019). These findings challenge deterministic assumptions and point instead to the importance of internal firm characteristics in shaping outcomes.

The third and increasingly influential line of research shifts attention toward underlying mechanisms and contextual conditions that explain how and when digital transformation contributes to SME performance (Yosephine et al., 2025). Within this perspective, innovation capability has emerged as a central mediating factor. Ferreira et al. (2020) demonstrate that digital technologies enhance performance primarily when they are leveraged to support innovation in products, services, or processes. In this sense, digital transformation does not directly create value, rather, it provides the enabling infrastructure through which innovation-driven value creation can occur. In parallel, entrepreneurial orientation has been identified as a critical strategic driver that influences how SMEs engage with digital transformation. Firms characterized by higher levels of innovativeness, proactiveness, and risk-taking are more likely to experiment with digital technologies and exploit emerging opportunities, thereby achieving superior performance outcomes (Rauch et al., 2009; Covin & Wales, 2019). This suggests that the effectiveness of digital transformation is not purely technological but is deeply embedded in the strategic posture of the firm.

Beyond internal mechanisms, contextual constraints particularly financial capacity consistently emerges as decisive factors. Access to finance plays a crucial role in determining the scope, depth, and sustainability of digital transformation initiatives. Beck and Demirgüç-Kunt (2006) highlight that financial constraints remain one of the most significant barriers to SME growth, especially in developing economies. More recent evidence suggests that limited financial resources restrict SMEs' ability to invest in complementary assets such as skills development, system integration, and innovation processes, thereby weakening the overall impact of digital transformation (Ayyagari et al., 2011).

Taken together, the empirical literature points to three critical patterns. First, there is a clear inconsistency in performance outcomes, even among SMEs that have adopted digital technologies. Second, there is a persistent under-theorization of causal mechanisms, particularly the role of innovation in translating digital investments into tangible results. Third, there is a limited integration of contextual moderators, such as financial capacity and institutional environments, which are essential in explaining cross-firm and cross-country variations (Soomro et al., 2024).

This fragmentation highlights a significant gap in the literature. While individual studies provide valuable insights, there remains a lack of integrative frameworks capable of explaining the causal pathways and conditional dynamics underlying SME performance in the digital era. Addressing this gap requires moving beyond linear models toward a mechanism-based synthesis that captures the complex interplay between technological adoption, strategic orientation, and contextual constraints. It is this gap that the present systematic review seeks to address.

7. CONCEPTUAL FRAMEWORK

Building on the systematic synthesis of the literature, this study advances a mechanism-based conceptual framework that explains SME performance as the outcome of interdependent technological, strategic, and contextual forces, rather than isolated or linear relationships. This directly addresses the limitations identified in the problem statement, particularly the oversimplification of digital transformation as a universally beneficial driver of performance. At the core of the framework is the proposition that digital transformation (DT) does not directly lead to improved SME performance. Instead, its effect is largely indirect and contingent, operating through firm-level capabilities and contextual conditions. Specifically, DT enhances innovation capability, which acts as the primary mechanism through which digital investments are translated into tangible outcomes such as new products, improved processes, and enhanced competitiveness (Ferreira et al., 2020; Verhoef et al., 2021).

Complementing this, entrepreneurial orientation (EO) is positioned as a strategic enabler that shapes both the adoption and effectiveness of digital transformation. SMEs characterized by higher levels of innovativeness, proactiveness, and risk-taking are more likely to leverage digital technologies strategically, thereby strengthening the pathway between DT and performance (Covin & Wales, 2019; Lumpkin & Dess, 1996). At the contextual level, financial capacity is conceptualized as a moderating condition that influences the strength, scalability, and

sustainability of digital transformation initiatives. Firms with greater access to financial resources are better positioned to invest in complementary assets such as skills, infrastructure, and innovation processes, thereby amplifying performance outcomes (Beck & Demirgüç-Kunt, 2006).

Collectively, this framework reflects a non-linear and conditional model, where SME performance is shaped by:

i. Direct and indirect causal pathways,
ii. Interaction effects between strategic and technological factors, and
iii. Contextual constraints that enable or limit value realization.

8. RESEARCH METHODOLOGY

This study adopts a Systematic Literature Review (SLR) design, which is particularly appropriate for synthesizing fragmented and evolving bodies of knowledge in complex fields such as digital transformation and SME performance. Unlike traditional narrative reviews, SLRs provide a transparent, replicable, and methodologically rigorous approach to evidence synthesis (Tranfield et al., 2003).

To ensure methodological rigor, the review follows the PRISMA 2020 guidelines (Page et al., 2021), which provide a structured process for identifying, screening, and synthesizing relevant studies.

Search Strategy

A comprehensive and systematic search was conducted across major academic databases, including: Scopus, Web of Science, ScienceDirect and Google Scholar. The search strategy combined key terms related to the core constructs of the study, including: “Digital Transformation,” “Entrepreneurial Orientation,” “SMEs,” “Innovation Capability,” and “Firm Performance.” Boolean operators (AND, OR) were used to refine the search and ensure coverage of relevant studies.

Inclusion and Exclusion Criteria

To maintain relevance and quality, studies were included if they:

i. Were peer-reviewed journal articles
ii. Focused explicitly on SMEs
iii. Examined relationships between at least two of the key constructs
iv. Were published between 2010 and 2025

Studies were excluded if they:

i. Were not peer-reviewed
ii. Focused on large firms without SME-specific insights
iii. Lacked methodological rigor or conceptual clarity

Data Extraction and Synthesis

Data extraction involved systematically coding each study based on:

i. Key variables (DT, EO, innovation, financial capacity, performance)
ii. Methodological approach
iii. Context (developed vs. developing economies)
iv. Key findings and limitations

A thematic synthesis approach was employed to identify recurring patterns, contradictions, and gaps across studies. This was complemented by a narrative synthesis, which enabled the development of causal explanations and theoretical integration (Tranfield et al., 2003). This approach is particularly suitable for unpacking complex causal relationships, where multiple interacting factors shape outcomes.

9. RESULTS AND DISCUSSIONS

The findings of this systematic review reinforce the argument that digital transformation is not a universally beneficial strategy, but rather a context-dependent and capability-driven process. While a significant number of studies report positive associations between digital transformation and SME performance, the evidence reveals substantial variation in outcomes across firms and contexts.

A key insight emerging from the synthesis is that entrepreneurial orientation acts as a critical amplifier. SMEs with strong EO are more likely to adopt digital technologies proactively, experiment with innovative business models, and respond effectively to market changes. This aligns with prior research emphasizing the role of strategic posture in shaping firm performance under uncertainty (Covin & Wales, 2019).

More importantly, the analysis highlights innovation capability as the central causal mechanism linking digital transformation to performance. Digital technologies, in themselves, do not create value; rather, they provide the infrastructure through which firms can innovate. SMEs that successfully translate digital investments into new or improved products, services, and processes are more likely to achieve sustained performance gains (Ferreira et al., 2020).

At the same time, financial capacity emerges as a decisive contextual constraint, particularly in developing economies. Limited access to finance restricts the ability of SMEs to invest in

complementary assets such as training, system integration, and innovation activities, thereby weakening the potential impact of digital transformation (Beck & Demirgüç-Kunt, 2006; Ayyagari et al., 2011).

Taken together, these findings support a shift away from linear, one-size-fits-all models toward a more nuanced understanding of SME performance as the outcome of interacting causal pathways and contextual conditions. This directly addresses the inconsistencies highlighted in the problem statement and provides a more robust analytical foundation for future research.

10. CONCLUSIONS

This systematic review provides a comprehensive and integrative understanding of how digital transformation, entrepreneurial orientation, and contextual factors interact to shape SME performance. The findings demonstrate that these relationships are complex, non-linear, and contingent, rather than direct and universally applicable.

By adopting a mechanism-based perspective, the study makes three key contributions. First, it challenges the dominant assumption that digital transformation automatically leads to improved performance. Second, it highlights the central role of innovation capability as the pathway through which digital investments create value. Third, it underscores the importance of contextual conditions, particularly financial capacity, in shaping outcomes. Overall, the study advances the literature by offering a more nuanced and analytically grounded explanation of SME performance in the digital era.

11. RECOMMENDATIONS

From a policy perspective, there is a need to move beyond promoting digital adoption toward enabling value realization. This requires targeted interventions aimed at improving SME access to finance, strengthening digital infrastructure, and building innovation capabilities.

For practitioners, the findings suggest that digital transformation should not be approached as a purely technological initiative. Instead, SMEs should adopt a holistic and strategically aligned approach, ensuring that digital investments are complemented by strong entrepreneurial orientation and innovation processes.

Future research should focus on:

i. Longitudinal studies to capture the evolving nature of digital transformation

ii. Context-specific analyses, particularly in developing economies

iii. Empirical validation of the proposed causal framework using quantitative and mixed-method approaches

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