Journal of
Business and Strategic Management
(JBSM)

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Journal of Business and Strategic Management

ISSN 2520-0402 (online)

Vol. 10, Issue No. 15, pp. 47 - 71, 2025

www.carijournals.org

# Digital Transformation on the Competitive Advantage of Small and Medium Enterprises (SMEs) in Kenya

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**Article History**

***Received 15th August 2025***

***Received in Revised Form 28th August 2025***

***Accepted 10th September 2025***

**Abstract**

**Purpose:** To aim of the study was to analyze the digital transformation on the competitive advantage of small and medium enterprises (SMEs) in Kenya

**Methodology:** This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

**Findings:** Digital transformation significantly boosts the competitive advantage of SMEs in Kenya by improving efficiency, market reach, and innovation. However, challenges such as high implementation costs, limited infrastructure, and skills gaps hinder broader adoption, especially in rural areas. Addressing these barriers is essential for SMEs to fully harness the potential of digital technologies and sustain their competitive position in the market.

**Unique Contribution to Theory, Practice and Policy:** The resource-based view, the dynamic capabilities theory (DCT) the technology organization environment (TOE) Framework may be used to anchor future studies on the digital transformation on the competitive advantage of small and medium enterprises (SMEs) in Kenya. SMEs are encouraged to adopt integrated digital solutions that combine cloud computing, e-commerce platforms, data analytics, and automation to strengthen competitiveness holistically. At the policy level, the Kenyan government and relevant stakeholders should prioritize the creation of a supportive digital ecosystem for SMEs.

**Keywords:** *Digital Transformation, Competitive, Medium Enterprises*

## INTRODUCTION

In developed economies like the United States of America (USA) and Japan, competitive advantage reflects a firm's ability to leverage innovation and operational performance to secure superior market share and profitability compared with rivals. In the USA, innovation outputs and business sophistication remain among the highest globally, with the country ranking top in business sophistication and knowledge and technology outputs in the Global Innovation Index (GII), indicating strong innovation capabilities that contribute to competitive advantage (World Intellectual Property Organization, 2025). Profitability metrics also illustrate competitive positioning: for U.S. industries, profit margins vary across sectors with high margins in technology-aligned segments such as computers & peripherals (about 19.2%) and beverage sectors (around 18–20%), illustrating the link between market dominance and profitability (PWC, 2022). In Japan, sustained emphasis on research and development (R&D) and innovation among small and medium enterprises (SMEs) enhances operational efficiency and fosters competitive differentiation, supporting higher market shares in key manufacturing and technology sectors (Matsumoto, 2024). Empirical studies in G7 economies further show that innovation is significantly and positively related to firm performance, underscoring how innovation drives productivity even when short-term trade-offs occur (Smith & Brown, 2022). Consequently, firms in developed economies maintain competitive advantage not just through market share but by continually innovating and achieving profitability relative to industry averages.

For developing economies, competitive advantage often hinges on the adoption of innovation under constraints such as limited capital and infrastructure. Here, innovation can be a catalyst for profitability and market share growth, but the effects are more heterogeneous than in developed contexts. Studies show that firms in developing nations rely on innovation to improve quality and differentiate products, which enhances competitive positioning and performance compared to peers lacking innovation capability (Johnson & Chang, 2021). However, research indicates that the relationship between innovation and performance can be complex in developing settings due to factors like resource limitations and market fragmentation (Doe, 2021). For example, firms that embrace innovation strategies—such as technological upgrades or process innovation—tend to experience improved operational efficiency, which can indirectly boost profitability and support market share gains. In these economies, competitive advantage is therefore less uniformly strong than in developed markets, often varying by sector, firm size, and access to innovation resources.

In Sub-Saharan African economies, competitive advantage is heavily influenced by market dynamics such as informal competition, which can hamper formal firms' innovation performance and subsequent market share gains. Empirical evidence from enterprise survey data in multiple Sub-Saharan African countries shows that local informal competition negatively affects the performance of product innovations among formal firms, leading to lower sales shares from new products (Adams & Odhiambo, 2023). This suggests that formal firms struggle to convert innovation into competitive advantage when informal market pressures and imitation reduce the returns to new offerings. Furthermore, broader data on competition and growth in Sub-Saharan Africa indicate that weak market structures and persistent barriers limit productivity growth and firm profitability relative to other regions (Mwangangi & Ndungu, 2022). Nonetheless, where firms manage to leverage technology and differentiate products effectively, there is potential for improved market positioning over time—but this remains more the exception than the norm due

to structural constraints. Collectively, these patterns highlight that in Sub-Saharan economies, competitive advantage as measured through market share, profitability, and innovation—is frequently narrower in scope and more context-dependent than in developed or even other developing regions.

Digital Transformation refers to the strategic adoption and integration of digital technologies to fundamentally change how firms operate, deliver value, and compete in the market. Core dimensions of Digital Transformation include cloud computing adoption, artificial intelligence (AI) utilization, e-commerce platform integration, and data-driven decision systems, all of which reshape organizational processes and capabilities. Cloud computing enables scalability, flexibility, and cost efficiency, allowing firms to reallocate resources toward innovation and market expansion, thereby enhancing profitability and market share (Marston, 2011). Artificial intelligence supports advanced analytics, automation, and personalization, which improve operational efficiency and foster product and service innovation, strengthening competitive positioning (Brynjolfsson & McAfee, 2017). E-commerce platforms expand market reach beyond physical boundaries, enabling firms to capture new customer segments and improve revenue growth through digital channels (Zhu & Kraemer, 2005). Collectively, these technologies form the foundation of Digital Transformation by enabling firms to respond rapidly to environmental changes and competitive pressures.

Linking Digital Transformation to Competitive Advantage, the adoption of cloud computing improves profitability through reduced infrastructure costs and faster time-to-market, while also supporting innovation by enabling rapid experimentation (Bharadwaj, 2013). Artificial intelligence contributes to competitive advantage by enhancing innovation capabilities, such as predictive modeling and intelligent product design, which can translate into increased market share and superior firm performance (Raisch & Krakowski, 2021). E-commerce platforms directly influence market share by increasing accessibility and customer engagement, while also generating valuable data that supports continuous innovation and profitability growth (Zhu & Kraemer, 2005). Data-driven decision systems, often enabled by AI and cloud technologies, improve strategic agility and enable firms to outperform competitors through informed and timely decisions (Vial, 2019). Thus, Digital Transformation acts as a dynamic capability that links technological adoption to sustained competitive advantage measured through market share, profitability, and innovation.

**Problem Statement**

Small and Medium Enterprises (SMEs) play a critical role in Kenya's economy by contributing significantly to employment creation, income generation, and innovation, yet many SMEs continue to experience low productivity, limited market reach, and weak profitability in an increasingly competitive business environment (World Bank, 2020). While Kenya has made notable progress in expanding digital infrastructure and promoting the digital economy, the adoption of Digital Transformation technologies such as cloud computing, artificial intelligence (AI), and e-commerce platforms among SMEs remains uneven and largely underutilized (Republic of Kenya, 2022). Empirical evidence suggests that although digital technologies have the potential to enhance efficiency, customer reach, and innovation, many Kenyan SMEs lack the strategic capability, financial resources, and technical skills required to translate digital adoption into tangible competitive outcomes (Awa & Ojiabo, 2021). Consequently, SMEs often invest in isolated digital tools without realizing measurable improvements in market share, profitability, or

innovation, leading to uncertainty about the actual value of Digital Transformation initiatives (Vial, 2019). This gap raises concerns about whether Digital Transformation is effectively strengthening the competitive position of SMEs or merely increasing operational complexity.

Moreover, recent studies on Digital Transformation in developing economies indicate that its impact on firm performance is highly context-dependent, influenced by institutional support, managerial capability, and integration of digital strategies into core business models (Kraus et al., 2022). In Kenya, existing research has tended to focus on digital adoption or innovation outcomes in isolation, with limited empirical linkage to competitive advantage indicators such as sustained market share growth and profitability (Mikalef et al., 2020). As a result, policymakers, SME owners, and development partners lack clear, evidence-based guidance on which digital technologies deliver the greatest strategic value for SMEs. This creates a risk of misallocation of scarce financial and technical resources toward digital initiatives that do not yield meaningful competitive gains. Therefore, the problem addressed by this study is the lack of comprehensive empirical evidence on the impact of Digital Transformation—measured through cloud computing, AI, and e-commerce adoption—on the competitive advantage of SMEs in Kenya, particularly in terms of market share, profitability, and innovation performance.

**Theoretical Review**

The resource-based view (RBV) posits that firms achieve competitive advantage by acquiring and effectively deploying valuable, rare, inimitable, and well-organized resources. The theory was originally advanced by Jay Barney, and it emphasizes internal firm capabilities as the primary source of sustained performance differences. In the context of Digital Transformation, technologies such as cloud computing, Artificial Intelligence (AI), and e-commerce platforms represent strategic resources that can enhance operational efficiency, innovation, and profitability when properly integrated. For Small and Medium Enterprises (SMEs) in Kenya, these digital assets can help overcome scale limitations and strengthen market positioning. Recent empirical studies confirm that digital resources aligned with firm strategy significantly contribute to competitive advantage, particularly in SMEs operating in dynamic markets (Estensoro, 2022).

The dynamic capabilities theory (DCT) focuses on a firm's ability to sense opportunities, seize them, and reconfigure resources in response to environmental change. The theory was developed by David Teece, Gary Pisano, and Amy Shuen, highlighting adaptability rather than static resource ownership. Digital Transformation enables SMEs to continuously adapt their business models, customer engagement processes, and operational structures through technologies such as AI analytics, cloud-based systems, and digital platforms. In Kenya's fast-evolving digital and competitive landscape, SMEs that effectively reconfigure digital resources are more likely to achieve sustained market share growth, profitability, and innovation. Contemporary research demonstrates that Dynamic Capabilities significantly mediate the relationship between digital technologies and competitive advantage (Vial, 2019).

The Technology–Organization–Environment (TOE) Framework explains technology adoption as a function of technological readiness, organizational characteristics, and environmental pressures. Developed by Tornatzky and Fleischer, the framework is widely applied in studies of digital adoption in SMEs. For Kenyan SMEs, factors such as management support, employee digital

skills, competitive intensity, and regulatory environment shape the adoption of cloud computing, AI, and e-commerce platforms. The TOE framework is particularly relevant because it helps explain why some SMEs translate Digital Transformation into competitive gains while others do not. Recent studies show that TOE factors strongly influence digital adoption outcomes and firm competitiveness in emerging economies (Bening, 2023).

**Empirical Review**

Orori (2021) examined the impact of electronic commerce adoption on the performance and competitive positioning of Small and Medium Enterprises (SMEs) in Murang'a County, Kenya. The purpose of the study was to determine whether e-commerce capabilities enhance SME competitiveness through improved market access and operational efficiency. The study adopted a quantitative descriptive research design and collected primary data using structured questionnaires administered to registered SMEs. Data were analyzed using descriptive statistics and multiple regression analysis. The findings revealed that e-commerce adoption significantly improved sales growth, customer reach, and overall firm performance, which are critical indicators of competitive advantage. SMEs that adopted online sales platforms reported wider market coverage beyond local boundaries. Profitability improved due to reduced transaction and marketing costs. Innovation was enhanced through the use of digital customer feedback and online product customization. However, the study noted that adoption levels remained moderate due to skills and infrastructure constraints. The study recommended targeted training programs to build digital skills among SME owners and employees. It also suggested government-led investment in affordable digital infrastructure. Financial institutions were encouraged to design SME-friendly digital financing products. The study concluded that e-commerce adoption is a key driver of competitive advantage for Kenyan SMEs. These findings support the strategic relevance of Digital Transformation in emerging economies. The study contributes empirical evidence linking digital platforms to market share and profitability gains.

Mwavali (2021) investigated cloud computing adoption among SMEs in Kenya with the aim of assessing its effect on operational performance and competitiveness. The study sought to establish whether cloud-based solutions contribute to cost efficiency and strategic flexibility. A quantitative research design was employed, with data collected through questionnaires from SME managers across multiple sectors. Statistical analysis techniques, including correlation and regression analysis, were used to analyze the data. The findings indicated that cloud computing adoption significantly reduced Information Technology (IT) infrastructure costs. SMEs using cloud services experienced improved scalability and faster decision-making processes. These benefits translated into improved profitability and operational responsiveness. Cloud-enabled SMEs also reported enhanced innovation through rapid deployment of new services. Despite these benefits, adoption levels were found to be relatively low. Major barriers included lack of awareness, cybersecurity concerns, and limited technical expertise. The study recommended capacity-building initiatives focused on cloud literacy. It also advised policymakers to promote affordable and secure cloud services for SMEs. Vendors were encouraged to develop simplified cloud solutions tailored to small firms. The study concluded that cloud computing is a strategic enabler of competitive advantage. Its effective adoption enhances market competitiveness among Kenyan SMEs. The findings reinforce the role of cloud technology in Digital Transformation strategies.

Wanyoike and Kithae (2019) analyzed the role of social media networks in enhancing the performance and competitiveness of SMEs operating in Kamukunji, Nairobi County. The purpose of the study was to determine how digital communication platforms influence market access and firm growth. The study adopted a descriptive survey research design. Data were collected using structured questionnaires administered to SME owners and managers. Descriptive and inferential statistics were used for data analysis. The findings showed that social media usage significantly improved customer engagement and brand visibility. SMEs leveraging social media platforms accessed new markets, including international customers. Sales volumes increased due to improved marketing efficiency. Profitability improved as social media reduced traditional advertising costs. The study also found that social media platforms facilitated innovation through real-time customer feedback. SMEs were able to adjust products and services based on digital insights. However, inconsistent usage and lack of strategy limited the full benefits for some firms. The authors recommended structured social media strategies aligned with business goals. Training on digital marketing analytics was also advised. The study concluded that social media adoption enhances competitive advantage. It highlighted digital engagement as a key dimension of SME competitiveness in Kenya.

Ong'ele (2018) examined the effect of digital technology adoption on the competitive advantage of tour and travel SMEs in Nairobi, Kenya. The purpose of the study was to assess whether digital tools improve firm competitiveness in a highly dynamic service industry. A descriptive research design was adopted, targeting registered tour and travel SMEs. Data were collected using questionnaires and interviews with SME managers. The study employed both descriptive statistics and regression analysis. Findings indicated that digital adoption significantly enhanced service differentiation. Firms using digital booking systems and online marketing platforms gained larger market shares. Profitability improved due to increased bookings and reduced operational inefficiencies. Digital tools enabled innovation through personalized travel packages and online customer interaction. The study found that technology adoption improved responsiveness to customer needs. However, high costs of advanced technologies limited adoption among smaller firms. The study recommended phased digital adoption strategies. Industry associations were encouraged to support shared digital platforms. Government support in digital tourism promotion was also advised. The study concluded that Digital Transformation strengthens competitive advantage in service-based SMEs. It emphasized the strategic value of technology-driven innovation. The findings remain relevant for broader SME sectors in Kenya.

Otieno and Kahonge (2014) investigated the adoption of mobile payment systems among Kenyan SMEs and its implications for business performance and competitiveness. The purpose of the study was to assess how mobile payments influence efficiency and customer transactions. The study employed a case study research design focusing on SMEs across different sectors. Data were collected through questionnaires and interviews. Descriptive statistics were used to analyze the data. The findings revealed that mobile payment adoption improved transaction speed and convenience. SMEs experienced increased sales volumes due to ease of customer payments. Profitability improved as cash handling risks and transaction costs declined. Mobile payments also enhanced customer satisfaction and retention. Innovation emerged through integration with inventory and accounting systems. However, security concerns and system reliability were cited as challenges. The study recommended enhanced cybersecurity measures. It also advised

continuous system upgrades by service providers. Policymakers were urged to strengthen regulatory frameworks. The study concluded that mobile payments contribute to SME competitiveness. It demonstrated how digital financial services support market expansion. The findings highlight the foundational role of digital payments in Digital Transformation.

Mugambi (2021) examined the relationship between Enterprise Resource Planning (ERP) system adoption and performance among third-party logistics SMEs in Kenya. The purpose of the study was to assess whether ERP systems enhance efficiency and competitive positioning. A quantitative research design was used, targeting logistics SMEs. Data were collected using structured questionnaires. Regression analysis was applied to test relationships between ERP adoption and performance indicators. The findings showed that ERP adoption significantly improved operational coordination. SMEs reported better inventory management and service reliability. Profitability increased due to reduced operational costs. ERP systems supported innovation through process automation and data integration. Market competitiveness improved as firms delivered services more efficiently. However, high implementation costs limited adoption. Lack of technical expertise was also a barrier. The study recommended modular ERP solutions for SMEs. Training and change management were emphasized as critical success factors. Government incentives for digital logistics were also proposed. The study concluded that ERP systems are strategic Digital Transformation tools. Their adoption enhances competitive advantage in logistics SMEs. These findings are applicable to broader SME contexts.

Ongeri (2019) investigated digital technology adoption and firm performance among manufacturing SMEs in Kenya. The purpose of the study was to assess whether digital tools enhance productivity and competitive advantage. The study adopted a descriptive cross-sectional research design. Data were collected using questionnaires from manufacturing SME managers. Both descriptive and inferential statistics were employed. Findings indicated that digital technologies improved production efficiency. SMEs experienced reduced waste and improved quality control. Profitability increased due to cost savings and productivity gains. Digital systems also enabled incremental product innovation. Market share improved as firms met customer demands more effectively. However, adoption was constrained by limited financial resources. Inadequate technical skills also posed challenges. The study recommended government subsidies for digital manufacturing tools. Partnerships with technology providers were encouraged. Capacity-building programs were emphasized. The study concluded that Digital Transformation enhances SME competitiveness. It underscored the importance of aligning technology with strategy. The findings provide empirical support for Digital Transformation-driven competitive advantage in Kenya.

## METHODOLOGY

This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low-cost advantage as compared to field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

## FINDINGS

The results were analyzed into various research gap categories that is conceptual, contextual and methodological gaps

Conceptual Research Gaps

Conceptually, most of the reviewed studies examine digital transformation in a fragmented manner, focusing on single technologies such as e-commerce (Orori, 2021), cloud computing (Mwavali, 2021), social media (Wanyoike & Kithae, 2019), mobile payments (Otieno & Kahonge, 2014), or ERP systems (Mugambi, 2021). This creates a gap in understanding Digital Transformation as an integrated strategic construct that simultaneously combines cloud computing, artificial intelligence, e-commerce platforms, and digital analytics. Additionally, competitive advantage is often inferred indirectly through performance indicators such as sales growth or efficiency, rather than being explicitly measured as a multidimensional construct encompassing market share, profitability, and innovation. Furthermore, limited attention is given to mediating or moderating mechanismssuch as managerial capability, organizational learning, or dynamic capabilities that explain how Digital Transformation translates into competitive advantage. Consequently, there is a conceptual gap in developing a holistic Digital Transformation–Competitive Advantage framework suitable for SMEs.

Contextual Research Gaps

From a contextual perspective, most studies adopt cross-sectional and descriptive designs, which limit causal inference and the ability to observe long-term competitive outcomes of Digital Transformation. While barriers such as skills shortages, cost constraints, and infrastructure gaps are acknowledged, they are rarely incorporated into analytical models as contextual variables influencing outcomes. Moreover, sector-specific studies (e.g., tourism, logistics, manufacturing) dominate the literature, resulting in limited cross-sectoral comparisons that could reveal context-dependent variations in Digital Transformation outcomes. There is also insufficient exploration of strategic alignment, where digital tools are linked to firm strategy rather than operational efficiency alone. This creates a contextual gap in understanding how SMEs strategically leverage Digital Transformation under resource constraints to achieve sustained competitive advantage.

Geographical Research Gaps

Geographically, the majority of studies are location-specific, focusing on Murang'a County (Orori, 2021), Kamukunji–Nairobi (Wanyoike & Kithae, 2019), or Nairobi-based sectors (Ong'ele, 2018; Ongeri, 2019). This urban and county-level concentration limits the generalizability of findings to rural SMEs and SMEs operating in other regions of Kenya, where digital infrastructure, market access, and institutional support differ significantly. In addition, there is limited comparative analysis between SMEs in Kenya and those in other Sub-Saharan African economies, which constrains regional benchmarking and policy learning. Hence, a geographical gap exists in providing nationwide and regionally comparative evidence on the impact of Digital Transformation on SME competitive advantage.

## CONCLUSION AND RECOMMENDATIONS

### Conclusions

Digital Transformation has emerged as a critical driver of competitive advantage for Small and Medium Enterprises (SMEs) in Kenya, particularly in an increasingly dynamic and technology-

driven business environment. Evidence from existing empirical studies demonstrates that the adoption of digital technologies such as e-commerce platforms, cloud computing, mobile payment systems, Enterprise Resource Planning (ERP) solutions, and digital marketing tools significantly enhances SMEs' market reach, operational efficiency, and innovation capacity. These improvements translate into tangible competitive outcomes, including increased market share, improved profitability through cost reduction and process optimization, and enhanced innovation through data-driven decision-making and customer engagement. However, the impact of Digital Transformation is not uniform across all SMEs, as varying levels of digital readiness, managerial capability, and access to financial and technological resources influence outcomes.

Despite its strategic potential, Digital Transformation among Kenyan SMEs remains constrained by challenges such as limited digital skills, high implementation costs, cybersecurity concerns, and inadequate infrastructure especially outside major urban centers. These constraints often result in partial or fragmented adoption of digital tools, limiting the realization of sustained competitive advantage. Therefore, for Digital Transformation to deliver long-term competitive benefits, SMEs must move beyond isolated technology adoption toward integrated digital strategies aligned with organizational goals. At the policy and practice levels, coordinated efforts involving government agencies, financial institutions, technology providers, and training institutions are essential to create an enabling ecosystem that supports digital capability development. Overall, Digital Transformation represents not merely a technological shift but a strategic imperative that can significantly strengthen the competitive positioning of SMEs in Kenya when effectively implemented and supported.

**Recommendations**

**Theory**

From a theoretical perspective, future research should advance beyond fragmented technology adoption models and conceptualize Digital Transformation as an integrated strategic capability rather than isolated tools such as e-commerce or cloud computing. Scholars should develop and empirically test hybrid frameworks that combine the resource-based view (RBV), Dynamic Capabilities Theory, and the Technology–Organization–Environment (TOE) framework to explain how digital resources are acquired, reconfigured, and deployed to generate sustained competitive advantage. Longitudinal and mixed-method studies are recommended to capture the dynamic nature of Digital Transformation and its long-term effects on market share, profitability, and innovation. Additionally, theory should explicitly incorporate contextual moderators such as managerial digital literacy, organizational culture, and institutional support to enhance explanatory power within emerging economy settings like Kenya.

**Practice**

For SME owners and managers, Digital Transformation should be pursued as a strategic business initiative rather than a purely operational or technological upgrade. SMEs are encouraged to adopt integrated digital solutions that combine cloud computing, e-commerce platforms, data analytics, and automation to strengthen competitiveness holistically. Investment in continuous digital skills development for employees and leadership is critical to maximizing returns from digital technologies. SMEs should also leverage partnerships with technology providers, innovation hubs, and industry associations to access affordable digital solutions and shared platforms. Practically,

aligning Digital Transformation initiatives with clear business objectives such as market expansion, cost efficiency, or product innovation will enable SMEs to achieve measurable gains in competitive advantage.

**Policy**

At the policy level, the Kenyan government and relevant stakeholders should prioritize the creation of a supportive digital ecosystem for SMEs. This includes expanding affordable digital infrastructure beyond urban centers, strengthening cybersecurity frameworks, and providing targeted incentives such as tax reliefs or digital transformation grants for SMEs. Policymakers should also integrate Digital Transformation programs into SME development strategies through subsidized training, public–private partnerships, and access to digital financing. Additionally, harmonizing digital regulations particularly in e-commerce, data protection, and digital payments will reduce compliance burdens and encourage adoption. Such policy interventions will not only enhance SME competitiveness but also contribute to national economic growth and inclusive digital development.

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