



DIGITAL TRANSFORMATION AND ORGANIZATIONAL PERFORMANCE OF FIRMS IN KENYA

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ABSTRACT

Digital transformation and organizational performance of firms in Kenya occur within a dynamic business environment shaped by rapid technological advancements, evolving customer expectations, increased market interconnectivity, and intense competition. Despite the widespread adoption of digital technologies, performance outcomes among organizations vary considerably, with some achieving operational efficiency and service delivery improvements while others encounter high implementation costs and weak performance returns. This study reviews empirical literature on the influence of digital transformation dimensions on organizational performance among firms in Kenya. It focuses on four core dimensions: e-commerce adoption, data analytics capability, process automation, and cloud computing adoption, while incorporating organizational culture as a moderating factor. The review synthesises evidence from global, regional, and Kenyan studies and is anchored in Dynamic Capabilities Theory, Institutional Theory and the Resource-Based View. The reviewed literature indicates that e-commerce adoption supports performance through expanded market reach, digital transaction efficiency, and customer engagement. Data analytics capability contributes to performance by enabling pattern recognition, predictive insights, and data-driven decision-making. Process automation supports performance by reducing operational friction, standardizing workflows, and enhancing service delivery, while cloud computing adoption improves scalability, data security, and resource optimization. The evidence further shows that the performance effects of digital transformation are context-dependent and influenced by infrastructural readiness, regulatory compliance, managerial leadership, and organizational learning. The review suggests that digital transformation dimensions influence organizational performance collectively rather than in isolation, and firms that align internal technological resources, institutional adaptation, and dynamic capabilities are better positioned to achieve sustained competitive advantage in the digital economy. Future studies should consider cross-sectoral empirical designs and longitudinal approaches to capture the evolving nature of digital transformation and its long-term impact on firm performance in emerging markets.

KEYWORDS: Digital Transformation; E-Commerce Adoption; Data Analytics Capability; Process Automation; Cloud Computing Adoption; Organizational Performance.

1.0 INTRODUCTION

According to Daud (2024), digital transformation is the process of utilizing the power of digital technology by organizations to improve competitive advantage, long-term sustainability, and tangible performance improvements. Digital transformation is the use of technology to radically improve the performance or reach of an organization. (Deloitte, 2018). Ismail, Khater, and Zaki (2017) defined digital transformation as a process through which firms assemble multiple new digital technologies, enhanced with ubiquitous connectivity, aiming at superior performance and sustained competitive advantage, by transforming multiple business dimensions, including the business model, the customer experience (comprising digitally enabled products and services) and operations (comprising processes and decision-making), while at the same time impacting people (including skills talent and culture) and networks (including the entire value system).

Although digital transformation is increasingly recognised as a strategic capability for improving organizational performance, debate remains on which dimensions have the greatest influence, particularly in emerging economies such as Kenya. Studies in advanced economies emphasise artificial intelligence, cloud computing, data analytics, and integrated digital platforms, while Kenyan studies focus more on mobile technologies, digital payments, process automation, and digital customer engagement. These differences suggest that the impact of digital transformation on organizational performance is context-specific and shaped by Kenya's technological, institutional, and market environment.

Digital transformation is increasingly important for organizations operating in turbulent environments characterised by rapid technological change, evolving customer expectations and intense competition. Although many organizations are investing in digital technologies, their performance outcomes vary considerably. Some achieve greater efficiency, improved service delivery and customer responsiveness, while others continue to experience high costs, operational inefficiencies and weak performance despite digital investments. This suggests that adopting digital technologies alone does not necessarily guarantee improved organizational performance, highlighting the need to examine the specific dimensions of digital transformation that influence performance.



Kenya provides an important context for examining this relationship because of its rapid growth as a digital economy, supported by increasing internet penetration, smartphone adoption, mobile money and digital entrepreneurship. However, organizations continue to face challenges including cybersecurity risks, inadequate digital infrastructure, high implementation costs, skills gaps and regulatory uncertainties. These conditions suggest that the extent to which digital transformation contributes to organizational performance may depend on how effectively organizations integrate digital technologies into their processes, services and decision-making.

Dynamic Capabilities Theory (Teece, 2007; Teece, Pisano & Shuen, 1997) serves as the anchor theory, explaining the organizational routines and strategic processes through which firms continuously sense, seize, and reconfigure internal and external capabilities in response to environmental turbulence and technology-driven disruptions. Institutional Theory (DiMaggio & Powell, 1983) complements this by providing the macro-level lens for understanding how regulatory, cognitive, and normative pressures shape digital transformation outcomes. The Resource-Based View (Barney, 1991) supplies the micro-level foundation by explaining how firms use distinctive resources such as technological capabilities, brand identity, and digital infrastructure to create competitive advantage. In addition, Organizational Learning Theory (Argyris & Schön, 1978) accounts for the generative processes and internal learning mechanisms that enable sustained adaptation. Together, these theories provide a comprehensive framework for understanding how firms navigate institutional pressures, acquire strategic resources, adapt organizational capabilities through dynamic routines, and sustain long-term adaptation.

Although previous studies have explored the relationship between digital transformation and organizational performance, the current literature remains fragmented across specific industries, geographical settings, and strategic dimensions. Previous research has largely focused on isolated sectors such as manufacturing, insurance, and e-commerce, or general digital entrepreneurship. However, limited empirical evidence is available on the broad, cross-sectoral effect of digital transformation dimensions on the overall performance of firms operating within the diverse Kenyan business environment. In addition, existing studies have often considered individual aspects of technology adoption while overlooking the simultaneous influence of core digital transformation pillars, such as digital infrastructure, data analytics, and operational re-engineering. Therefore, there is limited empirical knowledge about the generalized, non-industry-specific innovation and digital dimensions that most effectively influence the performance of firms across the Kenyan market.

1.1 Background of the Study

The contemporary business environment has undergone considerable change as a result of globalisation, digitalisation, technological development, and increased market interconnectivity. (Hasanah, 2024) These developments have intensified competition across various industry sectors in Kenya, requiring firms to continually rethink their operational strategies to remain competitive. Competitiveness based on conventional factors, such as physical resources and traditional market dominance, has gradually been displaced by advanced technological practices, including digital transformation, data-driven customer approaches, and flexible organizational structures (Subramaniam, 2022). Accordingly, digital transformation can be regarded as an important strategic concept used by organizations to redesign their capabilities, internal routines, and value creation processes.

Globally, digital transformation has emerged as a critical catalyst for organizational performance across diverse industries as firms leverage advanced technologies to stimulate growth, optimize operations, and enhance competitiveness (Guo & Xu, 2021). Firms operating in advanced economies compete through data-driven innovation, platform scalability, ecosystem integration, and process automation in order to optimize both operational efficiency and corporate value (Zareie et al., 2024). Digital transformation in these developed environments is typically facilitated by robust technological infrastructure, high digital literacy, and mature institutional frameworks that support technology adoption and strategic change. Consequently, organizations focus on aligning their digital capabilities with organizational capital, strong governance, and information quality to successfully navigate the complex costs and benefits associated with large-scale technological integration (Guo & Xu, 2021; Zareie et al., 2024).

Regionally, the African business environment presents a distinctive context for examining digital transformation and its influence on organizational performance, despite rapid growth in digital transactions and mobile technology adoption (Achieng & Malatji, 2022). Nevertheless, enterprises in the region frequently encounter structural complexities, including infrastructure bottlenecks, heavy reliance on traditional operating models, evolving regulatory landscapes, and substantial transformation costs (Cumbe, 2025). Consequently, digital transformation initiatives in African markets tend to focus heavily on mobile integration, resource reconfiguration, trust building, information quality, and overcoming local operational constraints to drive sustainable organizational performance (Zareie et al., 2024).

The Kenyan business environment presents a distinctive context for examining digital transformation and its influence on organizational performance, despite rapid growth in digital technology adoption and mobile-led transactions across various sectors (Kariuki & Mugambi, 2019; Wanjiku & Mwaura, 2021). Across the economy, firms increasingly leverage digital tools to stimulate operational growth, optimize internal workflows, and enhance competitive positioning (Kola, 2023). Nevertheless, enterprises in the country



frequently encounter structural complexities, including infrastructure bottlenecks, heavy reliance on traditional operating models, evolving regulatory landscapes, and substantial transformation costs (Mthembu et al., 2018). Consequently, digital transformation initiatives in the Kenyan market tend to focus heavily on mobile integration, resource reconfiguration, trust building, information quality, and overcoming local operational constraints to drive sustainable organizational performance (Omoga et al., 2025).

1.2 Statement of the Problem

Developments in the business environment, including globalisation, digitalisation, technological development, and increased market interconnectivity have intensified competition across various industry sectors in Kenya, requiring firms to continually rethink their operational strategies to remain competitive (Yadav, 2025). Competitiveness based on conventional factors, such as physical resources and traditional market dominance, has gradually been displaced by advanced technological practices, including digital transformation, data-driven customer approaches, and flexible organizational structures. Accordingly, digital transformation can be regarded as an important strategic concept used by organizations to redesign their capabilities, internal routines, and value creation processes.

The Kenyan business environment presents a distinctive context for examining digital transformation and its influence on organizational performance, despite rapid growth in digital technology adoption and mobile-led transactions across various sectors (Kariuki & Mugambi, 2019; Wanjiku & Mwaura, 2021). Across the economy, firms increasingly leverage digital tools to stimulate operational growth, optimize internal workflows, and enhance competitive positioning (Kola, 2023). Nevertheless, enterprises in the country frequently encounter structural complexities, including infrastructure bottlenecks, heavy reliance on traditional operating models, evolving regulatory landscapes, and substantial transformation costs (Mthembu et al., 2018; Guo & Xu, 2021). Consequently, digital transformation initiatives in the Kenyan market tend to focus heavily on mobile integration, resource reconfiguration, trust building, information quality, and overcoming local operational constraints to drive sustainable organizational performance (Zareie et al., 2024; Omoga et al., 2025).

Despite the strategic imperative of digital transformation, empirical research regarding its direct impact on organizational performance remains fragmented and inconclusive. While global studies (Guo & Xu, 2021; Zareie et al., 2024) highlight the positive link between digital integration and corporate value, they largely focus on developed economies or specific sectors such as manufacturing, leaving a gap in generalized, cross-sectoral evidence in developing markets like Kenya. Furthermore, existing local studies have largely examined isolated elements of technology adoption, such as e-commerce or mobile money, while overlooking how dynamic organizational capabilities, institutional pressures, and internal learning mechanisms interact to influence overall firm performance. Without a comprehensive understanding of these multi-level dynamics, many firms in Kenya continue to face high operational friction and sub-optimal returns on their technology investments. This study, therefore, seeks to address this gap by empirically investigating the effects of digital transformation on the organizational performance of firms in Kenya.

1.3 Research Objectives and Hypotheses

1.3.1 General Objective

To examine the influence of digital transformation and organizational performance of firms in Kenya.

1.3.2 Specific Objectives

The study was guided by the following specific objectives:

1. To determine the effect of e-commerce adoption on the organizational performance of firms in Kenya.
2. To investigate the influence of data analytics capability on the organizational performance of firms in Kenya.
3. To determine the effect of process automation on the organizational performance of firms in Kenya.
4. To determine the effect of cloud computing adoption on the organizational performance of firms in Kenya.
5. To establish the moderating effect of organizational culture on the relationship between digital transformation and organizational performance.

1.4 Research Hypotheses

H₀₁: e-commerce adoption has no significant effect on the organizational performance of firms in Kenya.

H₀₂: Data analytics capability has no significant effect on the organizational performance of firms in Kenya.

H₀₃: Process automation has no significant effect on the organizational performance of firms in Kenya.

H₀₄: Cloud computing adoption has no significant effect on the organizational performance of firms in Kenya.

H₀₅: Organizational culture has no statistically significant moderating effect on the relationship between digital transformation and organizational performance.

2.0 LITERATURE REVIEW

2.1 Introduction

This article reviews the literature on digital transformation and organizational performance of firms in Kenya. It is grounded in four key strategic management theories and examines empirical studies from 2020 to 2026 on digital transformation and organizational



performance in the Kenyan business environment. Finally, the section presents a conceptual framework showing the relationships among the study variables, incorporating organizational culture as a moderating factor.

2.2 Theoretical Framework

This study is guided by the Dynamic Capabilities Theory, Institutional Theory, the Resource-Based View, and Organizational Learning Theory, which are integrated to analyze how digital transformation affects firm performance in Kenya through internal resource endowments, institutional navigation, dynamic routines, and learning mechanisms. Although each theory explains distinct aspects of this relationship, none is sufficient alone: RBV emphasizes resources but lacks environmental adaptation insight; DCT explains adaptation while overlooking macro-level forces; Institutional Theory highlights regulatory pressures; and Organizational Learning Theory focuses on internal learning. These frameworks address how organizations in dynamic digital contexts navigate institutional pressures, acquire strategic resources, and adapt capabilities to gain competitive advantage, making this multi-theoretical perspective highly relevant to the Kenyan business environment.

2.2.1 Dynamic Capabilities Theory

Dynamic Capabilities Theory (Teece et al., 1997) argues that, for an organization to succeed in a dynamic environment, success requires not only resources but also the ability to integrate, develop, and realign internal and external capabilities in response to rapidly changing conditions. According to the theory, continuous adaptation, renewal and transformation of capabilities enable organizations to sustain competitive advantage.

Dynamic Capabilities Theory is applied in this study to establish the role of digital transformation in influencing organizational performance among firms in Kenya. The theory emphasises that organizational dynamic capabilities enable firms to sense, seize, and respond to environmental changes by transforming organizational activities (Cavusgil & Deligonul, 2025). In the present context, these capabilities are reflected in digital infrastructure integration, data analytics capabilities, process automation, and organizational capital. Firms with strong dynamic capabilities can quickly modify their digital platforms, network connectivity, cloud systems, data analytics models, and automated workflows in response to changing market preferences and technological disruptions (Li et al., 2022). Such continuous changes increase efficiency and operational performance, which, in turn, support improved firm performance.

The main criticism of the theory is that it is relatively conceptual and does not provide specific mechanisms for developing and maintaining firms' dynamic capabilities (Zollo, Bettinazzi, Neumann & Snoeren, 2016). It is also important to note that firms differ substantially in developing such capabilities because of differences in leadership, corporate culture, and technological development stage (Zahra, Sapienza & Davidsson, 2006). Nevertheless, the theory is useful for this research because it explains digital transformation and organizational adaptation within firms in Kenya.

2.2.2 Institutional Theory

Institutional Theory (DiMaggio & Powell, 1983) complements the strategic management perspective by providing a macro-level lens for understanding how regulatory, cognitive, and normative pressures shape organizational behavior and transformation outcomes. According to the theory, organizations do not operate in a vacuum; rather, they must conform to external institutional environments through coercive, mimetic, and normative pressures to gain legitimacy, secure resources, and ensure long-term survival (Thoumy & Abou Hamad, 2026).

Institutional Theory is applied in this study to establish the role of digital transformation in influencing organizational performance among firms in Kenya operating within structured regulatory and market environments. The theory emphasises that external institutional forces drive firms to adopt digital technologies, standardise operating procedures, and align with statutory frameworks such as national ICT policies and regulatory compliance standards (Oyetade & Zuva, 2025). In the present context, these pressures influence how firms deploy digital infrastructure, manage data, and structure organizational capital.

Firms facing stringent regulatory mandates and normative industry standards are compelled to integrate automated billing, electronic tax management systems, and secure cloud services to maintain operational legitimacy and stakeholder trust (Lateefat & Bankole, 2023). Such institutional alignment reduces compliance friction and enhances operational efficiency, which, in turn, supports improved organizational performance.

The main criticism of the theory is that it places excessive emphasis on conformity and institutional isomorphism, potentially underestimating the role of strategic choice, managerial agency, and proactive innovation by individual firms (Aksom & Tymchenko, 2020). Firms respond differently to institutional pressures depending on their internal capabilities and leadership vision. Nevertheless,



the theory is useful for this research because it explains how external regulatory and normative environments shape digital transformation and performance outcomes within firms in Kenya.

2.2.3 Resource-Based View (RBV)

Resource-Based View (Barney, 1995) provides the micro-level foundation by explaining how firms utilize internal resources and capabilities that are valuable, rare, inimitable, and organised (VRIO) to create sustainable competitive advantage. According to the theory, differences in firm performance are primarily driven by the heterogeneity and immobility of these internal resource endowments rather than external industry positioning (Peteraf, 1993).

Resource-Based View is applied in this study to establish the role of digital transformation in influencing organizational performance among firms in Kenya. The theory emphasises that firm-specific technological assets and capabilities enable organizations to build distinct competitive advantages (Teece & Pisano, 1994). Firms with unique technological infrastructure, advanced predictive modeling capabilities, and skilled digital talent can leverage these internal resources to optimize workflows, reduce operational costs, and deliver superior customer value (Bughin., et al, 2017). Such unique asset deployments increase efficiency and market competitiveness, which, in turn, support improved firm performance.

The main criticism of the theory is that it is static and does not adequately explain how firms acquire and develop new resources in fast-changing environments, which led to the development of dynamic capabilities (Teece, 2014). It is also important to note that firms differ substantially in translating resource ownership into performance outcomes because of variations in managerial execution and organizational routines (Kor & Mahoney, 2005). The theory is useful for this research because it explains the foundational role of internal digital assets and organizational capabilities within firms in Kenya.

2.2.4 Organizational Learning Theory

Organizational Learning Theory (Argyris & Schön, 1978) accounts for the generative processes and internal learning mechanisms that enable firms to acquire, interpret, and apply new knowledge for sustained adaptation. According to the theory, learning occurs through single-loop problem-solving, which corrects errors within existing operational frameworks, and double-loop learning, which questions and restructures underlying organizational norms, objectives, and routines in response to external changes (Dee & Leisÿt , 2016).

Organizational Learning Theory is applied in this study to establish the role of digital transformation in influencing organizational performance among firms in Kenya. The theory emphasises that continuous knowledge acquisition and cognitive development enable firms to absorb complex technologies and adapt effectively (Luo, 2020). Organizations that foster active learning cultures can rapidly train employees on new digital platforms, interpret real-time data analytics insights, and refine automated workflows based on operational feedback (Chowdhury, 2025). Such iterative learning processes increase organizational agility and problem-solving capacity, which, in turn, support improved firm performance.

A key criticism of the theory is that it is often difficult to measure organizational learning empirically, and the process can be slow or resisted by entrenched institutional routines (Rerup & Feldman, 2011). It is also important to note that firms differ substantially in their capacity to institutionalize learning because of variations in leadership support and employee engagement (Bryson, Pajo, Ward & Mallon, 2006). Nevertheless, the theory is useful for this research because it explains the internal cognitive mechanisms and knowledge-building processes supporting digital transformation within firms in Kenya.

2.3 Empirical Review

This section reviews previous studies on digital transformation and organizational performance among firms in Kenya and related sectors. It examines key dimensions of digital transformation, including e-commerce adoption, big data analytics, process automation, cloud computing adoption and organizational culture, as well as the moderating role of organizational culture, and their influence on organizational performance among firms in Kenya.

2.3.1 e-Commerce Adoption and Organizational Performance

e-commerce adoption has gained extensive attention in strategic management, entrepreneurship, and digital commerce research as one of the primary drivers of organizational performance, especially under conditions of increasing market expansion, competitive pressure, and the need for greater efficiency in revenue generation and customer outreach. E-commerce adoption involves reconfiguring how organizations conduct commercial transactions and engage markets through various digital methods, including online platforms, social media integration, electronic transaction processing, customer relationship management, and digital marketing strategies.

Evidence from studies conducted across diverse economic settings in Kenya indicates a positive association between e-commerce adoption and organizational performance. Organizations that integrate digital commercial systems into their operations are able to



improve sales growth, strengthen profitability, and enhance customer satisfaction. However, the effectiveness of e-commerce depends heavily on ICT agility, infrastructural readiness, and transaction efficiency. Empirical findings further suggest that electronic commerce enhances organizational performance through specific digital mechanisms. In this regard, Ahmed, Ooko, and Maina (2025), in a study examining the effect of e-commerce systems on Small and Medium Enterprises (SMEs) in the marginalized frontier context of Mandera East Sub-County, found a significant paradox: despite e-commerce having the lowest adoption rate among digital strategies (only 30.4%), regression analysis revealed it had the most substantial positive and significant effect on SME performance ($\beta = 0.748$, $p < 0.001$). The study established that while infrastructural and skills-based barriers suppress adoption, e-commerce has an unparalleled capacity to transform business outcomes in underserved regions.

In relation to regional enterprise dynamics, Nyokabi (2021) investigated the influence of Information and Communication Technology (ICT) agility on the performance of e-commerce SMEs in Kiambu County. Utilizing a descriptive research design and stratified random sampling, the study revealed that enhancements in service delivery, ICT infrastructure, advanced innovation, and government policy collectively boosted e-commerce performance, demonstrating that rapid-paced ICT agility is vital for sustainable commercial operations. Further confirmation of the operational relevance of digital commerce comes from transaction-focused studies. Cheruto and Kyalo (2021), examining transaction efficiency and the performance of digital firms in Nairobi County, anchored their work on the Theory of Planned Behaviour and the Resource-Based View. The study established that transaction efficiency has a significant positive effect on the performance of digital firms ($\beta = 0.659$, $p < 0.05$). The findings concluded that e-commerce facilitates real-time business transactions through direct payments, thereby drastically cutting transaction times and boosting profitability, customer bases, and online sales.

A comparison and synthesis of these studies show both similarities and differences in the relationship between e-commerce adoption and organizational performance across sectors. A clear pattern is that e-commerce adoption in marginalized and resource-constrained environments drives substantial performance leaps despite low initial uptake. For urban SMEs and service firms, electronic commerce improves performance by streamlining transaction efficiency, expanding online markets, and optimizing customer engagement. In specialized sectors such as private security, digital tools directly translate to higher sales volumes and revenue growth.

Similarly, in the micro and small enterprise sector, Ahmed, Ooko, and Maina (2025) explored digital transformation and e-commerce strategy adoption among small businesses in Kenya. Focusing on variables such as e-commerce systems integration, sales growth, and customer satisfaction, the authors found that digital adoption yielded substantial commercial returns: regression modeling confirmed that e-commerce systems exert a powerful positive effect on performance ($\beta = .748$, $p < .001$), significantly boosting profitability and operational workflows following the incorporation of digital solutions into enterprise operations.

Despite this positive connection, other studies have shown that e-commerce does not operate in isolation; rather, it works alongside digital literacy, robust ICT infrastructure, and supportive regulatory frameworks. Therefore, its overall effectiveness depends on a multi-stakeholder enabling ecosystem and continuous personnel training.

Existing literature shows that e-commerce adoption positively affects organizational performance. Nevertheless, findings from research studies remain dispersed across diverse geographic and industry settings, and limited research has simultaneously examined comprehensive e-commerce adoption frameworks alongside emerging digital transformation dynamics in Kenya. Therefore, further research is needed on the role of e-commerce adoption as part of a wider technological innovation framework and its direct and indirect impacts on firm performance in emerging economies, particularly within Kenya's rapidly growing e-commerce industry.

2.3.2 Big Data Analytics and Organizational Performance

Big data analytics has gained extensive attention in strategic management, information systems, and organizational research as one of the primary drivers of organizational performance, especially under conditions of increasing market complexity, competitive pressure, and the need for data-driven decision-making. Big data analytics involves identifying patterns, correlations, and trends within massive volumes of structured and unstructured data to assist in strategic execution through various methods, including descriptive, prescriptive, predictive, and diagnostic analytics. Theoretically, it is closely related to the Resource-Based View (RBV), the Institutional Theory, and Dynamic Capabilities Theory, as organizations realise superior performance through the strategic deployment of technological resources, efficient talent utilisation, and the continuous enhancement of analytical capabilities in response to dynamic operating environments.

Evidence from studies conducted across diverse sectors in Kenya indicates a positive association between big data analytics capabilities and organizational performance. Organizations that systematically integrate data analytics into their operations are able to improve decision-making accuracy, enhance service quality, and strengthen overall operational efficiency. However, the effectiveness of big data



analytics depends heavily on technical capability configurations, user experience tracking, and financial metrics alignment. Empirical findings further suggest that data analytics enhances organizational performance through specific analytical and operational mechanisms. In this regard, Odula and Chege (2023), in a study examining data analytics and organizational performance at the Kenya Civil Aviation Authority (KCAA), found that various types of analytics display positive significance: Descriptive Analytics ($\beta=0.133, p<0.05$), Prescriptive Analytics ($\beta=0.198, p<0.05$), Diagnostic Analytics ($\beta=0.190, p<0.05$), and Predictive Analytics ($\beta=0.120, p=0.05$). The study established that while data analytics significantly impacts performance, many public institutions have yet to fully leverage big data ICT initiatives, underscoring the need for dedicated policy frameworks.

In relation to the healthcare service sector, Kelvin and Morrisson (2023) explored the relationship between big data analytics capabilities and the performance of private hospitals in Nairobi City County. Utilizing a descriptive research design and anchoring their work on theories such as Dynamic Capabilities and the Resource-Based View, the authors revealed a strong, significant correlation between big data capability and performance, alongside strong correlations with service responsiveness and financial measures. The study concluded that analytics capabilities drive performance through patient satisfaction, high service quality, and cost-effective healthcare delivery, recommending focused investments in financial key performance indicators and advanced technology.

Similarly, in the financial services sector, Kiplagat and Muchelule (2024) investigated data analytics practices and the performance of micro-lending institutions in Nairobi County. Using multivariate linear regression, the researchers found that specific analytics practices significantly influenced performance, with Experience Analytics demonstrating a coefficient of 0.273 ($p<0.002$) and IT Cost Analytics demonstrating a coefficient of 0.292 ($p<0.000$). The study concluded that leveraging experience and cost analytics enables micro-lending institutions to enhance operational efficiency, optimize risk management, and secure competitive advantage in a dynamic financial landscape.

Further confirmation of the strategic relevance of big data analytics comes from higher education and institutional contexts. Kibe, Kwanya, and Owano (2020), in their research focusing on universities such as the Technical University of Kenya and Strathmore University, demonstrated that institutional assimilation of big data analytics fundamentally transforms administrative effectiveness, research output, and strategic academic positioning.

A comparison and synthesis of these studies show both similarities and differences in the relationship between big data analytics and organizational performance across sectors. A clear pattern is that big data analytics in public and regulatory institutions improves performance by strengthening aviation monitoring, compliance tracking, and systemic governance. For healthcare providers, analytics improves performance by elevating patient care quality and optimizing internal cost structures. In financial and educational institutions, data insights optimize user experience, cost management, and strategic decision-making.

Despite this positive connection, other studies have shown that big data analytics does not operate in isolation; rather, it works alongside human resource talents, technical infrastructure, and organizational support systems. Therefore, its overall effectiveness depends on integrated capability frameworks and continuous managerial commitment.

Existing literature shows that big data analytics positively affects organizational performance. Nevertheless, findings from research studies remain dispersed across isolated industry settings, and limited research has simultaneously examined comprehensive big data analytics frameworks alongside emerging operational dynamics in Kenya. Therefore, further research is needed on the role of big data analytics as part of a wider technological innovation framework and its direct and indirect impacts on firm performance in emerging economies, particularly within Kenya's rapidly growing digital and e-commerce ecosystems.

2.3.3 Process automation and Organizational Performance

Process automation has gained extensive attention in strategic management, public administration, and supply chain research as one of the main drivers of organizational performance, especially under conditions of increasing operational complexity, resource scarcity, and the need for greater efficiency in service delivery and workflow execution. Process automation involves reconfiguring how organizations execute operational activities through various methods, including routine service automation, automated queuing, biometric verification, digital ticketing, and electronic workflow systems. Theoretically, it is closely related to the Resource-Based View, the Dynamic Capabilities Theory, and Institutional Theory, as organizations realise superior performance through the strategic deployment of technological resources and internal capabilities, as well as through the constant adaptation of automated systems in response to dynamic operating environments.

Evidence from studies conducted across public and private sector settings in Kenya indicates a positive association between process automation and organizational performance. Organizations that digitize and automate their workflows are able to improve operational



efficiency, strengthen service delivery, and enhance overall productivity. However, the effectiveness of process automation depends heavily on contextual variables, system integration, and implementation standards. Empirical findings further suggest that technology adoption enhances organizational performance through specific process-related and service-related mechanisms. In this regard, Muthee and Mang'ana (2021), in a study evaluating system automation at the Ministry of Public Service and Gender in Nairobi, found that system automation conceptualized through user-friendly websites, customer information systems, and staff digital proficiency significantly influences service delivery. The study established that firms and public institutions that regularly and timely roll out customized and user-friendly automated systems can realize a significant improvement in their service delivery outcomes.

In relation to the public service delivery context, Okeyo, Nzioki, and Tuikong (2026) examined the role of process automation in enhancing public service delivery across Huduma Centres in the Nairobi Metropolitan Area. Using an explanatory mixed-methods design, the authors found that process automation had a significant positive effect on service delivery ($\beta = 0.358$, $p = 0.000$), explaining 33.4% of the variance in service delivery outcomes. The study revealed that while routine service automation scored highest, variations in implementation depth across centers presented gaps that require full integration, standardisation, and real-time synchronisation with central government platforms such as the National Registration Bureau and NTSA systems to eliminate bottlenecks and reduce human error.

Similarly, in the governance and public agency context, Kangethe and Namusonge (2024) investigated procurement automation and the performance of government agencies in Nairobi City County. Utilizing a descriptive research design and anchoring their work on UTAUT and the Resource-Based View, they found that automated practices significantly influenced performance, with e-vendor management having the highest impact ($\beta = 0.395$, $p < 0.05$), followed closely by e-ordering ($\beta = 0.348$, $p < 0.05$). The study concluded that procurement automation enhances efficiency, transparency, and financial management, leading to improved agency performance outcomes.

Further confirmation of the relevance of process automation to operational success comes from Kenya's retail and supply chain sectors. Muchai and Lambaino (2022), in their study of automated procurement systems among supermarkets in Nairobi City County, concluded that the adoption of e-tendering and e-ordering systems has a significant, positive effect on the organizational performance of the retail sector. In a similar vein, Muthui and Namada (2026), focusing on Container Freight Stations (CFSs) in Kenya, evaluated business process automation and established that subconstructs such as cargo handling automation and track appointment systems significantly affected performance indicators. They concluded that business process automation is closely associated with revenue growth, operational efficiency, and customer satisfaction, recommending scalable interoperable cargo clearance frameworks.

A comparison and synthesis of these studies show both similarities and differences in the relationship between process automation and organizational performance across sectors. A clear pattern is that process automation in public sector institutions and service centres improves performance by increasing processing speed, transparency, and efficiency in citizen service delivery. For retail and supply chain organizations, automation improves performance by optimizing procurement processes, reducing operational costs, and streamlining logistics. In regulatory and agency environments, digital tools enhance vendor management and financial control. Despite this positive connection, other studies have shown that process automation does not operate in isolation; rather, it works alongside human resource capabilities, staff training, and robust backup protocols. Therefore, its overall effectiveness depends on seamless system integration and holistic organizational capability configurations.

Existing literature shows that process automation positively affects organizational performance. Nevertheless, findings from research studies remain dispersed across isolated industry settings, and limited research has simultaneously examined comprehensive process automation frameworks alongside emerging e-commerce dynamics in Kenya. Therefore, further research is needed on the role of process automation as part of a wider technological innovation framework and its direct and indirect impacts on firm performance in emerging economies, particularly within Kenya's rapidly growing e-commerce industry.

2.3.4 Cloud Computing Adoption and Organizational Performance

Cloud computing adoption has gained extensive attention in strategic management, information systems, and organizational research as one of the primary drivers of organizational performance, especially under conditions of increasing digital integration, resource scarcity, and the need for operational cost reduction and enhanced scalability. Cloud computing involves migrating and managing data, software, and computing infrastructure through remote servers accessed via the internet, utilizing various methods such as cloud storage, software-as-a-service (SaaS), platform-as-a-service (PaaS), and infrastructure-as-a-service (IaaS). Theoretically, it is closely related to the Resource-Based View (RBV), and Institutional Learning Theory, as organizations realize superior performance through the strategic alignment of technological resources, technical capabilities, and external normative or coercive pressures.



Evidence from studies conducted across diverse economic sectors in Kenya indicates a positive association between cloud computing adoption and organizational performance. Organizations that transition to cloud-based systems are able to improve cost efficiency, streamline resource utilization, and enhance service delivery. However, the effectiveness of cloud computing depends heavily on cloud technical skills, infrastructure readiness, and institutional pressures. Empirical findings further suggest that cloud adoption enhances organizational performance through specific technological and financial mechanisms. In this regard, Ngari and Kinyua (2025), in a study examining computerized information systems among Small and Medium Enterprises (SMEs) in Mombasa County, found a positive linear relationship between computerized information systems and firm performance. The study emphasized that adopting computerized and cloud-compatible systems brings about productivity, cost reduction, and scope for innovation through new business models, noting that SMEs using modern systems perform significantly better than those relying on traditional methods.

In relation to public sector governance, Wanjiru and Muchelule (2022) investigated the effect of cloud computing on the performance of the County Government of Nyandarua. Utilizing a correlational research design and stratified sampling across five sub-counties, the authors found that cloud computing significantly influenced governmental performance, with independent variables including cloud technical skills and cloud infrastructure explaining 80.3% of the variance in performance outcomes. The study recommended comprehensive employee training and full cloud adoption to ensure sustained service delivery improvements.

Similarly, in the technology and organizational context, Too, Bomett, and Kiprop (2021) examined the critical factors influencing the adoption of cloud computing and digital technology systems among public sector institutions in Kenya. Using empirical survey data evaluated through structural equation modeling, their findings demonstrated that organizational environments, leadership support, and technical readiness exert a significant positive relationship with technology assimilation, highlighting the profound influence that internal competencies and infrastructure alignment play in digital transformation outcomes.

Further confirmation of the operational relevance of cloud services comes from higher education contexts. Rutto and Reuben (2025) examined cloud services and the organizational performance of private universities in Kenya, focusing on the Management University of Africa. Anchored in the Resource-Based View, the study revealed that cloud service adoption has a strong positive influence on performance, with a correlation coefficient of 0.929, and that the overall model explains 86.3% of the variation in performance outcomes. The findings established that effective resource utilization, cost management, and cloud integration are critical drivers of institutional success.

A comparison and synthesis of these studies show both similarities and differences in the relationship between cloud computing adoption and organizational performance across sectors. A clear pattern is that cloud computing in public sector institutions and county governments improves performance by streamlining administrative workflows and enhancing public service delivery. For SMEs and private enterprises, cloud adoption improves performance through structural cost reduction, flexibility, and optimized resource utilization. In institutional and higher education environments, cloud services optimize time management, personnel allocation, and operational efficiency.

Despite this positive connection, other studies have shown that cloud computing does not operate in isolation; rather, it works alongside specialized technical skills, institutional support, and robust digital infrastructure. Therefore, its overall effectiveness depends on targeted employee training and seamless system integration.

Existing literature shows that cloud computing adoption positively affects organizational performance. Nevertheless, findings from research studies remain dispersed across isolated industry settings, and limited research has simultaneously examined comprehensive cloud computing adoption frameworks alongside emerging digital transformation dynamics in Kenya. Therefore, further research is needed on the role of cloud computing adoption as part of a wider technological innovation framework and its direct and indirect impacts on firm performance in emerging economies, particularly within Kenya's rapidly growing digital economy.

2.3.5 Organizational Culture and Organizational Performance

Organizational culture has gained extensive attention in strategic management, organizational behavior, and information systems research as a critical contextual contingency that shapes the success of digital transformation strategies, especially under conditions of rapid technological disruption, behavioral resistance, and the need for aligned employee values. Organizational culture involves the shared values, beliefs, norms, and behavioral expectations that govern how members execute tasks and interact with technologies, including dimensions categorized under the Competing Values Framework such as clan, adhocracy, hierarchy, and market cultures—as well as digital mindsets and leadership-backed frameworks. Theoretically, it is closely related to the Competing Values Framework, Adaptive Leadership Theory, and the Resource-Based View, as organizations realize superior performance through the harmonious alignment of internal cultural environments with technological deployment and dynamic strategic capabilities.



Evidence from studies conducted across diverse corporate and public sectors in Kenya indicates that organizational culture significantly moderates the relationship between digital transformation initiatives and organizational performance. Organizations that foster supportive, agile, and innovative internal cultures are better positioned to amplify the positive performance outcomes yielded by digital systems. However, the effectiveness of this moderation depends heavily on cultural orientations, employee behavioral norms, and leadership support. Empirical findings further suggest that cultural dimensions influence performance outcomes through behavioral and structural mechanisms. In this regard, Odindo, K'Aol, and Njenga (2025), in a study investigating the moderating effect of organizational culture on the relationship between adaptive leadership and digital transformation within Kenyan insurance firms, found that organizational culture significantly moderates these relationships. The study demonstrated that incorporating organizational culture as a moderator substantially increased predictive power, raising the R^2 from 0.266 to 0.376, thereby proving that cultural context determines how effectively leadership-driven digital strategies translate into performance metrics like return on assets and customer experience.

In relation to public sector administration and governance, Ooro and Waiganjo (2022) examined the moderating role of organizational culture on the relationship between e-governance implementation and performance within the Nairobi County Government. Utilizing a correlational research design and stratified random sampling across a target population of over 32,000 employees, the study revealed a strong positive correlation between organizational culture and performance ($R = 0.746$), with regression analysis showing that culture accounted for 55.7% of the performance variation ($R^2 = 0.557$). The findings established that shared beliefs, values, and organizational norms critically dictate the success of public sector digital reforms.

Similarly, in the banking and financial services sector, Mutua and Njihia (2023) explored the structural interplay between corporate cultural orientations and digital transformation strategies within commercial banks in Kenya. Their study assessed how internal environments such as agility, shared digital mindsets, and leadership-backed frameworks moderate the execution of digital initiatives, concluding that an entrenched digital culture is foundational for optimizing performance outcomes in competitive financial institutions. Further confirmation of the operational relevance of organizational culture comes from technology and supply chain contexts. Kinyua, Akerele, and Muathe (2021) investigated technology adoption and organizational performance among Kenyan ICT SMEs, finding that employee behaviors facilitating ICT innovation adoption were heavily fostered by adhocracy cultural practices, informal manager-employee relationships, customer orientation, and strong control dimensions. Correspondingly, Issah and Ackah (2024) highlighted that supportive internal values amplify the positive performance outcomes yielded by electronic procurement platforms, securing organizational value for money and driving procurement efficiency. Additional insights from Njuguna, Alkizim, and Wanyona (2025) confirm that internal cultural norms and leadership support dictate the successful integration of specialized information management technologies across construction projects in Nairobi County.

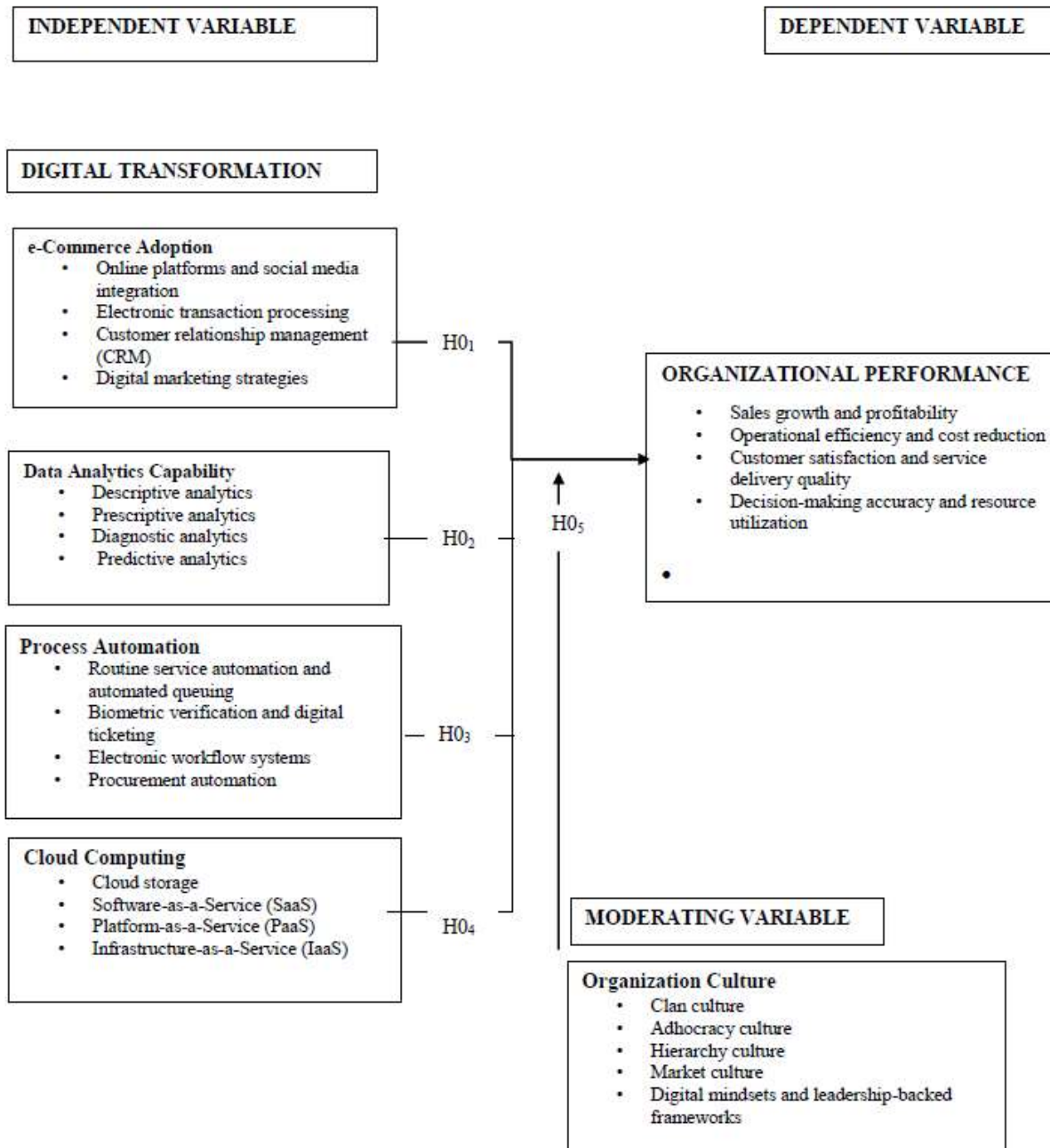
A comparison and synthesis of these studies show both similarities and differences in the moderating role of organizational culture across sectors. A clear pattern is that in highly regulated and public environments, hierarchical and supportive cultures stabilize digital rollouts and ensure compliance, whereas in agile financial and ICT sectors, adhocracy and market-oriented cultures accelerate digital innovation and competitive performance. Across all sectors, culture acts as the behavioral glue that either accelerates or impedes technological assimilation.

Despite this recognized impact, other studies have shown that organizational culture does not operate in isolation; rather, it interacts with leadership styles, technical infrastructure, and employee digital literacy. Therefore, its overall effectiveness depends on holistic alignment between cultural values and digital execution frameworks.

Existing literature shows that organizational culture significantly moderates the relationship between digital transformation and organizational performance. Nevertheless, findings from research studies remain dispersed across isolated industry settings, and limited research has simultaneously examined comprehensive cultural moderation frameworks alongside emerging e-commerce dynamics in Kenya. Therefore, further research is needed on the role of organizational culture as a key moderating variable within a wider technological innovation framework and its direct and indirect impacts on firm performance in emerging economies, particularly within Kenya's rapidly growing digital and e-commerce landscape.

2.4 Conceptual Framework

Kent & Thompson (2020) posit that a clearly structured conceptual framework helps illustrate the potential relationships among study variables. The framework conceptualises the relationship between e-commerce adoption, big data analytics, process automation, cloud computing adoption as measures of the independent variable digital transformation, organizational culture as the moderating variable, and their influence on organizational performance as the dependent variable.



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