

International Journal Research Publication Analysis

Page: 01-26

THE STRATEGIC ROLE OF DIGITAL TRANSFORMATION ON PERFORMANCE OF NSE-LISTED FIRMS IN KENYA

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Article Received: 23 July 2026

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Article Revised: 11 August 2026

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Published on: 01 September 2026

DOI: <https://doi-doi.org/101555/ijrpa.3122>

ABSTRACT

The increasing use of digital transformation has raised expectations for better organizational competitiveness and performance among companies listed on the Nairobi Securities Exchange (NSE). However, many companies listed on the exchange continue to face issues such as falling profitability, low returns on assets and equity, inefficient operations, and limited growth. These problems were linked to increasing operating costs, fluctuating exchange rates, high interest rates, and stronger competition. In response, many firms invested substantially in digital transformation initiatives to enhance competitiveness. Nevertheless, the varying performance outcomes among firms undertaking similar digital transformation initiatives still remains a major concern for the firms. This study sought to investigate the effect of digital transformation on firm the operational performance of firms listed in the NSE. The study was anchored on Dynamic Capabilities Theory and used a positivist research approach with a correlational design. The focus was on NSE-listed firms, with top management executives serving as key sources of information. Data was gathered using structured electronic questionnaires sent to a systematically selected sample of executives from listed firms. The results showed that digital transformation had a positive and statistically significant effect on firm performance ($\beta = 0.572$, $p < 0.001$), explaining 32.7% of the variation in firm performance ($R^2 = 0.327$). Among its components, Digital Technology Adoption ($\beta = 0.297$, $p < 0.001$) and Digital Culture ($\beta = 0.254$, $p = 0.002$) significantly improved firm performance, while Digital Process Integration ($\beta = 0.103$, $p = 0.209$) had a positive but statistically insignificant effect, indicating that technology adoption and a supportive digital culture contribute more directly to better organizational performance than process integration alone. The study recommends that management of companies listed on

the Nairobi Securities Exchange should strengthen investments in comprehensive digital transformation initiatives by prioritizing the adoption of modern digital technologies while simultaneously fostering a digital organizational culture that encourages innovation, continuous learning, employee empowerment, and effective digital leadership.

KEYWORDS: Digital Transformation, Firm Performance, Digital Technology Adoption, Digital culture, Digital Process Integration

1 INTRODUCTION

The Nairobi Securities Exchange (NSE) holds a central role in Kenya's financial system and is vital for boosting economic growth, facilitating capital formation, and promoting wealth creation (Murgor, & Saxunova, 2022). As the main securities market in the country, the NSE offers a regulated platform that enables businesses to secure long-term funding to support expansion, innovation, and infrastructure development, while also providing investors with opportunities to save, diversify their portfolios, and engage in corporate growth (Manasseh, 2002). The exchange plays a key role in strengthening Kenya's financial markets, fostering transparency, improving corporate governance, and contributing to the broader goals of economic development outlined in national policy initiatives such as Vision 2030 (Hope, 2011).

Despite its significance, the NSE has encountered major challenges over the last five years that have limited its capacity to fulfill its developmental role (Murgor & Saxunova, 2022). Market performance metrics indicate extended periods of low trading activity, declining market capitalization, and weak investor sentiment (KNBS, 2019). For example, the total market value fell from approximately KES 2.9 trillion to KES 2.2 trillion between 2019 and 2022, showing falling share prices and loss of capital across many listed companies (Nairobi Securities Exchange, 2023). These issues are linked to a mix of domestic and international factors, such as global conflicts, rising interest rates, exchange rate fluctuations, inflationary pressures, and geopolitical uncertainty, which have disrupted supply chains and reduced economic activity. As a result, the NSE experienced lower trading volumes, continuous foreign investor withdrawals, and increased market volatility, all of which reduced investor confidence (Capital Markets Authority, 2022).

To address these problems, regulators, policymakers, and the exchange itself have taken various steps to stabilize and revitalize the market. The Capital Markets Authority (CMA) has introduced regulatory changes aimed at reinforcing market integrity, improving disclosure

rules, and strengthening corporate governance for listed companies. At the same time, the NSE has focused on upgrading market infrastructure, including the use of digital trading platforms, automated clearing and settlement systems, and the introduction of new products like exchange-traded funds (ETFs), derivatives, and real estate investment trusts (REITs) to expand investment opportunities (Nairobi Securities Exchange, 2023). These efforts have been supported by initiatives to improve financial literacy and attract small and medium-sized enterprises through alternative market segments, with the aim of deepening the market and enhancing resilience (Kiptekwei, 2019).

Despite these regulatory reforms and infrastructure improvements, the actual impact of these mitigation efforts at the NSE has remained limited. Market capitalization dropped significantly from KES 2.9 trillion in 2019 to under KES 2.2 trillion in 2022, indicating ongoing value loss and weak investor confidence (Nairobi Securities Exchange, 2023). While there have been brief recoveries, performance has remained erratic and below previous peak levels, with lower equity turnover and reduced liquidity compared to past records (Capital Markets Authority, 2022). Foreign investor involvement also declined during this period, with continuous net outflows recorded between 2020 and 2023, further limiting market activity and suggesting reduced external confidence.

Although investments in digital trading infrastructure, automation of clearing and settlement systems, and enhanced disclosure requirements have improved operational efficiency and governance (NSE, 2023; CMA, 2022), these measures have not yet led to sustained increases in investor participation or capital formation. Macroeconomic pressures, including inflation, exchange rate volatility, rising interest rates, and global political instability, have continued to lower demand for equities as investors increasingly opt for fixed income instruments that offer more stable returns (Murgor and Saxunova, 2022).

As a result, although efforts to mitigate the crisis have improved regulatory and technological frameworks, they have not yet been sufficient to fully restore liquidity, widespread market participation, and long-term stability in the financial system. The Nairobi Securities Exchange (NSE) continues to be a crucial part of Kenya's economy, although its recovery has been slow and inconsistent across different industries. Recent data suggest some positive trends in trading volume and partial recovery in stock prices, especially in sectors like banking and telecommunications, which have shown greater resilience to economic and technological shifts (Capital Markets Authority, 2023). However, the exchange still reflects deeper structural issues in many listed companies, including falling profits, limited ability to innovate, and outdated business practices. These issues highlight that the NSE's overall

performance is closely linked to the health and effectiveness of the companies listed on it (Irungu, 2019).

A growing body of scholarly work suggests that digital transformation serves as a viable solution to the ongoing performance challenges faced by firms listed on stock exchange markets. Vial (2021) defines digital transformation as a process that enables organizations to utilize modern technological tools to create or modify business processes, organizational structures, and mechanisms of value creation in response to changes in their environment. Westerman, Bonnet & McAfee (2014) describe it as the integration of enterprise modernization across all areas of a company, transforming how value is delivered to customers and how organizations function. Similarly, Warner & Wäger (2019) explain digital transformation as coordinated changes in strategy, culture, leadership, and capabilities, instead of merely focusing on isolated technological investments.

Scholars further argue that digital transformation enhances firm performance by promoting the development of digitally enabled dynamic capabilities that combine technology with organizational learning and innovation. Li *et al.* (2022) show that firms with strong digital capabilities are better able to adjust their operations during times of disruption, converting digital investments into measurable performance improvements. Zhou and Kuang (2025) similarly note that digital transformation supports strategic renewal by allowing firms to restructure their value creation processes and explore new revenue opportunities. These insights highlight the role of digital transformation in shaping firm outcomes, particularly for publicly listed firms facing intense market scrutiny and competition.

Recent empirical studies provide strong evidence that digital transformation plays a key role in improving performance among firms listed on securities exchanges. For example, Chen and Alexiou (2026) studied Chinese A-share listed companies from 2011 to 2022. They found that digital transformation significantly reduces the risk of stock price crashes, especially in labor- and capital-intensive firms, by increasing market transparency and reducing information asymmetry. Zhao, Li and Ren (2023) reached similar conclusions, indicating that digital transformation lowers the probability of stock price crashes. Beyond risk reduction, Liu, Zhu and Cheng (2024) showed that digital transformation significantly enhances stock liquidity among Chinese A-share firms, while Chen, Zhang and Wang (2023) demonstrated that it positively affects operational efficiency and overall firm performance.

Additional evidence from Elafify and Wang (2024) shows that digital transformation boosts market activity among listed manufacturing firms by improving financial performance and reducing information asymmetry. Studies outside China also support these findings, such as

Alrawashedh and Shubita (2024), who found that digital transformation significantly enhances the financial performance of commercial banks listed on the Amman Stock Exchange. Similarly, Ren, Liu and Hao (2024) showed that technology-driven transformations significantly lower the cost of equity capital for listed firms by improving information transparency and increasing stock liquidity, with findings showing that a 1% increase in digital transformation leads to an average 8.8% reduction in equity financing costs.

Despite the availability of literature on the positive impact of modern-technology changes on the financial performance of listed companies, it is evident that most studies on emerging technological changes and organizational productivity have focused on relatively developed or fast-industrializing economies, particularly China, with limited attention given to developing economies such as Kenya. As a result, the extent to which these findings apply to firms listed on the Nairobi Stock Exchange (NSE) remains largely unexplored. In addition, many prior studies treat digital transformation as a single, overarching concept, without examining its specific components. There is limited empirical focus on how particular elements such as the adoption of digital technology, digital process integration, and digital organizational culture individually and collectively influence the performance of NSE-listed firms.

1.1 General Objective of the Study

To determine the effect of Digital Transformation on Performance of Firms Listed in Nairobi Securities Exchange, Kenya.

1.2 Conceptual Framework

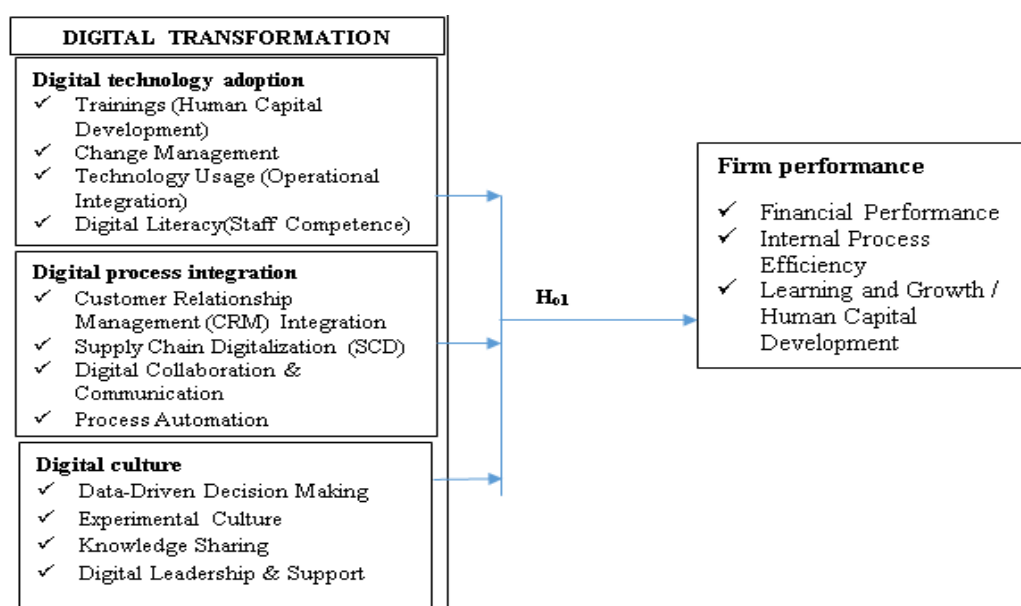


Fig 1: Digital Transformation, strategic agility and Firm performance Relationship.

The conceptualization above depicts how digital transformation relates with NSE listed firms performance, with digital transformation operationalized through three core dimensions: adoption of digital technology, digital process integration, as well as digital culture. This conceptual framework is adapted and extended from prior scholarly works relating to digital transformation, strategic agility and dynamic capabilities. Digital transformation multidimensionality draws from Vial (2019) and Warner and Wäger (2019), who emphasize that it involves coordinated shifts in technology, organizational culture and processes rather than isolated IT investments. The inclusion of digital technology adoption and digital process integration reflects insights from (Westerman, Bonnet, & McAfee 2014) who link digital technologies and process integration to improved operational and strategic outcomes.

2 LITERATURE REVIEW

2.1 Theory of Dynamic Capabilities

Dynamic Capabilities Theory describes an enterprise's capacity to identify threats and opportunities, act on them using prompt strategic decisions, and continuously realign its resources to remain competitive over time (Teece, 2007). The theory clarifies that merely investing in digital technologies does not necessarily enhance performance unless firms cultivate advanced capabilities that enable ongoing adaptation. Digital transformation is thus seen as a continuous capability building process in which firms restructure technologies,

processes, and skills to respond effectively to rapid technological change and market turbulence (Andrade and Gonalo, 2022).

The theory explains how training, change management, technology usage, and digital literacy function as micro foundations of dynamic capabilities. It argues that human capital development through digital training strengthens sensing and seizing capabilities by enabling employees to recognize digital opportunities and apply new technologies effectively (Rustam, Astuti & Safitri, 2024). Change management supports resource reconfiguration by helping firms overcome rigid routines and resistance to digital initiatives, thereby facilitating organizational renewal (Candrasa, Cahyadi, Cahyadi & Cen, 2024). Technology utilization and operational integration demonstrate an organization's ability to incorporate digital tools into routine activities, thereby converting IT resources into value-generating operational capabilities. In addition, digital literacy and employee competence strengthen absorptive capacity by enabling firms to acquire, process, and apply digital knowledge effectively, leading to enhanced internal process efficiency and improved organizational learning outcomes (Kastelli, Dimas, Stamopoulos & Tsakanikas, 2024).

The Theory further explains the role of digital process integration, including customer relationship management integration, supply chain digitalization, digital collaboration, and process automation (Keskitalo, 2024). CRM integration strengthens sensing capabilities by enabling companies to gather and do analysis on consumer data in present time, improving market responsiveness and customer focused innovation (Migdadi, 2021). Supply chain digitalization enhances seizing and reconfiguring capabilities by improving coordination with suppliers and customers, increasing flexibility, and strengthening resilience to disruptions (Ardolino, Bino, Ciano & Bacchetti, 2025). Digital collaboration and communication support organizational learning and knowledge sharing across functional and organizational boundaries, reinforcing the firm's ability to continuously renew processes. Process automation enables firms to reconfigure operational routines by increasing speed, accuracy, and consistency, thereby supporting sustainable improvements in firm performance (Warkentin, Bapna & Sugumaran, 2001).

2.2 Empirical Literature Review

Huang *et al.*, (2025) examined the factors parameters affecting the implementation of modern technological tools and how it impacts profitability in Chinese companies in the manufacturing sector. They focused on the main drivers behind the implementation of digital technological tool and evaluate their impact on overall productivity of the organization. Outcomes suggested that relative advantage, organizational readiness, top management

support, competitive pressure, regulatory backing, and influence from trading partners all significantly and positively affected digital technology adoption. In contrast, complexity negatively impacted adoption, while compatibility showed no significant effect. Additionally, the research confirmed that digital technologies improved firm performance.

Cui, Wu, Wu, Kumar, and Tan (2023) explored how emerging technological tools, SC integration, and the resiliency of the company relate to each other during the pandemic. Based on information processing theory and a large survey of Chinese manufacturing firms, the study examined how digital technologies enhance resilience through SC coordination, including internal, customer, and supplier coordination. They also looked at how information complexity influences this relationship. Their findings showed that SC coordination helped enterprise modernization improve firm resilience, with customer integration having the most significant impact. Additionally, results demonstrated that the positive influence of modern technological tools on resilience was stronger under high information complexity, offering insights for managers aiming to build resilience during crises like the pandemic.

Usai, Fiano, Petruzzelli, Paoloni, Briamonte, and Orlando (2021) explored the effect of using technology-driven tools on an enterprise's ability to innovate. Their main objective was to assess whether using more digital tools leads to better innovation results. Based on previous studies that suggested digital tools can increase a firm's capacity for innovation, the researchers tested this idea with two statistical methods. They first used principal component analysis to figure out which digital technologies are most connected to innovation performance. Then, they applied multivariate analysis of variance to check if these technologies could predict how well a company innovates. They used a large dataset that included many firms from across the European Union. The results showed that digital technologies impacts performance to a small extent, while spending on R&D is the strongest factor in predicting successful innovation.

A study by Shah, Zehri, Saraih, Abdelwahed, and Soomro (2024) explored the influence of modern technology and digital reinvention on the profitability of enterprises in Pakistan's Information, Communication, and Technology (ICT) industry. Quantitative methodological approach was used, collecting data from employees of 396 ICT firms in Pakistan. The findings showed that modern technological capability, its orientation, as well as transformation significantly impacted modern innovation and profitability. The inquiry also demonstrated the presence of a favourable and statistically correlation between digital innovation and performance of firms. Furthermore, digital innovation played a controlling

role linking digital capability, digital orientation, digital technology and firm's financial outcomes.

Shee, Miah, Fairfield, and Pujawan (2018) investigated the influence of cloud-based process incorporation on the productivity of the supply chain (SC) and the sustainability of the firms, with a special interest in the top management. They based their conceptualization of SC incorporation on the Resource-Based View and developed a conceptualization of the integration in a cloud technology setting as a multidimensional construct. The research examined how the cloud-enabled integration can improve SC productivity and, consequently, to the sustainability of the firm in general. The researchers used cross-sectional survey data of 105 retail firms in Australia to run structural equation modeling to assess the proposed relationships. Findings of the demonstrated that cloud-based solutions enable the integration of supply chains, which greatly enhances the effectiveness of SCs and consequently increases the sustainability of firms. Also, the researchers discovered that top management engagement enhanced the supplied relations and internal coordination as well as SC productivity. Nonetheless, it failed to have a considerable influence on the correlation between SC efficiency and user or customer integration.

Blichfeldt and Faullant (2021) investigated how the implementation of emerging technology and innovations in goods and services impact the profitability of firms within the process sector. The research employed an exploratory approach and used quantitative data collected from the 2015 European Manufacturing Survey (EMS). They examined 747 cases from process industries in Germany, the Netherlands, Austria, Switzerland, and Denmark. The study found that firms that implemented new technological platforms to a greater extent and with more intensity were more likely to introduce radical innovations in their products and services. Furthermore, firms that engaged in both radical product and service innovations were able to use their adopted technologies more effectively. The inquiry also indicated that radical product revamps significantly and positively impacted sales returns, whereas service innovation did not produce the same beneficial effect in the process industry. Additionally, the study found that in low-tech industries, enterprise modernization majorly support product and service innovations, thus leading to improved performance. However, digital technologies directly enhance performance in high-tech sectors, mainly by increasing efficiency rather than through innovation.

Proksch, Rosin, Stubner, and Pinkwart (2024) performed an empirical study examining how a digital strategy affects the level of modernization in the products, services, and operations of new businesses, focusing on the mediating aspect of digital capabilities and digital culture.

Structural equation modeling helped in analyzing data obtained from 102 newly established firms in Germany, the study used contingency theory to explain differences in digitalization outcomes. The findings showed that just employing a digital strategy does not ensure a high level of digitalization. Instead, the modernization of products and services is partially influenced by firms' digital IT capabilities, while the influence a digital strategic move on process modernization is partly influenced by both digital IT capabilities and a supportive digital culture.

Yang and Yee (2022) looked at how initiatives to digitally transform business processes affect company performance, using the idea of dynamic capabilities. Their study looked at how these digital initiatives influence performance through a dynamic operational capability framework, focusing on three major organizational aspects of differentiation strategy, absorptive capacity, and lean production. These factors help firms align their processes with digital technologies. They used a long-term event study method to analyze panel data from 168 Chinese firms that implemented process digitalization in the period 2006-2018. Their findings showed that implementing these digital initiatives significantly boosts firm performance. They found that differentiation strategy and absorptive capacity strengthen the positive impact of these initiatives, while lean production mechanisms have the opposite effect, reducing the performance benefits.

Bhatti, Sumbal, Ahmed, and Golgeci (2025) investigated how digital strategies affect business performance, highlighting the significance of modern technologies capacity and digital culture in manufacturing SMEs. The authors created and tested a model that explains how the use of digital strategies influences firm performance through these two main factors. They gathered data over time from both middle and senior managers in manufacturing companies. The results showed that a clear digital strategy positively affects firm performance, with digital platform capabilities and organizational culture playing essential roles in achieving this effect. The study provides valuable guidance for manufacturing firms, especially in developing countries, by showing that the success of digital strategies in improving competitiveness and performance depends on strong digital infrastructure and a supportive culture for digital change.

Pradana, Silvianita, Syarifuddin, and Renaldi (2022) studied how digital organizational culture impacts business performance, noting that there is not enough research on how digitalization affects cultural elements within organizations and how that, in turn, influences performance.

They designed and assessed a framework to look into the link between digital culture in an

organization and overall productivity. The data came from 263 managers in state-owned enterprises in Indonesia, and they used structural equation modeling with SmartPLS application for analysis. The outcomes showed that a strong digital organizational culture is important for improving both digital strategy and firm profitability. Nonetheless, the inquiry also found that the use of digitalization in business operations does not significantly affect the internal digital values of an organization's culture.

Junaedi, Renaldo, Yovita, Augustine, and Veronica (2023) conducted a qualitative study titled "Uncovering the Path to Successful Digital Performance through Digital Technology and Digital Culture as Moderation," exploring the association between the implementation of emerging technology adoption and organizational productivity, with digital culture acting as a moderator. Based on surveys and interviews with three main informants, the study gathered diverse insights to define the dimensions and indicators of digital technology, digital culture, and digital outcomes. The findings suggested that both digital technology and digital culture favorably impact digital performance, and digital culture further strengthens the connection between technology adoption and performance outcomes. The researchers came to the conclusion that organizations should focus on training and education to improve employees' skills in using digital technologies while fostering engagement and openness towards digital change.

Martínez-Caro, Cegarra-Navarro, and Alfonso-Ruiz (2020) looked into how merging technological tools influence profitability, focusing on the position of digital culture as a mediator. Their model suggested that developing a strong digital culture supports the digital transformation of internal processes and increases the ability to get value from digital tools, which ultimately benefits the organization. They collected data from 93 production centers in a multinational company operating in over ten countries and used structural equation modeling to evaluate their ideas. The outcomes indicated that while digitization helps create value, its full benefits are only realized when there is a strong digital organizational culture. Therefore, building a culture that supports digital strategies can significantly improve overall firm performance.

The reviewed literature generally demonstrates a positive relationship between digital transformation and firm performance, although the strength and mechanisms of this relationship vary across studies. Huang *et al.* (2025) established that organizational readiness, top management support, competitive pressure, regulatory support and trading-partner influence enhance digital technology adoption, which subsequently improves firm performance, while complexity constrains adoption. Similarly, Shah *et al.* (2024) found that

digital capability, orientation and transformation enhance innovation and profitability, whereas Yang and Yee (2022) confirmed that digital process initiatives significantly improve firm performance, particularly when supported by absorptive capacity and differentiation strategies.

Blichfeldt and Faullant (2021) further showed that technology adoption improves performance through product innovation, although the effects differ between low- and high-technology industries. Bhatti *et al.* (2025) and Pradana *et al.* (2022) emphasize the importance of digital culture, digital strategy and technological capabilities in translating digital initiatives into improved performance, while Martínez-Caro *et al.* (2020) demonstrate that digital culture can determine the extent to which organizations realize value from digital technologies. Collectively, these studies support the positive performance implications of digital transformation, but they differ in emphasis: some focus primarily on technology adoption, others on digital processes, innovation, capabilities or organizational culture. However, much of the literature treats digital transformation as a broad or composite construct rather than explicitly examining the distinct effects of digital technology adoption, digital process integration and digital culture.

3.0 METHODOLOGY

3.1 Research Design

Babbie (2020) explains that a research design serves as the fundamental structure for an inquiry, explaining the general plan and the particular tools for obtaining data and analysis. He highlights that a well-constructed research design offers a clear and systematic approach, which supports thorough data gathering, analysis, and interpretation. Similarly, Creswell and Creswell (2018) define research design as a comprehensive plan that guides the research process by incorporating philosophical beliefs, research strategies, and methodological steps. The study used a correlational research design to investigate and predict relationships between variables. According to Seeram (2019), correlational research involves measuring two or more variables to determine the direction and strength of their connections. By examining these links without altering the variables, this design offers a reliable and suitable framework for initial investigation.

3.2 Target Population

Population is the complete group of individuals or entities from which a study gathers data and to which the results are meant to be applied (Ingram & Schneider, 1991). In this research,

the population includes all companies traded in the NSE, which currently has 64 listed firms (NSE, 2025). These companies are spread across various important economic areas, including manufacturing, banking, insurance, agriculture, telecommunications, and energy, all of which significantly drive Kenya's economic growth and development.

The study population included operational managers, information technology managers, and procurement officers drawn from the listed firms. These categories of respondents are directly engage in the planning, execution, and supervision of technology-driven transformation initiatives within their organizations. As such, they are well positioned to provide informed and reliable information on issues related to digital technology adoption, digital process integration and digital culture.

3.3 Data Collection Method

The study used a quantitative data collection approach using electronically administered questionnaires aimed at obtaining reliable and objective data from top management of enterprises listed on the NSE. The chosen data collection methods is guided by the nature of the study variables, the need for generalizability of findings, and the requirement to test moderation effects.

3.4 Data Analysis and Presentation

The data analysis for the inquiry was done using quantitative methods that are consistent with the inquiry's objectives and theoretical foundation. The analysis proceeded in sequential stages, beginning with data preparation and descriptive analysis, followed by inferential statistical analysis using multiple regression models. Prior to regression analysis, the data was screened for completeness. Diagnostic tests were conducted to assess the assumptions of regression analysis, including normality, linearity, homoscedasticity, and multicollinearity. Once these assumptions are satisfied, hypothesis testing was undertaken using regression analysis at a 95 percent confidence level. Firm performance was treated as the outcome variable, while the dimensions of digital transformation and strategic agility serve as independent variables and moderator, respectively. Composite indices are created for multidimensional constructs using mean scores, consistent with best practices in management research (Hair *et al.*, 2019).

4 RESULTS AND DISCUSSION

4.1 Response Rate

The study focused on 246 top management respondents from from various sectors and a response rate of 240 translating to 97.56% was achieved as shown in the table below:

Table 4. 1 Response Rate.

Sector	Frequency	Percent
Agriculture	17	7.1
Automobile and Accessories	4	1.7
Banking	49	20.4
Commercial and Services	41	17.1
Construction and Allied	16	6.7
Energy and Petroleum	20	8.3
Exchange Trade Funds	7	2.9
Insurance	28	11.7
Investment	13	5.4
Investment Services	4	1.7
Manufacturing & Allied	32	13.3
Real Estate & Reits	4	1.7
Telecommunications	5	2.1
Total	240	100

Source: Survey Data, (2026)

4.2 Effect of Digital Transformation on the Performance of Firms Listed in NSE, Kenya.

To examine the effect of digital transformation on the performance of firms listed in the Nairobi Securities Exchange (NSE),Kenya a regression analysis was conducted using a structured and sequential analytical procedure. The study first operationalized the independent variable, digital transformation, into three dimensions: digital technology adoption, digital process integration, and digital culture. The data was then tested for the assumptions of multiple regression, including normality, linearity, homoscedasticity, independence of errors, and absence of multicollinearity After confirming that the assumptions were satisfied, composite indices for each construct were generated by averaging the relevant indicator scores. A multiple linear regression model was then estimated to test the direct effect of digital transformation on firm performance (H_{01}), with firm performance as the dependent variable and the three dimensions of digital transformation as the predictor variables. The significance of the regression coefficients was assessed using t-tests and associated p-values at the 5% level of significance, while the overall fitness of the model was evaluated using the F-statistic, the coefficient of determination (R^2), and the adjusted R^2 to

determine the proportion of variance in firm performance explained by digital transformation. A positive and statistically significant regression coefficient indicated that digital transformation significantly improved the performance of companies trading on the NSE, leading to the acceptance or rejection of the study hypotheses based on the empirical results.

Coefficients^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	4.037	.030		136.658	.000		
	DTA	.313	.077	.297	4.041	.000	.523	1.911
	DPI	.108	.086	.103	1.260	.209	.424	2.356
	DC	.262	.082	.254	3.200	.002	.449	2.227
a. Dependent Variable: FP								
Model Summary^b								
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson			
1	.578 ^a	.334	.325	.45770	1.867			
a. Predictors: (Constant), DC, DTA, DPI								
b. Dependent Variable: FP								
ANOVA^a								
Model		Sum of Squares	df	Mean Square	F	Sig.		
1	Regression	24.777	3	8.259	39.425	.000 ^b		
	Residual	49.440	236	.209				
	Total	74.218	239					
a. Dependent Variable: FP								
b. Predictors: (Constant), DC, DTA, DPI								

Source: Survey Data, (2026)

The multiple regression analysis above was conducted to examine the effect of Digital Technology Adoption (DTA), Digital Process Integration (DPI), and Digital Culture (DC) on Firm Performance (FP). The overall regression model was statistically significant, indicating that the independent variables jointly predict firm performance. The ANOVA results show that the model produced an F-statistic of 39.425 with a significance level of $p < .001$ ($F(3,236) = 39.425, p = .000$). This demonstrates that the combined effects of Digital Technology Adoption, Digital Process Integration, and Digital Culture significantly explain variations in firm performance.

The model summary further indicates that the correlation coefficient ($R = .578$) reflects a moderate positive relationship between the observed and predicted values of firm

performance. The coefficient of determination ($R^2 = .334$) shows that approximately 33.4% of the variation in firm performance is explained by the combined effect of Digital Technology Adoption, Digital Process Integration, and Digital Culture. After adjusting for the number of predictors in the model, the Adjusted R^2 of .325 indicates that the model explains 32.5% of the variance in firm performance. This suggests that while the predictors make a substantial contribution to explaining firm performance, approximately 67.5% of the variation is attributable to other factors not included in the model. The standard error of the estimate (0.45770) indicates a relatively small average prediction error, suggesting reasonable predictive accuracy. Furthermore, the Durbin-Watson statistic of 1.867 is close to the ideal value of 2.0, indicating that there is no evidence of autocorrelation among the residuals and confirming that the assumption of independent errors has been satisfied.

The regression coefficients reveal the individual contribution of each predictor to firm performance while controlling for the effects of the other variables. The regression equation is expressed as:

$$FP = 4.037 + 0.313(DTA) + 0.108(DPI) + 0.262(DC)$$

The constant ($\beta = 4.037$, $p < .001$) represents the expected level of firm performance when all predictor variables are equal to zero. Although the intercept is statistically significant, its primary role is to establish the baseline level of firm performance in the regression model.

The results further show that Digital Technology Adoption (DTA) has a positive and statistically significant effect on firm performance ($B = .313$, $\beta = .297$, $t = 4.041$, $p < .001$). This implies that, holding all other variables constant, a one-unit increase in Digital Technology Adoption is associated with a 0.313-unit increase in firm performance. The standardized coefficient ($\beta = .297$) indicates that DTA is the strongest predictor in the model, suggesting that organizations that adopt digital technologies more extensively tend to achieve significantly higher levels of performance. The significance of this coefficient provides an empirical evidence that investment in digital technologies contributes positively to organizational outcomes.

Digital Process Integration (DPI) has a positive but statistically insignificant effect on firm performance ($B = .108$, $\beta = .103$, $t = 1.260$, $p = .209$). Although the positive coefficient suggests that greater integration of digital processes may improve firm performance, the effect is not statistically significant at the 5% significance level. This finding suggests that process integration alone may not be enough to enhance organizational performance unless supported by other complementary organizational capabilities or resources.

Digital Culture (DC) also demonstrates a positive and statistically significant relationship with firm performance ($B = .262$, $\beta = .254$, $t = 3.200$, $p = .002$). This indicates that, holding other variables constant, a one-unit increase in Digital Culture results in a 0.262-unit increase in firm performance. The standardized coefficient ($\beta = .254$) shows that Digital Culture is the second most influential predictor after Digital Technology Adoption. The result suggests that organizations that cultivate a culture supportive of Data-Driven Decision Making, Experimental Culture, Knowledge Sharing, Digital Leadership & Support are more likely to achieve superior performance outcomes.

The standardized beta coefficients indicate the relative importance of the predictors in explaining firm performance. Digital Technology Adoption ($\beta = .297$) is the strongest predictor, followed by Digital Culture ($\beta = .254$), while Digital Process Integration ($\beta = .103$) contributes the least and does not significantly predict firm performance. This suggests that direct investments in digital technologies and the development of a supportive digital culture are more influential in improving firm performance than process integration alone.

The collinearity statistics indicate that multicollinearity is not a concern in this model. The tolerance values range from 0.424 to 0.523, all of which exceed the commonly accepted threshold of 0.10. Similarly, the Variance Inflation Factor (VIF) values range from 1.911 to 2.356, well below the critical threshold of 10 and even below the more conservative threshold of 5 as a rule of thumb. These results confirm that the predictor variables are sufficiently independent of one another, and the regression coefficients are stable and reliable.

The finding that Digital Technology Adoption (DTA) has a positive and statistically significant effect on firm performance is consistent with a growing body of empirical literature demonstrating that the adoption of digital technologies enhances organizational competitiveness and productivity. The positive relationship supports the findings of Huang *et al.* (2025), who established that digital technology adoption significantly improves firm performance in Chinese manufacturing firms, and Shah *et al.* (2024), who reported that digital technological capabilities positively influence innovation and financial performance in Pakistan's ICT sector. Similarly, Blichfeldt and Faullant (2021) found that firms adopting advanced digital technologies achieve superior innovation outcomes and improved business performance, particularly in high-technology industries where digitalization enhances operational efficiency. The result also aligns with Junaedi *et al.* (2023), who concluded that digital technology adoption directly improves organizational performance while its impact is

further strengthened by a supportive digital culture. Collectively, these studies reinforce the argument that investment in digital technologies enables firms to improve efficiency, innovation, and overall performance. The present study contributes new evidence from its context by confirming that digital technology adoption remains the strongest predictor of firm performance even when digital process integration and digital culture are considered simultaneously, highlighting its central role in organizational success.

The study found that Digital Process Integration (DPI) has a positive but statistically insignificant effect on firm performance, a finding that both contrasts with and extends previous empirical evidence. This result differs from Yang and Yee (2022), who found that digital process transformation significantly enhances firm performance through improved dynamic capabilities. Likewise, Shee *et al.* (2018) demonstrated that cloud-enabled process integration significantly improves supply chain performance and organizational sustainability, while Cui *et al.* (2023) found that digital integration strengthens organizational resilience through enhanced supply chain coordination. The inconsistency may be explained by contextual differences, industry characteristics, organizational maturity, or the complementary resources available to firms. Unlike previous studies where process integration generated significant benefits through mediating mechanisms such as operational efficiency, supply chain integration, or dynamic capabilities, the current findings suggest that digital process integration alone may not be sufficient to improve firm performance. This contributes new knowledge by indicating that the effectiveness of process integration depends on the presence of supporting organizational capabilities, and without such complementary factors, its independent contribution to performance may remain limited.

The positive and significant relationship between Digital Culture (DC) and firm performance is strongly supported by existing empirical literature. Martínez-Caro *et al.* (2020) found that digital technologies create greater organizational value when accompanied by a supportive digital culture, demonstrating that culture enables firms to realize the full benefits of digital transformation. The result also agrees with Bhatti *et al.* (2025), who concluded that digital culture is a critical mechanism through which digital strategies enhance business performance, and Trivedi (2023), who showed that digital culture mediates the relationship between digital transformation strategies and sustainable organizational performance. Furthermore, Junaedi *et al.* (2023) reported that digital culture promotes employee acceptance of digital transformation and strengthens the positive impact of technology adoption on organizational outcomes. The current study extends this body of knowledge by demonstrating that digital culture has a direct and significant effect on firm performance

rather than merely serving as a mediating or moderating variable. This suggests that cultivating a culture that embraces innovation, collaboration, continuous learning, and openness to technological change can independently enhance organizational performance, particularly in the firms listed in NSE.

Composite Effect of Digital Transformation on Firm Performance

Coefficients^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	4.038	.030		136.564	.000		
	DT	.679	.063	.572	10.761	.000	1.000	1.000
a. Dependent Variable: FP								
Model Summary^b								
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson			
1	.572 ^a	.327	.324	.45802	1.875			
a. Predictors: (Constant), DT								
b. Dependent Variable: FP								
ANOVA^a								
Model		Sum of Squares	df	Mean Square	F	Sig.		
1	Regression	24.290	1	24.290	115.789	.000 ^b		
	Residual	49.927	238	.210				
	Total	74.218	239					
a. Dependent Variable: FP								
b. Predictors: (Constant), DT								

Source: Survey Data, (2026)

The composite of Digital transformation computed by averaging DTA, DPI and DC which was then regressed against firm performance to determine whether it significantly influences organizational performance. The results indicate that the regression model is statistically significant, suggesting that digital transformation is a significant predictor of firm performance. The ANOVA results show that the model produced an F-statistic of 115.789 with a significance level of $p < .001$ ($F(1,238) = 115.789$, $p = .000$), demonstrating that the regression model provides a significant prediction of firm performance.

The model summary indicates a correlation coefficient (R) of .572, showing a moderate positive relationship between digital transformation and firm performance. The coefficient of determination ($R^2 = .327$) reveals that digital transformation accounts for approximately

32.7% of the variation in firm performance, while the remaining 67.3% is explained by other factors outside the model. The Adjusted R^2 of .324 suggests that after adjusting for the sample size and the number of predictors, the explanatory power of the model remains virtually unchanged, confirming that the model is stable and reliable. The standard error of the estimate (0.45802) indicates that the model predicts firm performance with a relatively low average error. Furthermore, the Durbin-Watson statistic of 1.875, which is close to the ideal value of 2.0, indicates that there is no evidence of significant autocorrelation among the residuals, confirming that the assumption of independent errors has been satisfied.

The regression coefficients further reveal that digital transformation has a positive and statistically significant effect on firm performance. The estimated regression equation is expressed as:

$$FP = 4.038 + 0.679(DT)$$

The constant ($B = 4.038$, $p < .001$) represents the expected level of firm performance when digital transformation is absent or equal to zero. More importantly, the coefficient for digital transformation ($B = .679$, $\beta = .572$, $t = 10.761$, $p < .001$) indicates that a one-unit increase in digital transformation leads to an estimated 0.679-unit increase in firm performance. The standardized beta coefficient ($\beta = .572$) indicates a strong positive effect, suggesting that digital transformation is a major determinant of firm performance. Since this is a simple regression model with only one predictor, the collinearity statistics (Tolerance = 1.000; VIF = 1.000) confirm that multicollinearity is not a concern.

The findings demonstrate that digital transformation significantly enhances firm performance, supporting the growing body of empirical evidence that organizations implementing digital transformation initiatives achieve superior operational efficiency, innovation, competitiveness, and overall organizational performance. The results are consistent with Huang *et al.* (2025), who found that digital transformation through the adoption of modern digital technologies significantly improves firm performance in Chinese manufacturing firms. Similarly, the findings support Shah *et al.* (2024), who established that digital transformation capabilities significantly enhance innovation and firm performance within Pakistan's ICT sector. The results also agree with Blichfeldt and Faullant (2021), who reported that firms embracing digital transformation through advanced technological platforms experience greater innovation and improved organizational performance. Likewise, Yang and Yee (2022) found that digital transformation initiatives involving business process digitalization significantly improve firm performance, particularly when supported by organizational

capabilities such as absorptive capacity and differentiation strategies. These findings further corroborate those of Bhatti *et al.* (2025), who concluded that digital transformation strategies positively influence firm performance through enhanced digital capabilities and a supportive digital culture.

However, the findings differ from studies suggesting that the relationship between digital transformation and firm performance is indirect or context dependent. For example, Usai *et al.* (2021) found that digital transformation contributes only marginally to innovation performance, arguing that research and development investment remains a stronger determinant of organizational success. Similarly, Proksch *et al.* (2024) reported that digital transformation strategies do not automatically result in higher levels of digitalization or improved organizational outcomes unless firms possess strong digital capabilities and a supportive digital culture. Martínez-Caro *et al.* (2020) also argued that the benefits of digital transformation are fully realized only when organizations cultivate a strong digital culture capable of converting technological investments into organizational value. These contrasting findings suggest that while digital transformation has the potential to improve firm performance, its effectiveness may vary depending on organizational readiness, digital capabilities, leadership support, and contextual factors. However, the present study contributes to the existing literature by demonstrating that digital transformation independently exerts a strong positive influence on firm performance, explaining 32.7% of the observed variation in organizational performance.

The findings extend Dynamic Capabilities Theory by providing empirical evidence that digital transformation significantly and positively influences firm performance, thereby supporting the theory's central proposition that organizations derive superior performance when they continuously develop, integrate, and reconfigure digital resources and capabilities in response to environmental change. The significant positive effect of digital transformation confirms that firms that embrace digital technologies, develop digital competencies, and integrate digital processes are better positioned to improve organizational performance. Moreover, the finding that digital technology adoption and digital culture significantly predict firm performance reinforces the theory's argument that digital resources alone are insufficient; rather, complementary organizational capabilities such as employee digital competencies, organizational learning, and a supportive digital culture are essential for converting digital investments into sustained competitive advantage. However, the insignificant effect of digital process integration suggests that process integration alone may not automatically generate superior performance, extending the theory by indicating that

resource reconfiguration must be supported by other organizational capabilities before meaningful performance gains can be realized.

5 CONCLUSION

The study concludes that digital transformation is a fundamental strategic capability that significantly enhances the performance of companies trading on the Nairobi Securities Exchange. The findings demonstrate that successful digital transformation extends beyond the acquisition of digital technologies to encompass the development of an organizational culture that embraces innovation, learning, collaboration, and technological change. While digital process integration remains an important organizational initiative, its independent contribution to performance is limited unless accompanied by complementary organizational capabilities such as technology adoption and a supportive digital culture. Therefore, firms seeking sustainable performance improvement should view digital transformation as a comprehensive organizational strategy involving technological, cultural, and managerial transformation rather than merely automating existing business processes.

6 RECOMMENDATIONS

The study recommends that management of companies listed on the Nairobi Securities Exchange should strengthen investments in comprehensive digital transformation initiatives by prioritizing the adoption of modern digital technologies while simultaneously fostering a digital organizational culture that encourages innovation, continuous learning, employee empowerment, and effective digital leadership. Organizations should also invest in employee digital skills development to ensure that technological investments are effectively utilized. Furthermore, digital process integration initiatives should be implemented alongside complementary organizational capabilities, including effective leadership, employee engagement, and organizational learning, to maximize their contribution to firm performance. Government agencies and industry regulators should continue promoting digital transformation by establishing supportive digital infrastructure, encouraging technology adoption through appropriate incentives, and facilitating knowledge-sharing platforms that enable firms to exchange best practices in digital transformation.

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