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Effect of Supply Chain Digitization on Firm Performance in Government State Corporations in Kenya

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ABSTRACT

Firm performance is a key determinant of business success, influencing operational efficiency, customer satisfaction, and profitability. To remain competitive and enhance performance, businesses are increasingly turning to supply chain digitalization as a strategic tool. However, past studies have not sufficiently linked supply chain digitalization with other critical business aspects. This study aimed to examine the effect of supply chain digitization on the performance of state corporations in Nairobi County, Kenya, focusing on the impact of electronic tendering, enterprise resource planning, cloud computing, and artificial intelligence on firm performance. The study was guided by the Resource-Based View Theory and the Technology Acceptance Model (TAM). An explanatory research design was used, targeting 411 state corporations registered with the Kenya National Bureau of Statistics. A sample size of 203 firms was selected through stratified and simple random sampling. Data collection was done using structured questionnaires, with a five-point Likert scale used to capture responses. Descriptive and inferential statistics were applied in data analysis. The study's hypotheses were tested using linear regression analysis. The results revealed that electronic tendering (β=0.636, $p<0.05$), enterprise resource planning (β=0.178, $p<0.05$), cloud computing (β=0.157, $p<0.05$), and artificial intelligence (β=0.276, $p<0.05$) had a positive and significant effect on firm performance. The study concluded that digital tools such as these effectively enhance firm performance by improving operational processes, and recommended fostering long-term relationships within the supply chain to support competitiveness.

INTRODUCTION

In the contemporary business environment, firms face unprecedented challenges as they strive to maintain competitiveness amid rapid technological advancements, shifting consumer preferences, and heightened global competition. Achieving sustainable firm performance is not only a goal but a necessity for organizations to ensure long-term survival. This is particularly critical for smaller firms, which often lack the resources and resilience of larger corporations, making them more vulnerable to adverse market conditions (Hassan & Davis, 2023). Innovation has emerged as a vital strategy for companies to enhance their operational efficiency and overall performance, as it enables them to stay ahead of the curve. By leveraging innovative practices and technology, firms can create economic value and outperform competitors, a principle at the heart of achieving competitive advantage (Fletcher & Williams, 2023). However, while innovation is widely recognized as a critical driver of success, the specific role of digital technologies in supply chain management remains underexplored.

Supply chain digitalization which can be described as the adoption and implementation of digital technologies including big data analytics, artificial intelligence (AI), the internet of things (IoT) and blockchain into supply chain management, is a wholistic shift in supply chain management. It should be noted that the implementation of these technologies has been proven to improve the speed, transparency, and flexibility, contributing to superior performance of actions, including inventory management, demand forecasting, and coping with market distortions (Singh *et al.*, 2023). However, while digitalization could unlock value, many firms, especially state corporations in Kenya, have not adopted these technologies. Past research has pointed to the advantages of realising IT applications including Artificial Intelligence, ERP, Electronic Tendering, and Cloud Computing in supply chain relations even as some challenges have been known to exist in determining absolute effects of these technologies on the performance of firms when moderated by supply chain agility. To eradicate these gaps, a comprehensive understanding of digital tools capabilities is necessary to establish the overall potential of enhancing organizational competitiveness (Bennett & Taylor, 2024).

Artificial intelligence as a supply chain management tool presents positive change potential in terms of prediction models, variable pricing and self-authoring decision-making. These technologies also enable firms to improve operational efficiency while also executing market adaptations with better speed and accuracy, thus increasing the supply chain's flexibility (Johnson, *et al.*, 2023). ERP systems, in contrast, offer general software solutions that integrate and computerize important business processes, such as purchase, product ordering, or material requirements planning and stock control.

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This is because, through the support they afford to the flow of information and operational openness, the ERP systems help the firms in efficient resource utilization and effective decision making (Almeida & Silva, 2023). In any case, Electronic Tendering platforms and Cloud Computing infrastructure add more value and procurement efficiency, reduce operation and supply chain costs, and provide scalability for current supply chain environment to develop more effective strategies for reacting to the changes in market demands (Green & Patel, 2024). Nevertheless, one issue that has not been studied well is how these technologies can enhance the functioning of different state corporations at once.

This study aims to address the following research gaps. It looks at the impact of AI, ERP, electronic tendering, and cloud computing on firm performance. A number of authors have focused on the implications of supply chain solutions supported by digital tools, where the role of state corporations has remained understudied both conceptually and in practice (Miller & Roberts, 2023). Notably, state corporations in Kenya; for instance, suffer from poor or low performance levels attributed to poor digitization. Thus, this research aims to present a critical review of the literature on the effects of supply chain digitalization on firm performance including findings that would assist state corporations to make better use of technology in improving their competitiveness and operational performance. Consequently, the study seeks to undertake a meaningful contribution to the extant literature on how firms might successfully coordinate digital technologies to enhance long-term competitive advantage in the contemporary digitalized context (Lee & Kim, 2024).

LITERATURE REVIEW

Electronic Tendering and Firm Performance

Electronic tendering has become an efficient solution to procurement operations, changing their nature and effects on firms for the better through effective admin cut down, data protection and instant updates. Specifically, the current research emphasizes the benefits of electronic tendering, including the trust development among stakeholders and increasing response time that was mentioned in Kazemi *et al.* (2020) and Tan & Ng (2019). This trust improves the long spanning relationship of the organization with its suppliers and the performance of the organization as well. Furthermore, the embedded use of analytics and artificial intelligence within systems ranging from electronic tendering affords a more comprehensive view of supplier performance, as well as automates bid evaluation that will relieve personnel of time-consuming activities (Wang *et al.*, 2021). These new technologies are revolutionizing procurement through enhanced cost cuts, precision, and reinforced competitive position.

HO1

Electronic tendering has no significant effect on firm performance in Government State Corporations in Kenya.

Enterprise Resource Planning and Firm Performance

In today's volatile environment it has become practically impossible and unrealistic to maintain organizational performance and efficiency through manual leg works hence the need for technology especially ERP systems. ERP systems rationalize operations, link various business activities, and provide up-to-date information, which advance decisions and customer care greatly (Garcia & Bianchi, 2023). operations cost information and transparency which are vital in organizations whose central concern is the minimization of cost bear by public organizations (Adams & Jones, 2024). Recent research has strengthened the positive relationship between ERP usage and firm performance and suggested increased effectiveness of managerial resources, efficient decisions and financial outcomes. Due to utilization of AI and ML, ERP systems are enhancing predictive analysis and scalability in the longer run with great benefits (Chen & Zhang, 2024).

HO2

Enterprise resource planning has no significant effect on firm performance in Government State Corporations in Kenya.

Cloud Computing and Firm Performance

That is why cloud computing is being recognized as one of the key trends in the modern management of supply chains by providing businesses with numerous competitive advantages connected with the degree of efficiency and necessary scale, as well as the possibility for real-time cooperation. Through Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS), firms can reduce costs, enable centralised management and enhance their decision-making. Among the forms, SaaS has played a crucial role in the coordination of human resources and other materials, financial, and informational resources, to meet market needs and respond to them promptly (Davis & Zhang, 2023). Businesses are able to eliminate risks such as stockouts, manage inventory, and minimize cost such as wastage of operational resources, as noted by Clark and Thomas (2023). As well, the effective implementation of cloud strategies cannot be achieved unless a proper step-by-step plan is formulated especially in cases where the main line of business that needs migrating to the cloud consists of heritage applications where one can choose the most significant processes like procurement and logistics and transfer them to cloud with no risky negative scenarios proposed by Jones and Harrison (2024). The studies conducted in the past few years show that cloud-based systems improve the data quality, operational accountability, and supply chain flexibility that prepares firms for competition in today's fast-paced, online-focused economy (Taylor & Green, 2023; Brown & Patel, 2023). As more advancement in cloud technology takes places, the technology becomes more strategic to supply chain managers to enhance their supply chain competitiveness and performance.

HO3
Cloud computing has no significant effect on firm performance in Government State Corporations in Kenya.

Artificial Intelligence and Firm Performance
Artificial Intelligence (AI) is soon becoming a revolutionary tool in the improvement of the firm performance, especially with regards to sustaining its supply chain operations significantly. Apply of AI for predictive demands ensures precise prediction of demand, inventory management, and process enhancements thus reduces cost and minimizes risks (Jones & Sridhar, 2023). The rising use of AI in the supply chain is a strategic move that has been supported by the need to achieve optimal output and flexibility in reacting to market fluctuations (Stoffel 2023). Moreover, AI's integration into Enterprise Resource Planning (ERP) systems enhances data accuracy and decision-making, making it a crucial component in sustaining competitive advantage and achieving growth (Tina & Jacobs, 2023). As AI technologies continue to evolve, their role in providing real-time insights and strategic recommendations will further elevate firm performance, solidifying AI's place in modern business strategy.

HO4
Artificial intelligence has no significant effect on firm performance in Government State Corporations in Kenya.

Theoretical Review
The study was anchored on the resource-based view (RBV), which is a popular theory in production and supply chain management. The RBV argues that value creation and the modeling of sustained superior performances and competitive forces are a function of rare, valuable, inimitable, and non-substitutable resources and capabilities as noted by Barney (1991). This can comprise of physical and nonphysical assets including managerial expertise, procedures, system creation, techniques, and organizational memory (Barney, *et al.*, 2011). The RBV embraces what Barney calls the 'inside out' view, which deems the internal resources in a company capable of determining its ability to perform in the market (Dicksen, 1996). Subsequent to the given research, the importance of RBV has also been stressed in the recent literature, and especially in digital transformation in supply chain management, where Johnson and Clark (2023) have reported on/runtime. In order to sustain competitive position, firms cannot only have to fully utilize existing assets, but also have to gain new assets quicker than their rivals (Chen & Davis, 2024). In this regard, there is assessment of supply chain digitalization as one of the important enablers of improving firm performance. As pointed by the RBV, attention is paid to the recognition of valuable resources and digital technologies as sources of competitive advantage, including artificial intelligence, cloud computing, and enterprise resource planning (Wang & Lee, 2023). This theory is also suitable for this study because it reveals how firms can utilize unique, firm specific assets by using digital innovations that are difficult to imitate. Application of advanced technological solutions such as electronic tendering and artificial intelligence can highly decrease operations costs and enhance firms' performance (Nguyen & Patel, 2024). The second theory that is proposed in this study is the Technology Acceptance Model (TAM), developed by Davis (1993). This theory is still useful today in explaining technology use in contexts that are current at the present time. According to the model by Davis (1989), perceived usefulness (PU) and perceived ease of use (PEOU) are the two critical determinants of users' acceptance of new technological inventions. Focusing on the field of supply chain management, TAM offers a well-suited theoretical foundation to understand how industries implement digital technologies to increase performance with regard to technological instruments such as artificial intelligence, blockchain, or cloud computing as described by Khan *et al.* (2023). The latest research points to the need to harness TAM in order to underpin these innovations, which in effect enhance the effectiveness of business functions, choices and costs (Smith & Zhang, 2024). For example, the integration of real-time tracking information technology and automated supply chain inventory systems has been established to enhance the efficiency of the processes in firm performance and customers satisfaction by minimizing errors (Jones & Williams, 2023).

Using TAM concepts, business managers and administrators must ensure that technological gains match with the requirements of the employees and that the interfaces with technologies are convenient, considerations that are invaluable when it comes to the effective implementation of the technological solutions in organisations (Chen & Liu, 2024). The model remains relevant and relevant to today's competitive business context by offering grounded guidance on how firms achieve superior performance when they incorporate digital technologies is the reason why the model remains crucial.

Conceptual Framework
This study conceptualizes that firm performance could be affected by Electronic Tendering, Enterprise Resource Planning, Cloud Computing, Artificial Intelligence. The aim of this study is to examine the nature and strength of the relationships between the independent variables (Electronic Tendering, Enterprise Resource Planning, Cloud Computing, Artificial Intelligence) on firm performance.

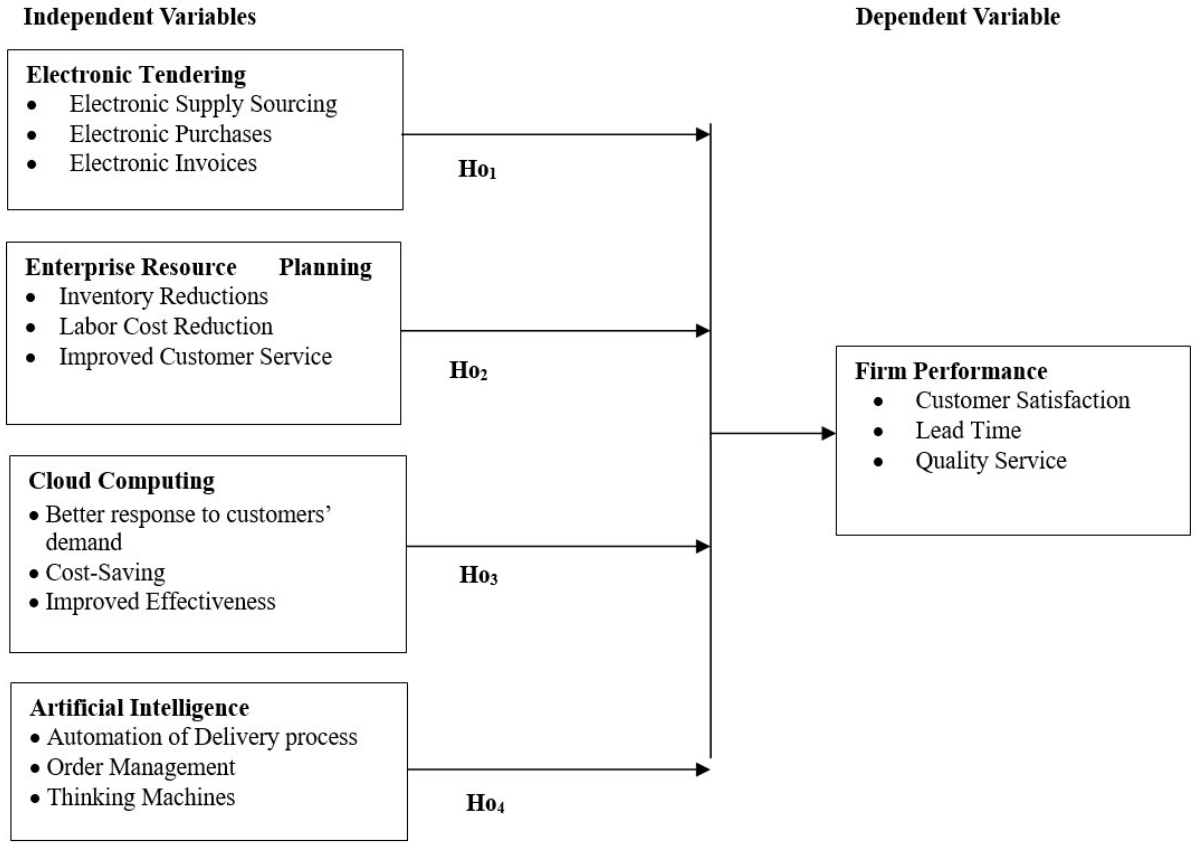

Figure 1: Conceptual framework linking the attributes of supply chain digitalization on firm performance

MATERIALS AND METHODS

Research Paradigm and Design

The primary focus within the research paradigm is centered around the exploration of ontology, epistemology, and methodology (Rahi, 2017). This study adopted a positivist research paradigm, which posits that the world is external and objective, consisting of a singular reality that remains unaffected by the researcher's viewpoint (Rehman & Alharthi, 2016). Positivism's epistemological stance is based on observable and measurable facts, grounded in assumptions about causality and prediction. From a methodological perspective, positivism emphasizes solving problems through quantification and statistical analysis. Within this framework, a hypothesis is formulated, either as a question or statement, concerning the causal relationships between phenomena. Empirical data is then collected and analyzed to develop a theory explaining how the independent variable affects the dependent variable.

This study utilized an explanatory research design to investigate the causal relationships between variables (Casey *et al.*, 2022). This design was appropriate as it enabled an in-depth examination of the cause-and-effect relationship between supply chain digitalization, serving as the independent variable, and firm performance as the dependent variable. This approach provided a thorough analysis of how digitalization impacts firms' operational outcomes.

Study Population and Sampling

The study's target population consisted of 411 state corporations registered in Kenya, with procurement managers serving as the unit of analysis. These managers were selected due to their practical expertise in supply chain operations, particularly in the areas of supply chain digitalization and overall performance. Furthermore, senior and middle-level managers are regarded as key informants on supply chain policies, as they are typically responsible for overseeing supply chain activities and can compare their organization's performance with that of direct competitors (Coltman *et al.*, 2011). The sample size was determined from the overall population to enable generalization of the findings within the bounds of random error.

The study's sample size was determined using Yamane's (1967) formula, applying a 90% confidence level:

$n= (N/1+N(e)^2)\ (411/1+411(0.10)^2) = 203$

Where: n = Sample size required

N = Number of people in the population (411)

e = Level of precision (0.10)

Based on this calculation, the sample size was 203 procurement managers.

Out of 203 distributed self-administered questionnaires, 188 were returned, yielding a response rate of 93%. This high response rate was deemed appropriate for analysis and interpretation, as a response rate between 60% and 100% is generally considered sufficient to validate survey-based research (Meyer *et al.*, 2022). The socio-economic characteristics of the respondents are shown in Table 1.

Table 1: Socio-economic characteristics of the respondents (n = 188)

		Frequency	Percent
Gender	Male	123	65.4
	Female	65	34.6
	Total	**188**	**100**
Age	Aged 20-30 years	1	0.5
	Aged 31 – 40 years	17	9.1
	Aged 41 – 50 years	85	45.2
	Over 50 years	85	45.2
	Total	**173**	**100**
Level of Education	Certificate/Diploma	1	0.5
	Bachelor degree	123	65.4
	Master degree	64	34.0
	Total	**188**	**100**
Experience	Less than 2 years	1	0.5
	Aged 2-5 years	17	9.1
	Aged 6-10 years	79	42.0
	Over 10 years	91	48.4
	Total	**188**	**100**

Source: Data Analysis (2024)

Research Instruments and Data Collection

Data collection from the procurement managers was conducted through structured questionnaires. These questionnaires were distributed in person, allowing respondents to complete them at their convenience. The quantitative data were gathered using a five-item Likert scale, with all items scored positively. The scale ranged from Strongly Disagree (1) to Strongly Agree (5), with options including Disagree (2), Neither Agree nor Disagree (3), and Agree (4).

To ensure the validity of the test items, the researcher relied on expert judgment from subject matter specialists, as outlined by Demirpence and Putnam (2020). These experts evaluated the relevance of the questionnaire to the research questions and provided feedback on its overall effectiveness. Their suggestions were integrated into the final version of the questionnaire.

The reliability of the data was measured using the Cronbach alpha test. While a generally accepted minimum for Cronbach's alpha is 0.70, explanatory research can allow for a lower threshold of 0.60, and more stringent studies may require an alpha of 0.80 (Alkhadim, 2022). The reliability test results are presented in Table 2. Among the variables assessed, firm performance demonstrated the highest reliability with an alpha of 0.858, followed closely by cloud computing at 0.838. Enterprise resource planning achieved an alpha of 0.829, while electronic tendering scored 0.794. Artificial intelligence showed the lowest reliability among the variables, with a score of 0.747. Importantly, all reliability coefficients surpassed the acceptable threshold of 0.70, indicating satisfactory reliability (Amirrudin *et al.*, 2021).

Table 2: Reliability statistics of items in the questionnaire

Variables	Cronbach's alpha	Standardized Items	Remark
Firm Performance	0.858	0.826	Reliable
Electronic Tendering	0.794	0.765	Reliable
Enterprise Resource Planning	0.829	0.839	Reliable
Cloud Computing	0.838	0.788	Reliable
Artificial Intelligence	0.747	0.787	Reliable

Source: Data Analysis (2024)

Before the commencement of data collection, all required documentation and permissions were secured. The research initially received approval from the Moi University School of Business, followed by the acquisition of a research permit from the National Commission for Science, Technology, and Innovation (NACOSTI). Data collection took place at designated times within selected sampling units, employing a "drop-and-pick-later" method for distributing the questionnaires. In some instances, data collection was scheduled to accommodate the participants' convenience. Respondents were assured that their confidentiality would be rigorously maintained.

Each participant was given approximately 45 to 60 minutes to complete the questionnaires, after which the completed forms were collected and securely stored for later analysis.

Model Development, Measures and Data Analysis

Prior to analysis, the collected data were checked for errors and cleaned using the Statistical Package for Social Sciences (SPSS) version 25.0. The research instruments underwent further editing to ensure completeness and consistency. The data were subsequently coded in preparation for statistical analysis. Descriptive statistics were employed to summarize the data, including percentages, frequencies, means, and standard deviations. The quantitative data assessing the relationship between the independent and dependent variables were analyzed using a Multiple Linear Regression model, structured as follows:

$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$

Where Y = Dependent variable,

β_0 = Y-intercept (constant term)

X_1-X_4 = Electronic Tendering, Enterprise Resource Planning, Cloud Computing, Artificial Intelligence

β_1, β_2, β_3, and β_4 = Regression Coefficients

X = predictor variables for the independent variables and

ε = error

The assumptions underlying multiple regression analysis were carefully adhered to in order to reduce bias, encompassing the following aspects:

Linearity

A linear relationship between the independent and dependent variables is required for regression analysis. This was verified using scatter plots.

Normality

The assumption of normal distribution for all variables was evaluated through a goodness of fit test.

Multicollinearity

Multicollinearity arises when independent variables are highly correlated. This was assessed using the Tolerance and Variance Inflation Factor (VIF). A VIF less than 10 and a tolerance value above 0.2 indicated the absence of multicollinearity (Lavery *et al.*, 2019).

Homoscedasticity

To ensure constant variance of the errors, a residual versus predicted values plot was examined.

Autocorrelation

The Durbin-Watson test was employed to detect autocorrelation, with values between 1.5 and 2.5 considered suitable for indicating the absence of serial correlation in the errors (Ding, 2019).

RESULTS AND DISCUSSION

Correlation Results

The correlation results presented in Table 3 reveal significant relationships among the studied variables. Firm Performance (FP) shows a strong positive correlation with Electronic Tendering (ET) ($r = 0.745$, $p < 0.01$), indicating that improvements in electronic tendering are closely associated with enhanced firm performance. A moderate correlation exists between FP and Enterprise Resource Planning (ERP) ($r = 0.608$, $p < 0.01$), suggesting that effective ERP implementation positively influences performance, although not as strongly as ET. The relationship between FP and Cloud Computing (CCP) is weaker ($r = 0.246$, $p < 0.01$) but still significant, indicating some positive impact. Additionally, Artificial Intelligence (AI) demonstrates a moderate positive correlation with FP ($r = 0.327$, $p < 0.01$), reflecting its beneficial relationship with firm performance. ET also shows significant correlations with other variables, including a strong correlation with ERP ($r = 0.340$, $p < 0.01$) and a moderate correlation with CCP ($r = 0.333$, $p < 0.05$). The correlation between ET and AI is weaker ($r = 0.231$, $p < 0.01$). Furthermore, ERP has a moderate correlation with AI ($r = 0.354$, $p < 0.01$) and a weak correlation with CCP ($r = 0.173$, $p < 0.05$). These results emphasize that enhancing electronic tendering could significantly improve firm performance, while investments in ERP and AI may also yield positive effects, albeit to a lesser extent.

Table 3: Correlation Results

	FP	**ET**	**ERP**	**CCP**	**AI**
FP	1				
ET	.745**	1			
ERP	.608**	.340**	1		
CCP	.246**	.333**	.173*	1	
AI	.327**	.231**	.354**	.222**	1
**. Correlation is significant at the 0.01 level (2-tailed).					
*. Correlation is significant at the 0.05 level (2-tailed).					

FP: firm performance, ET: electronic tendering, ERP: enterprise resource planning, CCP: cloud computing, AI: artificial intelligence

Regression Results

The regression analysis results in Table 4 indicate that Electronic Tendering, Enterprise Resource Planning, Cloud Computing, and Artificial Intelligence are significant predictors of firm performance. The constant term is significant, suggesting a baseline level of firm

performance in the absence of these variables. Among the independent variables, Electronic Tendering has the strongest positive effect (β = 0.636, p < 0.000), followed by Artificial Intelligence has the positive effect (β = 0.276, p < 0.000), Cloud Computing (β = 0.157, p < 0.000), and Enterprise Resource Planning (β = 0.178, p < 0.000). The model explains 87% of the variance in firm performance (R^2 = 0.870), demonstrating its strong explanatory power. The overall significance of the model is confirmed by an F-statistic of 242.624 (p < 0.001), highlighting the collective importance of these digital tools in enhancing firm performance.

Table 4: Regression Results

	β	Std. Error	Beta values	T values	P-values
Constant	2.344	.188		12.448	.000
Electronic tendering	0.088	.006	.636	15.886	.000
Enterprise Resource Planning	0.056	.011	.178	4.898	.000
Cloud Computing	0.093	.018	.157	5.207	.000
Artificial Intelligence	0.745	.143	.276	5.212	.000
R Square	0.870				
Adjusted R Square	0.866				
F Statistic	242.624				
F-sig	0.000				

a. Dependent Variable: Firm Performance

Discussion of the Findings

The results shown in Table 4 explain various positive impacts of a variety of digital technologies on firm performance, thus supporting earlier research on such benefits.

The results for Hypothesis 1 (HO1) show that Electronic Tendering has significant positive effect on firm performance coefficient (β = 0.636, p = 0.000). This coincides with the works of Farzin and Nezhad (2017) who wrote that, electronic tendering leads to reduction in the time taken to make procurement thereby increasing efficiency. It is also used in Johnson's (2016) context of international business transactions and highlights the enhanced process quality highlighted by Puschmann (2015) as well as buyer-supplier trust. Kazemi *et al.* (2020) also extend this view by showing that electronic tendering decreases administration costs and increases transparency as pointed out by Tan and Ng (2019) that depict better response time and decision making.

As for Hypothesis 2 (HO2), the results also support the previous research which states that ERP has a positive impact on the firm performance (β = 0.178, p = 0.000). Haddara and Moen (2017) established that ERP systems improve efficiency and effectiveness of resource utilization, a fact supported by this study. Similarly, Bhattacharya (2019) cites financial performance as a main area benefited from ERP, and Müller, Fay, and vom Brocke (2018) point at operational performance as a focal domain supported by ERP leading to observed performance. Beheshti *et al.* (2020) identify flexibility and reduced costs rooted in ERP systems which may have led to such performance differences.

In Hypothesis 3 (HO3) an appraisal of the coefficients outside the moderation models points toward the presence of a positive impact of Cloud Computing on firm performance with a coefficient estimate of 0.157 (t = 8.495, p = 0.000). Pierce and Garnett (2020) explain that cloud-tech provides firm operational and financial edges, Wellington (2019) shared that supply chain performance improves due to real-time data sharing. Similarly, Ali and Miller (2021) also confirm that cloud solutions enhance the operational effectiveness and data consistency to support the positive results of this study. logical supplement to this notion comes from Beheshti *et al.* (2020) who identifies cloud computing as an enabler of collaboration, which is critical for dynamic environments. Finally for Hypothesis 4(HO4), the result also shows there is a significant positive relationship between Artificial Intelligence (AI) predictor and firm performance where β = 0.276, p = 0.000. According to the studies done by Jones and Sridhar (2023), AI provides advantages like reduced costs and operations; Tina and Jacobs (2023) illustrate that AI deals with demand forecasting and inventory optimization. According to Lee and Lee (2020), AI helps in increasing the responsiveness of supply chains; similarly, by providing real-time visibility and making decisions in a flexible manner as explained by Shehmir (2023) also support the results of the study. Overall, these findings extend the importance of Electronic Tendering, ERP, Cloud Computing, and AI in improving firm performance.

CONCLUSION

The study concludes that the adoption of digital technologies significantly enhances firm performance. Electronic Tendering improves procurement efficiency, reduces operational costs, and elevates overall performance. Organizations that integrate electronic tendering into their processes can expect considerable improvements in operational effectiveness and cost savings. Similarly, the implementation of Enterprise Resource Planning (ERP) systems leads to enhanced

resource management, greater operational efficiency, and improved decision-making capabilities. These systems streamline processes and optimize resource utilization, driving better performance across various organizational functions.

Furthermore, the study reveals that Cloud Computing positively impacts firm performance by increasing scalability, flexibility, and cost efficiency. Firms that embrace cloud solutions experience improved adaptability and operational efficiency, granting them a competitive edge. Additionally, Artificial Intelligence (AI) plays a transformative role by automating tasks, fostering innovation, and enabling data-driven decision-making. The integration of AI in operations significantly boosts performance, enabling organizations to remain competitive and responsive in dynamic business environments.

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