



TECHNOLOGY ADOPTION AND PERFORMANCE OF DEVOLVED COUNTIES IN KENYA

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Article DOI: <https://doi.org/10.36713/epra23861>

DOI No: 10.36713/epra23861

ABSTRACT

The establishment of county governments in Kenya was expected to decentralize governance and improve service delivery. However, performance has remained below expectations, with persistent issues such as corruption, delayed payments, and poor utilization of development funds. Technology adoption has been identified as a potential solution to improve transparency, efficiency, and accountability in county operations. This study examined the influence of technology adoption on performance of Kenya's devolved counties. The theoretical foundation of the study on the influence of technology adoption on performance of devolved counties was the Technology Adoption Model (TAM). The study adopted a positivist philosophy and a correlation descriptive survey approach. Research was conducted in five counties, Kajiado, Nairobi, Machakos, Kiambu, and Murang'a, with a sample size of 399 participants. Data collection was through surveys and interviews. Data was analyzed using SPSS version 27, employing descriptive statistics and inferential analysis. The findings revealed that technology adoption had strong and positive correlation with performance ($r = .757$), suggesting that digital systems and innovations significantly enhance service delivery, transparency, and efficiency. The regression results indicated presence of strong and statistically significant relationship between technology adoption and the performance of devolved counties in Kenya. The study concluded that technology adoption significantly influences the performance of devolved governments in Kenya by enhancing service delivery, transparency, and operational efficiency. The study recommended that Kenya's devolved governments should invest strategically in digital technologies to improve service delivery, transparency, and efficiency.

KEYWORDS: Technology adoption, Performance, Devolved counties, Devolution

INTRODUCTION

In today's fast-changing global landscape, technology adoption has become a vital lever for enhancing organizational performance and public service delivery. As governments worldwide embrace decentralization to boost competitiveness (Adinew, 2024; Paais & Pattiruhu, 2020), the integration of digital systems has proven essential for sustaining efficiency and responsiveness. The United States and United Kingdom exemplify how devolved governance, supported by robust technological infrastructure, contributes to national stability and service excellence (Shattock, 2020; Hanafi, 2021). In contrast, China's challenges with institutional frameworks and digital governance have led to ethical lapses and poor service outcomes (Manolache et al., 2018).

Across Africa, the need for digital transformation is increasingly evident. Nigeria's federalist model, while legally sound, suffers from performance gaps due to limited technological integration (Ikeanyibe, 2018). South Africa's shared governance structure faces slow service delivery, partly due to underutilized digital tools (Masuku, 2019). Rwanda's tech-driven approach to inclusive governance has outperformed Uganda's model, especially in representation and participation (Nhede, 2019).

In Kenya, the 2013 devolution aimed to empower counties, yet performance remains inconsistent. Metropolitan counties such as Nairobi, Kiambu, Machakos, Murang'a, and Kajiado face challenges including stalled projects, corruption, and poor infrastructure (Munyi, 2023; Moturi, 2024). Citizens demand transparent and efficient services,



but governance gaps persist (Okerio & Muturi, 2019). Technology adoption offers a solution. Chege and Wang (2020) highlight that digital expertise strengthens core competencies and competitive advantage. Counties must invest in ICT tools to streamline operations, reduce costs, and improve service delivery (Ngigi & Busolo, 2020). This study explored how technology adoption can transform performance outcomes in Kenya's devolved counties.

STATEMENT OF THE PROBLEM

The establishment of county governments in Kenya in 2013 was expected to decentralize governance and improve service delivery. However, performance has remained below expectations, with persistent issues such as corruption, delayed payments, and poor utilization of development funds (Ntoiti & Makau, 2022; Okerio & Muturi, 2019). The Ethics and Anti-Corruption Commission (EACC) reported Sh 18 billion in undisclosed revenue between 2016 and 2019, while the Controller of Budget highlighted low development expenditure in counties like Nairobi, Machakos, and Kajjado (Moturi, 2024; Mburu, 2024). These challenges point to systemic inefficiencies that hinder the realization of devolution's goals.

Technology adoption has been identified as a potential solution to improve transparency, efficiency, and accountability in county operations. However, its integration remains inconsistent. Previous studies such as Kihara (2016) explored technology adoption in Kenya's manufacturing sector, but did not focus on county governments. Nini and Kihara (2023) examined strategic plan implementation in Western Kenya, emphasizing leadership and culture but overlooking digital systems. Similarly, Abdi, Mbithi, and Kithinji (2021) studied development plan execution in metropolitan counties, yet did not isolate the role of ICT in performance enhancement. Despite growing digital demands, there is limited empirical research on how technology adoption influences performance in Kenya's devolved metropolitan counties. This study sought to address that gap.

RESEARCH OBJECTIVE

The objective of the study was to determine the influence of technology adoption on performance of devolved counties in Kenya.

RESEARCH HYPOTHESIS

H₀: There is no statistically significant influence of technology adoption on performance of devolved counties in Kenya.

LITERATURE REVIEW

This section presents the theoretical review, empirical review and conceptual framework that underpins the study.

THEORETICAL REVIEW

The theoretical foundation of the study on the influence of technology adoption on performance of devolved counties was the Technology Adoption Model (TAM). The theory is highlighted in this section.

Technology Adoption Model

The Technology Adoption Model (TAM), developed by Fred Davis in 1989 (Ajzen, 2012), provides a theoretical foundation for understanding how technology adoption influences performance in Kenya's devolved county governments. TAM posits that perceived usefulness and perceived ease of use are the primary factors shaping an individual's decision to adopt information technology. Perceived usefulness refers to the belief that using a specific technology will enhance job performance, while perceived ease of use reflects the expectation that the system will be simple and user-friendly (Ajzen, 2012; King & He, 2006).

TAM further asserts that external factors, such as cultural, social, and political influences, affect these perceptions and, consequently, actual system usage (Holden & Karsh, 2010). For instance, language proficiency, political stability, and societal norms can shape attitudes toward technology adoption (Elkaseh, Wong & Fung, 2016; Marangunik & Granic, 2015). These perceptions ultimately determine user behavior and the likelihood of embracing digital systems.

In the context of Kenya's devolved counties, TAM is highly relevant. Understanding how county managers, staff, and stakeholders perceive the utility and usability of ICT tools, particularly in revenue collection and service delivery, can reveal key enablers and barriers to adoption. TAM offers insights into how strategic leadership and policy decisions can foster a culture of technological acceptance, thereby improving operational efficiency and performance.



Ultimately, TAM helps explain how technology adoption drives performance improvements in Kenya's devolved governance structures.

EMPIRICAL REVIEW

The empirical review section highlights past related studies to influence of technology adoption on performance of devolved counties in Kenya. The focus is on findings from both global and local contexts.

Influence of Technology Adoption on Performance of Devolved Counties in Kenya

According to Usai et al. (2021), technology is the collection of knowledge, innovations, goods, procedures, instruments, processes, and organizational structures that people use to carry out their daily tasks. Technology encompasses the expertise, products, machinery, processes, systems, and techniques used in the production of goods and services (Wang, 2019). The integration of information technology is essential for businesses today, with nearly every organization relying on it to optimize operations. To achieve a competitive advantage, businesses must ensure their technology aligns closely with their overall strategy.

According to Usai et al. (2021), technological adoption is a growing competence which is integrated into organizational processes and is critical to the competitiveness of an organization and performance in a changing and rapidly evolving marketplace. Strongly vibrant businesses are agile in both technical and commercial facets, produce cutting-edge technologies, improve workflows, and modify their business strategies to stay ahead of the competition (Wang, 2019).

Oladipupo and Olanike (2024) states that technology plays a critical role in establishing an organization's competitiveness and accomplishment because it is integrated into nearly every facet of organizational operations and procedures, which includes leadership, infrastructure, framework, culture, and the production and marketing of products and services. According to Selase et al. (2019), a company's human resources employ technology in a number of ways to boost productivity and effectiveness. The performance of the company is then impacted by this.

Related empirical research on technology and performance has been conducted. For instance, Oladipupo and Olanike (2024) investigated how technology adoption influences performance in Nigeria's insurance sector, focusing on Industry 4.0 integration. Using survey and cross-sectional methods, they sampled 228 managerial staff from 56 firms, achieving a 78% response rate. Their findings revealed that embracing Industry 4.0 technologies significantly boosts operational efficiency, risk management, and profitability. The study recommends sustained investment in digital tools to remain competitive. This insight is relevant to Kenya's devolved counties, where technology adoption, especially in financial and administrative systems, can enhance service delivery, transparency, and overall county performance. Chege, Wang, and Suntu (2020) investigated how technological adoption affects company performance in Kenya. They used structural equation modeling in their study, and the sample consisted of 240 firms. The results showed that corporate success was positively impacted by technology adoption and innovation. The study suggested that in order to improve business success, entrepreneurs need adopt innovative strategies. Furthermore, government policies have to prioritize enhancing ICT infrastructure, promoting the advantages of technology for SMEs, and setting up ICT resource centers to aid in the expansion of SMEs.

Madegwa, Makokha, and Namusonge (2019) examined the impact of automation of the revenue collecting procedure on organizational performance using Trans Nzoia County as a case study. Descriptive survey research was used in the investigation. The intended demographic consisted of 40 tax collectors, 15 accountants, and seven upper-level executives. Data was gathered using a semi-structured, self-administered survey. Quantitative data was descriptively evaluated using SPSS before being displayed as frequency tables. The study found that an organization's performance is affected by risk control, tax information intake, and feedback. The study concluded that the automation of revenue collection procedures through electronic payments has an immense effect on the functioning of the government office in Trans-Nzoia County.

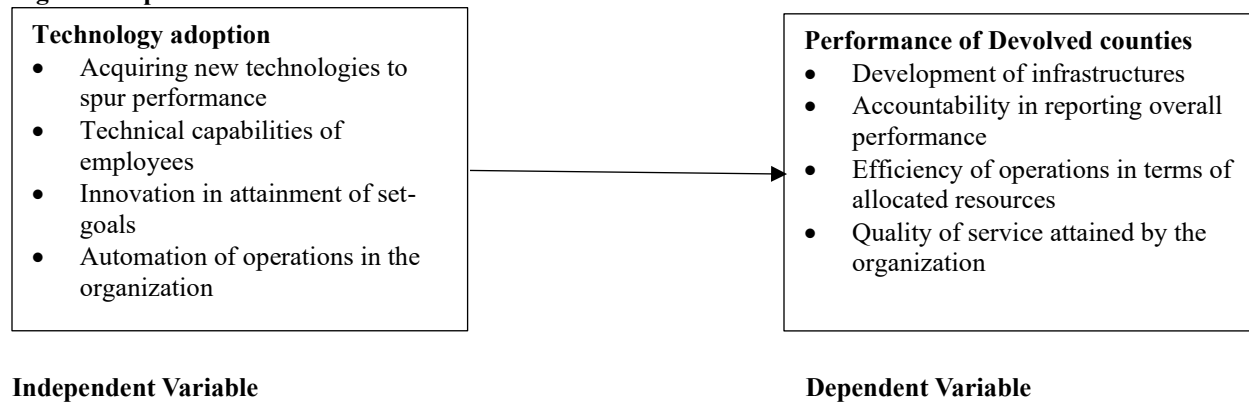
Selase et al. (2019) employed a quantitative approach to determine the impact of technology adoption and utilization on the financial performance of SMEs in Ghana's La-Nkwantanang municipality. The study identified particular characteristics that affect small and medium-sized businesses' adoption and use of internet technology by combining the Innovation Diffusion Theory and the Technology Acceptance Model concept with the sample size as 100

respondents. The investigators arrived at their subsequent findings after using structured questionnaires to collect initial information, which was then analyzed using SPSS and clever PLS. The findings established that adoption and use of internet technology are influenced by a number of factors, including perceived cost effectiveness, compatibility, perceived value, and simplicity of use.

Owuor (2018) evaluated how disruptive technologies affected Kenyan insurance companies' performance. Using a desktop literature review, the study concentrated on already published PDF-formatted articles that discuss technology and insurance companies' performance. The Schumpeterian Theory of Creative Destruction, the Diffusion of Innovation Theory, and Christensen's Theory of Disruptive Technology served as the theoretical foundations for the investigation. The findings revealed that disruptive technology has a positive and significant impact on organizational performance. Additionally, it has been demonstrated that utilizing big data analytics for in-the-moment business evaluation enhances total performance and profitability, hence advancing the organization farther into its expansion phase.

OPERATIONAL FRAMEWORK

Figure 1: Operational Framework



METHODOLOGY

This study adopted a positivist philosophy and correlation descriptive survey design. Research was conducted in five counties, Kajiado, Nairobi, Machakos, Kiambu, and Murang'a, with a sample size of 399 participants. They were selected using stratified and simple random sampling techniques. The sample size was determined using Yamane's formula, ensuring statistical representativeness and precision.

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = sample size, N = population size, and e = acceptable sampling error

using the formula, $n = \frac{483}{1+483(0.05)^2}$ -a total of 399 respondents were selected

Data collection employed surveys and interviews, targeting County Executive Officers and other key officials. A pre-test was conducted in Nairobi County with eight participants, who were excluded from the main study. Quantitative data were analyzed using SPSS version 27, employing descriptive statistics and inferential analysis. Qualitative data from interviews were examined using content analysis to inform conclusions and recommendations.

To validate the multiple regression model, several assumptions were tested: normality, multicollinearity, autocorrelation, heteroscedasticity, panel unit root, and Hausman were performed as diagnostic procedures. The study findings were presented using tables and figures for enhanced clarity and interpretation.

RESULTS AND DISCUSSION

The section presents the descriptive and inferential results of technology adoption and performance of devolved counties in Kenya.



Descriptive Results

The results on the influence of technology adoption on performance of devolved counties is provided. This was measured using the Likert scale of 1=Strongly Disagree 2= Disagree 3= Neutral 4=Agree 5=Strongly Agree, and the results, expressed as percentages and mode.

Table 1 Descriptive results of technology adoption

Technology Adoption	SD (%)	D (%)	N (%)	A (%)	SA (%)	Mean	SD
The current level of technology has greatly assisted in strategy implementation	0	3	16	46	35	4.12	0.789
The county has invested in ICT infrastructures	1	10	11	51	27	3.94	0.914
There is adequacy of ICT tools in the county	11	35	19	25	9	2.84	1.181
Our employees are encouraged to be innovative in the utilization of technology	1	10	29	47	13	3.62	0.872
Through innovation, strategy implementation is accelerating in the county	3	8	18	54	16	3.72	0.926
The county has automated all its services	25	35	12	19	9	2.52	1.296
Through automated services, the county is able to realize its goals on a timely basis	4	8	14	52	22	3.79	1.004
Composite						3.51	0.997

The results were arranged from best to least based on agreement percentages, mean scores, and standard deviations. Leading the list is “Technology Assists Strategy Implementation,” with 81% agreement, a high mean of 4.12, and a low standard deviation of 0.789. This reflects strong consensus and confidence in technology’s strategic value. The results strongly support Oladipupo and Olanike (2024) findings that Industry 4.0 technologies significantly enhance operational efficiency and competitiveness in Nigerian insurance firms. The implication is that counties leveraging technology effectively can streamline strategic execution and improve service delivery outcomes.

Second is “Investment in ICT Infrastructure,” with 78% agreement, a mean of 3.94, and a standard deviation of 0.914. This indicates generally positive perceptions with moderate variability. The results agree with Selase et al. (2019) also found that ICT adoption improves financial performance in Ghanaian SMEs, highlighting infrastructure as a key enabler of technology utilization. The implication is that sustained investment in ICT infrastructure can empower counties to scale digital services and enhance operational resilience.

“Timely Goal Achievement via Automation” ranks third, with 74% agreement, a mean of 3.79, and a standard deviation of 1.004. This suggests that automation contributes meaningfully to county performance. The results support the view by Madegwa, Makokha, and Namusonge (2019) that automation of revenue collection significantly improved operational efficiency in Trans Nzoia County. The implication is that counties adopting automation can reduce delays and improve the timeliness of strategic goal attainment.

Fourth is “Innovation Accelerates Strategy Implementation,” with 70% agreement, a mean of 3.72, and a standard deviation of 0.926. This reflects generally positive perceptions of innovation’s role in strategy execution. This agrees with Oladipupo and Olanike (2024) who emphasized that innovation through Industry 4.0 technologies boosts performance in competitive sectors. The implication is that fostering innovation can help counties remain agile and responsive to evolving development needs.

“Encouragement of Innovation in Technology Use” follows, with 60% agreement, a mean of 3.62, and a standard deviation of 0.872. While favorable, the 29% neutral responses suggest room for improvement in fostering a culture of innovation. The results support Selase et al. (2019) that perceived value and simplicity of use influence technology adoption, implying that innovation must be actively encouraged. The implication is that counties must cultivate environments that reward experimentation and support continuous technological improvement.

“Adequacy of ICT Tools” ranks second to last, with only 25% agreement, a low mean of 2.84, and a high standard deviation of 1.181. This indicates dissatisfaction and wide variation in responses. This agrees with Chege et al. (2020) who stressed the need for accessible ICT tools to support innovation and performance. The implication is that counties



must prioritize equipping staff with reliable and compatible ICT tools to unlock the full benefits of digital transformation.

At the bottom is “Full Automation of Services,” with only 28% agreement, a low mean of 2.52, and the highest standard deviation of 1.296. This reflects widespread dissatisfaction and inconsistent experiences. The results strongly support this concern by Madegwa et al. (2019) that limited automation in revenue collection hampers efficiency in county operations. The implication is that counties must accelerate automation efforts to eliminate inefficiencies and improve service consistency.

The findings align with literature, which consistently highlights the transformative potential of technology while underscoring the importance of infrastructure, innovation, and full automation to unlock its full strategic value. The implication is that counties must adopt a comprehensive digital strategy that integrates infrastructure, innovation, and automation to achieve sustainable governance outcomes.

Inferential Results

This section presents the correlation and regression results derived from hypothesis testing of influence of technology adoption on performance of devolved counties.

Correlation Results

The correlation results of the independent and dependent variables are illustrated in this section.

Table 2 Correlation analysis

	Performance	Technology adoption
Performance	1	.757**
Technology adoption	.757**	1

Technology adoption had strong and positive correlation with performance ($r = .757$), suggesting that digital systems and innovations significantly enhance service delivery, transparency, and efficiency. The results align with Chege, Wang, and Suntu (2020), who found that technology adoption enhances CRM implementation and overall performance. However, Selase et al. (2019) caution that adoption alone isn't sufficient, factors like perceived value and compatibility must be addressed to ensure effective utilization. This shows that technology adoption strongly correlates with performance, but its success hinges on strategic alignment, user readiness, and contextual fit. Organizations must invest not only in digital tools but also in capacity-building and change management to fully realize efficiency and transparency gains.

Regression Analysis

This section used regression to analyze the influence of technology adoption on performance of devolved counties. Key outputs included model summary, analysis of variance (ANOVA), and regression coefficients.

Table 3 Influence of technology adoption on performance

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.757 ^a	0.573	0.572	0.65221

a. Predictors: (Constant), technology adoption

ANOVA^a

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	163.379	1	163.379	384.078	.000 ^b
	Residual	121.659	286	0.425		
	Total	285.038	287			

a. Dependent Variable: performance of devolved counties

b. Predictors: (Constant), technology adoption



Model		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	
1	(Constant)	0.829	0.115		7.194	0.000
	technology adoption	0.779	0.040	0.757	19.598	0.000

a. Dependent Variable: performance of devolved counties

The regression results indicate a strong and statistically significant relationship between technology adoption and the performance of devolved counties in Kenya. The model shows a high R value of .757, with an R Square of .573, meaning that technology adoption explains 57.3% of the variance in county performance. The adjusted R Square (.572) confirms the model's reliability, and the standard error of the estimate (.65221) suggests a good fit.

The ANOVA results ($F = 384.078$, $p < .001$) confirm that the model is statistically significant, indicating that technology adoption is a meaningful predictor of county performance. The coefficient table shows that technology adoption has a standardized beta of .757, with a highly significant t-value (19.598, $p < .001$), demonstrating its strong influence.

The unstandardized coefficient ($B = 0.779$) implies that for every unit increase in technology adoption, county performance improves by 0.779 units. These findings suggest that integrating digital systems, automating processes, and enhancing ICT infrastructure significantly boost service delivery, transparency, and efficiency in county governments.

Overall, the results affirm that technology adoption is a key driver of performance in Kenya's devolved counties, and investing in digital transformation is essential for achieving sustainable development and responsive governance. The model equation for the relationship between technology adoption and performance of devolved counties in Kenya is therefore

$$Y = 0.829 + 0.779X_2$$

In this regard, H_{01} was rejected. Therefore, the alternate hypothesis is;

H_{a1}: There is statistically significant influence of technology adoption on performance of devolved counties in Kenya. The results are supported by Oladipupo and Olanike (2024), who found that Industry 4.0 technologies significantly enhance operational efficiency and profitability in Nigerian insurance firms. Similarly, Madegwa et al. (2019) demonstrated that automation of revenue collection improved performance in Trans Nzoia County. However, Selase et al. (2019) caution that adoption alone is insufficient, factors like usability and perceived value must be addressed. The implication is that technology adoption significantly boosts county performance, but success depends on strategic integration, user readiness, and continuous innovation. Counties must invest in digital infrastructure and capacity-building to fully realize the benefits of technological transformation.

CONCLUSION

The study concluded that technology adoption significantly influences the performance of devolved governments in Kenya by enhancing service delivery, transparency, and operational efficiency. However, its success depends on strategic alignment, stakeholder readiness, and continuous investment in capacity-building and innovation.

Recommendations

The study recommended that Kenya's devolved governments should invest strategically in digital technologies to improve service delivery, transparency, and efficiency. Technology adoption must align with county-specific needs, existing systems, and stakeholder readiness. To ensure sustainable transformation, counties should implement capacity-building and change management initiatives that support digital-user preparedness and innovation.

Area For Further Research

Future studies should explore the influence of technology adoption on performance of rural and urban counties in Kenya. This should lead to comparative analysis on the application of technology adoption as a driver to performance.



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