

DIGITAL PRESENCE AND PERFORMANCE OF KITUI COUNTY GOVERNMENT, KENYA

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Abstract: County governments in Kenya face mounting pressure to modernise service delivery and improve performance amid constrained fiscal resources and growing citizen expectations. This study investigated the effect of digital presence on the performance of the Kitui County Government in Kenya. Four specific objectives guided the research: to explore the effects of digital hardware, virtual communication, digital storage, and data usage on county government performance. The study was anchored on the Resource-Based View (RBV) theory, the Technology Acceptance Model (TAM), and the Diffusion of Innovation Theory. A descriptive research design was employed, with a census of all 61 employees in the Ministry of Information, Communication, and Technology of Kitui County Government. A structured questionnaire was the primary data collection tool, piloted with six ICT staff from Machakos County. Content validity and Cronbach's alpha reliability testing ($\alpha = 0.771$) confirmed the instrument's suitability. Diagnostic tests for normality (Shapiro-Wilk), multicollinearity (VIF), and autocorrelation (Durbin-Watson) confirmed the fitness of the regression model. Multiple regression analysis revealed that digital hardware ($\beta = 0.263$, $p = 0.004$), virtual communication ($\beta = 0.314$, $p = 0.002$), digital storage ($\beta = 0.229$, $p = 0.003$), and data usage ($\beta = 0.235$, $p = 0.002$) each had a statistically significant positive effect on county performance, collectively explaining 71.2% of the variance (Adjusted $R^2 = 0.712$). The study concludes that a robust digital presence is a critical driver of improved service delivery, transparency, citizen engagement, and operational efficiency in county governance. It recommends strategic investment in digital infrastructure, cloud-based storage solutions, structured virtual communication frameworks, and open data initiatives to enhance county government performance.

Keywords: Digital Presence, Digital Hardware, Virtual Communication, Digital Storage, Data Usage, County Government Performance, Kenya, Kitui County, e-Government.

1. INTRODUCTION

County governments occupy a central role in delivering essential public services in Kenya's devolved governance system, established under the 2010 Constitution. As one of Kenya's 47 counties, Kitui County is mandated to manage key functions including healthcare, agriculture, infrastructure, and local revenue collection. However, the county has faced persistent challenges including inadequate local revenue generation, heavy reliance on national government transfers which constitute up to 80% of total revenues and budget constraints that limit service delivery and development activities.

Against this backdrop, digital transformation has emerged as a critical enabler of improved county governance globally. As Mutuku (2020) and Saha (2023) notes, digital governance involves integrating technologies such as online service platforms, data analytics, and virtual communication channels into local government processes to enhance service provision. In Kenya, the 2024 Kenya National Bureau of Statistics (KNBS) report indicates that only 30% of Kitui County's government services are available online significantly below the national average of 50%. Internet penetration in the county stands at approximately 25%, compared to a national average of 43%, while only 15% of residents have access to reliable high-speed internet. Moreover, the Ministry of ICT reported that only 20% of intended online services were functional in the county, resulting in 60% of residents experiencing difficulties accessing essential services.

These conditions underscore the urgency of examining the relationship between digital presence and county government performance. While existing studies have investigated e-government and ICT adoption in other Kenyan counties including Kakamega (Sirengo & Ndolo, 2019), Nairobi (Anguche et al., 2024), and Elgeyo Marakwet (Kibiwot et al., 2024) the specific context of Kitui County has not been addressed. This study therefore sought to determine the effect of digital presence operationalised through digital hardware, virtual communication, digital storage, and data usage on the performance of the Kitui County Government, measured through revenue collection outcomes and service delivery metrics.

2. LITERATURE REVIEW

2.1 Theoretical Framework

This study is anchored on three theoretical frameworks. The Resource-Based View (RBV) theory, originally proposed by Penrose (1959) and elaborated by Prahalad and Hamel (1990), asserts that a firm's internal resources and capabilities drive competitive advantage. Resources are valuable when they are rare, inimitable, and non-substitutable (the VRIN framework). Applied to Kitui County, digital assets including hardware, storage systems, and communication infrastructure constitute intangible resources that can generate sustained performance advantages when strategically developed. Digital literacy and workforce skills are similarly treated as human resource capabilities critical to realising the value of these investments.

The Technology Acceptance Model (TAM), introduced by Davis (1986) and later extended to TAM3 (Venkatesh & Bala, 2008), posits that perceived usefulness and perceived ease of use are the primary determinants of technology adoption behaviour. In the context of Kitui County, TAM guides the analysis of whether employees and citizens perceive digital tools as useful and accessible, which in turn influences the uptake and effectiveness of digital services. For instance, a digital tax collection platform perceived as both useful and user-friendly is more likely to yield higher compliance and improved revenue outcomes.

The Diffusion of Innovation Theory, postulated by Rogers (1962), examines how new technologies and practices spread within social systems. Five attributes influence adoption rates: relative advantage, compatibility, complexity, trialability, and observability. Social influence and peer networks also accelerate diffusion (Valente & Davis, 2017). For county governance, this theory frames the adoption trajectory of digital services among citizens and public servants, and helps explain resistance patterns and capacity-building needs in underserved areas like Kitui.

2.2 Digital Hardware and County Government Performance

Digital hardware -- encompassing computers, servers, networking equipment, and IoT devices forms the foundational infrastructure of any digital governance system (Calazans & Moraes, 2018). Martynushkin et al. (2023) note that hardware automation of repetitive tasks allows government employees to redirect effort towards strategic activities, enhancing productivity. Odhiambo (2023), in a study of Kisumu County Government, found that investments in ICT hardware infrastructure and staff training positively influenced employee performance. Similarly, Owino et al. (2019) found a significant positive correlation between ICT hardware and revenue collection efficiency in Migori and Homa Bay counties. However, these studies were limited to specific regional contexts, and findings may not generalise to counties with different infrastructure profiles such as Kitui.

2.3 Virtual Communication and County Government Performance

Virtual communication refers to the use of digital channels including social media, email, video conferencing, and e-governance platforms -- to facilitate interaction within and beyond organisations (Khin & Ho, 2019). Effective virtual communication strategies enhance brand reputation, stakeholder engagement, and responsiveness (Chatterjee et al., 2023). In the public sector, Thirika and Motanya (2020) found that e-communication positively influenced service delivery in Tharaka Nithi County by improving timeliness and service credibility. Ngereri (2018) demonstrated that strategic communication management positively affected devolution outcomes in Taita Taveta County. Nonetheless, these studies were context-specific and largely descriptive, underscoring the need for inferential evidence from counties such as Kitui.

2.4 Digital Storage and County Government Performance

Digital storage systems including cloud platforms, databases, and electronic records management systems -- enable secure data archiving, retrieval, and sharing (Al-Okaily et al., 2022). Ahanger et al. (2024) identify key benefits of digital storage including enhanced collaboration, elimination of physical filing costs, and regulatory compliance support. Walubengo et al. (2023) found that information technology storage had a significant effect on service delivery in western

Kenya county governments ($r = 0.309, p < 0.05$). Wanjiru (2022) and Wangui and Muchelule (2022) similarly documented improved operational efficiency and reduced transaction costs attributable to digitised records management, although both studies were limited to specific counties and design constraints.

2.5 Data Usage and County Government Performance

Data usage refers to the capacity of organisations to collect, analyse, and apply data in operational and strategic decision-making processes (Kwon et al., 2020). Akter et al. (2022) argue that data analytics enables evidence-based decision-making, supplanting reliance on intuition. Anguche et al. (2024) established that e-government services including e-parking, e-business licensing, and e-land services significantly improved performance in Nairobi City County. Mutiso and Mutuku (2022) similarly found that information system utilisation positively influenced user and organisational performance in Machakos County. The consistent positive association between data-driven approaches and performance outcomes provides strong empirical grounding for the present study's hypotheses.

3. RESEARCH METHODOLOGY

This study adopted a descriptive research design to systematically characterise the influence of digital presence on county government performance and to identify patterns and relationships in the data (Delost & Nadder, 2019). The unit of observation was the Ministry of Information, Communication, and Technology (ICT) of Kitui County Government, comprising 61 employees -- the full population. Given the small and accessible population size, a census approach was employed, ensuring comprehensive representation and eliminating sampling error (Olea, 2021).

Data were collected via a structured, self-administered questionnaire incorporating both closed-ended Likert-scale items (1 = Strongly Disagree to 5 = Strongly Agree) and open-ended questions. A pilot test was conducted with six ICT staff from Machakos County Government, representing approximately 10% of the sample as recommended by Mugenda and Mugenda (2003). Content validity was assessed through expert review by a university supervisor. Internal consistency reliability was evaluated using Cronbach's alpha, which returned an aggregate coefficient of 0.771 -- exceeding the 0.70 threshold and confirming instrument reliability (Conrath et al., 2022). Table 1 presents the reliability statistics by variable.

Table 1: Reliability Test Results

Variable	Cronbach's Alpha	Remarks
Digital Hardware	0.785	Reliable
Virtual Communication	0.753	Reliable
Digital Storage	0.796	Reliable
Data Usage	0.773	Reliable
Performance	0.749	Reliable
Overall	0.771	Reliable

Three diagnostic tests were employed to validate the regression model. The Shapiro-Wilk normality test confirmed that all variables were normally distributed ($p > 0.05$). Multicollinearity assessment using the Variance Inflation Factor (VIF) produced values ranging from 1.206 to 2.001 -- well below the critical threshold of 10 -- confirming the absence of problematic multicollinearity. The Durbin-Watson autocorrelation test returned values between 1.554 and 2.061, indicating no significant autocorrelation in the model residuals. The regression model applied was:

$$Performance = \beta_0 + \beta_1(Digital\ Hardware) + \beta_2(Virtual\ Communication) + \beta_3(Digital\ Storage) + \beta_4(Data\ Usage) + \epsilon$$

Quantitative data were analysed using SPSS Version [X], applying descriptive statistics (means and standard deviations) and inferential statistics (multiple regression and correlation analyses). Qualitative responses from open-ended items were subjected to thematic analysis. Ethical clearance was obtained through NACOSTI, and respondent confidentiality was maintained throughout the study.

4. FINDINGS AND DISCUSSION

4.1 Digital Hardware

Table 2 presents respondent ratings on the influence of digital hardware on county government performance. The aggregate mean of 4.31 (SD = 0.787) with 79.7% agreement indicates a strongly favourable perception of digital hardware's contribution.

Table 2: Digital Hardware -- Descriptive Statistics (n = 61)

Statement	SD%	D%	N%	A%	SA%	Mean	Std.Dev
Computing devices automate repetitive tasks, freeing staff for strategic activities	7.1	14.8	5.5	36.1	36.6	3.80	1.273
Computing devices enable secure data storage and easy access	4.4	11.5	6.6	37.7	39.9	3.97	1.150
Servers allocate resources efficiently for optimal performance	3.8	13.7	10.9	49.7	21.9	4.52	0.628
Distributing workloads across servers prevents bottlenecks	9.3	16.9	10.9	43.2	19.7	4.34	0.519
Networking devices scale easily to accommodate growth	2.2	2.7	0.0	38.3	56.8	4.62	0.487
Networking devices automate repetitive processes	0.0	1.6	0.0	36.6	61.7	4.58	0.667
Aggregate	4.5	10.2	5.7	40.3	39.4	4.31	0.787

The regression analysis confirmed that digital hardware had a significant positive effect on county government performance ($\beta = 0.263$, $p = 0.004$). These findings are consistent with Martynushkin et al. (2023), who observed that digital hardware enables the automation of repetitive tasks, and with Odhiambo (2023), who found that ICT hardware infrastructure positively influenced employee performance in Kisumu County Government. Qualitative responses further reinforced these findings, with respondents noting that digital hardware facilitates inter-departmental communication, reduces paperwork, increases transparency, and promotes community engagement through social media and electronic communication channels.

4.2 Virtual Communication

Table 3 presents findings on virtual communication. The aggregate mean of 4.12 (SD = 0.883) with 78.4% agreement reflects a positive perception of virtual communication's role in county operations.

Table 3: Virtual Communication -- Descriptive Statistics (n = 61)

Statement	SD%	D%	N%	A%	SA%	Mean	Std.Dev
Virtual documentation reduces reliance on physical paperwork	13.6	4.5	2.3	29.4	50.2	4.06	0.939
Enhanced channels improve inter-departmental coordination	9.5	5.8	2.4	41.2	41.1	4.09	0.910
Quick information dissemination enables timely decisions	10.6	16.1	8.4	28.5	36.4	4.09	0.909
E-governance allows residents to access services online	1.6	5.2	0.0	41.1	52.1	4.55	0.449
Virtual communication facilitates rapid information sharing	23.1	12.2	6.1	25.4	33.2	3.58	1.420
Virtual communication fosters inclusive stakeholder collaboration	2.1	6.2	0.0	55.3	36.4	4.33	0.670
Aggregate	10.1	8.3	3.2	36.8	41.6	4.12	0.883

Virtual communication was the strongest predictor in the regression model ($\beta = 0.314$, $p = 0.002$), indicating that improvements in digital communication channels yield the largest marginal gains in county performance. This finding aligns with Thirika and Motanya (2020), who found that e-communication positively improved service timeliness and credibility in Tharaka Nithi County, and with Chatterjee et al. (2023), who noted that virtual communication strategies enhance stakeholder engagement and organisational reputation. Respondents highlighted that virtual communication enables real-time feedback collection, facilitates citizen voice in governance, and promotes accountability by keeping the public informed about county projects and expenditures.

4.3 Digital Storage

Table 4 presents findings on digital storage. The aggregate mean of 3.97 (SD = 1.032) with 75.3% agreement indicates a favourable but slightly more varied perception compared to other variables.

Table 4: Digital Storage -- Descriptive Statistics (n = 61)

Statement	SD%	D%	N%	A%	SA%	Mean	Std.Dev
Digital storage provides quick data access, boosting staff productivity	10.1	12.2	5.4	32.1	40.2	3.91	1.090
Digital storage automates data management, reducing human error	6.2	17.4	10.1	32.1	34.2	4.36	0.640
Digital storage eliminates costs of physical storage space	9.4	17.3	2.4	32.8	38.1	3.06	1.940
Digital storage reduces time on data management, lowering labour costs	12.3	4.4	1.4	27.7	54.2	4.22	0.780
Digital storage incorporates security safeguards against data breaches	7.4	11.1	4.4	34.2	42.8	4.23	0.770
Digital storage supports compliance via audit trails and access controls	8.6	5.4	2.8	42.0	41.2	4.03	0.970
Aggregate	9.0	11.3	4.4	33.5	41.8	3.97	1.032

Regression analysis established that digital storage had a significant positive effect on county performance ($\beta = 0.229$, $p = 0.003$). These findings support Walubengo et al. (2023), who demonstrated that information technology storage significantly improved service delivery in western Kenya county governments, and Wanjiru (2022), who documented reduced service costs, improved record management, and enhanced staff productivity following digitalisation of public records. Respondents additionally noted that digital storage enhances operational efficiency, expedites decision-making, improves government accountability, and supports data-driven policy interventions.

4.4 Data Usage

Table 5 presents findings on data usage. The aggregate mean of 4.16 (SD = 0.843) with 81.2% agreement was the highest agreement rate across all independent variables.

Table 5: Data Usage -- Descriptive Statistics (n = 61)

Statement	SD%	D%	N%	A%	SA%	Mean	Std.Dev
Digital usage enables remote work, improving employee satisfaction and retention	12.6	21.3	0.0	25.9	40.2	3.99	1.010
Digital usage enables flexible work arrangements, improving morale and productivity	3.4	4.9	2.2	50.1	39.4	4.52	0.480
Digital utilisation enables rapid response to changes and emerging trends	10.1	3.1	1.3	60.2	25.3	4.06	0.959
Digital tools enable more effective service innovation for citizens	6.9	5.7	2.1	47.9	37.3	4.21	0.790
Digital tools enable collection and analysis of citizen data for personalised services	13.3	5.3	2.8	38.3	40.3	4.02	0.978
Digital platforms facilitate real-time citizen feedback to improve services	6.7	7.2	3.8	51.1	31.2	4.16	0.839
Aggregate	8.8	7.9	2.0	45.6	35.6	4.16	0.843

Data usage had a significant positive effect on county performance ($\beta = 0.235$, $p = 0.002$). These findings are consistent with Akter et al. (2022), who demonstrated that data analytics supports evidence-based organisational decision-making, and with Anguche et al. (2024), who found that e-government service utilisation positively influenced Nairobi City County's performance. Qualitative responses highlighted that digital usage streamlines service delivery, enhances governance transparency, and fosters a more responsive relationship between county government and its residents.

4.5 Multiple Regression Analysis

Table 6 presents the model summary, showing that the four digital presence variables collectively explained 71.2% of the variance in county government performance (Adjusted $R^2 = 0.712$, $R = 0.857$).

Table 6: Model Summary

Model	R	R ²	Adjusted R ²	Std. Error
1	0.857	0.734	0.712	0.596

Table 7: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	91.578	4	22.895	32.817	0.003
Residual	36.975	53	0.698	--	--
Total	128.553	57	--	--	--

Table 8: Regression Coefficients

Predictor	B	Std. Error	Beta (?)	t	Sig.
(Constant)	0.619	0.216	--	2.866	0.003
Digital Hardware	0.705	0.228	0.263	3.092	0.004
Virtual Communication	0.794	0.302	0.314	2.629	0.002
Digital Storage	0.735	0.227	0.229	3.238	0.003
Data Usage	0.788	0.209	0.235	3.770	0.002

The ANOVA result ($F = 32.817$, $p = 0.003$) confirms overall model significance. The resultant regression equation is:

$$Performance = 0.619 + 0.263(Digital\ Hardware) + 0.314(Virtual\ Communication) + 0.229(Digital\ Storage) + 0.235(Data\ Usage)$$

Virtual communication was the strongest predictor ($\beta = 0.314$), followed by data usage ($\beta = 0.235$), digital hardware ($\beta = 0.263$), and digital storage ($\beta = 0.229$). All four predictors were statistically significant at $p < 0.05$. The remaining 28.8% of variance in performance is attributable to factors outside the model's scope, suggesting that future research should explore additional dimensions of digital presence and governance effectiveness.

5. CONCLUSION

This study established that digital presence operationalised through digital hardware, virtual communication, digital storage, and data usage has a statistically significant positive effect on the performance of Kitui County Government. Collectively, these four dimensions explained 71.2% of the variance in performance, confirming that digital transformation is a critical pathway to improved governance outcomes in Kenya's devolved system.

Digital hardware provides the foundational infrastructure for automating processes, improving data management, and enhancing inter-departmental communication, thereby increasing operational efficiency and citizen accessibility. Virtual communication bridges geographical and logistical barriers, enabling more inclusive citizen participation in governance and fostering transparency and accountability which are essential for building public trust. Digital storage modernises record-keeping, reduces administrative overhead, and equips county officials with the data needed for evidence-based decision-making. Data usage empowers the county to respond dynamically to citizen needs, deliver personalised services, and innovate governance processes.

Together, these findings affirm that digital presence is not merely an operational convenience but a strategic resource that underpins the county government's capacity to fulfil its constitutional mandate of effective and equitable service delivery.

6. RECOMMENDATIONS

6.1 Policy and Practice Recommendations

Kitui County Government should prioritise upgrading its digital infrastructure by investing in modern computers, servers, and networking equipment to enhance operational efficiency. Complementary cybersecurity training for county staff and robust hardware security protocols should be implemented to safeguard county data assets.

The county should establish a formal digital communication policy that defines standards for content on official platforms, mandates regular citizen engagement through social media and e-governance portals, and institutionalises training in virtual communication skills for government employees. Collaborative tools including shared documents, project management platforms, and digital forums should be adopted to improve intra-governmental coordination.

Cloud-based storage solutions should be deployed to improve data scalability, accessibility, and security, while reducing the risks associated with physical data loss. A standardised data collection protocol across county departments would ensure data compatibility and support integrated strategic planning.

An open data initiative should be established to grant citizens access to information on government spending, project statuses, and service availability, thereby fostering trust and active citizen engagement. Investing in regular data analytics training for county officials would strengthen evidence-based governance.

6.2 Recommendations for Further Research

This study was limited to Kitui County and the Ministry of ICT. Future studies should replicate the investigation across multiple counties to enable comparative analysis and enhance the generalisability of findings. The unexplained 28.8% variance in performance also suggests that additional dimensions -- such as digital literacy levels, governance culture, public-private partnerships, and regulatory frameworks -- warrant investigation. Longitudinal designs tracking the relationship between digital investments and county performance over time would further enrich the evidence base.

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