



**DIGITAL INTEGRATION AND PERFORMANCE OF INFORMATION AND COMMUNICATION TECHNOLOGY
AUTHORITY, KENYA**

Elvis Kombe Chiro & Dr. Josphat Kyalo, PhD

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¹ Elvis Kombe Chiro & ² Dr. Josphat Kyalo, PhD

¹ MBA Student ((Management Information Systems), School of Business, Economics and Tourism, Kenyatta University, Kenya

² Lecturer, Department of Management Sciences School of Business, Economics and Tourism, Kenyatta University, Kenya

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ABSTRACT

This study determined the effect of digital integration on the performance of the Information and Communication Authority, Kenya. The target population was the ICT staff team who were employees at Information and Communication Technology Authority in Kenya. Primary data were employed which were gathered through the use of a semi-structured questionnaire. The findings showed that data analytics significantly influences performance of ICT Authority ($\beta=0.192$; $p=0.000$). Secondly, it was established that Information storage have a significant influence on performance of ICT Authority ($\beta=0.227$; $p=0.000$). Thirdly, IT Infrastructure has a statistically significant impact on performance of ICT Authority ($\beta=0.165$; $p=0.034$). Finally, Management support significantly affect performance of ICT Authority ($\beta=0.413$; $p=0.000$). The study concluded that firms can utilize data analytics to obtain insight into their customers' behavior and detect consumption trends. Furthermore, data insights assist organizations in better understanding how their products are used by individuals, allowing them to better manage their resources for profitability. Secondly, ICT Authority performance is affected by capacity in information storage, communication, retrieval, and distribution. Thirdly, a robust and effective IT infrastructure is critical to the long-term viability of a business. Finally, in order to boost organizational effectiveness, management requires both knowledge and experience on matters relating to information technology. The study recommended that companies should prioritize data analytics to obtain understanding of the patterns of behavior within the company that impact overall performance. Companies should employ advanced data analytics techniques to provide indicators and projections for sustainable development. It was recommended that firms build an information technology infrastructure capable of evaluating large data swiftly and effectively and delivering alternative solutions to problems encountered. Finally, management should develop a policy framework to improve the use of information technology in their sector.

Key Words: Data analytics, Information storage, IT infrastructure, Management support

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INTRODUCTION

The performance of government institutions is crucial for effective public administration and societal development (Peters, 2018). As societies evolve and challenges become more complex, understanding and evaluating these institutions' performance is essential for fostering accountable, transparent, and responsive governance. Assessing government institution performance ensures optimal service delivery, resource allocation, and policy outcomes (Kaufmann, 2019). Policymakers can make informed decisions that drive socio-economic progress and public well-being. Evaluating government institution performance fosters a culture of continuous improvement, promoting institutional learning and adaptability in an ever-changing world. This study explores the performance of government institutions through a multidimensional examination, encompassing quantitative metrics and qualitative aspects such as responsiveness, accountability, and citizen engagement (Andrews, 2018). Drawing on academic research, policy reports, and real-world case studies, the study seeks to unravel the intricate dynamics that underpin government institutions and their broader implications for governance.

The Information and Communication Technology Authority of Kenya (ICT Authority) is a key institution in Kenya's digital landscape, guiding technological progress and fostering digital innovation (Ndemo, 2017). As a regional technology hub, the ICT Authority's performance offers insights into its efforts to propel the nation towards a digitally empowered future. The Authority's role is not only to drive technological evolution but also to ensure equitable access, protect digital rights, and foster a resilient cybersecurity framework. The ICT Authority's strategies, achievements, and challenges provide a lens to understand the interplay between technology, governance, and societal progress in a rapidly evolving global landscape (Gitau, 2020). This study explores the ICT Authority's performance in regulatory endeavors, infrastructure development,

digital inclusion initiatives, and collaborative partnerships.

Namada (2018) defines performance as the ability of the organization to effectively and efficiently utilize its resources to attain stated goals and objectives. Budhwar (2018) on the other hand defined performance as the extent and ability of the organization to achieve the set goals is deemed a measure of the performance of the organization. Performance relates to an institution's ability to use resources efficiently in order to meet predetermined goals (Marinova et al., 2016). According to Georgopoulos and Tannenbaum (1957), performance has to do with the extent to which the firm meets its objectives and goals.

Ricardo (2008) defined digital integration as the degree to which an organization uses electronic technologies to share information and coordinate activities with its suppliers and customers while Sebastian (2011) saw it as the degree to which information and communication technologies are used to connect different entities in a supply chain. Christian (2004) defined it as the use of information technology to link together the different steps in a value chain, so that information can flow seamlessly from one step to the next. John Hagel III & John Seely Brown (2005) opine that digital integration is the use of digital technologies to connect different parts of an organization or value chain, so that they can work together more effectively. Lastly Michael Porter (2014) defined digital integration as the use of digital technologies to connect products, services, and customers, so that they can interact with each other in new and innovative ways.

Data analytics is characterized as the handling of large amounts of data utilizing statistical and mathematical approaches that enable companies to recognize trends, detect abnormal, as well as start generating relevant insights (Muhammad, Tasmin & Aziati, 2020). Davenport (2014) characterizes it as the collection and evaluation of massive amounts of data made possible by immensely effective computers monitoring a variety of digital flows originating from various reports and employing

complex algorithms to analyze them. According to Tachizawa, Alvarez-Gil, and Montes-Sancho (2015), big data analytics is the process of evaluating massive amounts of unordered data to explore previously unknown patterns, indeterminate connections, as well as other subject matter expertise (Wasike, 2020).

The Information and Communication Technology Authority is a state-owned corporation which is established under the Ministry of Information Communication and Technology. The corporation was founded in August 2013. It is majorly concerned with the streamlining and rationalizing of the entire government of Kenya ICT functions (Kiminza & Were, 2016). The entire mandate is concerned with the enforcement of information and communication technology standards in Government and improving the supervision of electronic communication. It enhances the promotion of information and communication technology innovation, capacity and literacy. Their mission involves championing and harnessing the effective accessibility in the public service delivery of the public service and office (ICTA, 2019). Their core values entail thought which involves their work being solidly founded in adequate data, integrity which makes them trusted in the aspect of resource efficiency with utmost honesty and accountability, community who join hands together and work as a team in order to proffer solutions for the interest of their customers and action which is doing what they feel is right to do at the appropriate time necessary (ICT Authority, 2017). Their functions include setting and enforcing standards, deploying and managing the staff of the public service, design facilitation and regulation, government services promotion, ICT enterprise promotion, design supervision, facilitation of electronic equipment and record, implementation and development, ICT infrastructure establishment, development and maintenance. Several departments involved include the department of innovation, department of ICT capacity, department of standards and some other departments as well (ICTA, 2022).

Statement of the Problem

The Information and Communication Technology Authority (ICTA) in Kenya faces numerous challenges in its performance, including bureaucracy, lack of adequate funding, skills gap, corruption, lack of autonomy, inefficient project management, resistance to change, lack of clear performance metrics, limited stakeholder engagement, and data security and privacy concerns (Kiminza & Were, 2016). These issues hinder the ICTA's ability to effectively implement projects, maintain a competitive edge, and respond to emerging challenges in the rapidly evolving ICT sector. Additionally, the lack of clear performance metrics and key performance indicators (KPIs) makes it difficult to assess the effectiveness of initiatives. Limited stakeholder engagement can lead to a narrow perspective and limited buy-in for initiatives. For boosted performance, these challenges ought to be addressed.

A lot of studies have been conducted on performance. They include; A study done by Kennedy and Keino (2017) focused on how delegation of authority affects performance of employees at Twiga Chemical Industries Ltd. The study's target population was 200 permanent Twiga chemical industries ltd employees in Nairobi. In order to obtain a suitable sample, this study employed a stratified sampling strategy. Collection of data was done using questionnaires. The findings of the regression of coefficients revealed a favorable and substantial relationship between legislative delegation and employee performance.

Kombo, Obonyo, and Oloko (2014) investigated how delegation affected employee performance in savings and credit cooperative societies in Kisii County, Kenya. Kisii County's 13 SACCOS were the target demographic, with a total of 1040 respondents. The study sampled four (4) SACCOS that had been in operation for at least ten years utilizing descriptive and explanatory research, using a randomly obtained sample of 24 employees from each SACCO. A questionnaire was used to obtain primary data. The research found that effective

delegation in firms boosts overall employee performance.

Kimolo (2013) study explored how employee empowerment is related to the performance of Kenyan regional development agencies. The survey was designed in a descriptive manner. 20 Sampling of every employee working with the six Regional Development Authorities was done, with a total sample size of 173 employees selected at random. The major data gathering approach was used in this research. Most of the analysis was carried out with descriptive statistics. It was discovered that employee empowerment techniques had affected the performance of employees.

Ambani (2016) conducted research at the Kenya Medical Research Institute in Kisumu County on the impact of employee consultation on performance of the institution. This study used a descriptive study survey as its research design. to select the sample, and then 174 respondents from the company were selected using simple random sampling. In this study, structured questionnaires were the primary data collection tool. The data was evaluated using a descriptive analytic approach. According to the findings, supervisors kept employees informed about the company's future plans. It is evident that few studies have been conducted on the performance of ICTA. Hence it was the purpose of this study to investigate the impact of digital integration on the performance of ICTA.

Objectives of the Study

The study aims at investigating the effect of digital integration on the performance of Information Communication and Technology Authority in Kenya. The specific objectives were;

- To establish the effect of data analytics on the performance of ICTA, Kenya
- To determine the influence of information storage on the performance of ICTA, Kenya
- To access the role of IT infrastructure on the performance of ICTA, Kenya
- To evaluate the relevance of management support on the performance of ICTA, Kenya.

LITERATURE REVIEW

Theoretical Review

The Technology Acceptance Model

Technology Acceptance Model was developed by Fred Davis (1985). The theory was introduced in order to assess the willingness of individuals in embracing and making efficient use of information technologies that are newly introduced. Davis (1985) addressed the technology acceptance model as a mode through which individuals are being motivated through two basic routes namely the instrumentality and self-efficacy. The technology acceptance model was developed from the theory of reasoned action by Fishbein and Ajzen (1975) in their research on psychology. Two (2) basic factors have been proven to influence the technology acceptance model and which also influences the mode by which the information technologies are being utilized in an organization. The factors include the Perceived Usefulness (PU) and the Perceived Ease of Use (PEOU) (Davis, 1989). The technology acceptance models Perceived Usefulness is described as how fast an individual expresses feeling pertaining to the usage of a new development and how it will end up influencing the individual's performance positively.

The technology acceptance models Perceived Ease of Use is described as how fast an individual would feel by utilizing a completely new development and how it would create an emptiness which will by no means necessitate any physical effort or mental effort. The technology acceptance model therefore is one of the most renowned models of innovation and is important for the usage of the effectiveness of an individual in embracing information technologies. This involves the use of Microsoft Excel, PowerPoint, Microsoft Processing as well as Spreadsheet (Davis, 1985). The technology acceptance model has consistently revealed its strengths as well as its weaknesses and being unable to show the foundation of its independent variable which entails Perceived Ease of Use and

Perceived usefulness has been discovered to be a major weakness.

The Technology Acceptance Model (TAM) can help assess how employees perceive and adopt new digital technologies introduced by the Information and Communication Technology Authority (ICT Authority) in Kenya. TAM focuses on perceived usefulness, ease of use, behavioral intention to use, actual technology usage, and external factors influencing perceptions. Employees may perceive the technology as beneficial for improving efficiency, accuracy, and work quality. To improve adoption, the authority should focus on designing user-friendly interfaces and providing adequate training. Positive perceptions of usefulness and ease of use lead to increased willingness to use the technology. Monitoring usage patterns can provide insights into alignment with the authority's digital transformation goals.

Diffusion of Innovation Theory

This is Rogers' (2003) model of the innovation-decision process, which emphasizes the importance of every participant in the innovation-adoption process. An appropriate perception toward an advancement defines whether he accepts or rejects it (Rogers, 2003). The framework shows the successful enactment from whenever a participant assess a technological invention to the moment when person creates an option regarding whether to embrace or refuse the invention. The possible benefit of an advancement influences a person's decision of an innovation. Managers are decision makers who gather facts about an advancement, assess it, and decide based on its benefits or drawbacks (Rogers, 2003). Managers, according to Manuelli et al. (2007), are the change agents who assess the benefit that an ICT innovation may bring to the firm and decide whether to adopt or reject it.

The mindset of an executive toward advancement and his creativeness are critical in the decision-making methodology for digitalization. They affect how a person learns about a technological invention, advocates for its usage, makes a decision

on digitalization, and implements it (Rogers 2005). According to Ghobakhloo et al., (2012), managers' attitudes toward informed expertise in digital, innovation, and insight with digital usages are all important factors that influence digital integration. A body of research has demonstrated that the function of managers in institutions is critical because they impact all choices at numerous steps of digital integration (Bais, 2017). This theory is about management assistance. Successful digital integration development necessitates consistent management commitment throughout the system's making plans, application, as well as operational phases.

Unified Theory of Acceptance and Use of Technology

According to Vankatesh's Unified Theory of Acceptance and Use of Technology (UTAUT), there are four key concepts that impact user intentions and conduct when using ICT. These structures involve growing networks, system quality, user satisfaction, as well as information quality. Service quality, facilitating situations, as well as media power all impact cognitive aspirations utilizing ICT, and usage of advanced technologies is influenced by both affective commitment and facilitating situations (Venkatesh, Thong, & Xu, 2016). The extent to which a user believes that there is sufficient technical infrastructure to support the use of ICTs is referred to as facilitating conditions (Venkatesh, Bala, & Sykes, 2010). According to Radowan and Kristl (2017), facilitating conditions are the ICT infrastructure and expertise required by users to use information systems (Kristl & Radowan, 2017). Facilitating conditions in this study refer to IT infrastructure. To conduct business, SMEs require IT infrastructure such as the Internet, websites, mobile phones, and e-commerce. According to Ghobakhloo et al., (2012), users who believe that IT infrastructure is available tend to use the system more, whereas those who believe that IT infrastructure is unavailable tend to use IT less. IT usage will be low due to a lack of IT infrastructure (Gillian) (2005).

The Unified Theory of Acceptance and Use of Technology (UTAUT) is a model that explains and predicts how individuals and organizations adopt and use new technologies. It identifies four key constructs that influence technology adoption: Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions. Performance Expectancy refers to the extent to which individuals or organizations believe using the technology will enhance their performance and productivity. Effort Expectancy relates to the perceived ease of use of the technology. Social Influence considers the impact of external factors on technology adoption, including the recommendations and attitudes of peers and leaders within government agencies. Facilitating Conditions refer to the extent to which individuals or organizations believe the necessary resources and support are available to enable the successful use of the technology. UTAUT introduces moderating variables that can impact the relationships between the four key constructs and technology adoption. To apply UTAUT to the ICT Authority in Kenya, the organization should focus on addressing these key constructs and moderating variables.

System Theory

This study depended on Bertalanffy (1968) theory known as System Theory. The theory describes a system as an entity containing four entities. The first is objects – the fragments, components, or elements within the system. These might be physical or abstract or both, contingent upon the idea of the system. Second, a system comprises characteristics or properties of a system and its entities. Third, a system has inward connections among its entities. Fourth, the system exists in a setting. A system, at that point, is an arrangement of things that influence each other inside its setting and shape a bigger setup that is unique in relation to any of the parts (Whitchurch and Constantine, 2009) According to Whitchurch and Constantine (2009) the central frameworks intuitive worldview of hierarchical analysis includes the consistent phases of input, throughput, and output. The

characteristics of a system include: wholeness and interrelationship (the entire is more than the total of all parts), correlations, seeing causes, chain of impact, order, super-systems and subsystems, self-direction and control, goal-oriented, exchange with the environment, change and flexibility.

System Theory, an interdisciplinary framework, emphasizes the interconnectedness and dynamics of complex systems. It views organizations as interconnected entities with various components working together to achieve specific goals. In the context of the Information and Communication Technology Authority (ICT Authority) in Kenya, System Theory highlights the importance of a holistic perspective, recognizing emergent properties, feedback loops, boundary spacing, interdisciplinary approach, dynamic adaptation, and causality. The Authority should map the system, identify feedback mechanisms, consider boundaries, promote collaboration, and embrace adaptability. By applying System Theory, the Authority can gain a deeper understanding of the complexity of digital integration, enabling more effective planning, decision-making, and performance improvement across its digital initiatives. By recognizing the influence of feedback loops, fostering collaboration among teams and stakeholders, and embracing Adaptability, the Authority can enhance its digital integration efforts and overall performance.

The Modern Human Capital Theory

The human capital theory, developed in the 1960s by economists like Theodore W. Schultz, Gary S. Becker, Jacob Mincer, and Samuel Bowles, suggests that individuals and societies can achieve economic gains by investing in people, particularly in areas like education, health, and nutritional improvement. The theory posits that formal education is crucial for improving the productive capacity of the population, which in turn fuels economic growth (Saha, 1997). To meet labor or industrial requirements and gain a competitive edge in the global information and knowledge-based economy, countries need a skilled workforce using technology.

Information Communication Technology integration in education is a critical entry point. However, equipping institutions with ICT equipment is expensive due to hardware and software purchases, maintenance, and support costs. The human capital theory justifies large public expenditure on education (Law, 2003).

The Modern Human Capital Theory highlights the importance of investing in human resources for economic and organizational success. It suggests that investing in education, training, skills development, and health can lead to increased productivity, innovation, and overall economic growth. In the context of digital integration, the ICT Authority in Kenya can benefit from investing in skills and expertise to enhance its ability to effectively utilize digital tools and technologies. A knowledgeable and innovative workforce can drive organizational growth, adapt to changing digital landscapes, and improve operational efficiency (World Bank, 2019). A well-trained workforce can implement digital integration strategies, leading to streamlined processes and improved service delivery. Knowledge sharing and collaboration among employees are also crucial for the successful implementation of digital initiatives. Lastly, investments in human capital can lead to higher employee motivation and engagement, as employees who feel valued and equipped with relevant skills are more likely to contribute to the organization's goals, including effective digital integration (McKinsey Global Institute, 2017)

Empirical Review

Seetha et al. (2018) carried out an investigation focused on data analytics as well as operational effectiveness in performance practices. The study polled respondents from multinational corporations in the United States, Europe, the Middle East, Australia, and Asia. The analysis was performed utilizing structural equation modeling, as well as the findings suggest that analytics, Internet of things (IoT), data science, vendor rating, and management systems have an impact on supply chain in terms of cost savings, client contentment, organizational

effectiveness achievement, as well as connecting communication issues among supply chain management (SCM) and demand management. The researcher also claims that firms that use big data digital technologies can accrue financial profit as well as quality enhancement, and that the industry will soon embrace BDA as a criterion. The study focused on performance in supply chain management, this study will focus on performance of ICTA in Kenya.

Mugane (2019) conducted a study with the goals of determining the extent to which big data analytics assimilation among Kenyan banks and fintech companies, establishing the relationship between BDA adoption and competitive advantage, and finally establishing the challenges and opportunities of BDA adoption. The descriptive research design was employed. A census survey was conducted among the population of 42 commercial banks and 38 fintech companies in Kenya. Data was collected through questionnaires, and it was analyzed using means, frequencies, standard deviation, and regression analysis. The multivariate regression technique was used to determine the nature of the relationship between the adoption of BDA, with 23.1% effectively utilizing the technology. The remaining organizations were either in the process of adopting or testing their data models. The study discovered that implementing big data analytics leads to significant gains in competitive advantage. It had also enabled organizations that were successfully utilizing BDA to develop new products and enter new markets. It was also discovered that the organizations studied faced a variety of challenges in adopting BDA, including integration of legacy systems with new technologies and poor data quality. The study concentrated on the private sector in Kenya, this study will focus on the government sector that provides services for the public.

Kimani (2015) investigated the level of information technology use and its relationship to organizational performance at PS Kenya. A descriptive survey was used to achieve the study's objectives. A semi-

structured questionnaire was used to collect primary data. The population for this study consisted of the entire PS Kenya staff of 438 people. The questionnaire was administered electronically for data collection, and 311 respondents responded to the study, yielding a response rate of 71%, which was deemed adequate representation of the organization. According to the study findings, the majority of respondents had various IT company devices at their disposal to enable them to perform their duties. The study's findings also revealed a link between the level of IT use and organizational performance at Population Services Kenya. According to the findings of the study, IT use accounts for 82.4% of organizational performance at PS Kenya. The study target audience are staff from PS Kenya, the study will target staff from ICTA Kenya.

Wanyama (2018) investigated the impact of knowledge storage on organizational performance in Kenya's public sector. The effect of the independent and dependent study variables was determined using a multiple regression design in this study. The target population included 2343 employees from the ministries of devolution, labor, social security, and services, and information, communication, and technology. To obtain a sample size of 303 respondents, the researcher used simple random sampling and stratified sampling techniques. In the data collection procedure, structured questionnaires were used to collect primary data, and the drop and pick later method was used to collect secondary data. For further analysis, the collected data was entered into SPSS 23.0 and MS. Excel. The coefficient of correlation R was 0.897 in the study, indicating that the variables were highly correlated. The study concludes that knowledge storage improved organizational performance in Kenya's public sector. In as much as the study used public service offices, the study mainly concentrated on knowledge management, this study will focus on digital integration on performance.

Jabbouri, Siron, Zahari and Khalid (2016) investigated how information influences the information technology infrastructure of innovation performance on the private universities in Iraq. A descriptive research design was used for the study and the population study consisted of Iraqi Universities which were six (6) in number. With the use of a simple random sampling method, a sample size of seventy-five (75) was obtained while questionnaires were distributed to them to gather primary data. The analysis was carried out with regression and statistical analysis using SPSS. The research results showed that information technology infrastructure influences the innovative performance of the selected universities positively. The study was centered on Iraqi private universities while this present study will be centered on ICTA in Kenya

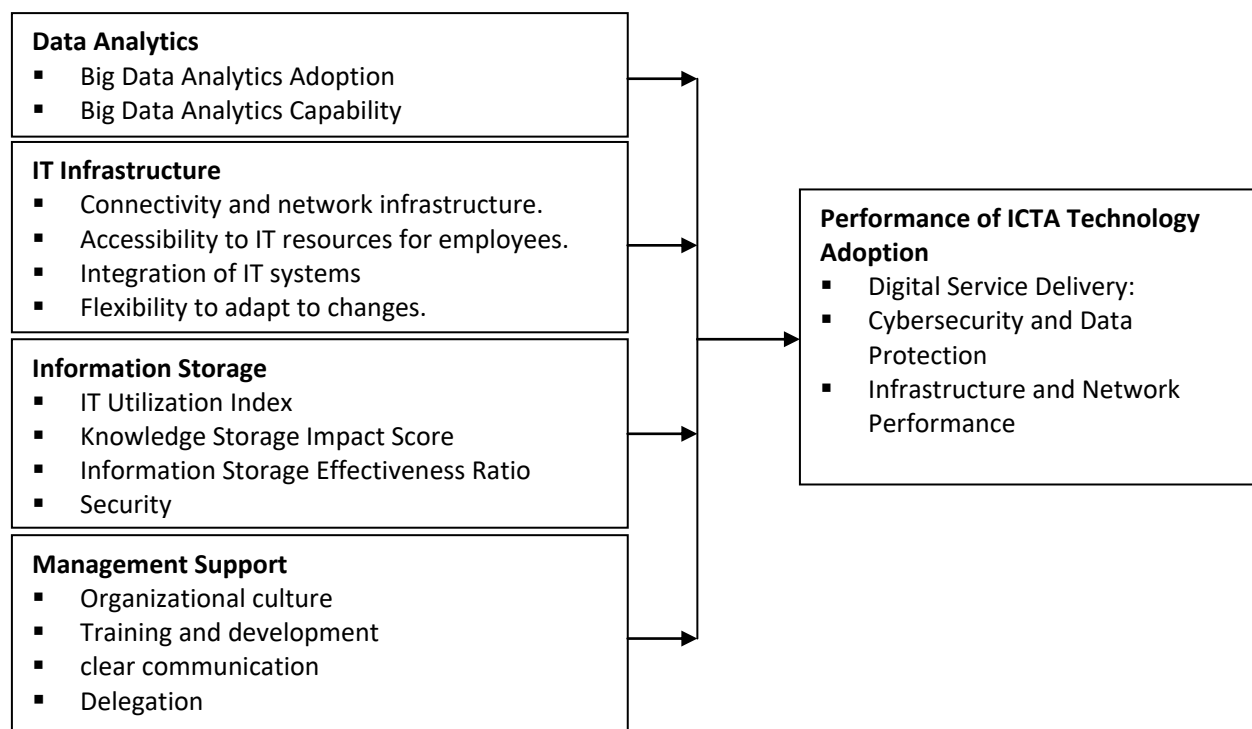
Saidu et al. (2020) determined the relationship between ICT infrastructure and organizational performance. The study targeted employees in Nigerian Northeastern polytechnics. With the aid of a simple random sampling technique, 50 respondents were selected who were administered questionnaires to fill. Analysis was done using descriptive and inferential analysis which reported a significant relationship existing between the variables. However, the study was carried out in Nigeria, this study will be carried out in Kenya.

Wahome et al., (2017) investigated the role of top management support practice in selected steel manufacturing firms in Kenya and its impact on the organizations' financial performance. The study used a descriptive survey research design, with structured questionnaires used to collect both qualitative and quantitative data. The target audience consisted of the 46 listed Kenyan Steel Manufacturing Companies. Krejcie and Morgan's Sample Size Table was used to determine sample size. The targeted population had a sample size of 42 people. Data was collected from Management Representatives or Quality Assurance Managers or their equivalents and had a response rate of 100%. Descriptive statistics were used to analyze

quantitative data, while qualitative data was used to supplement quantitative data interpretation. Analysis of Variance was used to test hypotheses. To demonstrate the significance of the relationship between financial performance and top management support practice, the Variance Inflation Factor was used. The study found that top management support practice statistically significantly predicted the performance of Steel Manufacturing Companies in Kenya using regression analysis. The analysis also revealed a fairly strong correlation between top management support practice and the performance of Kenyan Steel Manufacturing companies. The study looked mainly at top management on performance manufacturing firms, this study will focus on digital integration on performance of ICTA.

Makori and Kinyua (2019) investigated the relationship between organizational leadership and Co-operative Bank of Kenya performance. The study was founded primarily on contingency theory, stewardship theory, and path-goal theory. A descriptive research design was used in the study, which included a sample of 148 respondents. The findings revealed a strong link between organizational leadership and bank performance. According to the findings, improving delegation of duties, employee involvement, creating an effective organizational culture, and empowering employees are critical to improving bank performance. The study examined performance of Cooperative bank of Kenya and this study will look at performance of ICTA Kenya.

Conceptual Framework



Independent Variables

Dependent Variables

Figure 1: Conceptual Framework

Source: Researcher (2023)

METHODOLOGY

A cross-sectional research design was used in this study. The target population were all ICTA Nairobi headquarters. The headquarters had 565 employees

according to (ICTA, 2023). The respondents represented the following departments: Department of Standards, Innovation, ICT Capacity and Information Security. Simple random sampling

technique was utilized. Specifically, Krejcie and Morgan Table of sample size determination was used. A target population of 565 yielded 226 respondents. Proportionate to sample was used to apportion samples per each stratum.

Primary data was employed which was to gathered through the use of a semi-structured questionnaire. A pilot study was carried out to determine the validity and dependability of data collection instruments (Alvesson & Skoldberg, 2017). The questionnaires were pre-tested for comprehension, logic, and relevance on a small group of 23 respondents so as to improve on the data collection tool.

Data was organized, corded, and then input quantitatively into Microsoft Excel before being uploaded to SPSS 25 for analysis. A descriptive method utilizing frequencies, percentages, and mean values were used in the quantitative analysis procedures. Additionally, correlation analysis was used to discover how the study variables relate to one another. The regression model utilized in the research was as shown below:

$$Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \epsilon$$

Where;

Y = Dependent variable (Performance of ICTA)

α = the model intercept

β_1-4 = Coefficient of independent variables

X1 – Data analytics

X2 – IT infrastructure

X3 – Information storage

ϵ = Management support

RESULTS

Descriptive Analysis

Descriptive statistics are used to synthesize and characterize data. The purpose of descriptive statistics is to present an easy and rapid way to comprehend the data and discover any trends or patterns. This study made use of percentages and means.

Data Analytics and the Performance of ICT Authority, Kenya

The first objective of the study was to establish the effect of data analytics and the performance of ICT Authority, Kenya. Table 1 shows the preliminary analysis through descriptive statistics.

Table 1: Data Analytics and the Performance of ICT Authority, Kenya

Statement	SD	D	I	A	SA	Mean	SD
The organization has access to large, unstructured or recent event trending data	15%	18%	13%	31%	24%	3.30	1.40
Data collected are used for forecasting to know issues that happen around the institution and country at large	13%	18%	24%	27%	18%	3.18	1.28
Data collected are used for simulation so as to be used to explore what if and scenarios that happens across the country	15%	16%	23%	24%	23%	3.23	1.36
Modelling are used to aid communication between the government and citizens through defined scenarios	13%	14%	19%	38%	16%	3.30	1.26
Data analytics helps to evaluate, compare and optimize plans and policies	15%	16%	16%	31%	22%	3.28	1.37

Organizations that employ big data analytics provide visible decision making and information that can be used to produce financial benefits. The results of this study found that 55% of the participants agreed that the organization has access to large, unstructured, or recent event trending data. This implies that the organizations will be in a position to estimate the position of the organization and plan their activities to achieve the outcomes. This finding is consistent with the findings of Roosan et al. (2016), who underline that data acquired from multiple sources in organized, semi-structured, and unstructured forms, when correctly analyzed, can help organizations develop useful knowledge for enhanced organizational decision-making abilities.

It is well acknowledged that data analytics approaches can uncover trends and metrics that would otherwise go undiscovered during customer investigation and interaction. According to the study, 45% of respondents assert that data collected are used for forecasting to know issues that happen around the institution and country at large. This means that companies can use data analytics to learn about their customers' behavior and detect patterns of consumption. This information can help a company better understand its customers and reduce the turnover of clients. The findings are consistent with those of McAfee et al. (2012), who assert that big data analytics give managers with a valuable picture of their company activities, and that applying acquired information through big data analytics can lead an organization to value-based initiatives.

Big data analytics is important in any organizations since it supplies firms with information about their existing and projected conditions. In this research, 47% of respondents agreed that data collected are used for simulation so as to be used to explore what if and scenarios that happens across the country. This means that data analytics serves an important role in enterprises in producing sustainable goods and thereby enhancing organizational success. The findings are consistent with those of Bahsir and Ahmad (2021), who stated that using tools for data

analysis allows organizations to gain unprecedented perspectives, instantly analyze information and data, reduce time cycle for making decisions, strengthen the procedure for making choices, and make accurate and precise options.

Data analytics assists in specifically analyzing what works and can produce considerable growth for any business institution. It was observed that 54% of the participants agreed that modelling are used to aid communication between the government and citizens through defined scenarios. The findings were also supported by 53% of those who aver that data analytics helps to evaluate, compare, and optimize plans and policies. This suggests that firms are always ready to adopt new tools in order to remain creative, effectively surpass other businesses, and reduce the possibility of competitors. The findings are congruent with those of Hallman, Rakhimov, Plaisent, and Bernard (2014), who state that big data has the same potential to revolutionize our lives as technological investments as well as creativity have consistently improved competitive performance as well as efficiency. Furthermore, data insights show many facets that were never previously examined; firms are discovering how their goods are used by individuals, allowing firms to effectively deploy their finances for profitability.

Information Storage and the Performance of ICT Authority, Kenya

The second objective of this study was to determine the influence of information storage and the performance of ICT Authority in Kenya. As the primary statistical techniques, percentages, means, and standard deviations were used to assess the relevant variables. Table 2 summarized the findings.

Table 2: Information Storage and the Performance of ICT Authority, Kenya

Statement	SD	D	I	A	SA	Mean	SD
The organization has a good information storage capacity	6%	22%	17%	28%	28%	3.51	1.26
Information are communicated efficiently both internally and externally	14%	9%	23%	24%	30%	3.47	1.36
Proper mechanisms of retrieving stored work and procedures are active and in place	8%	16%	16%	24%	36%	3.63	1.32
The institution has a proper and active way of broadcasting messages to individual and organizations without necessarily having direct feedback from audience	13%	9%	16%	41%	22%	3.50	1.27
Information especially about the public are stored securely to avoid cyber-attacks and other security breach	8%	15%	19%	39%	20%	3.47	1.19

Information storage could affect performance in a number of ways. According to 56% of the participants, they reported that the organization has a good information storage capacity. This implies that the method and capacity of data storage in the organization could influence how it is shared and accessed. This finding is consistent with the findings of Mazumdar et al. (2019) who underline that, in general, cloud-based technology provides diverse solutions at different levels of complexity for building and dynamically provisioning user applications. The cloud provides appropriate frameworks for Big Data clustering as well as efficiently distributed database systems for their storage and deployment.

The ease of retrieval of information affects how an organization operates. The results shows that 60% of the participants agreed that proper mechanisms of retrieving stored work and procedures are active and in place. This implies that effective operations will be enhanced with appropriate data storage mechanisms. This finding corresponds with Dash et al (2019), who state that one of the key issues is storing massive volumes of data, yet many firms are familiar with data storage on their own facilities. It provides various benefits, including control over security, access to and uptime. An on-site server network, on the other hand, can be costly to scale and complex to operate. With falling costs and improved reliability, it appears that cloud-based

storage employing IT infrastructure is a better alternative, which most organizations have chosen.

Effective deployment of data within the organization affects its efficiency. According to the findings 54% were of the opinion that information are communicated efficiently both internally and externally. Moreover, 63% reported that the institution has a proper and active way of broadcasting messages to individual and organizations without necessarily having direct feedback from audience. This therefore implies that employees and the consumers are capable of exchanging communications within the shortest possible time. The findings support Musheke and Phiri's (2021) assertion that communication is a critical and essential component of a business, and it is required for fostering collaborations within the workplace, which has an impact on the company's success and choice-making. The capacity of a business to disseminate information helps consumers as well as staff members feel they are able to interact with and subsequently value their employer.

Cybersecurity is essential in every company since it protects both corporations and individuals from online attacks. According to the findings, 59% of respondents affirmed that information especially about the public are stored securely to avoid cyber-attacks and other security breach. Brilingait et al

(2022) recommend that active use of threat intelligence data aids in successful cyberattack mitigation, prevention, and protection. Reliable and pertinent threat intelligence data might assist an organization's proactive defense by directing it toward the detection of weak points in its infrastructure's security.

Role of IT infrastructure and the Performance of ICT Authority, Kenya

The third objective of the study was to assess the role of IT infrastructure and the performance of ICTA, Kenya. To examine various significant variables, percentages, means, and standard deviations were employed as key statistical tools.

Table 3: Role of IT infrastructure and the Performance of ICT Authority, Kenya

Statement	SD	D	I	A	SA	SD	Mean
The organization has up-to-date software application for efficient and smooth work activities	6%	20%	22%	38%	15%	3.35	1.12
Adequate hardware components are readily available	14%	10%	30%	33%	13%	3.19	1.21
The network has fast and reliable connectivity	10%	14%	21%	36%	19%	3.40	1.23
The institution has reliable and accessible database that can reach millions of people	10%	15%	18%	43%	14%	3.36	1.18
IT infrastructure is a defining factor for performance	10%	16%	22%	30%	23%	3.40	1.26

An effective and reliable IT infrastructure is critical to a business's sustainability. It was noted that 53% of participants agreed that the organization had up-to-date software application for efficient and smooth work activities. This implies that a robust IT infrastructure assists businesses in creating exceptional consumer and employee experiences. This finding is consistent with that of Namusonge (2016), who discovered that the usage of ICT infrastructure decreases operational expenses, improves efficiency in procurement procedures, and increases the rate with which items are delivered to consumers. As a result, ICT infrastructure improves organization performance.

The establishment of information technology infrastructure is crucial for enterprises to achieve their objectives. In this study, 46% of participants reported that adequate hardware components are readily available. Correspondingly, 53% of the participants agreed that IT infrastructure is a defining factor for performance. This indicates that investing in information technology tools facilitates the connection of diverse administrative operations. These findings correspond with those of Al-Hawary et al. (2017), who determined that investment in information technology is an important tool in enhancing efficiency because interest and

investment in technology elements helps to connect the various administrative functions with one another. Employee performance improves as a result of this.

Network connectivity is important in realization of organization success. According to 55% of participants, they agreed that the network has fast and reliable connectivity. This result agrees with that of Hossain et al (2023) who emphasize that in the adoption of e-commerce, these resultant factors are the internet connectivity, which plays a major role and Business data management which has equal importance for SMEs. SMEs have limited access to data as compared to multinational industries. However, the data has equal importance for multinational and SMEs to improve the e-commerce business.

Information technology is the most effective communication tool for gaining competitive edge within enterprises. According to the findings, 57% of respondents agreed that the institution had a credible and accessible database that can reach millions of individuals. This observation is congruent with the findings of Akhtar et al (2014), who emphasize that internet usage by small and medium-sized businesses affects their business decisions and procedures. Any corporation

operating in the modern period cannot ignore or dismiss the relevance of the Internet and its application in the business world. The Internet has enabled small firms to bridge the gap between contacting diverse customers and industries in a more cost-effective manner.

Management Support and the Performance of ICT Authority, Kenya.

The fourth objective was to evaluate the relevance of management support and the performance of ICTA, Kenya. Descriptive statistics that encompass percentages, means and standard deviation were utilized.

Table 4: Management Support and the Performance of ICT Authority

Statement	SD	D	I	A	SA	Mean	SD
Management facilitates the institution in undertaking system monitoring at regular time to avoid breakdown	13%	15%	14%	35%	24%	3.41	1.32
Management is competent through encouraging staff to use skills and abilities in a way that will promote the institutions' goal	10%	17%	23%	30%	19%	3.31	1.25
Management facilitates staff on training of new and emerging application, technology, and artificial intelligence	3%	20%	20%	35%	20%	3.48	1.13
The management has fast experience in the field of IT	14%	10%	16%	37%	23%	3.44	1.31
Management supports staff articulation of technical language	14%	12%	25%	31%	19%	3.28	1.28

Manager effectiveness impacts organizational health and influences all areas of an employee's experience, growth, and productivity. The study findings indicated that 59% of the participants were of the opinion that management facilitates the institution in undertaking system monitoring at regular time to avoid breakdown. This finding is consistent with that of Habtoor (2019), who concludes that managerial support has a favorable influence on both corporate dedication and customer service quality. Additionally, managerial support at place of employment increases values of engagement and participation among personnel while also enhancing the role in developing ideas, exploring new prospects, and converting them into action without jeopardizing productivity on the job.

In a competitive context, managerial skill allows programs to last as long as feasible. According to the study 49% of participants agreed that management were competent through encouraging staff to use skills and abilities in a way that will promote the institutions' goal. Furthermore, 60% of participants affirmed that the management has fast experience

in the field of Information Technology. Managers have the ability to influence employees' attitudes, interests, and behavior toward dedication to corporate duties and goals. This implies that competencies of managers in companies play a central role in the success or failure of these companies. This viewpoint is consistent with Velu and Manxhari (2017) who argue that when companies work significantly to develop the necessary administrative capabilities, set targets, minimize attracting costs, unhappy clients, wasted chances, and building their own competitive edge, they drive profitable businesses. As a result, it is clear that a blend of leadership skills influences organizational success.

Employee training enhances employee performance as well as their commitment to the organization. The results established that 55% observed that management facilitates staff on training of new and emerging application, technology, and artificial intelligence. This means that to increase efficiency, training may expose individuals to new competencies or deliver updates on current

technological advancements. This conclusion accords with that of Ali and Ngui (2019), who recognize that staff training is one of the critical instruments that aid to improve efficient business operations while also promoting the organization's stability index. If the firm wants to attain its goals in the most cost-effective manner, it must make extra efforts and invest heavily in training for staff members. Successful training initiatives contribute to the creation of a helpful and suitable atmosphere for development for employees.

Management support and decisions do influence all the aspects of any organization. Finally, 50% agreed that management supports staff articulation of

Table 5: Performance of ICT Authority

Statement	SD	D	I	A	SA	Mean	SD
The performance of service delivery improves over time	10%	13%	18%	31%	28%	3.53	1.30
In terms of ICT globally, the institution is growing towards being one	7%	15%	25%	27%	26%	3.51	1.21
Information sharing is efficient and in good quality	10%	16%	29%	27%	18%	3.26	1.22
Performance leads to cost saving by government institutions.	16%	10%	19%	27%	29%	3.43	1.40

The incorporation of digital tools is thought to improve workforce interaction as well as cooperation. Regarding performance, 59% asserted that with digital integration the performance of service delivery improves over time. This observation was supported by 53% of those who reiterated that in terms of ICT globally, the institution is growing towards being one. This implies that ICT integration on business will improve on business profitability. According to Frank et al. (2019), digital competency can eventually create value via improving business efficiency and effectiveness. The digital transformation not only improves the fundamental production procedures of any company, but it also improves the ability to collect data at a high level for a variety of purposes such as increasing sales, identifying new market locations, and establishing consumer interfaces.

Organizational information sharing contributes to the tracking and streamlining of operations. The findings found that 45% of the participants agreed that information sharing is efficient and in good

technical language. This means that organizations with support from management can improve worker productivity. This finding is consistent with the findings of Ismail et al. (2021), who emphasize the importance of management support in obtaining employees engaged and encouraging them to use their knowledge and abilities to propose ways to enhance certain elements of their jobs that require improvement.

Performance of ICT Authority

The performance was assessed in terms of service delivery, growth, information sharing, and cost savings. Descriptive statistics such as percentages, averages, and standard deviation were used.

quality. Moreover, 56% affirmed this position by reporting that performance leads to cost saving by government institutions. This indicates that, in general, digitalization improves connectivity between organizations and customers, hence enhancing productivity. This view corresponds with that of Martínez-Caro et al (2020) who discourses that business digitalization can accelerate the growth of value activities; however, firms will only be able to realize this potential if they adopt a digital organizational culture. Firms can expect to increase their performance by identifying the corporate culture that best supports their digital strategy.

Correlation Analysis

The main correlations that were used include Pearson and multiple regression analyses.

Pearson correlations were used to establish the nature of relationships between digital integration and performance of information and communication technology Authority. Table 6 shows the Pearson correlation Matrix for the study.

Table 6: Correlations

		Performance of	χ^1	χ^2	χ^3	χ^4
		ICTA				
Data Analytics	Pearson Correlation	.707**	1			
	Sig. (2-tailed)	.000				
	N	176	176			
Information Storage	Pearson Correlation	.816**	.668**	1		
	Sig. (2-tailed)	.000	.000			
	N	176	176	176		
IT Infrastructure	Pearson Correlation	.829**	.599**	.818**	1	
	Sig. (2-tailed)	.000	.000	.000		
	N	176	176	176	176	
Management Support	Pearson Correlation	.860**	.640**	.788**	.880**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	176	176	176	176	176

** . Correlation is significant at the 0.01 level (2-tailed).

The results established that there is a statistically significant relationship between Data Analytics and Performance of ICTA ($r=0.707^{**}$; $p<0.01$). This means that data analytics plays a critical role in organizations in providing sustainable commodities and, as a result, improving organizational success. This can be accomplished by implementing new technology that allow businesses to remain creative while maintaining their competitive advantage.

Furthermore, the results revealed that Information storage and performance of ICTA correlates statistically at 0.01 alpha level ($r=0.816^{**}$; $p<0.01$) This means that the method used to store information effects organizational performance. Cloud storage, in particular, provides suitable platforms for big data aggregation as well as effectively distributed database systems for storage and delivery.

Thirdly, there was evidence of a significant relationship between IT Infrastructure and Performance of ICTA ($r=0.829^{**}$; $p<0.01$). This means that an effective information technology system can help firms create excellent customer and staff experiences.

Finally, it was observed that there was a statistically significant relationship between Management

support and Performance of ICTA ($r=0.860^{**}$; $p<0.01$). This suggests that firms with management support can increase worker productivity. They accomplish this through staff training aimed at improving economical company operations whilst also enhancing the company's stability indices.

Regression Analysis

Multiple linear regression is a method of statistical analysis that predicts the result of a response variable by combining many explanatory variables. Multiple linear regression attempts to represent the linear relationship between causal (independent) and output (dependent) variables. The regression findings are shown in the following tables.

Model Summary

The level of significance of the association between the model and the variable of interest is reported in the model summary table.

Table 7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.902 ^a	.813	.809	.47560

a. Predictors: (Constant), Management Support , Data Analytics, Information Storage, IT Infrastructure

According to the Table 7, 80.9% of the performance of ICT Authority is explainable using Management Support, Data Analytics, IT Infrastructure, and Information Storage. The residual 19.1% cannot be accounted for by the model.

ANOVA

ANOVA (Analysis of Variance) is an approach that offers information on the degrees of variability within a regression model and serves as the foundation for tests of significance. The results are presented in Table 8.

Table 8: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	168.164	4	42.041	185.864	.000 ^b
	Residual	38.679	171	.226		
	Total	206.843	175			

a. Dependent Variable: Performance of ICT Authority

b. Predictors: (Constant), Management Support , Data Analytics, Information Storage, IT Infrastructure

The statistical significance of the model established that the variables (Management Support, Data Analytics, IT Infrastructure and Information Storage) contributed significantly to performance of Information Communication Technology Authority at 0.05 alpha, $Adjst.R^2=0.809$, $F(4,171)=185.864$; $p<0.05$.

Coefficients

In quantitative analysis, the linear regression parameters explain the theoretical connection between each of the independent variables and the dependent variable. The p values for the coefficients reflect whether these associations are statistically significant. The findings are presented in Table 9.

Table 9: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics		
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	-.041	.134		-.307	.759		
Data Analytics	.185	.044	.192	4.174	.000	.517	1.933
Information Storage	.239	.066	.227	3.605	.000	.275	3.637
IT Infrastructure	.171	.080	.165	2.137	.034	.183	5.450
Management Support	.431	.077	.413	5.585	.000	.200	4.994

a. Dependent Variable: Performance of ICT Authority

The regression statistics revealed that Data analytics significantly influences performance of ICT Authority ($\beta=0.192$; $p=0.000$). This result indicates that businesses can use data analytics to gain insight about their consumers' behavior and detect trends of consumption. Moreover, data insights help

businesses to understand how their products are utilized by people enabling them to better allocate their resources for profitability.

Secondly, finding established that Information storage have a significant influence on

performance of ICT Authority ($\beta=0.227$; $p=0.000$). This implies that capacity of information storage, communication, retrieval, and dissemination have an impact on performance of ICT Authority.

Thirdly, IT Infrastructure has a statistically significant impact on performance of ICT Authority ($\beta=0.165$; $p=0.034$). A functional and efficient IT infrastructure is important to a company's long-term viability. This demonstrates how investment in information technology solutions improves the integration of various administrative tasks.

Finally, Management support significantly affect performance of ICT Authority ($\beta=0.413$; $p=0.000$). As a result, it illustrates that management need both knowledge and experience in order to increase organizational success.

The Empirical Model for The Study

The study therefore adopted the equation:

$$Y = \alpha + 0.192 * X1 + 0.227 * X2 + 0.165 * X3 + 0.413 * X4$$

SUMMARY

Companies that use big data analytics make visible decisions and provide information that may be leveraged to generate financial rewards. According to the findings of this study, more than half of the participants agreed that the company has access to huge amounts of unstructured or current event trending data. This implies that businesses will be able to appraise their position and organize their efforts to obtain the desired goals.

Data analytics methodologies have been widely recognized for their ability to reveal trends and metrics that would otherwise go unnoticed during customer study and contact. According to the study, a portion of respondents believe that the data obtained is utilized for forecasting to learn about difficulties that occur within the institution and the country as a whole. This means that businesses can utilize data analytics to learn about their consumers' behavior and spot consumption patterns. This data might assist the organization comprehend its clientele while decreasing client turnover.

Big data analytics is vital in all businesses given that it provides data on current and anticipated situations. In this study, certain participants acknowledged that the data obtained is utilized for simulation in order to examine what if and situations that occur across the country. This means that data analytics plays a vital role in organizations in terms of providing sustainable commodities and, as a result, improving their overall performance.

Data analytics aids in precisely understanding what works and can provide significant growth for any company enterprise. A portion of the participants believed that modeling is utilized to aid interactions among the government and citizens through defined situations. The research results were also corroborated by a segment of individuals who claim that data analytics aids in the evaluation, comparison, and optimization of plans and programs. This implies that corporations are always ready to adopt new techniques in order to remain inventive, effectively outperform other businesses, and limit the chance of competitors.

Information storage may have an impact on performance in a variety of methods. According to several participants, the organization has a good capacity for information storage. This means that the manner and capacity of storage for data in a company may have an impact on how information is transmitted and retrieved.

The simplicity with which data can be retrieved has an impact on the manner in which an organization runs. According to the findings, respondents agreed that suitable systems for retrieving saved work and procedures are operational and in place. This indicates that adequate data storage systems will improve the efficiency of processes.

The successful transmission of data throughout the company has an impact on its effectiveness. In this study, the majority of those surveyed believed that information was transmitted effectively both internally and outside. Furthermore, another proportion stated that the institution had an appropriate and active method of broadcasting

messages to individuals and groups without necessarily receiving direct input from the audience. This implies that staff and customers are capable of exchanging communications in the smallest amount of time.

Cybersecurity is critical in any business since it safeguards both organizations and people from internet assaults. The vast majority of the participants agreed that the data, particularly regarding the public, is safely held to avoid cyber-attacks and other breaches of privacy.

A functional and resilient IT infrastructure is important to a company's long-term viability. According to the findings, the firm used up-to-date software applications for effective and seamless job activities. This means that a strong IT infrastructure can help firms create excellent customer and staff interactions.

The development of information technology infrastructure is critical for businesses to fulfill their goals. The majority of participants in this study claimed that necessary hardware components are easily available. Similarly, the majority of participants believed that IT infrastructure is a determining factor for performance. They further claimed that the network had quick and dependable connectivity. This suggests that investing in information technology solutions makes it easier to connect various administrative tasks. Subsequently, it may be concluded that information technology is the most effective communication instrument for attaining a competitive advantage within organizations. According to the findings, the majority of respondents agreed that the institution possessed a reliable and accessible database that could reach millions of people.

Leadership competence has an impact on organizational wellness and affects every aspect of an employee's experience, development, and efficiency. According to the survey findings, more than half of the participants believe that management assists the institution in conducting

system monitoring on a frequent basis to prevent disintegration.

In the face of competition, managerial ability permits operations to continue as long as possible. According to the study, a portion of participants believed that management was competent by encouraging employees to use their skills and abilities to further the institution's goals. Furthermore, the majority of participants agreed that the management has extensive experience in the field of information technology. Managers have the capacity to influence employees' attitudes, interests, and behavior toward adherence to corporate obligations and goals. This suggests that the competencies of company managers have a critical influence in the achievement or collapse of the company.

Training for employees improves both employee performance and commitment to the organization. According to the findings, more than half of the participants believe that management promotes staff training on new and developing applications, technology, and artificial intelligence. This means that training may expose individuals to new abilities or provide updates on current technological breakthroughs in order to boost efficiency. Management support and decisions have an impact on all parts of any firm. Finally, a large majority felt that management encourages technical language articulation among employees.

CONCLUSION AND RECOMMENDATION

The study concluded that data analytics has a substantial impact on ICT Authority performance. This finding suggests that firms can utilize data analytics to obtain insight into their customers' behavior and detect consumption trends. Furthermore, data insights assist organizations in better understanding how their products are used by individuals, allowing them to better manage their resources for profitability.

Second, it was discovered that information storage has a substantial impact on the functioning of the ICT Authority. This suggests that ICT Authority

performance is affected by capacity in information storage, communication, retrieval, and distribution.

Third, IT Infrastructure has a statistically significant impact on ICT Authority performance. A robust and effective IT infrastructure is critical to the long-term viability of a business. This shows how investing in information technology solutions helps the integration of diverse administrative duties.

Finally, management support has a significant impact on ICT Authority performance. As a result, it demonstrates that in order to boost organizational effectiveness, management requires both knowledge and experience on matters relating to information technology.

The research recommended that companies should prioritize data analytics to obtain understanding of the patterns of behavior within the company that impact overall performance. Using data analytics provides substantial insights into the company's success, allowing them to make modifications for improved results.

Big data analysis gives firms with extra capabilities that provide them a competitive advantage in their industry. Companies should employ advanced data analytics techniques to provide indicators and projections for sustainable development.

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A reliable and efficient information technology infrastructure is important to a company's long-term success. It is recommended that firms build an information technology infrastructure capable of evaluating large data swiftly and effectively and delivering alternative solutions to problems encountered.

The function of top management is critical to the success of any firm. Management should ensure that employees are paid adequately and are educated on information technology issues. Finally, they should develop a policy framework to improve the use of information technology in their sector.

Recommendations for further Research

One cannot overstate the significance of ICT technology implementation in government ministries. It facilitates cooperation both within and between public sector organizations and institutions by offering a uniform framework and direction. In this context, research could be carried out to determine bottle necks associated with implementation of ICT technologies in government ministries and its impact on organization performance.

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