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Influence of Information and Communication Technology Infrastructure on the Adoption of Enterprise Resource Planning at The Kenya Medical Research Institute in Nairobi City County, Kenya

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ABSTRACT

Organizational capabilities are critical sources of creating and building long-term competitive advantage. Organizations that can develop and deploy unique, inimitable, and valuable capabilities will gain sustainable competitive advantage. There is a dearth of information on the role of organizational capabilities in the implementation of Enterprise Resource Planning. Thus, this research analyzed the influence of Information and Communication Technology infrastructure on the adoption of Enterprise Resource Planning at the Kenya Medical Research Institute. This research was premised on the resource-based view theory, technology acceptance model, and dynamic capabilities theory. A descriptive survey design was utilized in the study. Semi-structured questionnaires will be administered for the data-gathering process. A census approach was used to select 52 employees of Kenya Medical Research Institute. The researcher personally issued the questionnaire to the subjects. The drop-and-pick method was adopted later in cases where participants might be unable to complete and return the questionnaires at the time of their administration. The Statistical Package for Social Sciences (SPSS) version 21 was utilized for descriptive and inferential statistical analysis. Regression and correlation analyses were performed to unearth the associations among variables. All ethical conducts were duly followed. Prose discussion was used to display the data collection's findings and the validity of the questionnaire was conducted by the use of expert opinions that assisted to establish content validity and the supervisor reviewing the items suggested while reliability was determined using Cronbach's Alpha test. The findings indicated a positive influence of Information and Communication Technology infrastructure on the adoption of ERP. The study concludes that a robust IT infrastructure is essential for supporting the scalability requirements of an ERP system. Senior management support helps in securing necessary resources for the ERP implementation, including budget allocation, staffing, and technology infrastructure. The study recommends that KEMRI should upgrade hardware and software by investing in new servers, storage devices, and networking equipment can help ensure that the IT infrastructure can support the demands of the ERP system.

Key Words: *Information and Communication, Technology infrastructure, Enterprise Resource Planning, Kenya Medical Research Institute*

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1.0 Introduction

1.1 Background to the Study

The present-day market and business landscape are ever-changing and intricate. The complexity and rapid pace of change in the environment are mediated by globalization, economic factors, and technological advancements. Consequently, competitiveness in the marketplace is on an upward trajectory (Keinath, Rechnitz, & Balasubramanian, 2021). The planetary exchange of goods and services, and the technological revolutions have also forced organizations to source products and services that can effectively meet 21st-century demands (Aremu, Shahzad & Hassan, 2020). This has also seen numerous organizations scaling up their investments in enterprise resource planning (ERP) and information technology (IT) systems. These systems continue to rapidly shape business processes and procedures. Zheng & Khalid (2022) credit the adoption of IT and ERP systems for the advances in strategic human resource management, operational control, and managerial control.

ERPs have been adopted in economic sectors in many countries in North America, Europe, Asia, and Africa. The rise in popularity of ERPs is attributed to their cost reduction capabilities, enhanced data efficiency and accuracy, revenue growth, enhanced stakeholder management, and better-quality outcomes in production (Shehab, 2010). Other critical sectors of the economy that have adopted ERPs include the insurance sector, retail, education, finance, and telecommunication. Consistent with Nizamani et al. (2014), the adoption of ERPs in those sectors has translated to better performance outcomes. A number of studies conducted in the African context have revealed ERP adoption mishaps related similar to those reported in other jurisdictions across the globe. El Sawah et al. (2008) developed a quantitative model in Egypt to measure ERP implementation success and discovered that Egyptian organizational culture hampered ERP system integration, resulting in high failure rates. Ramburn, Seymour, and Gopaul (2013) discovered that a large South African organization's ERP system failed during the initial stage due to several intra-organizational obstacles to efficient resource formation, transmission, and use.

ERP implementation challenges also stem from inadequate skills, lack of specialized expertise, limited understanding of project initiatives, and organizational resistance to change. According to Udo (2015), Ghana's Volta River Authority implemented an accounts and personnel computerization project but failed because lower-level employees resisted the implementation of ERP. Resistance and nonuse, particularly among older workers, led to the complete abandonment of the otherwise excellent system. Similarly in Nigeria, an ERP solution that would have increased accountability in the business processes of the Nigerian National Petroleum Corporation failed, resulting in government officials mismanaging billions of naira. The project, which was supposed to be completed in 86 weeks, dragged on for more than three years and cost more than double the contract sum approved by the Nigerian presidency (Udo, 2015). The implementation challenge was attributed to inadequate training and a lack of stakeholder engagement.

ERP systems have been implemented in many Kenyan organizations to enhance individual, organizational, and national capacity building. Automation of activities in business setups has had an influence on blue-collar workers. Besides, the adoption of ERPs has promoted efficiency in service delivery, knowledge management, process quality, and overall performance of both private

and public entities (Kamau & Nzuki, 2018). Besides its application in public and private sector entities, ERP was also relevant to individuals. Managers have also adopted ERPs to perform the core functions of management, particularly controlling, budgeting, leading, directing, staffing, and planning. The national government launched the E-Government Strategy (2004-2009) that gave a blueprint for ERP adoption. This demonstrates the government's commitment to mainstreaming ERP in its processes.

ERP offers centralized IT functions for commercial processes thereby allowing information sharing across the organization's information system. ERP is then aligned with the firm's processes to enhance process efficiency and quality, effectively meet customers' expectations, improve the integrity of data management systems, minimize costs, remove bureaucracy, and cultivate a data-driven culture for decision-making (Simon, 2016). Adopting ERP entails combining different subsystems into a unified one to centralize operations and improve coordination and collaboration. For example, an organization may have three primary management information systems tasked with the functions of financial management, human resource management, and procurement. The organization could then integrate the three independent systems into one to facilitate information exchange and synergy in the firm's operations. Consequently, the firm realizes quality performance outcomes (Almgren, 2014). As Singla (2015) posits, ERP system implementation can shorten value creation cycles, increase demand precision for materials management, and improve inventory management; additionally, it becomes a primary tool for re-engineering.

Organizational capabilities describe the physical resources and human resources endowed to the organization, particularly the upper-level management expertise (Chandler, 2016). In other words, it is how the firm's physical, structural, and human resources combine and function to attain the organization's vision. Seth (2020) contends that organizational skills are abilities that can be applied to the various tasks and duties in the firm to achieve the desired objectives. Organizational capabilities can also be the premise of the firm's competitive strategy and competitive advantage as they lead to the firm's exceptional quality in production or service delivery (Terouhid & Ries 2016). Organizational capabilities can also be threshold resources, which are the skills, expertise, and competencies that the organization needs to build and sustain a competitive advantage in the industry. Threshold resources are needed to perform the basic functions of the firm, such as providing goods and services that satisfy customer expectations and enable the firm to achieve its strategic objectives (Vesalainen & Hakala, 2014).

A parastatal is a government corporation founded primarily by an Act of Parliament or other laws of the land (Handbook for Civil Service Staff Induction, 2006). Parastatals are linked to the central government by virtue of their functions, and they collaborate closely with relevant government departments. Kenyan parastatals are classified into A, B, and C based on the volumes of revenue they generate and the state department under which they fall (Kibor, 2018). Moreover, they are classified based on the industries to which they belong including the regulatory sector, training and research, manufacturing, financial, and education among others.

Kenyan parastatals besides being recognized by the authorities, these bodies are also led by top management personnel who are presidential appointees. Different executive departments are responsible for the management and supervision of the functions of parastatals under them. Parastatals are engaged in manufacturing products that contribute to economic development. They also provide job opportunities to millions of Kenyans (Aremu et al., 2018). Some parastatals

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provide crucial services and products to Kenyans, such as the Kenya Power and Light Corporation which is tasked with the distribution of electric energy in the country.

1.2 Statement of the Problem

Joseph & Francis (2015) identify organizational capabilities as critical sources of creating and building long-term competitive advantage. Organizations that can develop and deploy unique, inimitable, and valuable capabilities will gain sustainable competitive advantage (Jepkemboi & Kariuki, 2021). Many Kenyan organizations encounter numerous challenges in ERP adoption, resulting in implementation hurdles or even system abandonment by organizations after significant financial investments (Njihia & Mwirigi, 2014). Organizations that have implemented ERP systems in Kenya still report poor quality performance outcomes suggesting significant implementation challenges (Macharia, 2019). ERP failure remains a stumbling block for many firms that have adopted it (Kitembe, 2017). As a public research institute, Kenya Medical Research Institute attempted but failed to successfully implement the full ERP system. The institution's lack of a complete ERP system has fueled inefficiencies and undermined the attainment of the organization's medical research aspirations. Therefore, the organization has many times grappled with delayed procurement of its research materials, failure to meet project completion timelines, and accountability challenges, especially to donors and other crucial stakeholders (Saxena & Mcdonagh, 2019). Consequently, the organization has wasted valuable time, as well as realized significant revenue losses (Kugun, 2021). Therefore, the organization must analyze the best practices that have to be adopted in implementing ERP (Morrisson, 2020). Thus, there is considerable interest in understanding the role of organizational capabilities in ERP execution to help KEMRI avert the implementation hurdles.

Additionally, there is a conceptual gap in the literature with respect to the place of organizational capabilities in ERP implementation. Many studies in the literature were limited in their conceptualization of organizational capabilities. Kibor (2018) only focused on ICT infrastructure; Abdi (2021) focused on the competence and commitment of top management; and Kavita (2018) focused on business process reengineering. Thus, the current study seeks to provide a more comprehensive picture of the influence of organizational capabilities on the adoption of ERP by focusing on business process reengineering, information communication technology, and senior management support as the key organizational capabilities. The present research also endeavors to fill the contextual gap in the literature since no single study has been conducted to find the role of organizational capabilities in the adoption of ERP in Kenyan parastatals. Aremu et al. (2018) examined factors influencing ERP system adoption among medium-sized enterprise firms in Nigeria while Mumba (2020) focused on Tanzanian microfinance institutions to study the effect of leadership styles on firm success, which both indicate a contextual research gap. The unique contexts in which the studies were carried out exhort further research on the same but in the Kenyan context. Therefore, the present study used the case of KEMRI, which is a Kenyan parastatal.

1.3 Objective of the Study

To show the influence of Information and Communication Technology infrastructure on the adoption of Enterprise Resource Planning at the Kenya Medical Research Institute

2.0 Literature Review

2.1 Theoretical Literature Review

2.1.1   Resource Based View Theory

The resource-based view model was originally formulated by Penrose (1950s) where she laid the groundwork by emphasizing the role of a firm's internal resources and capabilities for achieving long-term growth. Subsequently, Barney (1991) emphasized once more how crucial resources are to a company's performance and competitive advantage. There are different types of resources that organizations have, and which can influence their performance including physical, technological, information, and human resources (James, 2017). Walker (2018) opines that substantial resources are the primary source for improving venture development, consistent with the resource-based view theory. Samole (2014) concurs with the RBT in saying that a company's ability to create the right combination of assets while cutting expenses gives it a competitive edge. Such assets can be substantial or elusive, and they speak to a company's contribution to its performance. A proper asset mix can enable the organization to yield more capabilities and translate them into success factors for long-term competitive advantage and performance.

In the present study, the RBT would help develop the framework which KEMRI and other parastatals in Kenya could use to build core organizational capabilities from their asset mixes. Specifically, the resource-based view model will show how KEMRI can use its available physical, technological, knowledge, and human resource assets to translate its organizational capabilities into success factors. This theory explains adoption of ERP variable.

2.1.2   Dynamic Capabilities Theory

Teece, Pisano and Shuen (1997) proposed the dynamic capabilities theory. to show the strategic routines that an organization can utilize to reconfigure its internal and external competencies or resource bases to adapt to changing environments and build a long-term competitive edge over rivals. The foundation of this theory is that a firm's core competencies or resources must be exploited to establish short-term competitiveness that can be translated to a long-term competitive edge (Helfat & Peteraf, 2009). The dynamic capabilities theory asserts that visionary and effective management is required to exploit the firm's resource base and generate multiple competitive areas from its organizational capabilities (Ludwig & Pemberton, 2011). Multiple competitive areas allow an enterprise to remain agile and adapt to evolving requirements in a global context (Teece et al., 1997). Dynamic skills improve a company's capability to grow and thrive in the industry because leadership is responsible for organizing novel options that can create more worth for the company's stakeholders.

KEMRI operates in a rapidly evolving environment. The organization is charged with conducting medical research to address the ever-changing 21st-century healthcare needs. Addressing modern healthcare challenges through research requires the adoption of cutting-edge technologies and the revamping of organizational processes to maximize efficiency and performance. Besides, KEMRI's competing priorities and limited budget require the development of an asset mix that will enable it to generate multiple core capabilities. Thus, the present study will use the dynamic capabilities theory to understand how KEMRI utilized its organizational capabilities and resources to adapt to the rapidly changing technological environment in which it operates and to meet the ever-evolving healthcare research priorities. The theory explains top management support variable.

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2.1.3 Technology Acceptance Model

Davis introduced the technology acceptance model (TAM) in 1986 to highlight the determinants of the acceptance of computers or technology in firms. TAM posits that there exist two primary motivations for the adoption of a particular technology in an organization; first the perceived importance, benefits, or merits of the technology, and second; the perceived ease of application or utilization of the technology. The model emphasizes the attitudes of the potential user of the technology. If the user regards the technology as useful, they will readily adopt it. If the user regards the technology as easy to use, they will also adopt it in the organization (Davis, 1986).

TAM offers crucial explanations of the factors that underpin the implementation of technologies in organizations. Bradley & Lee (2007) posit that the failure of ERP in many organizations is partly to blame for the employees' unwillingness to implement it. This is consistent with TAM since employees feel ERP is difficult to use. Some employees are also generally anxious about new technologies and do not readily embrace them when it is introduced into their organizations (Sternad & Bobek, 2013). The lack of adequate training and stakeholder engagement prior to the technology implementation makes the execution of ERP more problematic. In the present study, TAM will be used to identify the factors related to perceptions of the potential users of ERP systems, and their influence on adoption and success of ERP at KEMRI. The model may also set the foundation for robust stakeholder engagement and training before the adoption of ERP to boost its success. This theory is used to explain ICT infrastructure.

2.1.4 Durkheim Theory of Culture

In 1890, Emile Durkheim introduced a theory that elucidates culture as a developing system of representations. This theory comprehensively grasps the complex array of beliefs, values, and symbolic patterns pertaining to the natural world, including his detailed observations of tribal societies. According to this theory, the sociological foundation of a company lies in its work culture, which embodies the very essence of the concept of culture, despite its seemingly unattainable nature. Through culture, an organization molds the tasks and achievements necessary for accomplishing its goals.

Zheng and McLean (2010) noted that subcultures within an organization can promote unity but can also lead to conflicts. Cultural differences may arise based on status, profession, or division. The presence of subcultures is evident in organizational discourse, where employees from different categories use specific language shared with colleagues outside the organization rather than within it. Additionally, various expressive symbols are created by subgroups to establish a shared sense of purpose. This theory holds significant significance in the examination of cultural dynamics which fosters healthy working relationships and promotes ethical interactions among employees. It also enables employees to make decisions in situations where there are no rules or regulations in place, situations that have not yet been experienced, but which improve organizational performance. This theory is linked to organizational culture variables.

2.2 Empirical Literature Review

Mwithiga et al. (2017) investigated the place of technological integration in organizational success. The study objectives were met by incorporating a descriptive research design and collecting cross-sectional data. The research incorporated primary and secondary data sources. It revealed a notable connection between technology integration and the success of the organization. While the research effectively discussed the impact of ICT on various aspects of the organization, it did not

specifically analyze the role of ICT infrastructure capabilities in the adoption of ERP systems within the organization, but rather focused on overall performance.

Kibor (2018) looked at how Nairobi County's tertiary institutions performed in relation to their ICT infrastructure. There were 149 postsecondary institutions in the county that made up the research population, with a sample of 60 participants selected through a simple random sampling method from these institutions, involving individuals specializing in ICT. Data collection was conducted through a questionnaire that underwent thorough reliability and validity testing. The findings indicated a positive relationship between the implementation of ICT infrastructure and organizational performance. Similar to the study by Mwithiga et al. (2017), Kibor (2018) demonstrated a comprehensive approach by exploring the influence of ICT adoption on overall organizational performance. Thus, this current study aims to analyze the connection between ICT infrastructure and ERP adoption within parastatals.

Aremu et al. (2018) studied the determinants of ERP system implementation and medium-sized firms, focusing on technology, leadership, and organizational culture. The sample size was 104 medium-sized firms in Ogun State, Nigeria. The researchers used questionnaires as data-gathering instruments. The participants comprised the top management employees of the firms as they were deeply conversant with the organizations' operations. The findings revealed that communication processes, technological change, technological infrastructure support, and organization structure significantly influenced the adoption of ERP among firms. The findings of the study further emphasize the crucial significance of efficient organizational management in mediating the connection between ERP adoption and the performance of the company. A contextual void was identified in the research due to its execution in Nigeria. The current study aims to investigate the correlation between ICT infrastructures, top management support, and business process reengineering in relation to ERP adoption at KEMRI.

AlBar & Hoque (2017) who studied the factors determining cloud ERP adoption among firms in Saudi Arabia. The research employed a survey methodology. The study investigated a total of 12 variables, including ICT infrastructure. The study showed that ICT infrastructure was a key enabler of cloud ERP adoption in firms. Organizations that had robust ICT infrastructure were likelier to implement ERP systems because they already appreciated the superior benefits of ICT (AlBar & Hoque, 2017). There was a clear contextual gap in the study because it was carried out among Saudi Arabian firms. The present study seeks to replicate the same in the Kenyan context but unlike AlBar & Hoque (2017) who studied 12 independent variables, the present study will only study 3.

Wairiuko, Nyonje, and Omulo (2018) conducted a study that focused on the examination of ICT infrastructure and the adoption of E-government to enhance service delivery within Kajiado County, Kenya. The research utilized a Descriptive survey approach. The collection of quantitative data involved the use of both open and closed-ended questionnaires, while qualitative data was gathered through an interview guide. Several hypotheses were tested and inferential data was examined using regression models and correlation analysis. The study's findings demonstrated that ICT infrastructure significantly boosted the uptake of e-government.

3.0 Research Methodology

A descriptive research design was used for this specific study. In essence, the goal of a descriptive research design is to compile data on a particular phenomenon in an organized manner. The

descriptive research design aimed to address the what, when, how, and where research study questions rather than the why ones (Mohajan, 2018). To answer the "what" question about the influence of organizational capabilities on ERP adoption in organizations, the descriptive research design was chosen for this study. The objective of this study was not to manipulate variables, but rather to solely describe the relationships that underlie them. The study's population consisted of the top managerial staff of KEMRI. The rationale for selecting the top-level managerial staff at KEMRI was because of their conversance with the institution's organizational capabilities and their possible influences on the adoption of ERP. Selecting top-level management employees from organizations for purposes of research is always recommended because of their competence and understanding of their organization's processes (Aggarwal & Ranganathan, 2019). According to information obtained from KEMRI (2022), there were a total of 42 employees holding management positions at KEMRI that is based in Nairobi County. The 42 employees included top-level managers, mid-level managers, and departmental heads. Thus, the present study targeted the 42 employees occupying leadership positions.

The chosen participants in the study should be more similar than different for them to be regarded as representative of the whole. The present study will adopt a census approach to determine the sample size. A census approach entails counting every unit or subject in the study population and is ideal in cases where the investigator wants to eliminate sampling errors or biases (Sheppard et al., 2020). Notably, the census approach is also appropriate in cases where the target population is not large, and it is achievable to analyze the complete population as part of the study. (Mugenda & Mugenda, 2003). In that regard, the present study selected all 42 employees holding managerial positions at KEMRI as the study sample. Closed-ended self-completion questionnaires were adopted as the data-gathering instrument. A pilot test was conducted with a few populations to determine the efficiency of the questionnaires as well as the accuracy and validity of the data gathered. All of this was used to obtain an in-depth answer in order to improve the study's achievement of objectives. According to Cooper et al. (1995), a self-administered questionnaire should be encouraged as a means of involving respondents in providing answers in their spare time, making administration more convenient.

The survey items were designed in line with the research variables. A five-point Likert scale was used in the questionnaire to standardize the participants' responses. The instrument was organized into 4 major parts. Section A detailed the participants' basic demographic information; Section B detailed survey items on ICT infrastructure; Section C had survey items on top management support; Section C focused on business process engineering; and Section D contained survey inquiries in ERP adoption at KEMRI. According to Kothari (2004), if the information is an accurate manifestation of the components, the interpretations based on it would be precise and significant. To put it differently, a research tool is considered valid if it effectively measures the specific aspects it was designed to measure to a significant extent. To confirm the validity, the researcher used content validity, which was validated by other research professionals. The researcher additionally carried out a preliminary investigation involving 10 participants. The subjective viewpoints of the chosen individuals from the preliminary investigation were utilized to improve the credibility of the tool.

The results of a pilot study were used to gauge the reliability. Following the completion of the pilot study, the reliability of the instrument was evaluated using Cronbach's Alpha. A Cronbach's Alpha value greater than 0.7 indicates that the study questionnaire is deemed dependable and appropriate for the current investigation. Nonetheless, the study tool needs to be enhanced if the Cronbach's

Alpha value is less than 0.7 are generally considered unreliable (Rousson et al., 2002). Thus, the present study also modified the research inquiries that could be below Cronbach's Alpha value of 0.7. First, an introduction letter from Kenyatta University had to be obtained before any data could be collected. A research permit was also obtained from the NACOSTI. The investigator personally met with the management staff at the KEMRI offices in Nairobi County to elucidate the study's objectives and invite their participation. Questionnaires were administered to the participants who completed and returned them after 3 days.

Data analysis involves refining and evaluating data to address research questions (Sekaran, 2005). The data collected underwent analysis through descriptive statistics and the Statistical Package for Social Sciences (SPSS) version 21. Tables were utilized to present the Likert's means, aggregate means, and standard deviations of participants' responses. Inferential statistics, such as correlation and regression analysis, were employed to show the relationships between ICT infrastructures, top management support, and business process reengineering on ERP at KEMRI.

The regression model illustrates.

$$ERP = \beta_0 + \beta_1 ICT_1 + \beta_2 TMS_2 + \beta_3 BPE_3 + \varepsilon$$

ERP= Adoption of Enterprise Resource Planning

B_0 = Constant

ICT_1= Information Communication Technology Infrastructure

TMS_2= Top Management Support

BPE_3= Business Process Reengineering

β_1 -β_3 - coefficients.

ε - error

The results are determined at a 95% level of significance.

The issue with this correlation lies in the fact that the independent variables must be truly independent. If the correlation among variables is strong, complications may arise during model fitting and result interpretation. As per Haitovsky (2019), Multicollinearity can be assessed using a metric known as the variance inflation factor (VIF), which measures how strongly the predictor variables in the regression model are related to one another. There is no upper limit to the VIF value, which goes from 1 upwards. A correlation between a particular predictor variable and other predictor variables in the model is indicated by a VIF of 1 (no correlation), 1 to 5 (moderate correlation), and a value greater than 5 (potentially severe correlation). Hence, a VIF value exceeding 5 was sought to ensure that multicollinearity was not an issue in the regression model.

Onder and Zaman (2017) highlight the significance of normality in residuals, emphasizing its impact on the precision and reliability of hypothesis tests and confidence intervals for regression coefficients. The validity of model selection criteria is also influenced by the normality of residuals including the R-squared, the adjusted R-squared which measure the goodness of fit and the trade-off between complexity and simplicity of the model and also affects the detection and treatment of outliers and influential points, which are observations that have a large influence on the model fit and the parameter estimates. The data analysis in the study involved the utilization of the Shapiro-Wilk test to examine the distribution of the data and determine if it significantly deviates

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from the normal distribution. Various parameters, including the widely recognized p-value, were considered in this analysis. If the p-value exceeds 0.05, it is concluded that the data adheres to the assumptions of normality.

The utilization of linear regression involves creating a model that depicts the connection between a dependent variable and one or multiple independent variables (Poole & O'Farrell, 2019). In the realm of linear regression, T-tests, as stated by Hansen (2020), play an important part in evaluating the statistical significance of specific variables within the model. Additionally, T-tests aid in comparing the significance of various variables, enabling the identification of the most influential predictors for the dependent variable. Consequently, the study conducted a linear regression analysis utilizing correlation coefficients, with a p-value < 0.05 being deemed as favorable. The research process was consistent with the established ethical norms and guidelines. The study ensured ethics by ensuring confidentiality, free consent, and privacy. These permissions were obtained to enable the collection of data from the insurance companies listed at the NSE. The results of the study would be shared with NACOSTI, various stakeholders, and published through a reputable organization. Additionally, it is important to note that participation in the study would be entirely voluntary, and no individual would be compelled to take part.. The investigator also respected the privacy and confidentiality of the participants, including providing the essential guarantees that the data collected would only be utilized for the current research.

4.0 Research Findings and Discussions

4.1 Descriptive Analysis Results

Statements	M	SD
The institution has a software application that aids and assists activities	4.59	0.876
Server-based database support management and staff of the institution	4.56	0.448
There is sufficient hardware component like laptops, printers, scanners, etc. available in the institution	4.03	0.948
Every employee is entitled to a hardware component to aid efficient workflow	4.54	1.064
Uninterrupted network services aid in an efficient workflow	4.21	0.797
The adoption of ERP has improved ICT services in the institution	3.76	1.315
Avearge mean and standard deviation score	**4.09**	**0.908**

The average mean and standard deviation score of 4.09 and 0.908 obtained confirms respondents' agreement of statements describing IT infrastructure influence of ERP adoption on basis of likert scale. The research conducted by Mwithiga et al. (2017) supports these findings, indicating that technological integration plays a crucial role in attaining organizational success. The study uncovered a significant correlation between the integration of technology and the achievement of organizational goals.

A strongly agreement was found in the following statements; the institution has a software application that aids and assists activities (M=4.59, SD=0.876), server-based database support management and staff of the institution (M=4.56, SD=0.448) and that every employee is entitled to a hardware component to aid efficient workflow (M=4.54, SD=1.064). The finding concur with

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Kibor (2018) who investigated the influence of ICT infrastructure on tertiary institution performance in the county of Nairobi and the results revealed a positive correlation between the adoption of ICT infrastructure and firm performance.

The respondents agreed on the statement that uninterrupted network services aid in an efficient workflow (M=4.21, SD=0.797), there is sufficient hardware component like laptops, printers, scanners, etc. available in the institution (M=4.03, SD=0.948) and that the adoption of ERP has improved ICT services in the institution (M=3.76, SD=1.315). The finding agree with Aremu et al. (2018) who studied the determinants of ERP system implementation and medium-sized firms, focusing on technology, leadership, and organizational culture and the findings revealed that communication processes, technological change, technological infrastructure support, and organization structure significantly influenced the adoption of ERP among firms.

4.2 Results of Multiple Regression Analysis

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.809[a]	.654	.648	1.017

The adjusted R square value was calculated to be 0.648, demonstrating the degree to which the adoption of ERP by KEMRI influenced by independent variable studied. This also means that the organizational capabilities not studied account for the remaining 35.2% which necessitates the need for further study.

Table 3: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	228.895	4	57.224	74.472	.001
	Residual	130.736	36	.7684		
	Total	359.631	40			

The statistical F value exceeded the statistical mean value of 57.224, with a value of 74.472. Furthermore, the significance value was 0.001, which was less than the 0.05 level of significance. Hence, it can be inferred that the model holds significance.

Table 4: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	0.621	.128		4.852	.000
IT Infrastructure	0.801	.214	4.396	12.995	.001

The results presented in Table 4 unveiled that holding IT Infrastructure, would be at a factor of 0.621. The finding shows that an improvement in IT infrastructure would lead increase the adoption of ERP at the Kenya Medical Research Institute by 80.1%.

The regression equation that was established is as follows;

Adoption of ERP = 0.621 + 0.801(IT infrastructure) + ε

The results in Table 4.14, also show that IT infrastructure had a positive significant influence on the adoption of ERP at the Kenya Medical Research Institute as indicated by beta value of 4.396 with a significant value of 0.001. The finding concurs with Wairiuko, Nyonje and Omulo (2018) who discovered that the presence of ICT infrastructure significantly contributed to the adoption of E-government.

5.0 Conclusions and Recommendations

5.1 Conclusions

The study concludes that a robust IT infrastructure is essential for supporting the scalability requirements of an ERP system. As KEMRI grows and expands its operations, the IT infrastructure needs to be capable of handling the increased data volume, user load, and transaction processing. ERP systems are designed to integrate various business functions and processes into a single unified platform. However, this integration heavily relies on the IT infrastructure's ability to connect different systems, databases, and applications. ERP systems store and process sensitive and confidential data, including financial information, employee records, and research data. An effective IT infrastructure is crucial for guaranteeing this data's security and protection.

5.2 Recommendations

The study recommends that KEMRI should upgrade hardware and software by investing in new servers, storage devices, and networking equipment can help ensure that the IT infrastructure can support the demands of the ERP system. Implement cloud-based solutions by moving some or all of the IT infrastructure to the cloud can provide scalability, flexibility, and cost savings. Enhance cybersecurity measures by strengthening cybersecurity measures, such as implementing firewalls, encryption, and multi-factor authentication, can help protect sensitive data and prevent cyber-attacks. Implement mobile solutions by providing employees with mobile access to the ERP system can improve productivity and flexibility. Mobile solutions can enable employees to access information and perform tasks from anywhere, at any time.

References

Aggarwal, R., & Ranganathan, P. (2019). Study designs: Part 2 – Descriptive studies. *Perspectives in Clinical Research*, *10*(1), 34–36. https://doi.org/10.4103/picr.PICR_154_18

AlBar, A. M., & Hoque, M. R. (2017). Factors affecting cloud ERP adoption in Saudi Arabia: An empirical study. *Information Development*, *35*(1), 150-164. https://doi.org/10.1177/0266666917735677

Ali, A., Mushtaq, N., & Bakhtawar, A. (2022). Exploring the Intervening Role of Top Management Support in the Successful Implementation of ERP: An Empirical Evidence from the Manufacturing Industry of Pakistan. *Pakistan Social Sciences Review*, *6*(2), 251-261.

Aremu, A. Y., Shahzad, A., and Hassan, S (2020). The influences of enterprise resource planning system adoption on firm's performance among medium size enterprises. *International Journal of Information Systems and Social Change*, 11 (1), 24.

Chang, L. J., & Powell, P. (2018). Towards a framework for business process re-engineering in small and medium-sized enterprises. *Information Systems Journal*, *8*(3), 199-215.

Elhuni, R. M. (2016). The Influence of organizational culture on the implementation of enterprise resource planning. *Power*, *13*, 14.

Ganesh, L., & Mehta, A. (2020). Critical success factors for successful enterprise resource planning implementation at Indian SMEs. *International Journal of Business, Management and Social Sciences*, *1*(1), 65-78.

Inan, G. G., & Bititci, U. S. (2022). Understanding organizational capabilities and dynamic capabilities in the context of micro enterprises: a research agenda. *Procedia-Social and Behavioral Sciences*, *210*, 310-319.

James, D.H. (2017). Extending the enterprise systems success measurement model: A Preliminary study. *Journal of Information Technology Management,* 17(1), 14-33

Jepkemboi, B. L., and Kariuki, P. (2021). Influence of organizational capabilities on competitive advantage among tier one banks in Kenya. *International Journal of Innovative Social Sciences & Humanities Research* 9(2):168-190.

Kamau, I. W., & Nzuki, D. (2018). Enterprise Resource Planning Systems Considerations and Implementation in State Corporations in Nairobi City County, Kenya. *International Journal of Current Aspects in Project Management (IJCAPM)*, *1*(2), 26-44.

Keinath, A. T., Rechnitz, O., Balasubramanian, V., and Epstein, R. A. (2021). Environmental deformations dynamically shift human spatial memory. *Hippocampus*, 31 (1), 89–10.

Kibor, J. (2018). Integration of information and communication technology and performance of tertiary institutions in Nairobi city county, Kenya. (Research Project), Kenyatta University, Kenya.

Kugun, G. K. (2021). Factors influencing the implementation of Enterprise Resource Planning Systems: a case study of Kenya Medical Research Institute (KEMRI) (Doctoral dissertation, Strathmore University).

Macharia, K. K. (2021). *Influence of Organizational Culture on the Implementation of Enterprise Resource Planning Systems in Kiambu, Kenya* (Master's Project, Kenyatta University)

Mohajan, H. K. (2018). Qualitative research methodology in social sciences and related subjects. *Journal of Economic Development, Environment and People*, *7*(1), 23-48.

Morrisson, M. K. (2020). Best practice models for enterprise resource planning implementation and security challenges. Journal of Business, 8(2), 55-60.

Mwithiga, L. T., Njihia, J. M., & Iraki, X. N. (2017). Information Technology (IT) Integration and Firm Performance. *International Journal of Economics, Commerce and Economics*, *5*(5), 802-823.

Samole, U.S. (2014). Factors affecting ERP system implementation effectiveness. *Journal of Enterprise Information Management,* 25(1), 60-78.

Seth, O. O (2020). Organization capability and performance of Airkenya Express Limited, Nairobi City County, Kenya. (Masters Project), Kenyatta University, Kenya.

Sternad, S., & Bobek, S. (2013). Influences of TAM-based External Factors on ERP Acceptance. *Procedia Technology*, 9, 33–42

Terouhid, S. A., & Ries, R. (2016). People capability: A strategic capability for enhancing organizational excellence of construction firms. *Journal of Modelling in Management,* 11(3), 811-841.

Vesalainen, J., & Hakala, H. (2014). Strategic capability architecture: The role of network capability. *Industrial Marketing Management,* 43(6), 938-950.

IBMED

Wairiuko, J. W., Nyonje, R., & Omulo, E. O. (2018). ICT infrastructure and adoption of E-government for improved service delivery in Kajiado county, Kenya. *European Journal of Business and Management*, *10*(30), 205-221.

Walker, E.H. (2018). ERP implementation issues in advanced and developing countries. *Business Process Management Journal*, 7(3), 276-84.

Zheng, J. and Khalid, H. (2022). The adoption of enterprise resource planning and business intelligence systems in small and medium enterprises: A conceptual framework. A mathematical problems in engineering, https://doi.org/10.1155/2022/1829347

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