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TECHNOLOGY INFRASTRUCTURE AND BUSINESS PERFORMANCE OF COMMERCIAL BANKS IN KENYA

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ABSTRACT

The general objective of the study was to examine the role of technology infrastructure on business performance of Commercial Banks in Kenya. The philosophy that guided the research is positivism philosophy. The study adopted correlational research design. The target population was commercial Banks in Kenya register by the Central Bank of Kenya. The population consisted of all 42 commercial banks in Kenya. Respondents' population comprised of five top managers from each bank translating to 210 top managers. Slovin's formula was used to calculate the sample size. Purposive sampling technique was used to select 138 top managers of the 42 commercial Banks in Kenya. This study used a self-administered, closed and open-ended questionnaire to obtain primary data. A pilot study was conducted to test the validity and reliability of the data collection instrument. Quantitative data was collected and analyzed in this study by calculating the response rate with descriptive statistics such as mean, standard deviation, median and proportions using the Statistical Package for Social Sciences (SPSS) version 24). Regression analysis and correlation analysis was used to carry out inferential data analysis to determine the direction and strength of the relationship between the independent and the dependent variables. In order to test the influence of information technology capability on business performance of Commercial Banks in Kenya, the study employed a hierarchical regression analysis with moderation. The study results were presented through use of tables and figures. The study concludes that technology infrastructure has a positive and significant effect on business performance of Commercial Banks in Kenya. The study revealed that hardware/Software, network and database influence business performance of Commercial Banks in Kenya. This implies that improvement in information technology infrastructure (hardware/Software, network and database) would lead to improvement in business performance of Commercial Banks in Kenya. The study recommends that the management of commercial banks in Kenya should ensure they had adequate and up to date hardware/Software to enable their employees improve their productivity.

Key Words: Technology Infrastructure, business performance of Commercial Banks and Positivism Philosophy

Background of the Study

The rapid change in technologies, increasing globalization, shifting demographics and greater regulatory oversight are combining to create fundamental shifts in business environment that has led to new opportunities, challenges and risks for the managers (Owuori, Ngala, & Obwatho, 2020). In this unpredictable market, competition is causing both demand and supply to fluctuate more rapidly, widely, and often than they used to (Lu & Ramamurthy, 2019). The capability to sense and respond to market threats and opportunities with speed and surprise has become essential for survival of organizations (Huang, Ouyang, Pan, & Chou, 2018).

IT infrastructure includes IT materials (e.g., hardware, software, and networks) built through systems, which provides a technical basis for product implementation based on IT and process innovation (Basheer et al., 2016; Lu & Ramamurthy, 2011). Firms are heterogeneous in developing and nurturing IT capabilities; therefore, they are likely to have different potential in leveraging information systems (IS) for their competitiveness. Scholars have viewed IT capability from different dimensions. These includes IT strategy and IT structure (Bergeron, Raymond, & Rivard, 2004); IT human capabilities and IT infrastructure capabilities, IT planning capability, system development capability, and information systems operation capability (Ravichandran, Lertwongsatien, & Lertwongsatien, 2005); IT infrastructure, IT business experience, IT relationship resources and IT human resources (J.-S. Chen & Tsou, 2012); IT managerial capability, IT personnel capability and IT infrastructure capability (Kim, Shin, Kim, & Lee, 2011); IT infrastructure capability, IT business spanning capability, and IT proactive stance (Lu & Ramamurthy, 2011); value, competitive, and dynamic capabilities (Bhatt & Grover, 2005); Managerial IT capability, technical IT capability, and relational IT capability (Garrison, Wakefield, & Kim, 2015).

Technological capability contributes to the achievement of higher levels of performance for firms, as it allows incremental improvements from the use of new technologies (Jonker, Romijn, & Szirmai, 2006). Access to a wider range of new technology options (Tatikonda & Stock, 2003) can influence the product cycle time (MontoyaWeiss & Calantone, 1994), speed of firm innovation (Coombs & Bierly III, 2006), launch and time to market of new products (Calantone & Di Benedetto, 2012), product development costs, success in developing new products (Tatikonda & Stock, 2003), and is considered an important component of knowledge and skills for the firm (Tatikonda & Stock, 2003; Renko, Carsrud & Brännback, 2018). A firm's competitiveness and performance are possible because of the organization ability to perform at different levels in different ways, implying that its success is due to the different capabilities it has (Stouder & Gallagher, 2015). As noted by Kim, Shin and Min (2016), the capabilities of a firm allow it to daily operate, grow, adapt to changes and to achieve a competitive advantage in the industry.

IT capabilities encompass IT infrastructure, IT applications, and human IT skills (Bharadwaj, 2000). It provides the necessary hardware and software that allow for creating networks that enable firm innovation. Appropriate implementation of IT infrastructure allows firms to implement the right applications at the right time and meanwhile broadened avenues for technological innovation (Zeng & Lu, 2020). IT infrastructure enables firms to identify and develop key technologies rapidly, share information across products, services, and locations, implement common transaction processing, and supply chain management across business processes (Zahra et al., 2019). Moreover, firms with strong human IT skills are not only better equipped to anticipate and address future business needs of the firm, but also are better able to innovate valuable new product features before competitors and achieve intangible benefits such as customer satisfaction (Bharadwaj, 2000).

Innovative ideas can include the use of IT to create new markets and gain a competitive advantage through greater interactivity, cheaper transactions, and direct communication with partners and clients (Hoque, Mohammad, Albar, & Bao, 2016; Zhu, Zou, & Zhang, 2018). Innovation improves a firm's value chain and introduces new products, services, solutions, and

work procedures (Shaw, O'Loughlin, & McFadzean, 2005). Schumpeter (1942) viewed innovation in entrepreneurship as a significant component of the firm's life cycle. Information systems researchers have empirically demonstrated that Information technology (IT) investments enhance firms' productivity, consumer welfare, and comparative advantage (Barua et al. 2000). Further, other studies have demonstrated that IT management capabilities, or the managerial skills associated with acquisition, management and use of information technologies, have significant impact on business performance (Bharadwaj 2014; Santhanam et al. 2013).

Central Bank of Kenya is the sole regulator of microfinance banks, foreign exchange trading bureaus, credit reference bureaus and commercial banks. Kenya is home to a total of 42 commercial banks, all having the same market share (Central Bank of Kenya Annual Report, 2021). In Kenya, the commercial banking industry has experienced entry of many players from locally incorporated banks and internationally incorporated commercial banks (multinationals), both from within and without the continent (Aburime, 2009). All the banks are competing for the market that is dominated by both public and private banks. Chowdhury and Rasid (2015) argued that in various branches, private commercial banks are continuously rising, generating job opportunities, increasing deposits, disbursement of loans, net income and earnings per share over time.

According to Ongore and Kusa (2013), commercial banking realization of financial intermediation is dependent on individual institution extent of financial innovation and customized development of financial products. In fact, there is need for financial institutions to embrace the value of technology based financial services for them to remain profitable and optimal in their operations. Over the last few years, banks have also experienced increased competition as a result of increased innovation among players and new market entrants (Cegarra-Navarro, Reverte, Gómez-Melero, & Wensley, 2016). These trends include the shift from long-established decentralized banking to one branch banking, made conceivable by the combination of different business capacities (PWC, 2012). In order to preserve brand leadership and consumer loyalty for commercial banks in Kenya, different tactics are used, such as the launch of innovative products and the implementation of effective customer relationship management.

Statement of the Problem

Technological capability has been considered as a critical element that improve organization's performance (Zhou, Yim & Tse, 2019) therefore, most successful organizations around the globe depends on their technological capability to effectively execute their routine business processes and activities (Ajonbadi, 2018). According to Bharadwaj (2018); (J.-S. Chen & Tsou, 2021); (Zeng & Lu, 2020), The ability of organizations to utilize, develop and enhance IT capabilities is critical, (Bharadwaj, 2019). Information Technology capabilities hold great potential to transform organizations by influencing decision-making and execution through innovation.

Improper implementation of technological capability have resulted in unnecessarily high operation costs, uncoordinated business activities, inability to achieve domestic policy goals, and failure to attract and retain professionals (Zahra et al., 2019). A number of studies on IS/IT capabilities have been carried out for instance, Akinbola, Adeniyi, and Oluwatosin (2017) on IS capabilities in telecommunication service businesses in Nigeria, Bhatt and Grover (2019) on information technology capabilities and their role in competitive advantage, and Oh and Kim (2021) on managerial capabilities of Information Technology and firm performance.

Mugambi and Kinyua (2020) did a study on the role of innovation capability on organization performance in the context of Commercial Banks in Nairobi City County, Kenya. The study considered product innovation, service innovation, and service innovation dimensions while the

current study considered Information Technology Strategy, Information Technology Processes, Information Technology Organization, and Information Technology Infrastructure capabilities. Kamau, Senaji, Eng, and Nzioki (2019) sought to establish the effect of Information Technology Capability on competitive advantage of the banking sector in Kenya. The study was anchored on the McKinsey 7S Framework Model. Focusing on 39 operational commercial banks in Kenya, a descriptive survey design was adopted. The current study looked at the effects that IT capability has on the financial and non-financial performance of Commercial banks. Further, the study adopted different dimensions of ITC and theories that the study was anchored on.

The least investigated aspects of this internal were how dynamics of information technology capabilities such as Information Technology Strategy, Information Technology Processes, Information Technology Organization, and Information Technology Infrastructure has been implemented, hence a problem for continued research (Lu & Ramamurthy, 2011). Researchers have shown that a firm's ability to effectively leverage its IT investments by developing a strong IT capability can result in firm performance. Relevant literature examines concepts such as managerial capability and organizational performance (Conyers, 2017), dynamic capability and competitive advantage (Rudolf, 2019), and innovation and performance (Kauzya, 2020).

Considering some of these studies and taking into considering that technological capabilities of firms keep changing, studies and reports have generally not addressed the Information Technology Strategy, Information Technology Processes, Information Technology Organization, and Information Technology Infrastructure capabilities and how it affects the business performance of Commercial Banks in Kenya. This gap creates the need to undertake a study to examine the role of Technology Infrastructure in business performance of Commercial Banks in Kenya.

General Objective

To examine the role of Technology Infrastructure on business performance of Commercial Banks in Kenya

Theoretical Framework

Dynamic Theory

Dynamic capabilities refer to an organization's responding ways to the environmental rapid changes. The dynamic capabilities of an organisation lie in its managerial and organisational processes (Sher and Lee, 2004), the nature of dynamic capabilities though being distinctive both in terms of their path dependence and details of emergence. These capabilities have common grounds, links and best practices across firms and organizations.

DCV extends RBV and emphasizes that the acquisition of capabilities is a necessary but not sufficient condition for gaining competitive advantage (Teece, Pisano, and Shuen 1997).

Only those firms that can appropriately create, integrate, and reshape their resources to adapt to changing environments can maintain their competitive advantage (Teece, Pisano, and Shuen 1997). According to DCV, differences in the superiority of firm performance are not determined by heterogeneity in resource endowments but rather by the capabilities acquired and employed by firms (Eisenhardt and Martin 2000). Capabilities are dynamic when they provide firms with the ability to implement new strategies to adapt to changing market conditions (Teece, Pisano, and Shuen 1997).

The concept of IT capabilities is drawn from the resource-based view that has been criticized for not explaining the benefits achieved through IT capabilities in unstable business environments (Wade & Hulland, 2004). A growing body of scholars has stressed on the importance of embracing IT capabilities concept from the perspective of a dynamic capability view that emphasizes the need to adapt and change in the face of rapidly changing market requirements. These capabilities are firm's inter-linked processes that are vital for future resource creation and

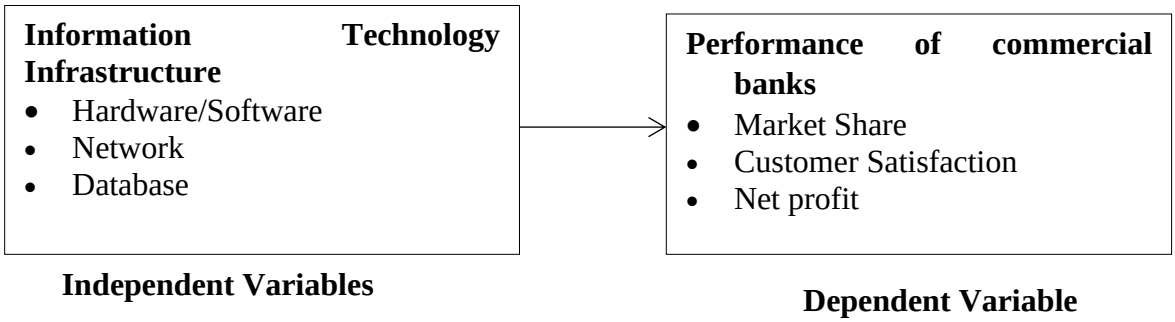
allow firms to manage upcoming challenges in a dynamic business environment by directing all the focus to create, renew or alter a resource mix to get competitive advantage, thus increases firm performance (Eisenhardt & Martin, 2000; Teece et al., 1997).

When firms possess strong IT capabilities, they tend to accelerate in decision making through swift response to changing market needs. Despite the strong appeal of IT capabilities concept, there has been a limited understanding there has been a limited understanding of the dimensional role of IT capabilities towards firm performance. Many studies have linked the dynamic capability of organizations to their innovation capability such as Lawson and Samson (2001), Ellonen, Wikström and Jantunen (2009) and Liao, Kickul and Ma (2009).

Lawson and Samson (2001) proposed that the organizations to be more innovative need to invest in seven aspects of capability: vision and strategy, organizational intelligence, harnessing the competence base, creativity, organizational structure, culture, and technology management. Dynamic capabilities can be studied and categorized according to the business situations and a variety of dimensions where they could be applied. Research done on a Japanese automobile company found that dynamic capabilities were the primary and most effective source of competitive advantage. According to Nevo and Wade (2010), IT capabilities tend to support other dynamic capabilities through extending new modules and various ways of routine business processes. In this way IT capabilities support innovation activities and firm performance (Del Giudice & Straub, 2011). Hence, studies should be conducted to clearly understanding how Technology Infrastructure enhance commercial banks.

Conceptual Framework

The conceptual framework shows the anticipated relationship between Technology Infrastructure and firm performance (dependent variable).



Empirical Review

Information Technology Infrastructure

IT infrastructure is the organization's ability to deploy hardware platforms and related software systems (Lu & Ramamurthy, 2006). IT infrastructure capability is a firm's ability to deploy shareable platforms and captures the extent to which the firm is good at managing data management services and architectures, network communication services, and application portfolio and services for the firm's specific information system applications (Bharadwaj, 2000; Broadbent, Weill, & St Clair, 1999; Laudon & Laudon, 2013). Flexible IT infrastructure reinforces information generation and distribution together, which in turn improvesa firm's ability to compete in turbulent environments that lead to competitive advantage (Lyver & Lu, 2018).

IT infrastructure includes IT materials (e.g., hardware, software, and networks) built through systems, which provides a technical basis for product implementation based on IT and process

innovation (Basheer et al., 2016; Lu & Ramamurthy, 2011). The study of Huang et al. (2012) shed light on IT capability and its ability to acquire, publish, collect, and recycle IT resources to support and promote business strategies and work procedures. Firm's success is in managing numerous tasks through a well-coordinated system with the support of IT infrastructure flexibility (Byrd & Turner, 2001) which efficiently reduces cost of production and enhance firm's performance (Jacks et al., 2011).

Among IT capabilities' dimensions, IT infrastructure has a critical importance (Flyvbjerg & Budzier, 2011). According to Sambamurthy et al., (2003) infrastructure integration can create unlimited digital alternatives that improve and enrich organizational learning, which can support organization ability to share and utilize available knowledge. Throughout strong IT infrastructure, organizations can swiftly put into practice new IT plans. IT infrastructure facilitates the firm's diversified purposes through information technology sharing which facilitations firm's procedures and support innovation activities (Bharadwaj, 2000).

IT infrastructure flexibility strengthens firm's management to accelerate in innovation and manages the efficiency of all business functions (Pavlou & El Sawy, 2006; Ray et al., 2005). IT infrastructure flexibility handles firm's development, which creates market equilibrium accordingly by initiating introducing innovative activities (Todd & Javalgi, 2007). Firms have to develop strong IT infrastructure flexibility, which can lead a firm towards innovation. Researchers have recognized IT infrastructure as the new competitive weapon and the critical resource of the firm that will yield sustained competitive advantage (Bharadwaj, 2000). Viewed from the resource-based theory perspective, the IT infrastructure that enables firms to implement innovations represents a type of causally ambiguous resource (Bharadwaj, 2000; Reed and DeFillippi, 1990).

IT infrastructure is divided into two major components: technical IT infrastructure and human IT infrastructure. Managerial IT skills are often tacit and dependent on other interpersonal relationships, which may take years to develop (Chatfield and Bjorn-Andersen, 1997; Mata, Fuerst and Barney, 1995), and those relationships tend to be highly local or organization specific. Therefore, the development of these skills is often a socially complex process (Mata, Fuerst and Barney, 1995) such as the ability of IT managers to work with other functional managers, suppliers, and customers to develop appropriate IT applications. Bush (2001) finds support for the effect of IT infrastructure on supply chain integration. The prior research focused mostly on technical infrastructure and ignored human IT resources in relationship to integration and performance.
Cash et al. (2020) argued that an IT infrastructure evolves through learning and assimilation of a firm's information requirements. Exploration of the environment can facilitate the ability to build appropriate capabilities. Research has also shown that development of IT skills, embedded into specific business practices, requires knowledge assimilation over time (Lu & Ramamurthy, 2011). In a quantitative study that explored the direct influence of intangible IT resources on sustainable competitive advantages in the high-tech industry in Algeria, Makhloufi, Abu Al-Rejal and Mohtar (2018) discovered that IT infrastructure has a significant effect on sustainable competitive advantage. Similarly, Bhatt, Wang and Rodger (2017) examined the moderating effect of the learning intensity of organizations on the relationships between information systems and the competitive advantage of Chinese firms, by collecting data from 122 IT managers. The result indicates that flexible IT infrastructure has significant effects on competitive advantage.

RESEARCH METHODOLOGY

Research Philosophy

The study used descriptive design to establish the role of Information Technology capability on business performance of Commercial Banks in Kenya. Hypotheses was tested by statistical approaches. Mohajan (2018) argued that that since the focus of the positivist paradigm is to discover the truth through empirical investigation, the quality standards under this paradigm are validity and reliability.

Research Design

The study adopted this research design to describe Information Technology capabilities carried out by commercial banks and show how they influence performance of the banks. This design also helps to collect and analyze study units' data at a point in time in order to determine the strength of relationship among variables (Saunders et al., 2007; Mulwa 2013).

Target Population

The target population was commercial Banks in Kenya register by the Central Bank of Kenya. The population consisted of all 42 commercial banks in Kenya. Respondents' population comprised of five top managers from each bank translating to 210 top managers. The top managers were targeted because top managers of a firm mostly handle strategic management issues.

Sample Size and Sampling Technique

A sample is a subset of the population of interest (Mugenda & Mugenda, 2003). Respondents' population comprised of five top managers from each organization translating to 210 top managers. The top managers were targeted because strategic management issues are mostly handled by top managers of organizations. Sekaran and Bougie (2010), suggested that a sample size larger than 30 and less than 500 is deemed appropriate for most research. Slovin's formula (1960) was applied as illustrated:

$n = N/ (1+Ne2)$,

Where;

n = Sample Size

N = Total Population

e = Error of Tolerance with a confidence level of 95 % (giving a margin error of 0.05)

$n = 210 / (1+ 210*0.05*0.05) = 138$

Hence, the sample size was 138.

Data Collection Instruments

This study used a self-administered, closed and open-ended questionnaire to obtain primary data. Secondary data on the performance of the commercial banks was also collected guided by a range. This range was calculated by the researcher based on the information provided by the respondents. The choice of a questionnaire to collect data for this study is informed by its practicability, ability to collect information from a lot of people within a short period and it can also be analyzed more scientifically and objectively than other forms of research (Kothari, 2004).

Pilot Study

Pilot test was conducted in order to detect weaknesses in instrumentation and also it provides proxy data for the selection of probability sample. The procedure which was applied in pre-testing the questionnaire was similar to those that were applied during the actual study and during the collection of data. According to Cooper and Schindler (2011) the number that is used in the pre-test should be small, about 1% to 10% of the entire sample size. In this case, 10% of the sample size, which is 21 respondents, participated in the pilot study in accordance with the ratio by Cooper and Schindler (2011). The participants were not included in the main survey.

Data Analysis and Presentation

Quantitative data was collected and analyzed in this study by calculating the response rate with descriptive statistics such as mean, standard deviation, median and proportions using the Statistical Package for Social Sciences (SPSS) version 24). Regression analysis and correlation analysis was used to carry out inferential data analysis to determine the direction and strength of the relationship between the independent and the dependent variables. In order to test the influence of information technology capability on business performance of Commercial Banks in Kenya, the study employed a hierarchical regression analysis with moderation. In hierarchical multiple regression analysis, the researcher is able to determine the order that the variables are entered into the regression equation (Yeomans, 2017).

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

Descriptive Statistics Analysis

Technology Infrastructure

The fourth specific objective of the study was to examine the role of Technology Infrastructure on business performance of Commercial Banks in Kenya. The respondents were requested to indicate their level of agreement on various statements relating to Technology Infrastructure and business performance of Commercial Banks in Kenya. A 5 point Likert scale was used where 1 symbolized strongly disagree, 2 symbolized disagree, 3 symbolized neutral, 4 symbolized agree and 5 symbolized strongly agree. The results were as presented in Table 4.1.

Table 4. 1: Technology Infrastructure

	Mean	Std. Deviation
Information Technology facilities support the connection of various digital platforms (such as, on-line transactions)	4.168	0.905
System software or functional components supporting the integration and extension of digital platforms	3.989	0.885
Our bank easily retrieve relevant information from our partner databases	3.970	0.605
The components of our bank's IT infrastructure are evolving with our business partners	3.955	0.981
Our IT standards are defined and enforced across functional units, and with joint coordination among our strategic business partners/alliances	3.911	0.873
IT systems is an enablers and drivers for the bank's business strategy	3.897	0.786
Our bank is informed of key IT emerging technologies related applicable in banking sector	3.889	0.896
Our bank's ICT capability is characterized by investment towards improvement of the ICT hardware	3.875	0.897
Data management services are reasonably good	3.852	0.934
The communication network is largely fulfilled in terms of connectivity, reliability, and availability	3.786	0.763
The quality of IT service applications such as ERP is able to meet needs	3.765	0.852
IT management services is able to coordinate the physical infrastructure effectively and efficiently	3.721	0.743
IT management services can manage relationships with business units effectively and efficiently	3.652	0.733
Aggregate	**3.790**	**0.867**

From the results, the respondents agreed that information technology facilities support the connection of various digital platforms (such as, on-line transactions). This is supported by a mean of 4.168 (std. dv = 0.905). In addition, as shown by a mean of 3.959 (std. dv = 0.885), the

respondents agreed that system software or functional components supporting the integration and extension of digital platforms. Further, the respondents agreed that their bank easily retrieve relevant information from their partner databases. This is shown by a mean of 3.970 (std. dv = 0.605). The respondents also agreed that the components of their bank's IT infrastructure are evolving with their business partners. This is shown by a mean of 3.955 (std. dv = 0.981).

The respondents agreed that IT standards are defined and enforced across functional units, and with joint coordination among their strategic business partners/alliances. This is supported by a mean of 3.911 (std. dv = 0.873). In addition, as shown by a mean of 3.897 (std. dv = 0.786), the respondents agreed that IT systems is an enablers and drivers for the bank's business strategy. Further, the respondents agreed that their bank is informed of key IT emerging technologies related applicable in banking sector. This is shown by a mean of 3.889 (std. dv = 0.896). With a mean of 3.875 (std. dv = 0.897), the respondents also agreed that bank's ICT capability is characterized by investment towards improvement of the ICT hardware.

From the results, the respondents agreed that data management services are reasonably good. This is supported by a mean of 3.852 (std. dv = 0.934). In addition, as shown by a mean of 3.786 (std. dv = 0.763), the respondents agreed that the communication network is largely fulfilled in terms of connectivity, reliability, and availability. Further, the respondents agreed that the quality of IT service applications such as ERP is able to meet needs. This is shown by a mean of 3.765 (std. dv = 0.852). The respondents also agreed that IT management services is able to coordinate the physical infrastructure effectively and efficiently. This is shown by a mean of 3.721 (std. dv = 0.743). With a mean of 3.652 (std. dv = 0.733), the respondents agreed that IT management services can manage relationships with business units effectively and efficiently.

The findings agree with Sambamurthy et al., (2003) that infrastructure integration can create unlimited digital alternatives that improve and enrich organizational learning, which can support organization ability to share and utilize available knowledge. Throughout strong IT infrastructure, organizations can swiftly put into practice new IT plans. IT infrastructure facilitates the firm's diversified purposes through information technology sharing which facilitations firm's procedures and support innovation activities (Bharadwaj, 2000). The ability of a company to leverage IT resources critically depends on the interaction of the IT function with the business units (Panda & Rath, 2018). The relationship infrastructure consists of sharing risk and responsibility of IT application between IT and business unit management (Zahra et al., 2019).

Flexible IT infrastructure reinforces information generation and distribution together, which in turn improvesa firm's ability to compete in turbulent environments that lead to competitive advantage (Lyver & Lu, 2018). The study of Huang et al. (2012) shed light on IT capability and its ability to acquire, publish, collect, and recycle IT resources to support and promote business strategies and work procedures. Firm's success is in managing numerous tasks through a well-coordinated system with the support of IT infrastructure flexibility (Byrd & Turner, 2001) which efficiently reduces cost of production and enhance firm's performance (Jacks et al., 2011).

Business performance of Commercial Banks in Kenya

The respondents were requested to indicate their level of agreement on various statements relating to business performance of Commercial Banks in Kenya. A 5 point Likert scale was used where 1 symbolized strongly disagree, 2 symbolized disagree, 3 symbolized neutral, 4 symbolized agree and 5 symbolized strongly agree. The results were as presented in Table 4.2.

Table 4. 2: Business performance of Commercial Banks in Kenya

	Mean	Std. Deviation
Service delivery in commercial banks has improved over time	4.084	0.997
Adoption of information technology capability has enhanced competitive advantage of commercial banks	3.917	0.831
Am satisfied with the level of competitive advantage in our organization	3.898	0.563
There are few customer complaints on the quality of services offered by our organization	3.851	0.851
The net profit has increased with technology implementation	3.832	0.923
Generally, quality of service delivery has improved hence contributing positively to bank annual profitability	3.795	0.865
Am satisfied with the level of performance of in our organization	3.767	0.785
Adoption of IT capability has improved the market share of commercial banks	3.721	0.821
Net profit of commercial banks has been increasing as a result of adopting information technology capabilities	3.698	0.828
Aggregate	**3.766**	**0.858**

From the results, the respondents agreed that service delivery in commercial banks has improved over time. This is supported by a mean of 4.084 (std. dv = 0.997). In addition, as shown by a mean of 3.917 (std. dv = 0.831), the respondents agreed that adoption of information technology capability has enhanced competitive advantage of commercial banks. Further, the respondents agreed that they are satisfied with the level of competitive advantage in our organization. This is shown by a mean of 3.898 (std. dv = 0.563). The respondents also agreed that there are few customer complaints on the quality of services offered by their organization. This is shown by a mean of 3.851 (std. dv = 0.851).

With a mean of 3.832 (std. dv = 0.923), the respondents agreed that the net profit has increased with technology implementation. In addition, as shown by a mean of 3.795 (std. dv = 0.865), the respondents agreed that generally, quality of service delivery has improved hence contributing positively to bank annual profitability. Further, the respondents agreed that they are satisfied with the level of performance of their organization. This is shown by a mean of 3.767 (std. dv = 0.785). The respondents also agreed that adoption of IT capability has improved the market share of commercial banks. This is shown by a mean of 3.721 (std. dv = 0.821). The respondents also agreed that net profit of commercial banks has been increasing as a result of adopting information technology capabilities. This is shown by a mean of 3.698 (std. dv = 0.828).

The findings agreed with Basheer et al, (2016) and Galliers et al. (2020) who noted that IT capabilities have been developed and widely adopted by many companies to collect, process, store, and retrieve information. IT has increased companies' ability to exploit opportunities and avoid threats. IT also identifies the business strategy's strengths and weaknesses (Chu et al., 2019). Therefore, installing IT into the businesses helps to understand what is happening in the external environment, and it defines how to process the incoming data for predicting the external environmental factors (Lu & Ramamurthy, 2011).

Hadj et al. (2020), showed that IT capabilities are fundamental to fulfill a competitive advantage and that IT capabilities may show better resolution to the mystery of the opposite effect of IT capabilities on competitive advantage. ITC provides the necessary hardware and software that allow for creating networks that enable firm innovation. Appropriate implementation of IT infrastructure has allowed firms to implement the right applications at the right time and meanwhile broadened avenues for technological innovation (Sambamurthy, Bharadwaj, & Grover, 2003).

Correlation Analysis

Table 4. 3: Correlation Coefficients

		Organization Performance	Technology Infrastructure
Organization Performance	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	131	
Technology Infrastructure	Pearson Correlation	.859**	1
	Sig. (2-tailed)	.000	
	N	131	131

The results also revealed that there was a very strong relationship between Technology Infrastructure and business performance of Commercial Banks in Kenya (r = 0.859, p value =0.000). The relationship was significant since the p value 0.000 was less than 0.05 (significant level). The findings are in line with the results of Minjeong and Sungyong (2021) who revealed that there is a very strong relationship between technology infrastructure and organization performance

Table 4. 4: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.341	0.089		3.831	0.000
	Technology Infrastructure	0.398	0.102	0.399	3.716	0.002

a Dependent Variable: Organization Performance

The regression model was as follows:

$Y = 0.341 + 0.398X_1 + \varepsilon$

In addition, the results revealed that Technology Infrastructure has significant effect on business performance of Commercial Banks in Kenya $\beta 1=0.398$, p value= 0.002). The relationship was considered significant since the p value 0.002 was less than the significant level of 0.05. The findings are in line with the results of Minjeong and Sungyong (2021) who revealed that there is a very strong relationship between technology infrastructure and organization performance

Conclusions

The study also concludes that technology infrastructure has a positive and significant effect on business performance of Commercial Banks in Kenya. The study revealed that hardware/Software, network and database influence business performance of Commercial Banks in Kenya. This implies that improvement in information technology infrastructure (hardware/Software, network and database) would lead to improvement in business performance of Commercial Banks in Kenya.

Recommendations

The study found that technology infrastructure has a positive and significant effect on business performance of Commercial Banks in Kenya. This study therefore recommends that the

management of commercial banks in Kenya should ensure they had adequate and up to date hardware/Software to enable their employees improve their productivity.

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