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Information Technology Capabilities: Determinant of Enhanced Organizational Performance

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Abstract: The study sought to establish the effect of information technology capabilities on organizational performance at M. KOPA, Kenya and the corresponding hypothesis was formulated and tested. The study targeted 129 employees of M. KOPA and 118 of them responded. The study adopted a descriptive research design and positivist research philosophy. SPSS version 26 was used to analyze data using correlation and regression analysis. Research findings from the test of hypothesis established that technology capabilities positively and significantly affected the performance of M. KOPA. The study findings support Dynamic Capabilities Theory and Innovation Diffusion Theory which underpin technology capabilities-organizational performance link.

Keywords: Technological capabilities, organizational performance, positivist philosophy, Dynamic Capabilities Theory, Innovation Diffusion Theory

I. INTRODUCTION

Technology capabilities consist of IT hardware, IT software, data management systems, IT services, some government policies and organizational culture as well as competitive strategies which organizations employ to gain sustainable competition and obtain greater performance in highly dynamic competitive business environment (Garcia-Sanchez et al., 2018). Organizational performance is a set of both financial and non-financial indicators which offer information on the degree of achievement of organizational goals (Lebans & Euske, 2006) and relies upon the profitable incorporation of fabulous science adopted by way of the organization (Lakhwani et al., 2020). Indeed, IT assets are used strategically in almost every business and sector to increase organizational performance (Gakuubi, 2018). Despite the increased interest in Information technology, the relationship between information technological assets or capabilities has not been comprehensively established. Moreover, there seems to be a scarcity of studies conducted locally specifically on M. KOPA.

Information Technology capabilities

According to the Technical Committee ISO/IEC (2017), there are several types of Information Technology capabilities(resources). In this regard, Liao (2016) states that these capabilities have great impacts on people because they speed up the works and operations of an organization by making them better and also ensuring the adoption of changes that are key for such organizations. Bharadwaj (2017) categorized the IT resources broadly into: the tangible and intangible resources. These resources are further classified into physical infrastructural components (IT hardware) and human based resources that comprise technical and managerial IT skills (IT services) which form the tangible resources. In addition, the technological knowledge and synergy which involves the software and data systems management are classified as intangible resources. These are termed to be technological assets in an organization. IT hardware, IT software, data management systems, IT services and organizational culture have been described as resources, capabilities and competitive strategies that can be utilized by organizations to gain a competitive result and achieve greater organizational performance in terms of dynamics and business environment (García-Sánchez et al., 2018).

Organizational performance

According to Ion and Criveanu (2016), the concept of performance has increased the attention in recent decades and has predominantly been in almost all

domains of human activity. These authors further opined that performance consists of achieving objectives set in relation to organization's orientations. McAfee and Brynjofsson (2018) asserted that organizations that have set aside a portion on budget and resources with respect to their objectives by exploiting the resources use on investing into IT perform better than those with less IT investment do. As Mwania and Muganda (2015) argued that for organizations to achieve higher performance, there is considerable need to invest in the latest technology and sound systems. In this regard, Jalagat (2017) supported the idea that integrating the advancements in technology through IT will undeniably enable organizations to improve profitability, operational efficiency, quality of services, development of new products and innovation of products and services; hence results in higher performance. Organizational performance is significantly affected by the efficiency of procedures (operations) and innovations (Simanová & Gejdoš, 2019). They further asserted that if organizations do not constantly refine and develop their operations, they are at risk of failure and extinction, also concluded that implementation of the IT in business processes accomplish the quality of goods and services needed, hence increases performance. As Gupta, Raychaudhuri, and Haldar (2018) argued that the soft skills among engineers within an organization resulted in an increase in customer satisfaction, operational efficiency, quality of services, innovation, increasing employee motivation, among others. That is the reason why this study will adopt non-financial elements like operational efficiency, quality of services and innovation to measure the organizational performance

M-KOPA Kenya

M-KOPA is a financial institution that has provided a solar energy gateway to a multitude of people who earn and live on less than a dollar each day. M-KOPA operate on a 'Pay-As-You-Go' financing model that enables customers to access much needed energy but at a flexible payment plan. The company's culture is people-centric and has a solar system that acts as the main source of power for consumers' homes, connecting fridges, radios, charging, TVs and lights.

M-KOPA has dominated the African market through leveraging on information technology infrastructure by ensuring accessibility of mobile phone devises and electronic money penetration by ensuring the handheld devices can be charged using continuous supply of renewable solar energy while at the same time paying for the energy using online banking or e-money from the mobile devices. This has ensured constant supply of income generating opportunities for M-KOPA customers while increasing revenues for the organization. Through this business model, M-KOPA have been able to receive payments from customers who would otherwise have not been able to have access to solar energy equipment due to lower income.

M-KOPA's mobile payment platform partnerships, in dozens of countries, are enabling the spread of pay-as-you-go financing in emerging markets around the world enhancing the performance of the organization. Consumers with a mobile money account from M-KOPA's payment platform partners can easily make payments on their pay-as-you-go loans, with the simplicity of sending a text message. Together, pay-as-you-go and mobile money are unlocking access to life-changing products and financial services, helping drive financial inclusion in Sub-Saharan Africa and around the world. This shows how technology adoption has enabled M-KOPA to increase the quality of services, the efficiency and improved the organizational process.

M-KOPA's information technology infrastructure has been designed to allow for inexpensive payment plans for solar energy equipment through partnerships between manufacturers and distributors. Its mission: "To create the technology that allows businesses to offer live changing products to anyone, anywhere". The products sold are solar lamps, solar powered phone charging system, its products include the solar home systems, clean cookstoves, water pumps and others. This indicates the absorption of technology in M-KOPA's operations.

Information technology capabilities and organizational performance

Girma (2016) carried out a study on how adoption of components of information technology affects performance of financial institutions in Ethiopia and established that maximum utilization of information

technology components coupled with well skilled and knowledgeable employees, and customers who were able to use point of sale equipment and money vending machines had a positive direct influence on the organization performance in this sector. Research by Kimani (2018) on impact of information technology on organization performance showed significant positive impacts on productivity. García et al., (2018) studied the influence of Technological Assets on structural performance and found that structural innovation was more and more necessary for organizations to gain competitiveness.

II. Methodology

The study adopted a positivist research philosophy and descriptive research design. Primary data was collected from 118 employees of M-KOPA. A pre-test was done, and based on the pre-test results, the instrument was amended accordingly. Data was analyzed using SPSS version 23.

III. Results and Analysis

The study used descriptive and inferential statistics to analyze data. Pearson Product Moment correlation and regression analysis were used to establish the correlation between information technology assets and organizational performance at M-KOPA, Kenya.

Response Rate

The study targeted 129 employees from M. KOPA, Kenya. Table 1 presents details on the response rate.

Table 1: Response Rate

Questionnaires		
Issued	Returned	Response Rate
129	118	91.47%

Reliability Analysis

The reliability of the questionnaire was tested using Cronbach Alpha. The reliability statistics are presented in Table 2.

Table 2: Reliability Statistics

Scale	Cronbach's Alpha	Number of Items
Overall reliability	0.851	21
Information Technology Hardware	0.858	6
Information Technology Software	0.836	6
Information Technology Asset Managament	0.86	6
Organization Performance	0.911	3

The study had an overall Cronbach reliability of 0.851 and all the values are above the 0.7 threshold required to establish reliability of a study (Saunders et al., 2020).

Distribution of respondents by Age group

The study sought to determine the age of the respondents and the findings are presented in Table 3.

Table 3: Age of respondents

Age in Years	Frequency	Percent
20 and below	8	6.78
21 - 30	48	40.68
31- 40	159	12.71
41 - 50	79	19.49
51 years and above	24	20.34
Total	118	100

From the findings of Table 3, 12.71% of the respondents indicated that they were aged between 31 to 40 years, 19.49% of the respondent indicated they were aged between 41 to 50 years, 40.68% of the respondents indicated that they were aged between 21 to 30 years, whereas 20.34% of the respondents indicated that they were 51 years of age or above while 6.78% of the respondents indicated that they were aged 20 years or below. This is an indication that respondents were well distributed in terms of their age.

Highest Level of Academic Qualification

The research sought to determine the highest academic qualifications of the respondents and the findings are presented in Fig 1.

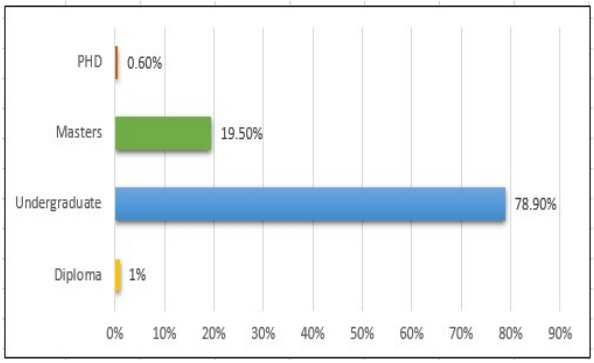

Fig 1: Highest level of academic qualification

From the findings of figure 1, the study established that 78.90% of the respondents were undergraduates, 19.50% of the respondents had masters, and 1% of the respondents had diplomas while remaining 0.60% respondents indicated to hold PhD qualifications. This is an indication that most of the respondents engaged in this study had attained minimum academic qualification of a diploma certificate hence could understand and respond to the questions.

Table 4: Correlation between information technology capabilities and organizational performance.

		Organizational performance	IT Hardware	IT software	IT asset management
Organization Performance	Pearson Correlation	1			
	Sig.(2-tailed)				
	N	118			
IT Hardware	Pearson Correlation	.666**	1		
	Sig.(2-tailed)	0			
	N	118	38		
IT Software	Pearson Correlation	.628**	.663**	1	
	Sig. (2-tailed)	0	0		
	N	118	38	38	
IT Asset Management	Pearson Correlation	.523**	.547**	.577**	1
	Sig.(2-tailed)	0	0	0	
	N	118	118	118	118

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

Test of hypothesis

The study sought to establish the correlation between information technology capabilities and organizational performance. A corresponding hypothesis was formulated and tested using Correlation and simple linear regression analysis. The results of the analysis are depicted in Table 4 and Table 5.

Table 5: Simple linear regression analysis. Model Summary (a), Change Statics (b), ANOVA (c), Regression Coefficients (d).

a. Model Summary

Model	R	R Squared	Adjusted R Square	Std. Error of the Estimate
1	.720[a]	.518	.513	.554
2	.724[b]	.524	.517	.552

b. Change Statistics

Model	R Squared Change	F Change	df1	df2	Sig. F Change
1	.518	112.416	3	314	.000
2	.006	3.733	1	313	.054

c. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	103.628	3	34.543	112.416	.000
	Residual	96.485	314	.307		
	Total	200.113	317			
2	Regression	104.766	4	26.191	85.979	.000
	Residual	95.348	313	.305		
	Total	200.113	317			

d. Regression Coefficients						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	.840	.205		4.105	.000
	Information Technology Hardware	.392	.053	.404	7.435	.000
	Information Technology Software	.275	.055	.278	4.995	.000
	Information Technology Asset Management	.142	.050	.141	2.832	.005
2	(Constant)	.475	.278		1.708	.089
	Information Technology Hardware	.374	.053	.386	7.026	.000
	Information Technology Software	.269	.055	.273	4.917	.000
	Information Technology Asset Management	.163	.051	.162	3.190	.002

IV. DISCUSSION

The findings from Table 4 show that the relationship between information technology hardware and organization performance as r (0.666); p = 0.000. Followed by the relationship between information technology software and organization performance as r (0.628); p = 0.000; and finally, the relationship between information technology asset management and organization performance as r (0.523); p = 0.000. it can be concluded that there exists a positive significant relationship between the independent and dependent variables since the P-Values are less than the chosen significant level of 5 percent. From the results in Table 5, the Adjusted R-Squared value was 0.513 indicating that 51.3% of the variation in organizational performance is explained by variation in information technological capabilities and 48.7% is explained by other factors that are not part of the study. The ANOVA results indicate that the model is statistically significant (F=1.124, P 0.000). The P-value for the F test statistic is less than 0.005 hence providing strong evidence of goodness of fit of the model. The beta values imply that for one unit increase in information technology hardware, information technology software and information technology asset management led to increase in organizational performance at M. KOPA (β 0.404, 0.278, 0.141, t=7.026,4.917,3.190; P<0.05). The study findings agree with the findings by Abosede, A. S., et al. (2019) who established that investments in information technology assets reduced the average costs of services and thus, increased organization profitability.

V. CONCLUSION

The study sought to determine the effect of information technology capabilities on the performance of M. KOPA, Kenya. The study was conducted through a descriptive design. The study adopted both descriptive and inferential statistics to analyze the data.

The study tested and confirmed the hypothesis that information technology capabilities have a positive and significant effect on organizational performance. This implies that firms which are endowed with information technology capabilities are more likely to perform better than those which are not.

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