



Corporate Technological Capability as a Driver to Firm Performance: A Study on Firms Listed at the Nairobi Securities Exchange

[Ndungu Samuel Machiri¹](#), [Margaret Oloko²](#), [John Karanja Ngugi³](#), [Romanus Odhiambo⁴](#)

¹PhD Candidate, JKUAT Kenya;

² Lecturer, JKUAT, Kenya

³ Lecturer, Kenyatta University, Kenya

⁴Vice Chancellor, MUST, Kenya

Email: extrendconsultants@gmail.com

Abstract: *The aim of this paper was to assess the role played by corporate technological capabilities on firm performance. The ability of a firm to integrate information technology in its operations has been known to be integral in driving organizational success by promoting efficiency and effectiveness. The prevailing underperformance of the listed firms in Kenya raises the question on whether these firms have integrated adequate technology and whether they have what it takes to effectively incorporate technology in their operations, hence the subject of this study. Through a descriptive research design, the study surveyed 240 senior management personnel drawn from the 64 listed firms using a structured questionnaire. The data was analysed using SPSS and Amos software for descriptive statistics and structural equation modelling respectively. The findings revealed that technological capabilities had a significant influence on the performance of firms listed at the NSE ($R^2 = .096$; $\beta = 0.150$; $P=0.0001<0.05$).*

It was concluded that through adequate ICT infrastructure, ICT human skills and the commitment to integrate and accept use of ICT, the listed firms would strengthen their operational efficiency thus record superior performance.

Keywords: *Information Technology Capabilities, Firm-level factors, Organizational Performance, Nairobi Securities Exchange*

I. Introduction

In the modern business landscape, the pivotal factor determining the success of any organizational strategy is technology. Consequently, the initial and fundamental step for any organization seeking to amplify its performance is the augmentation of its technological capabilities. According to Eliyana et al. (2021), information technology is defined as the evolution of production and communication systems into more efficient and user-friendly frameworks that facilitate human contributions to performance and operations. This advancement has led to enhanced efficiency in the global production of goods and services.

In order to achieve performance and operational sustainability, contemporary businesses must embrace technology. The adoption of information technology (IT) is a process through which organizations incorporate and leverage technological solutions to optimize their operations, increase efficiency, and fulfill strategic objectives (Fakunmoju et al., 2020). IT adoption involves the integration of various technologies, software applications, hardware systems, and networks into an organization's infrastructure. This integration empowers organizations to streamline processes, enable seamless communication and collaboration among employees and teams, and enhance decision-making through access to real-time data, analytics, and reporting capabilities (Zhang & Li, 2022).

Strategically, the adoption of information technology is a driving force in management, ensuring improved efficiency and productivity by automating repetitive tasks, optimizing workflows, and providing user-friendly tools for employees (Kaur, Rao, & Singh, 2023). It also facilitates scalable and flexible operations, aligning the organization's activities with its strategic direction

For effective strategic management, extensive utilization of information technology is imperative. The rise of technology has diversified and performance-focused management practices (Zouhair, Belaisaoui & Mrini, 2023). Particularly in the manufacturing sector, organizations embrace information technology to enhance their operations and service delivery. However, it's essential to implement systems that monitor information and operations flow, thereby minimizing management gaps.

Assessing an organization's IT integration involves evaluating the skills possessed by employees. These IT skills encompass the proficiencies and experiences necessary for effective technology use (Kaur & Mand, 2022). Organizations aiming to maximize IT benefits must ensure their employees are equipped to leverage technology in their daily tasks. These competencies encompass various abilities, including computer usage, file management, web navigation, online research, digital communication, data management, and analytics (Triandini et al., 2023). Acquiring these skills simplifies the organization's ability to utilize IT in aligning with its strategic success.

Another crucial facet in evaluating IT integration is the organization's IT infrastructure. As stated by Al-Zagheer et al. (2022), IT infrastructure implies that an organization can adopt new technology by providing the necessary groundwork, including hardware like computers and internet access. This indicates whether the organization possesses the essential framework to seamlessly integrate technology into its daily operations.

Alolote (2022), on the other hand, highlights IT acceptance as a means to assess an organization's utilization of technology. This involves aligning appropriate measures and systems to facilitate the incorporation of IT into operations. According to Sarya, Arief, Saroso, and Bandur (2023), an organization might possess IT skills and infrastructure, but without effectively adopting IT, its impact on performance enhancement could be limited.

Information Technology (IT) capability refers to an organization's capacity to effectively harness and utilize technological resources, tools, and strategies to achieve its business objectives and enhance its overall performance (Masoud & Basahel, 2023). IT capability encompasses a range of skills, knowledge, processes, and technologies that enable an organization to leverage information technology to its advantage. According to Hao and Song (2016), one of the key IT capabilities is the availability of technology infrastructure. This includes the hardware, software, networking, and other foundational components that support an organization's IT operations. A well-developed technology infrastructure forms the basis for various IT initiatives. Moreover, Chae et al. (2018) indicated that skills set on the use of IT is another integral ICT capabilities that significantly contributes to firm performance. According to Lioukas et al. (2016), IT capability involves having a workforce equipped with the necessary skills to operate, manage, and innovate with technology. This includes skills related to programming, data analysis, cybersecurity, system administration, and more.

IT capability plays a crucial role in driving digital transformation within an organization. This involves reimagining business processes, customer interactions, and operational models through the integration of digital technologies. Moreover, IT capability requires systems and technologies to work seamlessly together. Integrating various IT solutions and ensuring interoperability is essential for optimizing business processes. IT capability also enhances communication and collaboration among teams and individuals through digital tools, enabling efficient teamwork and knowledge sharing. According to Basheer et al. (2019), IT capability is a dynamic and strategic asset that empowers

organizations to leverage technology for enhanced efficiency, innovation, and competitiveness. Developing and nurturing a strong IT capability is crucial for organizations looking to thrive in today's technology-driven business landscape.

According to Shahzad et al. (2020), through IT capability, operational efficiency is achieved. A well-developed IT capability streamlines various business processes, automates repetitive tasks, and enhances operational efficiency. This can lead to reduced operational costs, improved resource allocation, and increased productivity, all of which contribute to better firm performance. IT capabilities also provide access to real-time data and analytics, enabling better-informed decision-making. Timely and accurate information helps executives make strategic choices that can positively impact the firm's performance and market positioning (Arora & Rahman, 2017). According to Chu et al. (2019), having the right capabilities on the use and integration of ICT in the organization plays a crucial role in promoting innovation and adaptability. The authors argued that IT capabilities foster innovation by enabling the development and implementation of new technologies and solutions. Firms with strong IT capabilities can adapt to changing market conditions more quickly and introduce innovative products or services, which can drive growth and competitiveness.

In Kenya, Chepkole and Deya (2019) noted that the role of Information Technology capability in firm performance is extensive. It spans across various aspects of business operations, from enhancing efficiency and innovation to enabling better decision-making and customer engagement (Ngele & Omido, 2020). Developing and nurturing a robust IT capability can significantly impact a firm's ability to succeed, grow, and maintain a competitive edge in today's technology-driven business landscape. Technological capability holds a pivotal role in achieving efficiency and innovation within a firm's production processes. It is closely associated with the expertise and skills essential for a business to create, utilize, modify, assimilate, and transfer technologies (King'oo et al., 2020). The technological capacity of a firm can be perceived as a component of the extensive reservoir of knowledge, techniques, systems, and tools available for generating, distributing, and employing goods and services in the market. A firm's evolution in technology signifies an ongoing process of generating and absorbing technologies that enable the competitive production and provision of valuable products to the market. According to Bakan and Sekkeli (2017), the positive effects of technological capability on firm performance highlight its potential to influence intermediary factors like a firm's learning.

Research has demonstrated that technological capability enhances a firm's learning capacity, organizational efficiency, manufacturing proficiency, and resource allocation competence (Panda & Rath, 2021). Consequently, firms oriented towards technology possess the determination and capacity to acquire crucial technological knowledge and incorporate them into their business operations. Thus, the developmental journey of a firm's technological capability follows a path-dependent process that commences with experiential learning and advances to adaptation-driven learning, enhancing productivity through adept utilization and assimilation of technological knowledge (Panda & Rath, 2021). Hence, it is imperative to emphasize that technological capability heightens a firm's effectiveness in generating innovative ideas and knowledge, empowering listed firms to attain distinct performance outcomes in response to the dynamic marketing landscape.

The performance of listed firms shows the synopsis of the status of a country's economy in that they are the closest link between operational efficiency and the overall success of local and international businesses in a given economy (Ndotono, 2023). In Kenya, listed firms have been showing mixed results in regard to their performance. Three listed firms; Uchumi, Mumias Sugar and Kenya Airways, for example are undergoing operational difficulties despite the continued bail-out by the government. Herbling (2015) noted that at

least 4 NSE-listed firms (Uchumi, Kenya Airways, Mumias Sugar and Express Kenya) were reported to either be insolvent, nearly insolvent or operating on negative working capital. CMC Holdings was taken over by an international investor and de-listed after undergoing financial mismanagement and governance impropriety. In contrast, there are firms that continue to perform exceedingly well within the same environment; KCB, Safaricom Ltd, Equity Group, Nation Media Group, Kenya Power & Lighting Co. Notably, these firms have been keen on integrating ICT in their operations, as opposed to those that are facing performance challenges (Kemboi et al., 2023). This begs the question on whether IVCT capability could be the link between the firms' difference in performance.

II. Review of Literature

2.1 Theoretical Review

The study was anchored on dynamic capabilities theory (Teece, 2007). The theory upholds the need for dynamic capabilities in a dynamic world so as to enable firms triumph and record superior results. The basic assumption of the dynamic capabilities framework is that core competencies should be used to modify short-term competitive positions that can be used to build longer-term competitive advantage (Teece, 2014). Dynamic capabilities theory attempts to deal with two key questions which include how can senior managers of successful companies change their existing mental models and paradigms to adapt to radical discontinuous change; and how can companies maintain threshold capability standards and hence ensure competitive survival? (Cai, et al., 2016). When senior managers are confronted with the task of building dynamic capabilities, they need to consider drastic fluctuations in the threshold capability and standards, making it more and more complex for companies to understand the minimum requirements needed to remain in the game as an industry player. Monitoring external and increasingly unpredictable parameters allow managers to tackle internal processes of adapting their resource base (Kim et al., 2020). One of the dynamic capabilities that the theory upholds is the integration of ICT as a key enabler to continued performance. The theory holds that ICT is a unique prospect that can propel companies to the next level, hence the essence of integrating modern technology in firm processes. This theory further supports the embrace of key capabilities such as ICT skills that steer the integration of ICT into the organization. Through such skills, organizations stand a chance to be competitive and steer their performance to the next level.

2.2 Information Technology Capabilities

Jinnan, Lihua and Lin (2014) conducted a study on the Impact of Information Technology Capability on Financial Performance of Chinese Listed Companies during the Period of Economic Downturn. The study provided evidence that firms with superior IT capability perform better than the firms within the same industry in times of economic downturns (2008) as well as in recovering periods (2009) and former phases of stability or growth (2007). However, the study was conducted in China during an economic downturn while the current study focused on the effect of information technology as a firm level capability that influences performance of firms listed at Nairobi Securities Exchange. The IT capability literature recognizes that competence in mobilizing and deploying IT-based resources is a source of competitive advantage and differentiates firm performance (Batatineh et al., 2015). The IT capability of a company encompasses its technological infrastructure, the human resources with technical and managerial IT skills, and intangible IT-enabled assets like knowledge resources, customer focus, and synergistic elements (Bakan & Sekkeli, 2017). Businesses can enhance their operational performance by effectively utilizing their IT capability to boost earnings, minimize expenses, or achieve both objectives (Adamides &

Karacapilidis, 2020). Initially, the IT capability can enhance product distinctiveness, leading to greater profits and revenue through web technologies (Kamar et al., 2023). As an illustration, certain banks have developed informational and financial services within a website, enabling them to set their products and services apart (Jayabalan et al., 2021). This enables them to generate new income streams through advertising, referrals, and commissions from web partners. Furthermore, companies with strong IT capability can expand revenue streams by securing valuable assets such as patents (Eliyana, Handriana, & Fatimah, 2021). According to Fakunmoju, Arokodare, and Makinde (2020), superior IT capability potentially serves as a significant means to decrease marketing costs by fostering switching costs and customer loyalty. Even if IT becomes more accessible and standardized, businesses with advanced IT capacity can impose switching hurdles on customers, thereby fostering their loyalty. For instance, banks can heighten switching barriers and customer loyalty through an internet banking system enriched with features. A customer accustomed to an array of integrated products and services offered by such a system may be reluctant to shift to other banks. Additionally, robust IT capability can allow companies to exclusively access customer information and preferences, reducing the expenses associated with identifying potential business opportunities (King'oo, Kimencu, & Kinyua, 2020). This exclusive information can be a valuable resource for companies venturing into new business domains without incurring substantial costs (Zhang & Li, 2022). These instances highlight how IT capability profoundly influences a company's business performance, either by augmenting revenues or curbing costs in the era of the Internet

2.3 Performance of Listed Firms

Wellalage and Locke (2012) investigated the effect of governance practices on financial performance and agency costs of multinational subsidiaries and local public companies in Sri Lanka. The findings indicated that there was a positive relationship between governance and firm financial performance and a negative relationship between corporate governance and firm agency costs. However, the process by which the firm financial performance and agency costs affect multinational companies, MNC subsidiaries and local public companies, LPCs is different.

Using a sample of 37 companies, Heenetigala (2011) carried out a comparative analysis on governance/regulatory practices and firm performance of listed companies in Sri Lanka to gauge the changes to corporate governance/regulatory practices from 2003 to 2007. The results showed a significant increase in governance/regulatory practices between 2003 and 2007 for board composition and board committees reporting. The study provides evidence in support of a positive relationship for separate leadership, board composition, board committees and firm performance based on return on equity. The study concluded that even in adverse economic and political conditions, good corporate governance/regulatory practices were important to the performance of firms operating in Sri Lanka.

By use of ordinary least squares multiple regression analysis, Hansen (2013) did a study on how dynamic capabilities and slack resources shape performance in a new competitive landscape. The hypotheses were tested on two samples of US listed corporations during the two distinct time periods, 1991-2000 (1,097 firms) and 2001-2010 (1,234 firms) which enabled an investigation into the effect of macroeconomic conditions on the hypothesized relationships. Hansen (2013) found that the effect is stronger during the more turbulent macroeconomic conditions of the 2000s compared to the 1990s. However, only moderate support was found for the second assertion, that the effective dynamic capabilities have a more attractive risk/return effect in firms with higher levels of slack resources

2.4 Conceptual Framework

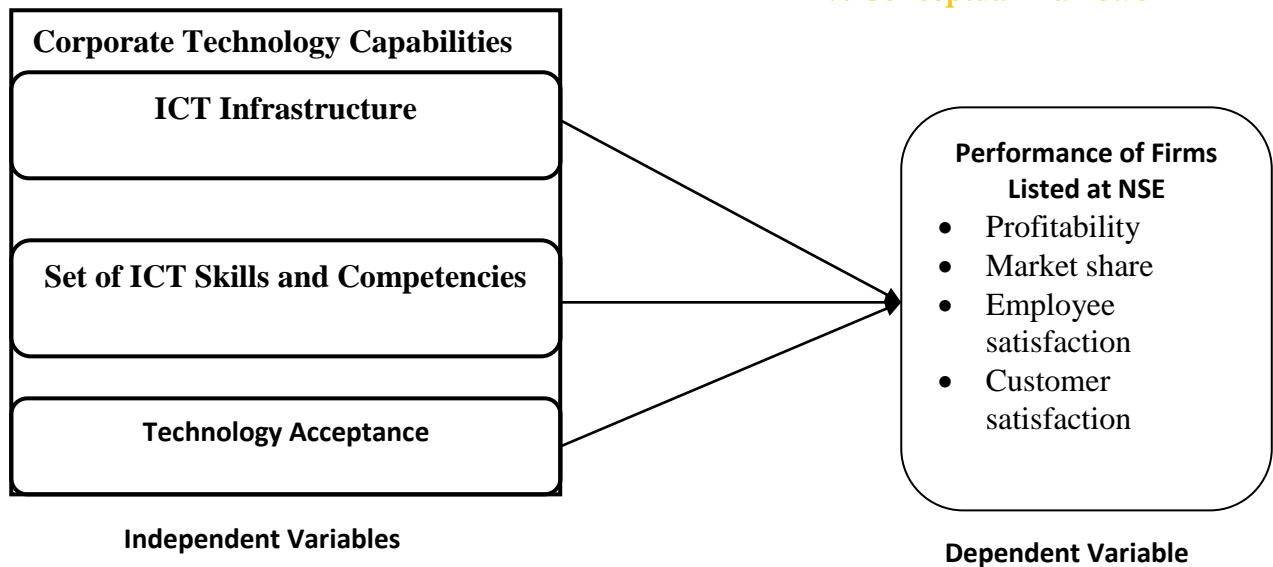


Figure 1. Conceptual Framework

III. Research Methods

The study used a combination of descriptive and exploratory survey research designs. Polit and Beck (2003) describe a descriptive survey research design is a systematic research method for collecting data using questions, observations, and interviews. Explanatory research design on the other hand, is a flexible design that allows the researcher to consider many different aspect of a problem and try to explain relationships that might exist between phenomena. The

current study employed a combination of descriptive and exploratory research designs to relate relationships between the identified independent variables with the dependent variable. The target population for this study was firms listed at the NSE and were actively trading as at December 31st, 2020. They are regulated by the Capital Markets Authority and are required to provide financial statements that are audited by reputable audit firms (Musimba, 2013). This

provides for objective and reliable economic and financial performance data of these organizations. There were 64 publicly listed companies. The NSE Handbook 2013 categorizes the listed firms into ten (10) industry sector groups. These were Agriculture, Automobile and Accessories, Banking, Commercial and Services, Construction and allied, Energy and Petroleum, Insurance, Investments, Manufacturing and Allied, Telecommunication and Technology.

All the listed firms were sampled surveyed. A principal informant research approach was used in data collection. This is where key decision makers in these companies were sampled, with a priority based on top management. A sample of 240 respondents was obtained. This is where four respondents were selected from each of the firms, drawn from senior personnel ranging from Chief Executives or Managing Director and where not possible senior executives like General Managers or Executives Directors in charge of strategy formulation, implementation and review in the respective firms. The unit of observation was therefore senior executives from each of the listed firms.

The primary data collection instrument was a questionnaire. The questionnaire was administered to senior executives at General Manager or Senior Executive Director level from each of the listed firms. Data collected was screened, coded and keyed in into the primary statistical tool used in the research. The study relied on Statistical Packages for Social sciences (SPSS). Data analysis involved coding, response analysis, diagnostic tests, descriptive analysis,

model development and testing and finally hypothesis testing. Conclusions were then derived from the analysis.

AMOS (a statistical analysis tool) was used as the primary tool to carry out the specification of the SEM model. AMOS (Analysis of Moment Structures) is a visual statistical software embedded within SPSS, and is specially used for Structural Equation Modeling (SEM), path analysis, and confirmatory factor analysis. Regression model was used in the study to test the hypotheses. Every independent variable was regressed with the dependent variable and the results presented using correlation (r), variance (ANOVA), regression (R^2) and regression coefficients.

IV. Results and Discussion

4.1 Response Rate

The study had a sample of 240 respondents who were surveyed using a structured questionnaire. A response rate of 75% (180 respondents) was achieved and the data used for analysis. This therefore makes the study appropriate to make conclusions and recommendations.

4.2 Information Technology Capabilities

In the modern World, information technology plays a very significant role in firm performance and competitiveness. Through better and well improvised technological systems, organizations integrate their operations through which they save on costs while maximizing their profit. The fourth objective of the study was to find out the influence of information technology capabilities on performance of firms listed at NSE. The findings from the study are as herein presented based on the specific measures of information technology.

a. Expenditure on Information Technology

The study sought to find out the expenditure that organizations spent on IT related investments for a period of 10 years prior to the time of the study. The findings as shown in figure 2 revealed that 27% of the respondents indicated that their respective organizations spent below 10% of their investments on IT, 8% spent between 10 and 20%, 43% spend 20 to 50% on IT while 22% spent above 50% of their capital investment on IT and IT related activities. McAfee and Brynjolfsson (2008) contended that in the modern day market, organizations cannot overlook the power of ICT in their operations and performance in general due to its risks and wide range of opportunities it opens the firm to.

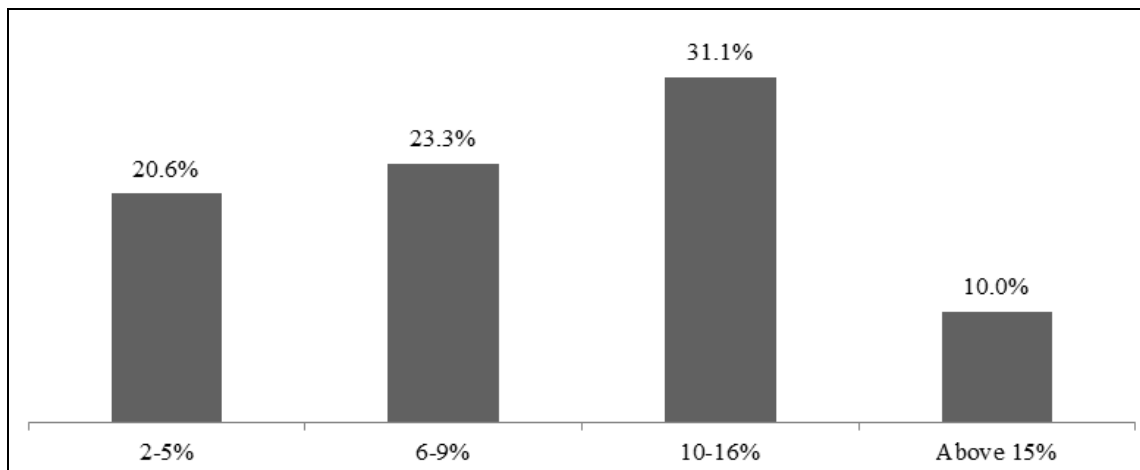


Figure 2. Expenditure on IT

b. Staff Members dedicated to IT related Activities

The study sought to find out the rate of employees that were purely dedicated to information technology. The findings as shown in figure 3 portray that 36% of the respondents indicated that their respective organizations had 10% of staff dedicated to IT activities, 16% indicated 10 to 15%, 33% indicated 15 to 20% while 16% said that they had 20% of the staff dedicated to IT related activities

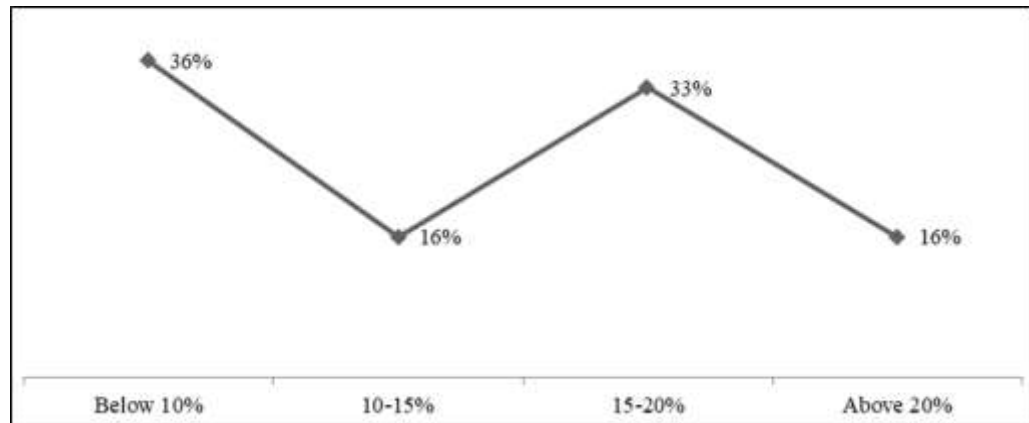


Figure 3. Staff dedicated to IT Activities

The respondents' views on the best way to which they described the role of IT in their respective firms were sought. The findings as shown in table 1 revealed that 14.4% of the respondents described the role of IT in their organization as a traditional role, 36.1% described it as an evolving role while 49.4% described the role of IT in their organization as an integral role. Ray et al. (2005) described the role of IT as an integral role that keeps on improving and require much attention and research for it to be successful in enhancing firm performance

Table 1. Best Description of role of IT

Option	Frequency	Percent
Traditional role	26	14.4%
Evolving role	65	36.1%
Integral role	89	49.4%
Total	180	100.0%

4.3 Firm Performance

In this section the study sought opinion of various constructs that define firm performance based on stakeholder theory. Respondents were asked their opinions on employee satisfaction, customer satisfaction, social and environmental performance, firm profitability and finally firm market share

a. Employee Satisfaction

Under employee satisfaction, respondents were requested to give their opinion on staff turnover rate and the firms' attractiveness to existing talent as indicators of firm performance.

The results are captured below.

The study sought to find out the turnover rate of the employees on annual basis. The findings revealed that majority of the respondents indicated that their organizations had recorded turnover rate of between 15% to 20% with 34.4% of the total respondents, followed by those that indicated between 3% and 10% with 23.9%, 10-15% with 21.7%, less than 3% with 15% while those that had a turnover of more than 20% were 5% of the total respondents

Table 2: Employee Turnover

Option	Frequency	Percent
Between 3% and 10%	43	23.9%
Above 10% but below 15%	39	21.7%
15% but below 20%	62	34.4%
20% and above	9	5.0%
Total	180	100.0%

b. Attractiveness

The study sought to find out the trends in attractiveness of their organizations to the available talent in the labour market over a period of 10 years covered by the study. The findings as shown in figure 4 revealed that 2% of the respondents opined that within the period, the attractiveness of their firm to joiners into the organization had significantly reduced, 9% indicated that the attractiveness had moderately reduced, 24% indicated that it remained the same, 52% said it moderately increased while 13% said that the attractiveness significantly improved

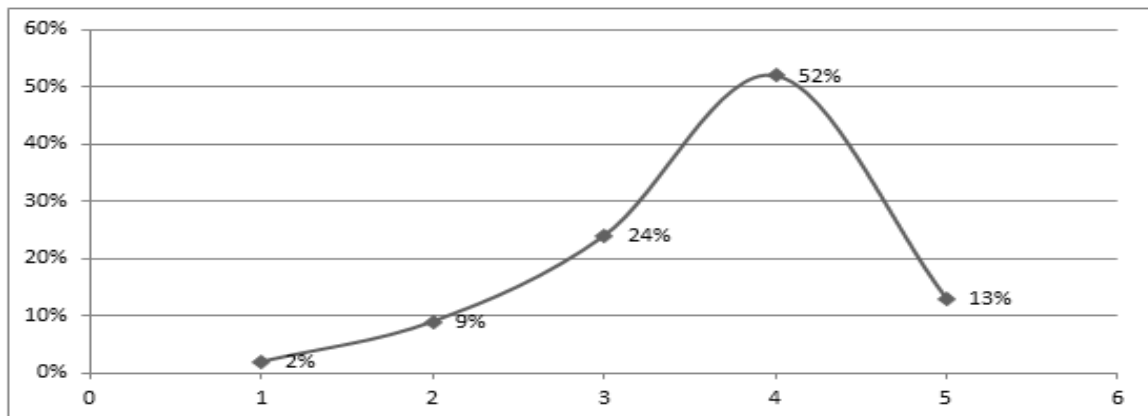


Figure 4. Attractiveness of the Organization

c. Customer Satisfaction

The study sought to find out the rate of repeat customers to new customers among firms listed at the NSE. From the findings, it is clear that majority of the respondents (49.4%) had between 21 and 40% of their customers as repeat customers, followed by 28.3% who had between 41 and 60% as repeat customers while 11.1% had above 60% of their customers as return customers. Miller, Washburn and Glick (2013) asserted that firm performance is mainly driven by the repeat customers who greatly sustain and steer the market of the firm

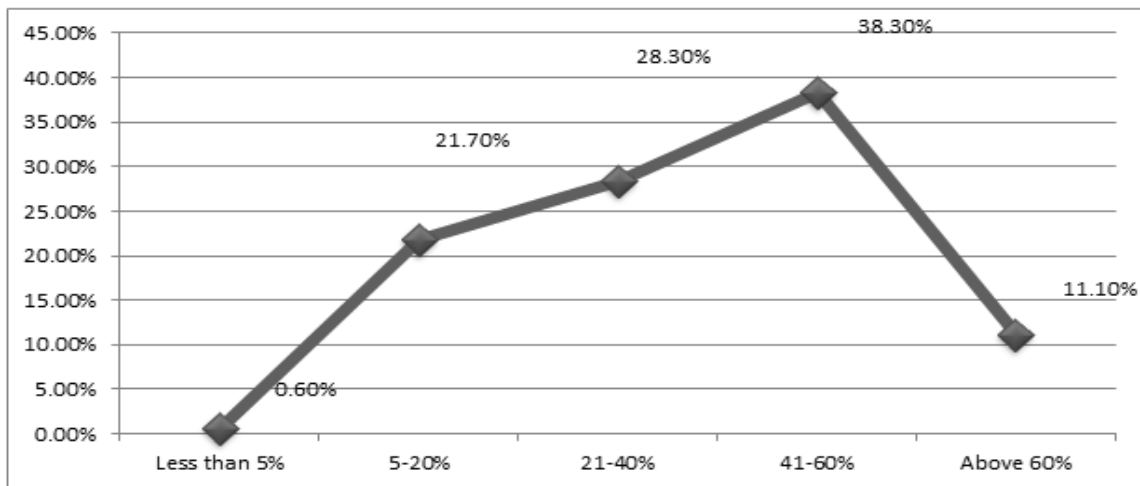


Figure 5. Repeat Customers

d. Social and Environmental Performance

The study sought opinion from respondents regarding their views on social and environmental investments and how these relate to firm performance. The questions focused on revenue set aside to support environmental based programs and legal suits instigated by stakeholders against the firm.

The study sought to find out the respondents' level of agreement with statements on social and environment performance. On the first statement that participation in social activities is an important strategic activities that drive brand performance, majority of the respondents agreed with the statement as evidenced by a mean of 3.57 and a standard deviation of 0.805.

On the second statement that as a responsible corporate citizen the firm actively participates in activities aimed at taking care of the environment in areas where it operates, majority of the findings agreed with the statement as evidenced by a mean of 3.78 and a standard deviation of 0.849. The findings compare with those by Lu, Zhou, Bruton and Weiwen (2010) who found that socially responsible organization usually benefit from their acts by reaping trust from the employees as well as the customer

Table 3. Agreement on Social and Environmental Development

Statement	S	D	U	A	SA	Mean	Std. Dev.
Participation in social activities is an important strategic activities that drives our brand performance	1.1	7.8	32.8	49.4	8.9	3.57	0.805
As responsible corporate citizens, our firm actively participates in activities aimed at taking care of the environment in areas where we operate	0.0	11.1	16.1	56.7	16.1	3.78	0.849

e. Firm Profitability

The study sought to find out the average profit growth of the firms for the period between 2005 and 2015. The findings revealed that majority of the firms (77.2%) had recorded a profit growth rate of between 10 and 30%, 13.9% had recorded profit growth above 30% while 8.9% had recorded a profit growth rate less than 10%. Fan (2011) established that

performance of modern organizations is mainly determined by the ability of the firm to make profit consistently.

The study sought to establish the performance of the firms in terms of ROA and ROE. The study found that majority of the firms (43.3%) had more than 25% growth rate of the Return on Equity while 13.9% of the respondents had below 5% growth rate in the ROE. On the other hand, majority of the firms (56.7%) had between 5 and 10% growth rate in the Return on Assets while 7.2% of the firms had a growth rate on ROA below 5%

Table 4. Average Return on Equity and Return on Assets

ROE			ROA		
	Frequency	Percentage		Frequency	Percentage
Below 10%	16	8.9%	Below 5%	13	7.2%
10%-30%	139	77.2%	5-10%	102	56.7%
Above 30%	25	13.9%	Above 10%	65	36.1%
Total	180	100%	Total	180	100%

f. Market Capitalization

The respondents' views on market capitalization (market value) of their respective firms were sought. The findings revealed that majority (52.2%) of the firms had a growth rate in the market capitalization of between 3% and 10% while 42.8% had an average growth rate in the market capitalization above 10%. On the other hand, majority of the firms (79.4%) had dividend yield of between 3% and 10% as opposed to 8.9% who had a dividend yield of less than 3%. On the average growth of shareholders, the study revealed that majority of the firms (61.1%) had a growth rate above 5% of the shareholders while 8.3% had a shareholder growth rate below 3%

Table 5. Market Capitalization

	Market Capitalization		Dividend Yield		Shareholder	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Below 3%	9	5.0%	16	8.9%	15	8.3%
3%-10(5)%	94	52.2%	143	79.4%	55	30.6%
Above 10(5)%	77	42.8%	21	11.7%	110	61.1%
Total	180	100%	180	100%	180	100%

4.4 Hypothesis Testing

The relationship between IT capabilities and firm performance was tested using the SEM and regression coefficients derived from the structural model and regression model respectively. The study sought to statistically establish the relationship between the information technology (independent variable) and the performance of firms listed at the NSE (dependent variable).

This was done using the ANOVA test, the regression coefficients and the scatter plot diagram. This enabled the researcher to identify whether to accept the null hypothesis for the variable or not. The model equation used for the variable was of the form; $Y = \beta_0 + \beta_1 X_1$. The model summary results shown in table 6 revealed that the R value was 0.310 while the R² was 0.096 which indicated that the variability of the information technology competency and the performance of the firms listed at the NSE could be explained by up to 9.6% of the model. This implies that the model was fit to determine the relationship between the two variables and therein make conclusions and recommendations

Table 6. Model Summary; Information Technology Competency

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.310 ^a	.096	.091	.32035

a. Predictors: (Constant), Information Technology competency

b. Dependent Variable: Performance of firms listed at the NSE

The ANOVA results are as shown on table 7. The results revealed that the F-calculated for the variable was 18.920 which is greater than the F-critical while the mean was 1.942 all implying that the model was significant. The P-value was $0.000 < 0.05$, an additional proof that the model was significant

Table 7. ANOVA; Information Technology Competency

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	1.942	1	1.942	18.920	.000 ^b
Residual	18.267	178	.103		
Total	20.209	179			

a. Dependent Variable: Performance of firms listed at the NSE

b. Predictors: (Constant), Information Technology Competency

The regression coefficient results were also sought as shown in table 8. The results revealed that the coefficient β for the model was 2.639 (constant) and 0.154 (variable) thus making the model equation to be; $Y = 2.639 + 0.154X_4$. This implies that a unit change in information technology capability could lead by up to 15.4% change in the performance of the firms listed at the NSE. The results further showed that the P-value for the variable was $0.000 < 0.05$ implying that information technology capability significantly influenced the performance of the firms listed at NSE

Table 8. Regression Coefficients; Information Technology

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.639	.084		31.583	.000
Information Technology	.154	.035	.310	4.350	.000

a. Dependent Variable: Performance of firms listed at NSE

The relationship was further proved by use of a scatter plot diagram. The results are as shown in figure 6 where the plots show a positive gradient. This implies that information technology capabilities positively influenced the performance of firms listed at the NSE

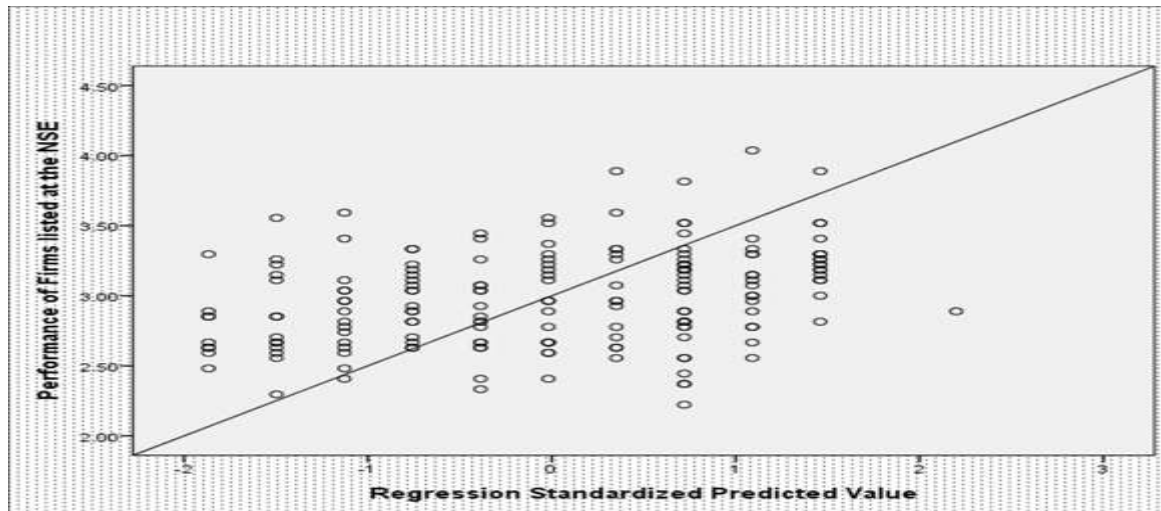
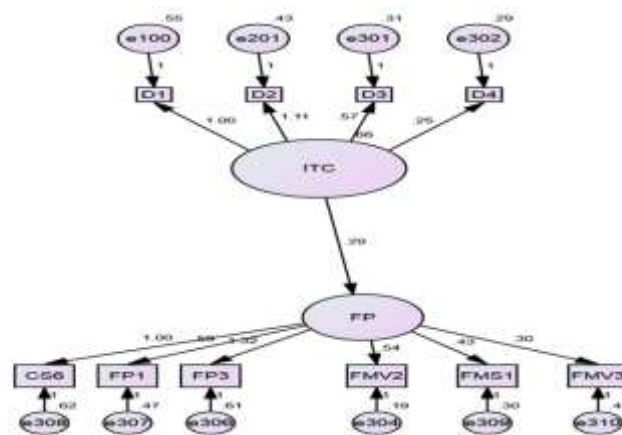


Figure 5. Scatter Plot; Information Technology Capabilities

A structural equation model on information capability was defined. The findings as shown in figure 6 revealed that IT competence had a coefficient value of 0.29 when structured against firm performance and indication that a unit change in IT competence influenced up to 29% increase in firm performance



The results of the inferential statistics analysis therefore infer that the null hypothesis that there is no significant relationship between information technology capability and firm performance is rejected in the study. These findings compliments previous findings that had argued that IT-based capabilities or assets IT assets (e.g., IT investments, IT applications) affect various measures of firm performance, such as productivity, profitability, risk, shareholder value, and other intangibles such as customer satisfaction (Bharadwaj, 2000; Brynjolfsson and Hitt, 2000; Dewan, Shi & Gurbaxani, 2007; Mithas et al., 2012). The same findings agree with the findings of Mithas, Ramasubbu, and Sambamurthy (2011), whose findings highlighted the role and importance of IT-enabled information management capability in enabling business excellence that creates and sustains a competitive advantage. From these findings, it can therefore be argued that information technology capability is an enabler of organizational capability which in turn is a key driver of firm performance

V. Conclusion

Information Technology (IT) is a major component of any organization's factor of production and therefore cannot be overlooked in any way. Information technology capability is a key driver of performance among the firms listed at the NSE. The study concluded that IT capability was a key performance differentiator among the firms at the NSE. However, it is noted that some firms did not dedicate a resolute number of staff to IT a move that can negatively affect the effectiveness of the latter. The study concluded that firms at the NSE majorly adopted and invested in IT for its strategic role but not for other major purposes such as information role, transaction and threshold role. This could mean that apart from strategy, IT could not be of much importance to firms thus limiting the benefit of the latter to the firms' performance.

Information technology is critical capability required of any firm that wishes to excel and remain competitive in the market place. The firms listed at the NSE have to effectively adopt IT in their operations not only for the sake of strategy but to enhance their efficiency through information sharing and transactional purposes. To make IT effective, the firms should invest more funds and man power towards ICT tools and operatives. In the modern business World, Information Technology stands to be one of the main determinants of how well an organization does in terms of efficiency and effectiveness. It is therefore recommended that the management of listed firms embrace information technology by bringing modern and automated means of production as well as information sharing platforms that create the uniqueness, efficiency and effectiveness of their firms.

References

- Adamides, E., & Karacapilidis, N. (2020). Information technology for supporting the development and maintenance of open innovation capabilities. *Journal of Innovation & Knowledge*, 5(1), 29-38.
- Arora, B., & Rahman, Z. (2017). Information technology capability as competitive advantage in emerging markets: Evidence from India. *International Journal of Emerging Markets*, 12(3), 447-463.
- Bakan, I., & Sekkeli, Z. H. (2017). Types of information technology capability and their impacts on competitiveness. *Research Journal of Business and Management*, 4(2), 212-220.
- Basheer, M., Siam, M., Awn, A., & Hassan, S. (2019). Exploring the role of TQM and supply chain practices for firm supply performance in the presence of information technology capabilities and supply chain technology adoption: A case of textile firms in Pakistan. *Uncertain Supply Chain Management*, 7(2), 275-288.
- Bataineh, A., Alhadid, A., Alabdallah, G., Alfalah, T., Falah, J., & Idris, M. (2015). The role of information technology capabilities in capitalizing market agility in Jordanian telecommunications sector. *International Journal of Academic Research in Business and Social Sciences*, 5(8), 90-101.
- Cai, Z., Huang, Q., Liu, H., & Liang, L. (2016). The moderating role of information technology capability in the relationship between supply chain collaboration and organizational responsiveness: evidence from China. *International Journal of Operations & Production Management*, 36(10), 1247-1271.
- Chae, H. C., Koh, C. E., & Park, K. O. (2018). Information technology capability and firm performance: Role of industry. *Information & Management*, 55(5), 525-546.
- Chepkole, G. K., & Deya, J. (2019). Effect of strategic capability on competitive advantage of information technology firms in Nairobi City County, Kenya. *International Academic Journal of Human Resource and Business Administration*, 3(5), 104-127.

- Chu, Y., Chi, M., Wang, W., & Luo, B. (2019). The impact of information technology capabilities of manufacturing enterprises on innovation performance: Evidences from SEM and fsQCA. *Sustainability*, 11(21), 5946.
- Eliyana, A., Handriana, T., & Fatimah, N. (2021). Dynamic Capabilities Information Technology Enabler For Performance Organization. Retrieved from <https://digitalcommons.unl.edu/libphilprac/4901/>
- Fakunmoju, S., Arokodare, M., & Makinde, G. (2020). Strategic agility and competitive advantage of oil and gas marketing companies: the moderating effect of information technology capability and strategic foresight. *The Journal of Accounting and Management*, 10(3).
- Hansen, G. S., & Wernerfelt, B. (1989). Determinants of firm performance: The relative importance of economic and organizational factors. *Strategic Management Journal*, 10(5), 399-411.
- Hao S, & Song M (2016). Technology-driven strategy and firm performance: are strategic capabilities missing links? *J Bus Res* 69:751–759
- Heenetigala, K. (2011). Corporate governance practices and firm performance of listed companies in Sri Lanka (Doctoral dissertation, Victoria University Melbourne).
- Herbling, D. (2015, December 3). NSE-listed companies profit warnings hit 11 for second year. *Business Daily*. Retrieved from <http://www.businessdailyafrica.com/>
- Jayabalan, J., Dorasamy, M., Raman, M., Sambasivan, M., & Harun, S. (2021). Unleashing frugal innovation in private higher education institutions via intellectual capital and Information technology capability: a systematic literature review. *F1000Research*, 10.
- Jinnan, W., Lihua, H. & Lin, L. (2014). Impact of Information Technology Capability on Financial Performance of Chinese Listed Companies during the Period of Economic Downturn. *WHICEB 2014 Proceedings*. Paper 43. <http://aisel.aisnet.org/whiceb2014/4>
- Kamar, K., Lewaherilla, N. C., Ausat, A. M. A., Ukar, K., & Gadzali, S. S. (2023). The Influence of Information Technology and Human Resource Management Capabilities on SMEs Performance. *International Journal of Artificial Intelligence Research*, 6(1.2).
- Kemboi, N., Kinyariro, D. K., Gesage, M. B., & Maina, J. N. (2023). Relationship Between Dividend Yield And Financial Performance Of Listed Firms At The Nairobi Securities Exchange. *Financial Studies*, 27(1).
- Kim, S., Kim, B., & Seo, M. (2020). Impacts of Sustainable Information Technology Capabilities on Information Security Assimilation: The Moderating Effects of Policy—Technology Balance. *Sustainability*, 12(15), 6139.
- King’oo, R. N., Kimencu, L., & Kinyua, G. (2020). Empirical analysis of effect of information technology capability on performance of private universities in Kenya. *International Journal of Managerial Studies and Research*, 8(11), 52-61.
- Lioukas, C. S., Reuer, J. J., & Zollo, M. (2016). Effects of information technology capabilities on strategic alliances: Implications for the resource-based view. *Journal of Management Studies*, 53(2), 161-183.
- Lu, Y., Zhou, L., Bruton, G. & Weiwen, L. (2010). Capabilities as a mediator linking resources and the international performance of entrepreneurial firms in emerging economy. *Journal of International Business Studies*, 41, 419-436.
- Masoud, R., & Basahel, S. (2023). The Effects of Digital Transformation on Firm Performance: The Role of Customer Experience and IT Innovation. *Digital 3*, 109–126. <https://doi.org/10.3390/digital3020008>
- McAfee, A., & Brynjolfsson, E. (2008). Investing in the IT that makes a competitive difference. *Harvard Business Review*, 86(7/8), 98.
- Musimba, M.A. (2013). Firm level competencies and international performance of Companies listed at the Nairobi Securities Exchange.

- Ndotono, C. M. (2023). Board Characteristics and The Financial Performance of Agricultural Firms Listed in The Nairobi Securities Exchange, Kenya. *International Journal of Academic Research in Economics and Management and Sciences*, 12(2), 222 – 236.
- Ngele, E., & Omido, K. (2020). Effect of information technology capability on competitive advantage of the Kenyan banking sector: A critique. *International Journal of Advanced Research in Management and Social Sciences*, 9(1), 76-2.
- Panda, S., & Rath, S. K. (2021). Information technology capability, knowledge management capability, and organizational agility: The role of environmental factors. *Journal of Management & Organization*, 27(1), 148-174.
- Shahzad, F., Du, J., Khan, I., Shahbaz, M., Murad, M., & Khan, M. A. S. (2020). Untangling the influence of organizational compatibility on green supply chain management efforts to boost organizational performance through information technology capabilities. *Journal of cleaner production*, 266, 122029.
- Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28(13), 1319-1350.
- Teece, D. J. (2014). A dynamic capabilities-based entrepreneurial theory of the multinational enterprise. *Journal of International Business Studies*, 45(1), 8-37.
- Wellalage, N. H., & Locke, S. (2012). Ownership structure and firm financial performance: Evidence from panel data in Sri Lanka. *Journal of Business Systems, Governance and Ethics*, 7(1), 52-65.
- Zhang, J., & Li, H. (2022). The impact of big data management capabilities on the performance of manufacturing firms in asian economy during COVID-19: the mediating role of organizational agility and moderating role of information technology capability. *Frontiers in Psychology*, 13, 833026.