



Influence of Knowledge Management Capabilities on the Performance of Mobile Telephone Firms in Kenya

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJEBA/2021/v21i1530476

Editor(s):

(1) Prof. Chun-Chien Kuo, National Taipei University of Business, China.

Reviewers:

(1) Gede Ariadi, University of Brawijaya, Indonesia.

(2) M. M. Dede Suleman, Universitas Bina Sarana Informatika, Indonesia.

(3) Bilson Simamora, Kwik Kian Gie School of Business and Information Technology, Indonesia.

Complete Peer review History: <https://www.sdiarticle4.com/review-history/75391>

Original Research Article

Received 01 August 2021

Accepted 07 October 2021

Published 11 October 2021

ABSTRACT

With intensifying rivalry in the mobile telephone industry, mobile telephone firms are finding knowledge management capabilities as vital resource for ensuring their performance. However, there is scanty empirical literature to help these firm associate knowledge management capabilities to their performance, hence this study which sought to ascertain the inspiration of knowledge management capabilities on the performance of mobile telephone firms in Kenya. it objectives were to; establish the influence of knowledge acquisition, find out the influence of knowledge application, determine the role of knowledge transfer, ascertain how knowledge protection influence, and stablish the joint effect of knowledge management capabilities (knowledge acquisition, knowledge application, knowledge transfer and knowledge protection) on the performance of the mobile telephone firms in Kenya. This study adopted descriptive survey design where it used a target population of the 63 heads of human resources, information marketing and finance from the 21 telephone firms operating in Kenya. Since the target population was easily manageable and readily accessible, census was used. The data which was collected data from primary sources using

questionnaires was analysed using quantitative approach to produce descriptive and inferential statistics. In addition, the study tested for its hypothesis testing using; t-test, F test and Analysis of Variance. The study found that each of; knowledge acquisition, knowledge application, knowledge transfer and knowledge protection have a positive significant effect of performance. The study concluded that on embracing knowledge management capabilities; knowledge acquisition; knowledge application; knowledge transfer; and knowledge protection, mobile telephone firms in Kenya experienced significant improved in performance and as they also gained competitive advantage over their competitors.

Keywords: Knowledge acquisition; knowledge application; knowledge management capabilities; knowledge protection; knowledge transfer; mobile telephone firms; performance.

1. INTRODUCTION

In recent years, businesses have been transacting in a disruptive and volatile environment; caused by intense global competition and market dynamism, rapid technological changes, and increasingly changing customer demands [1]. It is for this reason that knowledge is positioning itself as power source for helping firms to develop in such a dynamic operating environment through assisting distinguish activities which add value and support achieving stakeholders demands [2]. Accordingly, knowledge is becoming the most important resource for firm performance to the extent of surpassing other resources production such as land and capital. Subsequently, many organizations are embracing knowledge management for increasing their organizational performance. More specifically, the increasing globalization and competitions is compelling organizations develop knowledge management capabilities for gaining competitive advantage against their rivals [3]. Firms that are applying knowledge management capabilities in their operations, are gaining more competitive in the market they trade in addition to improving their innovative performance [4,5]. This implies that knowledge management capabilities are essential resources for enhance effectiveness and efficiencies of firm.

The key dimensions of knowledge management for driving performance of organizations through gaining competitive advantage over their rivals are; knowledge capabilities, knowledge acquisition, application transfer and protection [6]. Possession of these knowledge management capabilities constructs, by enterprises, is a tactical requisite for their performance both in the local, regional and global business environments [7]. Notably, through utilisation of knowledge management capabilities in their operations,

most multinational companies (MNCs) are becoming more competitive in the market in which they trade in which altogether improves their innovative performance [4,5,8]. In Africa, many firms have turned their interests on knowledge management capabilities and especially in enhancing their effectiveness in acquiring and managing supply chain management functions and performance of enterprises in their value chain [9]. In their study, Sarkindaji et al. [7] established that knowledge management capabilities; knowledge capabilities, acquisition, application transfer and protection, affect performance of Nigerian mobile telephone firms as they make the enterprise remain competitive over and above their rivals.

In Kenya, scholars and researcher have embarked on intensive research to ascertain its influence on the performance of the enterprises by knowledge management capabilities to established these capabilities as being the utmost essential factors of production after land, labor and capita l [10]. This is where Ngahu and Mbugua [11] point out that performance of the Kenyan mobile telephone firms is directly reliant; attainment, application, transfer and jealousy guarding and protecting its intellectual capital from their competitors. Ambula, Kariuki & Wasike [12] found out that the knowledge management has a significant and positive effect on performance of industrial companies in Kenya.

Although knowledge management is widely acknowledged as an essential resource for helping achieve significant performance in organizations, Donate and de Pablo [13] argue that there has been little contentment among stakeholders on knowledge management capabilities as being associated with performance of firms. Furthermore, the researchers point out utilisation of knowledge management capabilities is a challenging

assignment for managers. To counter these challenges, scholars such as Omotayo and Babalola [14] have suggested that among the most innovative competitive strategies that a firm should have is its knowledge management capabilities. Thus, knowledge management capabilities have been linked to performance by researchers. Organizations such as telephone firms have invested heavily in terms of technology with the sole objective of enhancing their operations in terms of improving their operations, increased inventions and increase in profitability [15].

The mobile telephone firms have led to the penetration level of mobile telephones in Kenya to 80%, meaning that for every 10 Kenyans, eight of them own a mobile phone, thanks to the mobile telephone firms in Kenya [16]. In 2016, the mobile telephone firm sales in Kenya contributed to 6% of Kenya's Gross Domestic Product (GDP), which was equivalent of 4 billion sales [6]. It is therefore important to note the huge contribution of the mobile telephone firms in the country and how they have contributed to the growth of the economy. Mobile telephone firms in Kenya operate with a sole goal of meeting their operating overheads and generating a return on investments for the investors [17]. It is expected that the returns realized from the mobile telephone firms should grow as the institution grows in business. Mobile telephone firms have employed various tactics in their quest to ensure an increase in the return for the investors, despite the intensive rivalry between the companies. Whereas technology enhances new inventions in mobile telephone communication, the development of new features in mobile phones has led to increase in demand for new advanced products and services, amongst the mobile telephone firms [6].

1.1 Statement of the Problem

With intensifying rivalry in the mobile telephone industry, mobile telephone firms are finding knowledge management capabilities as vital resource for ensuring their performance [18]. Despite literature having shown that knowledge management capabilities are essential for improving performance of firms, mobile telephone firms in Kenya have not adequately employed knowledge management capabilities for spurring their performance. However, most of the empirical research on knowledge management capabilities have been carried out in developed countries, denying mobile

telephone firms in Kenya adequate literature to associate knowledge management capabilities to their performance [19]. While Kinyua, Muathe and Kilika [10] pursued to ascertain the influence of knowledge management exercises on commercial banks in Kenya, Ngahu and Mbugua [11] sought to establish knowledge management processes of acquisition, transformation and usage on commercial banks. The research by Sarkindaji [7] recognized that information management competences such as information gaining and application were influencing the performance of mobile telephone firms in Nigeria. A Chiu and Chen [20] concluded that dynamic capabilities in organizations had a progressive bearing on the financial operations of Taiwanese public utility, Mtawali and Kiiru [21] concluded that information management capabilities had a statistically significant inspiration on the performance of microfinance establishments in Kenya. In view of the above issues, there is scanty empirical literature to help these firm associate knowledge management capabilities to their performance, hence this study which sought to linking the gap in knowledge that the previous researches did not capture in addition to scrutinize the influence of information management competences on operations.

1.2 Objectives

The overall intent of this research was to ascertain the inspiration of knowledge management capabilities on the performance of mobile telephone firms in Kenya. The precise goals of this study were to:

1. Establish the influence of knowledge acquisition on the performance of mobile telephone firms in Kenya.
2. Find out the influence of knowledge application on the performance of mobile telephone firms in Kenya.
3. Determine the role of knowledge transfer on the performance of mobile telephone firms in Kenya.
4. Ascertain how knowledge protection influence the performance of mobile telephone firms in Kenya.
5. Establish the joint effect of knowledge management capabilities (knowledge acquisition, knowledge application, knowledge transfer and knowledge protection) on the performance of the mobile telephone firms in Kenya.

1.3 Justification of the Study

This research would be important to the mobile telephone firms in that they might use the outcomes of this research to establish the strengths and weakness in their use of the knowledge management capabilities and therefore make maximum use of the capabilities they possess to their advantage.

Further, the findings of this might be useful in that they may use them to establish their internal policies, which will be of importance in thwarting competition from their competitors. This would help them to enhance their performance.

The conclusions of this enquiry would be significant to the Communication Authority of Kenya (CA) [6] in enabling them to make policies and guidelines, which are important in setting up a level playing ground to the mobile telephone firms by ensuring fair competition and wad off unethical business practices. This would be achieved by monitoring the knowledge management capabilities possessed by the mobile phones, facilitating their patenting, and copyrighting and ensure that mobile telephone firms operating in Kenya comply with the Authorities regulations.

The study focused on information management capabilities and performance of mobile telephone firms in Kenya and that can create contextual and conceptual research gaps, which opens up avenues for future studies by other scholars. Based on the recommendations from other studies, there was a chance that more in-depth scrutiny could be conducted by prospect researches on the topic.

2. LITERATURE REVIEW

2.1 Theoretical Review

This study used the Resource Based View (RBV) to support the knowledge acquisition, organizational knowledge theory to mainly support knowledge application, adaptation structuration theory to support knowledge transfer and the organizational learning theory to inform the knowledge protection.

Barney [22] advocated the Resource Based View (RBV) theory which suggests that organization should strive to make best use of the available

resources (capabilities) within the organization [23]. Such resources must possess four unique characteristics which are Valuable, Rare, Imitable and Non-substitutable (VRIN) [22]. These characteristics make the resources of an organization to give it a competitive edge over their rivals. While valuable means that the resources are in a position to command value to the firm and thus bring up a competitive advantage rare implies that the resources have to bring up an exclusive tactic to bring a competitive advantage over the competitor. Inimitable implies that for a resource to be a source of competitive advantage, competitors must not be able to obtain it and non-substitutable resource means that a resource should not be able to be replaced by any other strategically comparable [22]. The RBV theory was related to this enquiry because it offered insights on how to harness the core competencies of the organization in order to increase their output. This theory therefore supported the first research objective's aspect of this study, knowledge acquisition.

The organizational knowledge theory, proposed by Nonaka [24] and further advanced by Krogh and Nonaka [25]. recognizes socialization, internalization, externalization and combination (SECI) as the four models of collaborations that assists in knowledge management in an enterprise. This theory is concerned with how to build organization capability, how to apply it, how to transform the information from one form to another and finally, how to administer organizational knowledge [26]. In an organization the application of knowledge is an ascending winding practice from the individual stage to the group stage, and thereafter, to the corporate stage [26]. This theory was related to this research in that it provided an insight on how to make use of the knowledge and capabilities gained to the advantage of the organization. Mobile telephone firms after acquiring new knowledge can go ahead and apply them by ensuring they remain with the young generations in the organization for a sustainable competitive advantage. This theory in this regard supported the second objective's aspect of this research, which was knowledge application.

The adaptive structuration theory, advanced and grounded on the Giddens [27] and also advanced by Poole and DeSanctis [28] and modified the Giddens [27] is related to the conduct of people as they make use of technology such as internet in the mobile

telephone service firms. This theory also describes the interaction of people with technology, such as how people interacts with use of mobile phones. This theory was significant to this research as it analysed how new technology and knowledge can be utilized in a commercial setting to gain a competitive advantage in the enterprise. Once an organization achieves new knowledge, it need to apply it to its products to produce quality products, which are superior to their competitors' products. This theory thus supported the third research objective's aspect, which is knowledge transfer.

The organizational learning theory advanced by Kolb [29] and then by McGill and Slocum [30] explain how organizations learns new ideas and transforms them within itself to achieve a economic benefit over its rivals . According to Simon [31] safeguarding of knowledge within the organization and against imitation by the competitors give the organization an upper hand and a competitive advantage. This theory was essential in this enquiry as it supports the fourth research objective's aspect which was knowledge protection. This theory therefore explained how knowledge is gained in an organization and how it is preserved within the confines of the organization to enable the organization have a competitive advantage in the market.

2.2 Empirical Literature Review

In their research, Gareth and Cicmi [32] established that knowledge acquisition had a major inspiration on the performance of work-based activities as Amah [33] established that there was a major connection amongst continuous knowledge acquisition and the operations of the industrial establishments in the Rivers State, Nigeria. Meanwhile Ngahu and Mbugua [11] established that knowledge acquisition had a positive influence on the operations of financial establishments in Kenya. It can therefore be postulated that knowledge acquisition has a positive influence on performance of firms.

In Iran, Matin and Sabagh [34] established that knowledge application had an inspiration on the operations of export companies in Iran while Waribugo, Ofoegbu and Akpan [35] revealed knowledge transfer has the most influence on product invention among industrial businesses in Nigeria. Gachungi and Mugambi [36] established

that electronic communication had a major inspiration on the working of Kenya National Highway Authority (KeNHA). Organizations are therefore able to properly put in place strategy to enable them apply knowledge and make them competitive and hence influence their performance. Knowledge application, therefore, has an influence on the working of establishments.

In Pakistan, Najeeb, Muhammad, Hanif, Bakar and Hamid [37] established that knowledge transfer had a positive influence on operation of banks in Malaysia while in Jordan, Olaima, AL-ameryeen and Al-Makhadmah [38] established that knowledge transfer had a positive influence on the operations of organization. In their study, Kinyua, Muathe and Kilika I [10] revealed that knowledge transfer and knowledge application had a positive influence on the operations of commercial banks in Kenya. Thus, knowledge transfer is important for an institute to have an economic edge in the industry. It can therefore, be advanced that knowledge transfer sways the operations of organizations in Kenya.

In Netherlands, Estrada, Faems and de Faria [39] found out that rival partnership has a major progressive effect on product innovation performance and only when inner information sharing procedures and official knowledge protection procedures are existing. Meanwhile, in Nigeria, Ozigbo [40] established that information organization procedures such as knowledge safeguard had a positive impact on the operations of hospitality industry in Nigeria while in Kenya, Gakuo and Rotich [41] established that knowledge protection had a positive significant influence on the performance of commercial banks in Kenya. It therefore can be postulated that knowledge protection has a influences on the performance of organizations.

Nevertheless, studies amongst the mobile telephone firms seems to be scanty and especially for mobile telephone firms in Kenya. Partaking keen interest on this gap, this enquiry therefore pursued to evaluate the effect of knowledge management capabilities on the performance of mobile telephone firms in Kenya. This investigation sought to find out the influence of knowledge acquisition, knowledge application, and knowledge transfer and knowledge protection on performance of mobile telephone firms in Kenya.

Based on these findings; the study tested the following hypotheses:

H_{a1}: Knowledge acquisition has a significant influence on the performance of mobile telephone firms in Kenya.

H_{a2}: Knowledge application has a significant influence on the performance of mobile telephone firms in Kenya.

H_{a3}: Knowledge transfer has a significant influence on the performance of mobile telephone firms in Kenya.

H_{a4}: Knowledge protection has a significant influence on the performance of mobile telephone firms in Kenya.

H_{a5}: There is a joint significant effect of knowledge management capabilities (knowledge acquisition, knowledge application, knowledge transfer and knowledge protection) on performance of the mobile telephone firms in Kenya.

3. RESEARCH METHODOLOGY

3.1 Research Design

A research design is a setup of requirements that lead to answering of research questions [42]. This analysis embraced descriptive research design. A descriptive review is a design that aims at collecting information to ascertain the presence of an association amongst variables [43].

3.2 Target Population

As said by Cooper and Schindler [44], focus populace refers to all elements of interest in a particular study. In this respect, the target population of this research was the 63 managers of the 21 mobile telephone firms in Kenya. The acceptance of the population size was supported by statistical theory, which demonstrates that in most varieties of populations, wherever statistical sampling is used, population size is just a minor issue since the random selection process ensures representativeness [45]. Thus, additional items are not required after an appropriate sample size with a decent cross-section of items is achieved, regardless of population size.

Since the target population was easily manageable and readily accessible, census was used. So, the entire target population participated in the study [43]. Thus, the study used 63 heads of Human Resources, Marketing and Finance units of the 21 mobile telephone firms in Kenya as the respondents.

3.3 Data Collection

This research embraced primary data collected through administration of questionnaires. These pieces of questionnaires were distributed to the respondents in person and by email or ad and google documents. The questionnaire had both open-ended and closed-ended questions; where the open-ended questions allowed the participants to respond through narrations while closed-ended questions enabled the participants to respond to predetermined responses which restricted the respondents to the intents of the enquiry. The closed ended questionnaire used a 5-point Likert type scale which ranked the responses in the scale of 1 to 5 where: "1 represents "Strongly Disagree", 2 is for "Disagree", 3 is for "Neutral", 4 is for "Agree" and 5 represents "Strongly Agree". On one extreme is strongly agree while on the other is strongly disagree towards an aspect of the research. The researcher administered the questionnaire by means of dropping and picking the questionnaires.

3.4 Pilot Study

In its efforts of seeking to improve dependability of investigation tools, the research conducted a pilot testing on 7 respondents translating to an estimated 10% of the sample population of 63 heads of departments from the 21 mobile telephone firms in Kenya [46]. Specifically, the study tested the tool for reliability and validity.

Reliability is the consistency of the tool in producing the same results over time [14]. In testing for reliability, this study used Cronbach's Alpha internal consistency approach to yield Cronbach's alpha coefficient. Cronbach's alpha coefficient of above 0.70 is an indication of highly reliable tool for simple investigations but if it was less than 0.7 then it was considered unreliable [47]. Sekaran and Bougie [48] stated that coefficient greater than or equal to 0.7 is acceptable for basic research. The reliability results were captured in Table 1.

Table 1. Reliability results

Variables	Cronbach's alpha	Number of items	Conclusion
Knowledge Acquisition	0.833	4	Reliable
Knowledge Application	0.801	5	Reliable
Knowledge Transfer	0.953	5	Reliable
Knowledge Protection	0.913	6	Reliable
Performance of Mobile Telephone Firms in Kenya	0.806	5	Reliable

Table 2. Factorial test results for construct validity

Variables	KMO	Bartlett's Test of Sphericity			Conclusion	Validity
		Approx. Chi-Square	df	Sig.		
Knowledge Acquisition	0.839	248.505	6	0.000	Meritorious	Valid
Knowledge Application	0.852	282.333	10	0.000	Meritorious	Valid
Knowledge Transfer	0.877	284.219	10	0.000	Meritorious	Valid
Knowledge Protection	0.729	201.005	15	0.000	Middling	Valid
Performance of Mobile Firms in Kenya	0.79	188.008	28	0.011	Middling	Valid

The pilot results proved that the variable statements were highly reliable with a representative Cronbach's Alpha of .833, .801, .953, 913, and .806 for knowledge acquisition, knowledge application, knowledge transfer and knowledge protection respectively.

Validity is the correctness, truthfulness and significance of the information and all conclusions derived from the information [49]. The test for construct validity for the study is the Kaiser-Meyer-Olkin (KMO) test for construct validity where, KMO Value/Degree of Common Variance of between 0.90 to 1.00 is "Marvelous", 0.80 to 0.89 is "Meritorious", 0.70 to 0.79 is "Middling" 0.60 to 0.69 is "Mediocre", 0.50 to 0.59 is "Miserable", 0.00 to 0.49 is "Don't Factor". Thus, a KMO coefficient of above 0.800 is "Marvelous" for the study and were evaluated as per Table 2 which indicate the KMO and Bartlett's test of construct validity for each of the dependent and independent variables.

The values of the KMO Measure of Sampling Adequacy for all the variables were above 0.500. The significance of the KMO coefficient was evaluated using a Chi-Square test and a critical probability value (p-value) of 0.05. A Chi-Square coefficient ranging from 41.512 to 66.555 and a p-value of 0 imply that the coefficients were significant. These results

further implies that there was a significant correlation between knowledge acquisition, knowledge application, knowledge transfer, knowledge protection, and performance of mobile firms in Kenya.

3.5 Data Analysis and Presentation

Data analysis was conducted using quantitative technique to produce descriptive statistics such as mean and standard deviation as well as inferential statistics such as correlations and regressions. The most appropriate software recommended by Mackey and Gass (2015) is SPSS version 23.

Multiple Linear Regression Model was used as shown below:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e \quad (i)$$

Where:

- Y = Performance of mobile telephone firms
- X1 = Knowledge acquisition
- X2 = Knowledge application
- X3 = Knowledge transfer
- X4 = Knowledge protection
- e = Error term
- α = Constant
- β = Coefficient of independent variable

The research relied on t-test to test the hypotheses of the study [42] An important property of the t-test is its robustness against assumptions of population normality. In other words, t-tests are often valid even when the assumption of normality is violated, but only if the distribution is not highly skewed. This property made them one of the most useful procedures for making inferences about population means.

4. RESEARCH FINDINGS AND DISCUSSION

The researcher administered questionnaire to 63 respondents from 21 registered mobile telephone firms in Kenya, where 54 questionnaires were filled correctly and returned. This translates to a response rate of 85.71%, which was considered adequate as recommended by Saunders & Bezzina [47].

Most of the respondents, forming (40.7 had worked above 5 years and up to 10 years as who had a worked above 15 years and up to 20 years were (18.5%) those who worked for more than 10 years and up to 15 years. Only 5.6% of the respondents had worked for more than 20 years and 1% of the respondents had less than and up to 5 years' experience. This shows that the respondents had adequate working experience at the different mobile telephone firms and therefore possessed the necessary knowledge, skills and even organizational story on knowledge management capability and organizational performance which were considered useful for this study. This further shows that the organizations have a succession plan which ensures continuity sharing and transfer of knowledge.

When the respondents were requested to state the scope of operation of the organization they worked for, a majority of 51.85% of the organizations had their operations throughout Kenya, 35.19% operated regionally within Kenya while the remaining 12.96% operated beyond East Africa.

When the respondents were requested to indicate the list of products that the organizations, they worked for dealt in, they reported the products as; provision of internet services, provision of bulk SMS, sale of telephones and mobile phones. Some companies were found to be selling tablets, laptops and other electronic accessories

that can be used to supplement the use of phones.

4.1 Descriptive Statistics

The data collected as guided by the research objective were measured on a 5-point likert scale 1 represents "Strongly Disagree", 2 is for "Disagree", 3 is for "Neutral", 4 is for "Agree" and 5 represents "Strongly Agree and analysed to yield means and standard deviation. These results were transformed into quantitative data using the scale 1-1.8 represents "Strongly Disagree", above 1.8-2.6 is for "Disagree", above 2.6 to 3.4 is for "Neutral", above 3.4 to 4.2 is for "Agree" and above 4.2 to 5 represents "Strongly Agree".

4.2 Influence of knowledge acquisition on the performance of mobile telephone firms in Kenya

The research assessed objective 1; to establish the influence of knowledge acquisition on the performance of mobile telephone firms in Kenya and produced results in Table 3.

Grounded on these results, the study findings show that the knowledge creation is an integral part of every staff member of the organization. (M=3.61, SD=1.338) and the firms encourages sharing of knowledge between different departments to create a competitive advantage. (M=3.61, SD=1.309) while sharing of knowledge within the organization leads to creation of a pool of experienced staff and this leads to innovation (M=3.57, SD=1.159) and acquired knowledge is distributed in the organization through electronic or print media to all key stakeholders. (M=3.44, SD=1.410). The findings of the study are in agreement with Kushwaha and Rao [50] who stated that companies need to innovate in products, processes, and organizational structures to gain and maintain a competitive advantage. An enterprise can therefore be considered as a knowledge producer or learning organization.

4.3 Influence of Knowledge Application on the Performance of Mobile Telephone Firms in Kenya

On assessing objective 2 to find out the influence of knowledge application on the performance of mobile telephone firms in Kenya, results in Table 4 were obtained.

Table 3. Knowledge acquisition and firm performance

Statement	Mean	Std. Dev.
Knowledge creation is an integral part of every staff member of the organization.	3.61	1.338
The organization encourages sharing of knowledge between different departments to create a competitive advantage.	3.61	1.309
Sharing of knowledge within the organization leads to creation of a pool of experienced staff and this leads to innovation.	3.57	1.159
Acquired knowledge is distributed in the organization through electronic or print media to all key stakeholders	3.44	1.410

Table 4. Knowledge application and firm performance

Statement	Mean	Std. Dev.
Application of new information results in invention in the business.	3.48	1.356
New innovation provides the organization with an economic benefit in the market.	3.52	1.411
Application of acquired knowledge leads to new inventions in the market.	3.56	1.410
New designs as a result of acquired knowledge leads to inventions of new markets and customers.	3.44	1.449
New products as a result of knowledge application leads to increased sales volumes.	3.76	1.045

Based on the results, the study found that there was high application of new information results in invention in the business (M=3.48, SD=1.356) and that the innovation provides the organization with an economic benefit in the market (M=3.52, SD= 1.411). More so, application of acquired knowledge leads to new inventions in the market (M=3.56, SD=1.410) and new designs, as a result of acquired knowledge, leads to inventions of new markets and customers (M=3.44, SD=1.449)> ti was found that new products as a result of knowledge application leads to increased sales volumes (M=3.76, SD=1.045).

The findings on this study are in agreement Gareth and and Cicmi [32] who stated that organizations will be prosperous in building an economic benefit over a given period if they generate knowledge at the least effort and a high swiftness equated to their rivals and make use of it excellently and competently. According to them, Innovations come up because of application of knowledge. With innovation, an enterprise is capable of developing new capacity, which can assure it an economic advantage over the rivals in the market. New creations are the different designs, formations or establishments, which an organization will come up with when it

makes use of the new knowledge, which it has acquired to its advantage [19].

4.4 Role of KNOWLEDGE Transfer on Performance of Mobile Telephone Firms in Kenya

The research assessed objective 3 to Determine the role of knowledge transfer on the performance of mobile telephone firms in Kenya to produced results in Table 5.

The findings in Table 5 show that these organizations encourage collaboration between members to help in knowledge transfer (M=3.52, SD=1.270) and this collaboration of members has fostered knowledge transfer to various departments of the organization (M=3.41, SD=1.434). The results show that the organizations collaborate in different systems for knowledge transfer among various departments (M=3.43, SD=1.368). Also, the organizations organize benchmarking with other organizations in the same industry (M=3.56, SD=1.327) and that benchmarking transfers knowledge and technology from one organization to another organization (M=3.57, SD=1.297).

Table 5. Knowledge transfer and firm performance

Statement	Mean	Std. Dev.
Our organization encourages collaboration between members to help in knowledge transfer.	3.52	1.270
Collaboration of members has fostered knowledge transfer to various departments of the organization.	3.41	1.434
Our organization collaborates different systems for knowledge transfer various departments.	3.43	1.368
Our organization organizes benchmarking with other organizations in the same industry.	3.56	1.327
Benchmarking transfers knowledge and technology from other organizations to our organization.	3.57	1.297

The results of this study affirm the findings in the study by Jones and Mahon [51] that the transfer of knowledge to the organization and business processes is relevant to achieving high performance, innovation processes, and competitive advantages. Organizational performance needs to be managed and monitored in order to control, address, communicate companies' outcomes: the improvement of organizational performance derives also from sharing target knowledge. In this sense, the proposal of appropriate conceptual methods and models for management and organizational purposes is of strategic importance, as it allows to achieve positive results in competitive business organizations and processes. Therefore, the current scenario has led to new advanced knowledge and modern companies have become competitive in the market through industry-specific knowledge, determining their success, overall value and long-term performance.

4.5 Knowledge Protection and Performance of Mobile Telephone Firms in Kenya

The research assessed objective 4 to ascertain how knowledge protection influence the performance of mobile telephone firms in Kenya where the results were as presented in Table 6 were produced.

These findings show that the organization have copyright protections of their knowledge and technology. (M=3.56, SD=1.298) where the copyrighting of their technologies has protected them from competitors copying their innovations (M=3.59, SD=1.353); Based on the results, the firms have patents on their inventions and this helps them avoid legal suits. (M=3.50, SD=1.129). Patenting their inventions has

increased their competitive advantage in the market (M=3.67, SD= 1.099). these results show that within the organizations, every staff has a password which they use to log in to their respective systems. (M=3.37, SD=1.218) and the password protection in their system helps to prevent unauthorized access to their systems (M=3.67, SD=1.133).

The findings of the study therefore are in line with Hurmelinna [52] who established that for a resource to confer competitiveness to a firm and result in superior performance, it has to be valuable, rare, inimitable and non-substitutable. This resource must be protected. However, though knowledge protection can be effected through IT systems and other physical means, it should be recognized that a very significant amount of organizational knowledge resides in the employees in which case softer methods of protecting this knowledge through employee incentives that govern the behavior and conduct of employees should be implemented as well. Protection is vital if the knowledge is to be used to generate or preserve a competitive advantage [52].

Protection of knowledge asset is an essential task in the organization's knowledge management implementation. Security is always the major concern in any organization's management information systems. Protecting corporate knowledge requires clear but detailed policies to ensure the knowledge asset is in its safe state at all times. Knowledge protection is necessary for effective performance and control within organizations. This would typically include the use of copyright and patents along with information technology systems that allow knowledge to be secured by filename, user name, password and file-sharing protocols that ascribe rights to authorized users.

Table 6. Knowledge protection and firm performance

Statement	Mean	Std. Dev.
Our organization has copyright protections of our knowledge and technology.	3.56	1.298
Copyrighting our technologies has protected us from competitors copying our innovations.	3.59	1.353
We have Patents on our inventions and this helps us avoid legal suits.	3.50	1.129
Patenting our inventions has increased our competitive advantage in the market.	3.67	1.099
Within our organization, every staff has a password which they use to log in to our system	3.37	1.218
Password protection in our system helps to prevent unauthorized access to our systems.	3.67	1.133

4.6 Organization Performance

The study assessed the level of organization performance among these firms. The results were as presented in Table 7.

These results show that there has been improved customer satisfaction (M=3.746); high return on investments (M=3.746); and the relationship between the organization and contractors have improved (M=3.805) while the return on assets were high (M= 3.763). From the findings of this study therefore it is evident that KM capability is the source and ability of an enterprise to leverage existing knowledge to create and protect new knowledge. Furthermore, an enterprise should combine personal skills and knowledge, physical and technical resources, structure and culture to stimulate the ongoing knowledge dynamism [53].

4.7 Inferential Statistics

Inferential statistics infer from the findings to the population were produced from the inferential analysis. This study conducted correlational analysis to establish existence relationship and Multiple regression to obtain a predictive model.

4.8 Pearson Product Moment Correlation Analysis

Using Pearson Product Moment, the study conducted correlational analysis to establish whether the independent variables; knowledge acquisition, knowledge application, knowledge transfer, and knowledge protection were significantly related to the dependent variable; performance of mobile telephone firms in Kenya which produced Table 8.

Table 7. Performance of mobile telephone firms in Kenya

Statement	Mean	Std. Dev.
Our sales volumes have increased as a result of adoption of information management competences	3.48	1.161
Our annual cash flows have improved due to increase in sales volumes.	3.65	0.914
Our customers are satisfied due to the high-quality products we offer them.	3.81	0.826
Our internal business processes have greatly improved leading to high efficiencies.	3.87	0.870
Our delivery time of customer orders has improved due to an improved process of ordering and preparation of orders	3.67	0.971

Table 8. Correlation analysis

Correlations		Knowledge Acquisition	Knowledge Application	Knowledge Transfer	Knowledge Protection	Performance
Knowledge Acquisition	Pearson	1	.911**	.890**	.773**	.617**
	Correlation					
	Sig. (2-tailed)		0.000	0.000	0.000	0.000
Knowledge Application	N	54	54	54	54	54
	Pearson	.911**	1	.925**	.865**	.693**
	Correlation					
Knowledge Transfer	Sig. (2-tailed)	0.000		0.000	0.000	0.000
	N	54	54	54	54	54
	Pearson	.890**	.925**	1	.856**	.671**
Knowledge Protection	Correlation					
	Sig. (2-tailed)	0	0		0	0
	N	54	54	54	54	54
Performance	Pearson	.773**	.865**	.856**	1	.811**
	Correlation					
	Sig. (2-tailed)	0.000	0.000	0.000		0.000
Performance	N	54	54	54	54	54
	Pearson	.617**	.693**	.671**	.811**	1
	Correlation					
Performance	Sig. (2-tailed)	0.000	0.000	0.000	0.000	
	N	54	54	54	54	54
	Pearson	.617**	.693**	.671**	.811**	1

These results show that at 5% significance level, knowledge acquisition was positively and significantly related to organization performance ($r = .617$, $p\text{-value} = .000$) as knowledge application was also found to be positively and significantly related with organization performance ($r = .693$, $p\text{-value} = .000$) while knowledge transfer was found to be having a positive and significant relationship with organization performance ($r = .671$, $p\text{-value} = .000$) and knowledge protection was found to be positively and significantly related to organization performance ($r = .811$, $p\text{-value} = .000$). These findings therefore suggest that knowledge acquisition, knowledge application, knowledge transfer and knowledge protection had a highly significant relationship with performance of mobile telephone firms in Kenya since the correlation coefficient (r) was exceeding 0.6.

4.9 Regression Analysis

A multiple linear regression analysis was done to examine the establish a model for predicting dependent variable in terms of the independent variable. The regression results obtained are presented in Table 9.

Based on the regression coefficients in Table 9. The regression model for performance of mobile telephone firms in Kenya predicting was:

$$Y = 1.344 + 0.018X_1 + 0.027X_2 + 0.088X_3 + 0.703X_4$$

Where: Y = Organization performance, X_1 = knowledge acquisition, X_2 = knowledge application, X_3 = knowledge transfer and X_4 =knowledge protection.

The equation above revealed that by holding knowledge acquisition, knowledge application, knowledge transfer and knowledge protection variables to a constant zero, organization performance will be at a constant of 1.344 units.

Table 9 further provides information about the contribution of each of our predictor variables to the predictive ability of the model. In this case all the four variables contribute significantly to the model (knowledge acquisition=.019, knowledge application=.042, knowledge transfer=.031 and knowledge protection =.049) $p < .05$. Considering the β values which indicate the direction of the relationship, all the four variables (knowledge acquisition, knowledge application, knowledge

transfer and knowledge protection) positively affect organizational performance. The findings obtained concur with the findings of Ngahu and Mbugua [11] and Waribugo, et al. [35] who found out that, there was positive medium (moderate) relationship between knowledge management capabilities (knowledge acquisition, knowledge application, knowledge transfer and knowledge protection) and organizational performance in the in the telephone mobile firms in Kenya.

4.10 Hypothesis Testing

The first four hypotheses were tested by using t-test and based on the results shown in Table 9.

H_{a1}: Knowledge acquisition has a significant influence on the performance of mobile telephone firms in Kenya.

Results ($t=2.129$, $p=0.019$) revealed that $t_{cal} (2.129) > t_{critical} (1.96)$ and thus hypothesis was accepted. Since the hypothesis was accepted, there is a significant effect of knowledge acquisition on performance of mobile telephone firms in Kenya. the findings agree to those in the study by Ngahu and Mbugua [11] that knowledge acquisition has a positive influence on the performance of financial establishments in Kenya

H_{a2}: Knowledge application has a significant on the performance of mobile telephone firms in Kenya

Results ($t=2.152$; $p=0.042$) show $p < 0.05$ and $t_{cal} (2.152) > t_{critical} (1.96)$ which means that the hypothesis was accepted. Since hypothesis was accepted then there is a significant effect of knowledge Application on performance of mobile telephone firms in Kenya. These findings affirm study by Waribugo et al. [36] which revealed knowledge transfer has the most influence on product invention.

H_{a3}: Knowledge transfer has a significant on the performance of mobile telephone firms in Kenya.

Results ($t=3.570$; $p=0.031$) show that the $p < 0.05$ and revealed that $t_{cal} (3.570) > t_{critical} (1.96)$. So the hypothesis was accepted. to mean that there is a significant effect of knowledge transfer on the performance of mobile telephone firms in Kenya. Such findings confirm the findings in the study by Najeeb et al. [37] that

knowledge transfer had a positive influence on operation

H₀₄: Knowledge protection has a significant on the performance of mobile telephone firms in Kenya.

Results ($t=4.960; p=0.049$) show $p < 0.05$ and revealed that $t_{cal} (4.960) > t_{critical} (1.96)$ and thus the hypothesis was accepted. This indicated that there is a significant effect of knowledge protection on the performance of mobile telephone firms in Kenya. This affirms the study by Gakuo and Rotich [41] that knowledge protection had a positive significant influence on the performance

The last hypothesis

H₀₅: There is a joint effect of knowledge management capabilities (knowledge acquisition, knowledge application, knowledge transfer and knowledge protection) on performance of the mobile telephone firms in Kenya

Was tested using ANOVA with results as shown in Table 10.

Table 10 provided the results on the analysis of the variance (ANOVA). The results ($p < 0.01; F=23.868$) indicated that the model was statistically significant since $p < 0.01$ was less than 0.05. This was supported by an F statistic of 23.868. The results implied that knowledge management capability is a good predictor of firm performance. The findings agree with that of Kim [53] who found a significant relationship between knowledge management capability and firm performance.

The summary of the model was depicted in table 11.

Based on the results in Table 11, the value of adjusted R^2 was 0.633 which suggests that 63.33% variation in performance of mobile telephone firms in Kenya can be attributed to change in knowledge acquisition, knowledge application, knowledge transfer and knowledge protection. Moreover, the remaining 36.7% suggest that there are other factors that can explain variation in organization performance which were not included in this model. The findings further show that the variables under research are strongly and positively related as indicated by correlation coefficient (R) value of .813.

Table 9. Coefficients of determination

	Coefficients ^a				t	Sig.
	Unstandardized Coefficients		Standardized Coefficients	Beta		
	B	Std. Error				
(Constant)	1.344	0.257			5.235	0.000
Knowledge Acquisition	0.018	0.137	0.028		2.129	0.019
Knowledge Application	0.027	0.179	0.042		2.152	0.042
Knowledge Transfer	0.088	0.155	0.139		3.570	0.031
Knowledge Protection	0.703	0.142	0.872		4.960	0.049

a. Dependent Variable: Organization perform performance of mobile telephone firms in Kenya

Table 10. ANOVA for knowledge management capabilities

	ANOVA ^a				
	Sum of Squares	df	Mean Square	F	Sig.
Regression	21.662	4	5.415	23.868	.000 ^b
Residual	11.118	49	0.227		
Total	32.779	53			

a. Dependent Variable: performance of mobile telephone firms in Kenya

b. Predictors: (Constant), Knowledge Protection, Knowledge Acquisition, Knowledge Transfer, knowledge Application

Table 11. Model summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.813 ^a	0.661	0.6333	0.47633
a. Predictors: (Constant), Knowledge Protection, Knowledge Acquisition, Knowledge Transfer, knowledge Application			

5. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The results of the study have revealed that knowledge application has a positively high significant influence on the performance of mobile firms in Kenya. The study further established those new innovations, new creations and new product are among the knowledge acquisition factors that affect performance of organizations as it was observed in the mobile telephone firms in Kenya. Therefore, following the results of the study, it is worthwhile to conclude that organization performance is dependent on knowledge application.

The study further concludes that knowledge application has a positively high significant influence performance of mobile telephone firms in Kenya. the interaction between organization members, collaboration between organization technologies and benchmarking are among the factors that influenced the mobile telephone firms in Kenya. Through embracing knowledge transfer the mobile telephone firms in Kenya enjoyed the benefits of financial focus, customer focus, internal business processes, organizational learning and growth, social responsiveness, and environmental integrity which are indicators of performance.

In conclusion therefore, it is worth noting that knowledge transfer has a positively high significant influence on the performance of mobile firms in Kenya.

The study concludes that knowledge protection has a positively high significant influence on the performance of mobile firms in Kenya. influences the performance of an organization. Among the knowledge protection factors that influenced performance were copyrights of knowledge, patents of knowledge and passwords protections. By embracing Copyrights of knowledge, Patents of knowledge and Password’s protections, the mobile telephone

firms in Kenya have improved their performance levels especially in Financial Focus, Customer Focus, Internal business processes, Organizational learning and growth, social responsiveness and Environmental integrity.

5.2 Recommendations

The organizations need to align themselves competitively, they should put up systems that ensure creation of knowledge, sharing of knowledge, distribution of knowledge. The acquisition has to do with the search for knowledge outside the organization and the creation of new knowledge from the interaction between new knowledge and prior knowledge in the organization. Therefore, new knowledge will benefit the development of innovation and organizational effectiveness. The acquisition of knowledge takes place from individual participation and interactions between tasks, technologies, resources and people in a specific context. The knowledge outsourced and acquired by the people who need it can increase the productivity and profitability of companies.

It is important that KM helps the organization to use the acquired knowledge to adjust strategic direction, solve new problems, and improve efficiency. A regular review is, therefore, required to know what has worked well and what has not during the lifecycle of KM.

The firms can simply accumulate knowledge because they think people are accessing it and using it. Effective recovery mechanisms provide quick and easy access and knowledge sharing. Web portals and the organization’s intranet can play a critical role in explicit knowledge. The use of text mining techniques to gain relevant knowledge is characteristic of the dissemination of knowledge about unstructured knowledge. The use of intelligent agents to actively create user profiles and provide the user with the appropriate insights and materials is another form of knowledge dissemination. Chat rooms, bulletin boards, online communication, practice communities on the organization’s intranet also facilitate the exchange of knowledge.

Focuses on leakage of knowledge to not authorized people, on leaving or retiring employees, and is concerned with observability of knowledge by externals. Hence, knowledge protection focuses on the confidentiality aspect of knowledge. The relational perspective focuses on how relational capital, i.e. mutual trust, respect, and friendship in inter-organizational relationships helps to protect knowledge.

6. SUGGESTIONS FOR FURTHER STUDIES

This study focused on KMC as an organizational mechanism for the continuous and deliberate creation of knowledge in organizations [21]. However, the mere focus on knowledge management is not enough for organizations to learn through them.

The researcher did not address the nature of the relationship that should exist between KMC and OL in order to ensure effective organizational performance. This therefore remains as part research work that should be considered in the future.

The study found that 63.33% variation in performance of mobile telephone firms in Kenya is explained by change in knowledge acquisition, knowledge application, knowledge transfer and knowledge protection. Moreover, the remaining 36.67% suggest that there are other factors that can explain variation in organization performance which were not included in this model. so other studies should be done to establish the factors contributing to 36.67% variation in performance of mobile telephone firms in Kenya

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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