INTERNATIONAL JOURNAL OF
RESEARCH AND CURRENT DEVELOPMENT
Available Online at http://www.journalijrcd.com
VOL. 2, ISSUE, 1, PP.41-49, JANUARY, 2017

IJRCD

ISSN: XXX-XXXX

RESEARCH ARTICLE

THE ROLE OF STRATEGIC ADOPTION OF TECHNOLOGY IN COMPETITIVENESS OF COMMERCIAL BANKS IN KENYA

Samson Ole Kisirkoi[1]., Esther Waiganjo[2] and AGNES Njeru[3]

[1] Maasai Mara University P.O Box 861 – 20500 Narok, Kenya
[2,3]Jomo Kenyatta University of Agriculture and Technology, Kenya

ARTICLE INFO

Article History:
Received 18th October, 2016
Received in revised form 19th November, 2016
Accepted 24th December, 2016
Published online 28th January, 2017

Keywords:

Commercial banks, competitiveness, Technology, strategic, survival.

ABSTRACT

Commercial banks play a critical role in the well being of the Kenyan economy. They also form a major portion of the financial sector in the country. Sustained competitiveness is of utmost importance in the National Economy. This study focused on the determination of factors that influence competitiveness of commercial banks in Kenya. Competitiveness often represents business comparison and rivalry among firms for market share and/or the economic strength of a business entity relative to its competitors in the market or industry. The research sought to establish strategic adoption of technology on competitiveness of commercial banks in Kenya. Technology, The study adopted a cross-sectional survey research design. The target population comprised of the forty three commercial banks in Kenya. The 43 commercial banks also served as the study's unit of inquiry while the unit of analysis was the management and employees within each of the commercial banks. Further, the study relied on primary data that was obtained by administering questionnaires and interview schedules to three officials within the commercial banks. The collected data was made ready for analysis and cleaned through checking for errors and completeness by editing, coding, transcribing and entering them directly into SPSS software. The main results of the study were that there was positive relationship between strategic adoption of technology, and competitiveness of commercial banks in Kenya. The relationship was found to be 56.3%,. It is therefore recommended that commercial banks should endeavour to build, and entrench on a continuous basis, their in strategic adoption of technology. There is need for further research on what other factors influence competitiveness of commercial banks in Kenya. Further research also needs to be undertaken on how the Central Bank of Kenya could enhance its oversight and regulatory mandate on commercial banks to ensure their long-term survival and stakeholder satisfaction.

Copyright © 2017 Samson Ole Kisirkoi., Esther Waiganjo and AGNES Njeru., This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Commercial banks are major players in the economic development of any country By definition and for the purposes of this study a Commercial Bank- is the type of bank that provides banking services such as accepting deposits, providing business loans and other advances as well as other financial services for a profit (Aywa, 2014). (Lall 2001); it is the capacity of offering goods and services with high customer value compared to competing ones (Chikan, 2008).

Competitiveness – is the ability of a firm to do better them comparable firms in sales, market share or profitability (Lall 2001); it is the capacity of offering goods and services with high customer value compared to competing ones (Chikan, 2008).

Strategic Adoption of Technology- Is the adoption of systems (technologies) to reduce mental and physical efforts in solving problems and performance of tasks to eliminate inefficiencies and improve service delivery (Awe, 2007).

*✉ ***Corresponding author:*** **Samson Ole Kisirkoi**
Maasai Mara University

The objective of the study

The objective of the research was to determine the role of strategic adoption of technology on competitiveness of commercial banks in Kenya. Technology is a major enabler of efficiency and effectiveness in service delivery. There is therefore need to learn the extent to which commercial banks can enhance their competitiveness with the use of technology.

According to Thompson *et al*. (2012), there is a tight connection between competitive advantage and profitability. The quest for sustainable competitive advantage always ranks high in the crafting of strategic framework for an organization. They further explain that the key to successful strategy making is to come up with a market to draw customers and that market place. A particular chosen strategy will be based on one or more theoretical foundations. The following then are the relevant theories that form the framework of the study.

Strategic Adoption of Technology on Competitiveness

Technology refers to having state of the art operating systems, information systems and real time data as an integral part of operations aimed at high levels of efficiency. This will clearly boost organizational competitiveness. Feurer and

Chaharbaglik (2006) on their part stated that technological innovation can be regarded as the driver for changes in a competitive position of an organization which hinges on its ability to drive or at least keep abreast with such changes.

According to Awe (2007), information technology is defined as " technologies that ensure a more accurate and cost effective knowledge to support decision making, reduces mental and physical efforts in solving certain tasks; reduces or eliminates inefficient practices, it rivals the manual system and improves services rendered to customers". Information and Communication Technology has provided self-service facilities also referred as (automated customer service machines) from where prospective bank customers can complete their account opening documents direct online. It assists customers to validate their account numbers and receive instruction on when and how to receive their cheque books, credit and debit cards (Agboola, 2001). Thus, Technological innovation deals with the physical devices and software that link various computer hardware components and transfer data from one physical location to another (Laudon and Laudon; 2001 & 2010).

In their research on banks, PWC (2015), pointed out that technology will change everything and that it is becoming a potent enabler of increased and better service as well as reduced costs. This ultimate has the effect of improved competitiveness. PWC researchers further explain that technology big data, cloud computing, smart phones and high band with will improve service delivery. They also note that digital is now focused on current products and services and therefore there is an enhanced data capture and analysis which drives more targeted customer offerings. This implies mobile banking will increasingly disrupt distribution models. It is also observed that technology has enhanced security and verification and this has enabled all aspects of sales service and delivery to be conducted online. In the 21st century information technology is considered as a new source of competitive advantage crucial for sustainable survival. IT enhances management processes and operations as well as productivity and flexibility. Thus Information technology has the potential of improving operational efficiency and effectiveness, (Moghavveni, *et al* 2012).

Commercial Banks in Kenya by market share

Commercial banks in Kenya have continued to compete for market share using various strategies all aimed at enhancing service delivery and customer experience. The main strategy is the use of information technology and innovation. Some banks have embarked on cost-cutting measures to make them more efficient and agile. Kirimi (2016) pointed out that lenders have been forced to respond to the stiff competition in banking sub-sector. Banks have been left with limited options other than addressing costs and optimization of use of limited resources to improve productivity.

The Central Bank of Kenya's latest market data indicates that Kenya Commercial Bank has largest market share of 14.1%. KCB's market dominance is attributed to its long established brand and strong government business support backed by the wider public sector. Kirimi further reports that KCB has undertaken successive reforms and restructural movement. The bank has also undergone transformation which focused on improving operational efficiencies and enhancement of customer delivery platforms. Equity Bank comes third with 9.44% of the market share. The bank has a massive customer base of about 10 million. Equity Bank has a deep brand familiarity and enhanced re-tooling of the business which it refers to as 'next generation digitization named: Equity 3.0'. Standard Chartered and Barclays round up the top five banks in Kenya with 7.0% and 6.94% respectively. Standard Chartered Bank leverages on high-end SMEs corporate net-worth clients who they continue to serve supported by effective automation and online banking capabilities. Kirimi also explains that Barclays is fighting to retain its former dominance which has not been helped by its recent announcement of exit from Africa. The bank however still enjoys solid loyalty among select corporate, SMEs and retail clients. Commercial Bank of Africa and Diamond Trust Bank round up the top banks in Kenya.

Commercial banks in Kenya are classified into three peer groups done according to a weighted composite index which comprises of net assets, customer deposits, capital and reserves, number of deposit accounts and number of loan accounts. Banks that have a weighted composite index of 5% and above are classified as large. Those considered medium have a weighted composite index of between 1% and 5%. Banks considered small are those with a weighted composite index of less than 1%, (Central Bank of Kenya, 2015).

Influence of Strategic Adoption of Technology on Competitiveness

Agboola (2006) in his study on Information and Communication Technology (ICT) in banking operations in Nigeria using the nature and degree of adoption of innovative technologies, degree of utilization of the identified technologies, and the impact of the adoption of ICT devices on banks, found out that technology was the main driving force of competition in the banking industry. During his study he witnessed increase in the adoption of ATMs, EFT, smart cards, electronic, home and office banking, and telephone banking. He indicates that adoption of ICT improves the banks' image and leads to a wider, faster and more efficient market. He asserts that it is imperative for bank management to intensify investment in ICT products to facilitate speed, convenience, and accurate services, or otherwise lose out to their competitors.

Technology Adoption of the willingness of users to accept and make use of available systems which is determined primarily by the perceived usefulness, defined as degree to which the user believes their performance will be enhanced through use of the system; and perceived ease of use, which is defined as the degree to which the user believes their use of the system will be free of effort (Davis, 2009). Due to the dynamic nature of the economic environment and changing customer requirements, strategic adoption of technology is critical for firms to remain competitive.

Shirley and Sushanta (2006) studied the impact of information technology on the banking industry and analyzed both theoretically and empirically how information technology (IT related products are internet banking, electronic payments, security investments, information exchanges). Berger, (2005) stated that spending can affect bank profits via competition in financial services that are offered by the banks. Using a panel of 68 US banks for a period of over 20 years to estimate the impact of IT on profitability of banks, they found out that though IT might lead to cost saving, higher IT spending can create network effects lowering bank profits. They further contend that the relationship between IT expenditures and bank's financial performance is conditional to the extent of network effect. They say that if network effect is too low, IT expenditures are likely to; reduce payroll expenses, increase market share, and increase revenue and profit.

Mabrouk and Mamoghli (2010) in their study on Dynamics of Financial Innovation and Performance of Banking Firms, analyzed the effect of the adoption of two types of financial innovations namely; product innovation (telephone banking and SMS banking etc.) and process innovation (Magnetic strip card (debit, ATM and credit card), Automatic cash dispenser; (Automatic teller machine; Electronic payment terminal etc.) on the performance of banks. Their analysis included two adoption behaviors, first mover in adoption of the financial innovation and imitator of the first movers. They found out that first mover initiative in product innovation improves profitability while process initiative has a positive effect on profitability and efficiency. Banks that imitate are less profitable and less efficient than first movers.

Looking at the influence of technology on the Jordanian banks Akram and Allam (2010) used a Pooled Data Regression using Pooled Least Square to measure the level of investment in information technology on improving the matrix of financial and operational performances. The results of measurements using test of hypothesis showed that there is an impact on the use of Management Information Systems [MIS] in Jordanian banks in the market value added (MVA), Earnings Per Share (EPS), Return on Assets (ROA) and Net Profit Margin (NMP). However, the test of hypothesis also showed that there was no impact of the use of MIS in Jordanian banks to improve the Return on Equity (ROE). They concluded that due to the increased costs of investment in information technology which might work to reduce the return on the property.

Nyangosi and Arora (2011) argue that commercial banks adopted different electronic distribution channels to meet the demands of customers. In their study to examine the adoption of information technology in Kenyan banks focusing on services provided through internet and mobile banking, they found out that inclusion of information technology in banking business was necessary to achieve excellence goal. The study further revealed that ATM technology is the most available technology while SMS banking was also found useful. They also found out that customers use bank websites to know the products, use internet banking to check balance, know after sale services and buy products, an indication that internet banking is gaining popularity and becoming vital in financial transaction events.

RESEARCH METHODOLOGY

The study adopted a cross-sectional survey research design. Lavrakas (2008) describes a cross-sectional survey research design as a systematic research method for collecting data from a representative sample of individuals using instruments composed of closed-ended and/or open-ended questions, observations, and interviews. A cross-sectional research is one in which data are collected from selected individuals at a single point in time. Cross-sectional designs are effective for providing a snapshot of the current situation prevailing in a particular population (Gay, Mills, Airasia, 2009).

It is one of the most widely used non-experimental research designs across disciplines to collect large amounts of survey data from a representative sample of individuals sampled from the targeted population. The cross-sectional survey design was adopted for this study because of its relevance in addressing the operations raised by the research. The target population of the research was the 43 commercial banks licensed by the Central Bank of Kenya. To ensure the required information was captured 3 employees were interviewed from each bank. The study used questionnaires and interview guides to collect data from sampled employees in the commercial banks. The collected data was subsequently analysed with the use of SPSS software.

RESULTS AND DISCUSSION

The data analysis was done guided by the research as per the specific objectives where patterns were investigated, interpreted and inferences drawn on them.

Results and discussion of the research are as provided hereunder

The number of questionnaires, administered to all the respondents, was 126. A total of 97 questionnaires were properly filled and returned from the bank employees.

Reliability Test

The questionnaire was tested for reliability using the Cronbach alpha reliability coefficient to establish its appropriateness for further analysis. The results were presented in table 1.

Table 1 Cronchbach alpha reliability test

Variable	Cronbach's Alpha	No. of Items	Remarks
Technology	0.874	10	Accepted
Competitiveness	0.959	15	Accepted
Overall Measurements	**0.935**		

Pilot testing was carried out to determine the reliability of the research instrument. The reliability test results are as indicated in table 1.The Cronbach's alpha on objectives are above 0.7 which agrees with Nunnally who suggested that the reliability coefficient value of above 0.7 is statistically reliable and acceptable for the study.

Descriptive Analysis for Strategic Adoption of Technology

The third objective of study was to determine the influence of strategic adoption of technology on competitiveness of commercial banks in Kenya. The study used 10 statement items to establish the influence of each item on the other. The researcher used a 5 likert to assess the views and opinions of the respondents on each statement item. Where the higher score of 5 represented strongly agreed, 4 represented agree, 3 represented neutral, 2 represented disagree and 1 represented strongly disagree. The frequency and percentages used to summarize the responses were presented in table 2

Table 2 Strategic Adoption of Technology Descriptive Results

Sno	Statement	Very Low	Low	Neither high nor low	High	Very High	Likert Mean
1	Adoption of technology has a significant correlation with organizational competitiveness.	0.0%	14.4%	11.3%	38.1%	36.1%	3.96
2	Technology advancement has significantly promoted market-like forms of production and distribution in our company.	0.0%	5.2%	18.6%	47.4%	28.9%	4.00
3	Adoption of technology promotes high levels of efficiency and performance within our organisation.	0.0%	10.3%	11.3%	45.4%	33.0%	4.01
4	To achieve organizational competitiveness an institution should adopt technology in its operations.	0.0%	9.3%	12.4%	32.0%	46.4%	4.15
5	Technology through electronic business is very effective at reducing the costs of attracting new customers	1.0%	12.4%	4.1%	35.1%	47.4%	4.15
6	E-commerce is certainly a very effective tool when it comes to establishing customer relations and provision of access to global markets.	1.0%	15.5%	8.2%	40.2%	35.1%	3.93
7	Through technology our company has been able to increase the market size and market structure.	0.0%	11.3%	15.5%	33.0%	40.2%	4.02
8	The Internet is helping us to enlarge existing markets by cutting through many of the distribution and marketing barriers.	1.0%	11.3%	11.3%	32.0%	44.3%	4.07
9	E-commerce lowers information and transaction costs for operating on overseas markets and providing a cheap and efficient way to strengthen customer-supplier relations.	0.0%	11.3%	17.5%	37.1%	34.0%	3.94
10	Technology has encouraged our company to develop innovative ways of advertising, delivering and supporting our marketing efforts.	4.1%	12.4%	7.2%	38.1%	38.1%	3.94
	Average	0.7%	11.3%	11.7%	37.8%	38.4%	4.02

Table 2 shows that 74.2% of the respondents agreed that adoption of technology has a significant correlation with organizational competitiveness, 76.3% agreed that technology advancement has significantly promoted market-like forms of production and distribution in their company while 78.4% agreed that adoption of technology promotes high levels of efficiency and performance within their organization and 78.4% agreed that to achieve organizational competitiveness an institution should adopt technology in its operations.

In addition 82.3% of the respondents agreed that technology through electronic business is very effective at reducing the costs of attracting new customers, 75.3% agreed that E-commerce is certainly a very effective tool when it comes to establishing customer relations and provision of access to global markets while 73.2% agreed that through technology their company has been able to increase the market size and market structure and 76.2% agreed that the Internet is helping us to enlarge existing markets by cutting through many of the distribution and marketing barriers. Finally 71.1% of the respondents agreed that E-commerce lowers information and transaction costs for operating on overseas markets and providing a cheap and efficient way to strengthen customer-supplier relations and 76.2% agreed that technology has encouraged their company to develop innovative ways of advertising, delivering and supporting their marketing efforts. The mean score for responses for this section was 4.02 which indicates that majority of the respondents agreed that strategic adoption of technology was a key determinant of competitiveness of commercial banks in Kenya.

The study findings are in line with Shirley and Sushanta (2006) who studied the impact of information technology on the banking industry and analyzed both theoretically and empirically how information technology (IT related products are internet banking, electronic payments, security investments, information exchanges). Berger, (2005) also stated that spending can affect bank profits via competition in financial services that are offered by the banks. Using a panel of 68 US banks for a period of over 20 years to estimate the impact of IT on profitability of banks, they found out that though IT might lead to cost saving, higher IT spending can create network effects lowering bank profits. They further contend that the relationship between IT expenditures and bank's financial performance is conditional to the extent of network effect. They say that if network effect is too low, IT expenditures are likely to; reduce payroll expenses, increase market share, and increase revenue and profit.

From the interview guide the respondents were optimistic in regards to the level of technology adoption as all the banks were embracing technology to ensure they keep up with the world wide technological changes pace. The respondents indicated that their bank has adopted technology in its operations by about 80-90%. Its mobile and internet banking is being practiced. ATMs networks are available in many places to improve access to banking services. These have delighted customers a great deal. The factors that have contributed to the adoption of technology are for customers' convenience and reliability, increase efficiency in revenue collection to help in decongestion of banking halls (service customers better and faster). Thus it is clear technology helps in the retention of customers given stiff competition in the banking sector.

Diamond Trust bank has embraced technology in every operation. The latest technology is applied to make service delivery faster. The bank adopted technology to enhance efficiency and keep pace with global trends. It has introduced e-banking and cashless money transfers. There is a high degree of adoption of technology in the banks operations. Strategic adoption of technology has been driven by the need for efficiency, effectiveness and enhancement of competitiveness. It was also driven by the need to attain high business returns. Chase Bank has fully adopted technology in its operations to the extent that it was awarded the 1st position bank in mobile banking. The factors that drove the bank to adopt technology were stiff competition and customer satisfaction. The bank uses technology to outperform its rivals in the industry by ensuring reliability and security of customer transactions.

Equity Bank has also enhanced its industry competitiveness through online and mobile banking. The bank also produces e-statements all to delight the customers. The bank is on top of things in innovativeness. Research and surveys are done regularly to find out customer needs. To meet the changing customer requirements and expectations, the bank management continuously improving service delivery as well as development of new products and services. Customer feedback is constantly sought to innovate.

The Bank of Africa's quest for strategic adoption of technology was driven by the global industry trends. Customers require speedy and efficient delivery of services. Customers need to do business anywhere and anytime given that the world has become a global village. The bank has fully embraced technology in its operations. This is based on the understanding that customers are busy and demand cost-effective, efficient and convenient services.

On its part, Citi Bank delivers on smart award winning, user friendly online banking experience which can be used by clients in nearly all banking needs. The online banking services include:- free online bill payments, Citi Bank's text banking, accounts alert, virtual account numbers, add a user, online bank statements , online check images, online transfer services, money Citi financial tools, auto save, online and mobile fraud protection, 24/7 customer support. The findings are consistent with the Central Bank of Kenya's (2015) Supervision Report which indicated that on average, in 2014 one bank employee was serving 770 employees whereas in 2015 an employee was serving 972 customers. This was an indication of improved efficiency in customer service as a result of adoption of technology. It is however cautioned that the banking sector management should ensure the increased use of modern technology in banking transactions is matched with effective controls to prevent incidents of fraud.

Descriptive Analysis for Competitiveness

The study sought to find out the competitiveness of commercial banks in Kenya. The study used 15 statement items to establish the influence of each item on the other. The researcher used a 5 likert scale to assess the views and opinions of the respondents on each statement item. The results are presented in table 3

Table 3 Competitiveness Descriptive Results

Sno	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Likert Mean
1	Compared to our competitors in the previous year, our organization's sales growth rate is higher.	4.1%	9.3%	11.3%	41.2%	34.0%	3.92
2	Compared to our competitors in the previous year, our organization's market share is bigger.	5.2%	10.3%	23.7%	41.2%	19.6%	3.60
3	Compared to the previous year, the level of employee productivity in our organization is higher.	3.1%	13.4%	12.4%	27.8%	43.3%	3.95
4	Compared to the previous year, the level of profitability of our organization is higher.	0.0%	4.1%	17.5%	41.2%	37.1%	4.11
5	The company has experienced an increase in total revenue over the last 5 years	4.1%	8.2%	0.0%	49.5%	38.1%	4.09
6	We have superior firm performance as indicated by increasing ROE for the last 5 years.	8.2%	5.2%	16.5%	44.3%	25.8%	3.74
7	Compared to the previous year, our revenue flow is higher and increasing steadily	1.0%	10.3%	12.4%	43.3%	33.0%	3.97
8	We have competitive advantage over our competitors.	1.0%	8.2%	12.4%	47.4%	30.9%	3.99
9	The company has experienced an increase in return on assets.	2.1%	13.4%	22.7%	35.1%	26.8%	3.71
10	Our firm has experienced an increase in assets over the last 5 years.	0.0%	8.2%	9.3%	57.7%	24.7%	3.99
11	Our firm has ability to raise capital for its operations	4.1%	20.6%	0.0%	41.2%	34.0%	3.80
12	Our customers have been highly satisfied for the last 5 years	8.2%	13.4%	0.0%	48.5%	29.9%	3.78
13	There has been a low level of employee turnover for the last 5 years	1.0%	18.6%	4.1%	39.2%	37.1%	3.93
14	The company has experienced an increase in customer base for the last five years	1.0%	12.4%	12.4%	35.1%	39.2%	3.99
15	The company has experienced an increase in return on capital	2.1%	21.6%	10.3%	26.8%	39.2%	3.79
	Average	3.0%	11.8%	11.0%	41.3%	32.8%	3.89

Table 3 shows that 75.2% of the respondents agreed that compared to their competitors in the previous year, their organization's sales growth rate was higher, 60.8% agreed that compared to their competitors in the previous year, their organization's market share was bigger and 71.1% agreed that compared to the previous year, the level of employee productivity in their organization was higher. Seventy eight point three percent of the respondents agreed that compared to the previous year, the level of profitability of their organization was higher, 87.6% agreed that the company had experienced an increase in total revenue over the last 5 years and 70.1% agreed that they had superior firm performance as indicated by increasing ROE for the last 5 years.

In addition 76.3% of the respondents agreed that compared to the previous year, their revenue flow was higher and increasing steadily, 78.3% agreed that they had competitive advantage over our competitors while 61.9% agreed that the company had experienced an increase in return on assets and 82.4% agreed that their firm had experienced an increase in assets over the last 5 years. Seventy five point two percent of the respondents agreed that their firm had ability to raise capital for its operations, 78.4% agreed that their customers have been highly satisfied for the last 5 years and 76.3% agreed that there had been a low level of employee turnover for the last 5 years. Finally 74.3% of the respondents agreed that the company had experienced an increase in customer base for the last five years and 66% agreed that the company had experienced an increase in return on capital. The mean score for responses for this section was 3.89 which indicates that majority of the respondents agreed to the statements regarding competitiveness of commercial banks in Kenya.

Strategic Adoption of Technology Influence

On whether strategic adoption of technology has an influence on firm's competitiveness, the results presented in this section explain the relationship.

Reliability Tests

Using Cronbach's Coefficient Alpha test on technology, the coefficient value determine to establish the reliability .the result were shown in Table 4.

Table 4 Reliability Test for Technology

Variable	Technology
Number of items	10
Cronbach's Alpha	0.894

A coefficient of 0.894 was found as shown in table 4.27.These results corroborates findings by Saunders Lewis and Thornhill (2009) and Christensen, Johnson and Turner (2011) who stated that scales of 0.7 and above, indicate satisfactory reliability. Based on these recommendations, the statements under the technology variable of this study were concluded to have adequate internal consistency, therefore, reliable for the analysis and generalization on the population.

Sampling Adequacy

To examine whether the data collected was adequate and appropriate for inferential statistical tests such as the factor analysis, regression analysis and other statistical tests, two main tests were performed namely; Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Barlett's Test of Sphericity. For a data set to be regarded as adequate and appropriate for statistical analysis, the value of KMO should be greater than 0.5 (Field, 2000). The findings were shown in Table 4.30.

Table 5 Technology KMO Sampling Adequacy and Bartlett's Sphericity Tests

Kaiser-Meyer-Olkin Measure	**0.768**
Bartlett's Chi- Square	764.087
Bartlett's df	45
Bartlett's Sig.	0.00

The results show that the KMO statistic was 0.768 which was significantly high; that is greater than the critical level of significance of the test which was set at 0.5 (Field, 2000). In addition to the KMO test, the Bartlett's Test of Sphericity was also highly significant (Chi-square = 764.087 with 45 degree of freedom, at $p < 0.05$). The results of the KMO and Bartlett's Test are summarized in Table 4.30. These results provide an excellent justification for further statistical analysis to be conducted.

Factor Analysis

Factor analysis was conducted after successful testing of validity and reliability using KMO coefficient and Cronbach alpha results. Factor analysis was conducted using Principal Components Method (PCM) approach. The extraction of the factors followed the Kaiser Criterion where an eigen value of 1 or more indicates a unique factor. The results were shown in Table 4.31.

Table 6 Adoption Technology Total Variance Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.187	51.872	51.872	5.187	51.872	51.872
2	1.812	18.123	69.995			
3	1.076	10.757	80.752			
4	0.66	6.596	87.348			
5	0.4	4	91.349			
6	0.299	2.992	94.34			
7	0.218	2.185	96.525			
8	0.15	1.5	98.025			
9	0.12	1.198	99.223			
10	0.078	0.777	100			

Extraction Method: Principal Component Analysis.

Total Variance analysis indicates that the 10 statements on technology can be factored into 1 factor. The total variance explained by the extracted factor is 51.872%.

Factor loadings for sub-constructs of strategic adoption of technology were shown in Table 4.32.

All the statements attracted coefficients of more than 0.4 hence all the statements were retained for analysis. According to Rahn (2010) and Zandi (2006) a factor loading equal to or greater than 0.4 is considered adequate. This is further supported by Black (2002) who asserts that a factor loading of 0.4 has good factor stability and deemed to lead to desirable and acceptable solutions

Table 7 Factor Loading for Strategic adoption of Technology

Statement	Component
Adoption of technology has a significant correlation with organizational competitiveness.	0.731
Technology advancement has significantly promoted market-like forms of production and distribution in our company.	0.741
Adoption of technology promotes high levels of efficiency and performance within our organisation.	0.823
To achieve organizational competitiveness an institution should adopt technology in its operations.	0.643
Technology through electronic business is very effective at reducing the costs of attracting new customers	0.699
E-commerce is certainly a very effective tool when it comes to establishing customer relations and provision of access to global markets.	0.685
Through technology our company has been able to increase the market size and market structure.	0.774
The Internet is helping us to enlarge existing markets by cutting through many of the distribution and marketing barriers.	0.639
E-commerce lowers information and transaction costs for operating on overseas markets and providing a cheap and efficient way to strengthen customer-supplier relations.	0.663
Technology has encouraged our company to develop innovative ways of advertising, delivering and supporting our marketing efforts.	0.78
Extraction Method: Principal Component Analysis.	

Strategic Adoption of Technology Normality Test

To check for normality, the study adopted the skewness and kurtosis statistic as recommended by Myoung (2008). The skew value of a normal distribution is zero, usually implying symmetric distribution. On the other hand Kurtosis is a measure of the peakedness of a distribution. West *et al*. (1996) proposed a reference of substantial departure from normality as an absolute skew value > 2 and an absolute kurtosis value > 7. However, for this study the recommendation of Myoung (2008) who asserted that as a rule of thumb a variable is reasonably close to normal if its skewness and kurtosis have values between -1.0 and + 1.0. The results were presented in table 4.33.

Table 8 Strategic Adoption of Technology Normality Test

	Statistic	Std. Error
Skewness	-0.871	0.245
Kurtosis	0.342	0.485

The results show that strategic adoption of technology had a skewness coefficient of -0.871 and its kurtosis coefficient being 0.342. Based on these it was concluded that technology are normally distributed since they lie with the ± 1 range recommended by Myoung (2008).

Strategic Adoption of Technology Linearity Test

Linearity of variables was tested using correlation coefficients as suggested by Cohen, West and Aiken, (2003). To establish whether there is a linear relationship, the study adopted the Pearson product of moment's correlation coefficients. Which are presented in table 9

Table 9 Technology Correlation Coefficients

Variable		Competitiveness	Technology
Competitiveness	Pearson Correlation	1	
	Sig. (2-tailed)		
Technology	Pearson Correlation	0.75	1
	Sig. (2-tailed)	0.000	

The results indicate that the variables competitiveness and strategic adoption of technology had a strong positive relationship as indicated by a correlation coefficient of 0.750. This implies that there is a linear positive relationship. Thus an increase in strategic adoption of technology effectiveness would result in an improved competitiveness.

Multicollinearity

Multicollinearity in the study was tested using Variance Inflation Factor (VIF). A VIF of more than 10 (VIF ≥ 10) indicates a problem of multicollinearity. According to Montgomery (2001) the cutoff threshold of 10 and above indicates the existence of multicollinearity while tolerance statistic values below 0.1 indicate a serious problem while those below 0.2 indicate a potential problem. The results are presented in table 10

Table 10 Technology Multicollinearity

Colinearity Statistics	
Tolerance	VIF
0.45	2.222

The results indicate that the VIF value for strategic adoption of technology was established to be 2.222 while its tolerance statistic was reported to be 0.45. Based on these the assumption of no multicollinearity between predictor variables was thus not rejected as the reported VIF and tolerance statistics were within the accepted range.

Relationship between Strategic Adoption of Technology and Competitiveness

Regression analysis was conducted to empirically determine whether strategic adoption of technology was a significant determinant of competitiveness among commercial banks in Kenya. Regression results are presented in Table 11

Table 11 Model Summary for Strategic Adoption of Technology

Model Summary									
					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.414[a]	.171	.162	.711	.171	19.622	1	95	.000
a. Predictors: (Constant), Technology									

The results show that the goodness of fit for the regression between strategic adoption of technology and competitiveness was satisfactory. The results indicate that there is a weak positive relationship of 0.414 between adoption of technology and a firm's competitiveness which is very significant at a p value of less than 0.05. An R squared of 0.171indicates that

17.1% of the variations in competitiveness are explained by the variations in strategic adoption of technology.

Further analysis sought to establish the overall model significance and was presented in table 4.37.

Table 12 ANOVA for Strategic Adoption of Technology

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.926	1	9.926	19.622	.000[b]
	Residual	48.055	95	.506		
	Total	57.980	96			

a. Dependent Variable: Competitiveness
b. Predictors: (Constant), Technology

From table 4.37 it is clear that the F statistic of 19.622 indicated that the overall model was significant since the p value is < 0.05. The findings imply that strategic adoption of technology was statistically significant in explaining competitiveness among commercial banks in Kenya. The mean square values shoes that the variance in the responses is small since the regression mean square is much bigger than the residual mean score.

The strategic adoption of technology coefficients are presented in table 13

Table 13 Coefficients of Strategic Adoption of Technology

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.287	.363		6.294	.000
	Technology	.398	.090	.414	4.430	.000

a. Dependent Variable: Competitiveness

The results show that strategic adoption of technology contributes significantly to the model since the p-value for the constant and gradient are less than 0.05. The findings imply that one positive unit change in strategic adoption of technology leads to a change in competitiveness at the rate of 39.8% . This confirms the positive effect of strategic adoption of technology on competitiveness in Kenyan commercial banks. The simple linear regression model defining the relationship between the variables was;

$Y = 2.287 + 0.398X_1 + 0.363$

Influence of Strategic Adoption of Technology on Competitiveness

The third objective of study was to determine the influence of strategic adoption of technology on competitiveness of commercial banks in Kenya. Adoption of technology gives a strong mile hold in achieving competitive advantage, this has seen most of the commercial banks adopting new technological changes so as to win many customers and retain them through offering high quality services. The respondents agreed that technology advancement had significantly promoted market-like forms of production and distribution in their company, adoption of technology promoted high levels of efficiency and performance within their organisation, technology through electronic business was very effective at reducing the costs of attracting new customers and E-commerce was certainly a very effective tool when it comes to establishing customer relations and provision of access to global markets. Regression and correlation results indicated that there was a positive and significant relationship between strategic adoption of technology and competitiveness in commercial banks in Kenya.

CONCLUSIONS

Continuous engagement in introduction of new products and services, upgrading of the existing systems as well as introduction of new software's for business operations greatly affect the ability of the commercial banks to perform and achieve long term sustainability. This facilitates its product/services quality improvements, technical specification creating new and significantly better customer value thereby influencing the bank's performance and growth. Product innovation therefore has a greater influence to the competitiveness of the commercial banks which are also positively related. Adoption of technology strategic greatly enhances organizational competitiveness and therefore long-term survival.

The reorganization of the banks' structure towards improvements in service delivery determines the competitiveness of the bank which eventually affects its financial, assets and customer base. The ability of the banks to manage its public relations, employee motivation and retention in its operations determines its performance which dictate the position of the bank in the market and its value of assets and as well as its profitability due to favorable customer and employee relations and general market studying.

Recommendations

Managements of commercial banks should pay close attention to the factors that enhance their long-term profitability and competitiveness. From the study it is clear that strategic adoption of technology positively influences banks' competitiveness.

The management of commercial baks have to embrace modern technology for their survival given the rapid changes in customer expectations.

Commercial banks should be on top of the game to ensure they keep pace with the rapid changes in technology. Customer requirements are fast changing. The study has established that adoption of technology enhances competitiveness. Thus by promoting strategic adoption of technology there should be a resultant high level of efficiency and reduction in cost. This also improves customer convenience and speed of service delivery. Technology also helps to reach more customers at minimal cost. Commercial banks should therefore strive to ever improve their technological capacity to preserve and grow their market share and customer base. Banks should however be careful to

ISSN: XXXX-XXXX

ensure that there are effective controls because as computer-based transactions increase so as to prevent fraud.

Banks' innovativeness is highly critical for their survival and sustainability. There is need for banks to invest in state-of-the art technology and regular training of their staff to enhance employee creativity and innovativeness. The bank should constantly find out customer requirements and conduct benchmarking on best practices. Cost-effective processes, new products and services should be developed to satisfy and attract customers. Adequate resources should be allocated for research and development to enhance service delivery. The more innovative a bank is the more it is likely to attract customers. There is more need than ever for convenience of customers who wish to spend less and keen to getting the highest possible satisfaction. Customers are won by convenient and personalized banking services.

It is recommended that banks should regularly train their employees to enhance skills, knowledge and capabilities in line with market dynamics. Recruitment of staff is based on established skills' gaps to facilitate achievement of banks' business objectives.

Areas of Further Research

There is need for further research to establish customer requirements given their ever shifting expectations. There is also need for further research to determine what other factors influence competitiveness of commercial banks in the face of changing customer requirements. Rapid developments in technology has had both positive and disruptive effects. Fraudsters have stepped up their evil techniques to acquire money wrongly. There is therefore need for further research to find ways of countering fraudulent financial activities aimed at safeguarding stakeholder's interests.

References

Aywa S. (2015). The Structure of Universal Banking in Kenya

Berger, C. (2005) Bauman's Verbal Art and the Social Organization of Attention: The Role of Reflexivity in The Aesthetics Of Performance. *Journal of American Folklore* 115 (455),

Cohen, J., Cohen, P., & Stephen, G. West, and Leona S. Aiken (2003).*Applied Multiple Regression/Correlation Analysis For The Behavioral Sciences*,*3*.

Davis, E.(2015) The importance of strategic planning in your organization-http://www.ceoinstitute.com

Jalal-Karim, A., & Hamdan, A. M. (2010). The Impact of Information Technology on Improving Banking Performance Matrix: Jordanian Banks as Case Study. In *European Mediterranean and Middle Eastern Conference on Information System* (pp. 21-33).

Kamau, A. W. (2009). *Efficiency In The Banking Sector: An Empirical Investigation Of Commercial Banks In Kenya* (Doctoral Dissertation, University of Nairobi).

Lall, M. (2001). National Strategies For Technology Adoption In The Industrial Sector: *Lessons Of Recent Experience In The Developing Regions*, Human Development Occasional Papers (1992-2007) HDOCPA-2001-08, Human Development Report Office (HDRO), And United Nations Development Programme (UNDP).

Mabrouk, N.& Mamoghli, V. (2010) Dynamics Of Financial Innovation And Performance Of Banking Firms. *Context of an Emerging Banking Industry*.

Myoung, B. (2009)., Micro-Econometrics for Policy, Program and Treatment Effects. In OUP Catalogue. *RePE*.

Nyangosi, C. & Arora, J. (2011). Antecedents and Obstacles to E-Banking Adoption: A Comparative Study of India and Kenya. *International Journal OfIndian Culture and Business Management*, 4 (2), 123-137

Shirley, M. & Sushanta, S. (2006). The Impact of Information Technology on the Banking Industry: Theory and Empirics

Saunders, M., Lewis, P. & Thornhill, A. (2009).*Research Methods For Business Students*. (5th Edition). London: Prentice Hall.

How to cite this article:
Samson Ole Kisirkoi, *et al:* The Role Of Strategic Adoption Of Technology In Competitiveness Of Commercial Banks In Kenya. International Journal of Research and Current Development 2017; 2(1): 41-49.