

Influence of Technological Change Management on Competitive Advantage of Tier 1 Commercial Banks In Nakuru, Kenya

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Abstract— Tier one commercial banks in Kenya operate under an extremely competitive environment in which there is competition for market share, customer numbers, loan clients, deposits and profitability levels. One of the strategies that have been adopted for the purposes of building competitive advantages is the adoption of new technologies. However, the manner in which change management is undertaken is critical in the commercial banks gaining competitive advantages given the context that these technologies are often similar across the banks. This study therefore sought to examine the role of technological change management on the competitive advantage of tier one commercial banks. This study sought to examine the influence of mobile banking applications and electronic queue management system on competitive advantages of tier one commercial banks in Nakuru town. The study was guided by Technology Acceptance Theory. This study used descriptive research design targeting seven Tier 1 banks operating in Nakuru town from which the accessible population was their management teams from operations, IT and customer care service department. The study used a census approach and purposively selected the respondents. The study used a pre-tested structured questionnaire to collect data for the study. Data was analyzed using both descriptive and inferential statistics. The findings revealed that mobile banking ($\beta = 0.366$, $p \leq 0.05$) and electronic queue management ($\beta = 0.382$, $p \leq 0.05$) were all significant factors to the competitive advantage of Tier 1 banks in the study area. The study, therefore, recommends that; the commercial banks should need to invest in the development of universal mobile phone applications, further there is need for system developers to further integrate the electronic queue management to the banking services, such as, mobile phone alerts. Finally, there is need for the banks to embark on an awareness campaign on the capability of the deposit taking ATMs.

Index Terms— Electronic Queue Management System, Internet Banking, Mobile Banking, Tier 1 Commercial Banks.

I. INTRODUCTION

Commercial banks operate under extremely competitive industry across the world. In Europe, Dunkley (2017) notes that the banking sector is extremely competitive due to the emergent threat from fintech companies. In the United States, Roberts (2017) captured the competitive nature of US commercial banks competitive industry. Nationally, the Bank of America which had been the largest commercial bank by customer deposits lost its spot to JP Morgan in 2017. In 2016, the JP Morgan had also surpassed wells Fargo by market

capitalization aspects. In Africa, the banking industry is extremely competitive across the continent. In Ghana, Price Water House Coopers., (2017) notes declining market share of UniBank Ghana Limited (UGL) one of the country's top performing banks which was attributed to high competition from new entrants in its core markets.

In South Africa, (Jaadan, 2018) noted an increasing competitive market environment in terms of the market share as indicated by customer numbers. In this context, both the ABSA bank and standard bank had lost customers to the tune of three hundred thousand and while Capitec, and Nedbank had gained customer numbers for the 2017 financial years (Jaadan, 2018). In Kenya, there is an increasingly competitive competition amongst the large pier group of banks that is KCB bank, Equity Bank, Cooperative Bank, Barclays Bank, Standard Chartered Bank, Diamond Trust Bank, Commercial Bank of Africa, and Stanbic bank (Dzombo, Kilika, &Maingi, 2017). There are 43 registered commercial banks in Kenya whereby 28 of them have their branches in Nakuru Town. There are seven tier one commercial banks in Kenya and all of them have their branches in Nakuru County. These banks are Kenya Commercial Bank (KCB), Equity Bank, Barclays Bank, Standard Chartered Bank, Cooperative Bank, Stanbic Holdings andDiamond Trust Bank (Karanja, 2011).

Tier one commercial banks are defined to commercial banks that are considered safe by the Central Bank of Kenya (CBK) due to large number of customer deposits, net assets and loan facilities and they control almost 50% of the Kenyan banking market share. Due to the high competition within the banking the banking sector there is need for commercial banks to adopt strategies give them competitive advantages. Competitive advantage refers to the leverage of superiority an organization or business has over its rivals (Noorani, 2014). The use of technology has been one of the main ways of achieving competitive advantages in diverse organizations. However, the adoption of these new technologies and ability to reap benefits from their usage may be influenced by change management aspects

Technological change management relates to the deployment and adoption of new technologies and management of the processes involved in these processes in order to improve or enhance performance. There are diverse ways in which the technological change management influences competitive advantages of organizations. These includes employee perceptions towards technological changes, employee competences on new technologies, management of technological change and functions of new

technologies. The management of technological changes is critical for leading to competitive advantages in organizations. Mutisya (2010) noted that managing change in technology is critical in leading to competitive advantage. The technological change brings in new technologies which have the capacity to lead to competitive advantage. The functions of these new technologies are critical in leading to competitive advantage. Amongst the aspects of new technologies that can be applied include application in transaction and cheques imaging transmission, settlements of payment on a gross basis in real time, account opening process, loan approval process, credit card services, and sales force automation (Mbigura, 2012).

A. *Statement of the Problem*

Tier one commercial banks in Kenya operate under an extremely competitive environment in which there is competition for market share, customer numbers, loan clients, deposits and profitability levels (Ouma, 2016). One of the strategies that have been adopted for the purposes of building competitive advantages is the adoption of new technologies (Kithaka, 2014). The technologies that have been adopted in the banking sector in Kenya include mobile banking, internet banking, deposit receiving ATMs, Queue Management Systems, and diverse core banking platforms (Mayieka, 2015). However, the manner in which technological change management is undertaken is critical in the commercial banks gaining competitive advantages given the context that these technologies are often similar across the banks. However, the aspect of technology change management has not been explored in previous studies. Other studies that have examined the role of change management include Meja (2009) who examined the role of change management practices at Equity bank; Olivia (2014) who examined the role of leadership on strategic change management in commercial bank and Arupe and Nairobi (2014) who examined strategic change management at National bank of Kenya. These studies did not address the role of technological change management on the competitive advantages of the tier one commercial banks. The present study, therefore, sought to fill the existent gaps on the role of technological change management on competitive advantage in banks through the variables; mobile banking applications, internet banking, electronic queue management system and deposit taking ATMs on competitive advantages of tier one commercial banks in Nakuru on competitive advantages of tier one commercial banks.

B. *Objectives of the Study*

- i. To examine the influence of mobile banking applications on competitive advantages of tier one commercial banks in Nakuru
- ii. To establish the influence of electronic queue management system on competitive advantages of tier one commercial banks in Nakuru

C. *Research Hypotheses*

H01: There is no statistically significant influence of mobile banking applications on competitive advantages of tier one commercial banks in Nakuru

H02: There is no statistically significant influence of electronic queue management system on competitive advantages of tier one commercial banks in Nakuru.

II. LITERATURE REVIEW

The paper was based on Technology acceptance theory which was introduced by Davis (1989), is an adaptation of the theory of reasoned action specifically tailored for modeling user acceptance of information systems. The goal of the theory is to provide an explanation of the determinants of computer acceptance that is general, capable of explaining user behavior across a broad range of end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified. Ideally one would like a model that is helpful not only for prediction but also for explanation, so that researchers and practitioners can identify why a particular system may be unacceptable, and pursue appropriate corrective steps. A key purpose of the theory, therefore, is to provide a basis for tracing the impact of external factors on internal beliefs, attitudes, and intentions. Technology acceptance theory was formulated in an attempt to achieve these goals by identifying a small number of fundamental variables suggested by previous research dealing with the cognitive and affective determinants of computer acceptance.

The technology acceptance theory has also been used by researchers to explain why a particular system may or may not be acceptable to users. It hypothesizes that there are two beliefs, perceiving usefulness and perceiving ease of use, which are variables that primarily affect the user acceptance. The theory is relevant to the study because it suggests that the external variables indirectly affect individuals' attitude toward adoption of information communication technology acceptance by influencing perceived usefulness and perceived ease of use. External variables might include individual user attributes, social factors or those related to their job tasks. Therefore, the current study was adequately guided by Technology Acceptance Theory in regard to the role of technological change management on competitive advantage of tier 1 commercial banks in Nakuru, Kenya.

A. *Mobile Banking Applications and Competitive Advantages*

Mobile banking has been studied by many researchers with its influence in banking sector. Too, Ayuma, and Ambrose (2016) carried out a study to examine the effect of using mobile banking on the financial performance of commercial banks operating within Kapsabet Town in Kenya. The study specifically focused on the effect of mobile banking withdrawals, deposits, payment of bills, funds transfer and loans on financial performance of the commercial banks in Kapsabet Town. Descriptive research design was used by the study and a target population of 336 individuals, who comprised of the management team, head of departments, banks staff and customers. The study sample was 180 selected through stratified random sampling. Research questionnaires and interviews were used to collect data. Using regression analysis, the study found out that using mobile banking to withdraw and deposit cash (beta

coefficient of -0.409), using mobile banking to obtain loans (beta coefficient of 0.296), making funds transfer using mobile banking (beta coefficient of -0.269), as well as payment of bills (beta coefficient of 0.704), cumulatively explained 32.6% of the variability in financial performance of commercial banks in Kapsabet Town. This model was found to be statistically significant due to its p-value for the f-test value being below 0.05.

A study by Kithaka (2014) sought to examine the effect of mobile banking on the financial performance of commercial banks in Kenya. The study focused on all licensed commercial banks using mobile banking. The study used cross sectional descriptive survey design and applied both quantitative and qualitative approaches. The study population was 43 licensed commercial banks in Kenya which were all sampled using census research method. The study relied on secondary data from the banks' financial reports. Financial performance measurements used by the study were Return on Assets and Return on Equity. The study found out that the annual money moved through mobile banking and number of mobile users influence financial performance in terms of return on equity as well as return on assets. In this regard, a unit increase in the amount moved through mobile banking resulted to 0.671 units increase in financial performance of commercial banks in Kenya with other factors held constant as indicated by a beta coefficient of 0.671. In regard to number of mobile banking users, the study found out that a unit increase in the number of mobile banking users, the financial performance of commercial banks in Kenya increased by 0.738 units. The influence was found to be statistically significant at 5% significance level.

Focusing on commercial banks in Kenya that have already implemented mobile banking technology, Njoroge (2014) out a study to examine the effect of using mobile banking technology on performance of the banks. The study conceptualized bank performance as financial performance. The study targeted all the 44 commercial banks in Kenya that used mobile banking technology and through census research method, the 44 were all sampled. The study obtained its data by reviewing financial reports that are available in the respective banks' website. The study found out that total mobile banking loan, mobile banking transaction charges, mobile banking total deposits and funds through mobile banking explained 12% of the variance in return on assets of the commercial banks. This influenced was found to be statistically significant as indicated by $F(4,407)=7.790$ and $p<0.05$.

On Rwandan context, Harelimana (2017) carried out a study to establish the impact that mobile banking has on the financial performance of commercial banks. The study focused on one commercial bank in Rwanda, Unguka Microfinance Bank Ltd. The study used descriptive research design to guide the study. The target population for the study was 67 people. The study used a sample of 50 employees who comprised of 24 senior managers and 26 bank staff. Data was collected by use of questionnaires. Using a Likert Scale of five points where 1=strongly disagree and 5=strongly agree, the study found out that withdrawals were the major uses of

mobile banking with a mean of (4.34), then bill payment with a mean of 4.16 and followed by checking financial statements with a mean of 4.00. The study found out that deposits and money transfer were rarely used services in mobile banking due to means of 1.88 and 1.36 respectively.

B. Electronic Queue Management System and Competitive Advantage

The roles of electronic queue management system have been examined by diverse scholars across the world. Focusing on Hudumacentres in Kenya, (Agwaro, 2017) examined the role of automated queuing on the service delivery in the centres. The study adopted a descriptive research design with a sample size of 70 respondents were purposively chosen across the Hudumacentres in the country. Using a five point likert scale, the study found diverse advantages of using electronic queue management, the study found its diverse uses including customers having to get a ticket from the dispenser for service (mean of 4.96), automated queuing enabling a first come first served policy (mean of 4.80), and customers don't jump the queues (mean of 4.66).

The role of electronic queue management system on the customer experience was examined by Mohamud (2016) in a study on KCB bank. The study adopted a descriptive cross sectional survey research design and a sample size of 150 KCB customers that were purposively chosen. Data was collected using semi structured questionnaires. Using five point likert scale (1=Strongly Disagree and 5=Strongly Agree), the study found that electronic queue management system are associated with diverse service delivery aspects; faster services (mean of 3.36), no queue jumping (mean of 3.69), saving of time in the banking hall (mean of 3.47), electronic queue management system being easy to use (mean of 3.33), electronic queue management system being reliable (mean of 3.26) and convenience in electronic queue management system use (mean of 3.80). Using regression analysis, the study found that a unit increase in automated queuing system was associated with a 0.138 increase in service delivery aspects due to a beta coefficient of 0.138. However, these results were not found to be statistically significant due to a p value of greater than 0.05 which was the level of significance.

In a study based in Ethiopia, Arega (2017) examined the role of queue management on the customer satisfaction levels. Structured questionnaires were used for the purposes of data collection aspects and a sample size of 659 respondents were utilized. The study used correlational analysis to examine the role of queue management system and customer satisfaction levels. The study found a positive correlation of 0.577 in relations to perceived waiting time and customer satisfaction levels; waiting environment and customer satisfaction levels had a correlation of 0.366; and queue discipline was positively correlated with customer satisfaction levels at a correlation of 0.320. Using a five point likert scale, the study found that satisfaction with perceived waiting time had a mean of 2.96; satisfaction with waiting environment had a mean of 2.24; and satisfaction with priority given the elderly and pregnant women had a mean of 3.69.

Still focusing on the role of electronic queue management system and competitive advantage, Austria (2015) examined the queue management practices on the service delivery within restaurants in Philippines. The study used a sample size of 363 respondents derived from five restaurants and structured questionnaires were used for the purposes of data collection. Using a five point likert scale, the study indicated the diverse manner in which the electronic queue management influenced service delivery. In this context, the study noted that there was implementation of first come first serve rule (mean of 3.87), efficient service to elderly clients and pregnant mothers (mean of 3.89), and there was no preferential treatment to VIP customers (mean of 3.37). Using regression analysis, a unit increase in automated queuing led to 0.863 increase in service quality due to a beta coefficient of 0.863. These results were found to be statistically significant at 5% level of significance due to p value of 0.000.

C. Summary of Reviewed Literature

In regard to mobile banking, Too, Ayuma, and Ambrose (2016) found out that using mobile banking to withdraw and deposit cash, obtain loans, make funds transfer and to pay bills influenced the financial performance of commercial banks. A study by Kithaka (2014) found out that the annual money mover through mobile banking and number of mobile users influence financial performance in terms of return on equity as well as return on assets. Njoroge (2014) on the other hand found out that total mobile banking loan, mobile banking transaction charges, mobile banking total deposits and funds through mobile banking affected the return on assets of the commercial banks. On Rwandan context, Harelimana (2017) found out that withdrawals and bill payment were the major uses of mobile banking

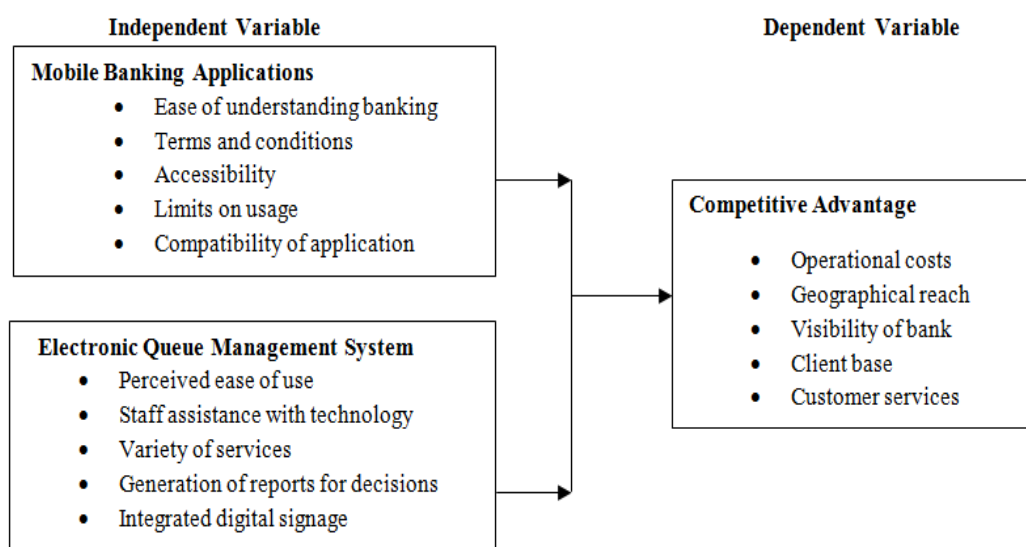
Focusing on the role of electronic queue management system, Agwaro (2017) found out that diverse advantages of using electronic queue management such as customers having to get a ticket from the dispenser for service,

automated queuing enabling a first come first served policy and customers don't jump the queues. Mohamud (2016) found that electronic queue management system was associated with increase in service delivery aspects. In a study based in Ethiopia, Arega (2017) found a positive correlation between waiting time and customer satisfaction levels; between waiting environment and customer satisfaction levels; and between queue discipline and customer satisfaction levels. In the same context, Austria (2015) revealed that automated queuing led improvement in service quality.

D. Knowledge Gap

From the reviewed literature, various research gaps have been identified and whereby the current study seeks to fill. Studies by Too, Ayuma, and Ambrose (2016) to examine the effect of using mobile banking on the financial performance of commercial banks was done in Kapsabet Town while the current study was done among tier 1 commercial banks in Nakuru town and therefore a conceptual gap. Competitive advantage of commercial banks is also influenced by bank sizes, however, a study by Kithaka (2014) to examine the effect of mobile banking on the financial performance and that by Njoroge (2014) to examine the effect of using mobile banking technology on performance focused in all commercial banks in Kenya in general. The current study fills this contextual gap by striding on tier one commercial banks that will help in generalization of study findings. A study by Harelimana (2017) to establish the impact that mobile banking has on the financial performance of commercial banks presents both contextual and methodological research gaps. Contextually, the study was done in Rwanda while the current study was done in Kenya. The reviewed study utilized descriptive statistics only while the proposed study used inferential statistics to link the study variables an aspect that was not done in the reviewed study.

E. Conceptual Framework



III. METHODOLOGY

This study used descriptive research design. The design was appropriate since it helped the researcher obtain a lot of information. This study targeted employees of commercial banks operating in Nakuru town. There are 7 tier 1 commercial banks in Kenya and have their branches in Nakuru Town (Cytton, 2017). These banks are Kenya Commercial Bank (KCB), Equity Bank, Barclays Bank, Standard Chartered Bank, Cooperative Bank, Stanbic Holdings and Diamond Trust Bank. From the banks, The study specifically targeted the management teams from operations, IT and customer care service department for they are best fitted to understand both technological change management aspects and competitive advantage aspects. The study targeted a total of 56 banks employees comprising of 7 managers, 21 ICT personnel and 28 customer service personnel. The study further used census sampling to select the number of commercial banks to participate in the study. The study used purposively selected all the targeted employees from the 7 tier 1 commercial banks operating within Nakuru Town. Purposive sampling involves selecting specific objects or individuals based on the information required and therefore their probability of being selected for the study is 1 (Saunders, Lewis, & Thornhill, 2009). A total of 56 banks employees comprising of 7 managers, 21 ICT personnel and 28 customer service personnel. The study used structured questionnaire which is a research tool that contains closed-ended questions and confines the researcher from giving information other than the one sought by the study

(Shirish, 2012). This study used content validity index whereby five subject matter experts comprising of four bank managers and the research supervisor was used as subject matter experts. This study used Cronbach's Alpha test of internal consistency to test the reliability of research tools. The study carried out a pilot study from three tier 1 commercial banks within Nairobi CBD. This study used both descriptive and inferential statistics. Descriptive statistics involves description of basic characteristics of data while inferential statistics gives in-sights on the descriptive statistics (Orodho, 2003). This study used both descriptive and inferential statistics. Descriptive statistics involves description of basic characteristics of data while inferential statistics gives in-sights on the descriptive statistics (Orodho, 2003). A multiple linear regression was used for inferential statistics to establish the relationship between technological change management aspects (independent variables) and competitive advantage (dependent variable) of commercial banks in Nakuru Town.

IV. RESULTS

A. Response Rate

The target population of the study was 56 banks employees comprising of 7 managers, 21 ICT personnel and 28 customer service personnel. Therefore, fifty-six structured questionnaires were distributed to the respondents for the purposes of data collection purposes. Out of the distributed questionnaires, 46 questionnaires were returned back. There was therefore a response rate of 82.1%.

Length of Time Worked in Bank

	Frequency	Percentages
Below one Year	0	0%
1-5 Years	5	10.8%
6-10 Years	15	32.6%
Above 10 Years	26	56.6%
Total	46	100.0%

The results of the length of time worked in a bank indicated that 10.8% of the respondents had worked in the bank for less than 5 years, 32.6% of the respondents for 6 to 10 years, and 56.6% of the respondents for above 10 years. The high number of respondents who had worked for above

10 years can be attributed to the relative stability and good pay within the commercial banks leading to a huge number of employees staying with the banking sector a relative long period.

Mobile Banking Applications on Competitive Advantage

	NE	SM	ME	LE	VLE	Chi-square	
	%	%	%	%	%	Value	p
Ease of understanding of the mobile banking processes	2.1	10.6	31.9	42.6	12.8	23.484	0.002
Terms and conditions for obtaining loans	0.0	8.5	36.2	51.1	4.3	24.412	0.001
Accessibility of agencies for cash to mobile app transfer	4.3	12.8	29.8	44.7	8.5	22.983	0.002
Limit on amount of money that can be transferred	6.4	14.9	23.4	48.9	6.4	18.662	0.0012
Compatibility of the mobile banking app with the phone	10.6	6.4	34.0	38.3	10.6	17.321	0.019

A majority of respondents agreed to a large extent (42.6%) that ease of understanding of the mobile banking processes influences the competitive advantage of tier one commercial banks in Nakuru. Some other respondents also agreed with the statement to very large (12.8%), moderate (31.9%), and small extents (2.1%). Respondents who felt that ease of

understanding of the mobile banking processes had no extent of influence on the competitive advantage of tier one commercial banks in Nakuru were 2.1%. The study found that there was statistically significant relationship between ease of understanding of mobile banking processes and competitive advantage due to a chi square results of $\chi^2(4) =$

23.484, $p = 0.002 < 0.05$.

The terms and conditions for obtaining loans were cited to influence the competitive advantage of tier one commercial banks in Nakuru by 51.1% of respondents to a large extent, 36.2% of respondents to a moderate extent, and 4.3% of respondents to a very large extent. Some respondents agreed that terms and conditions for obtaining loans to a small extent influence the competitive advantage of tier one commercial banks in Nakuru (8.5%) and none of the respondents perceived there to be no extent of influence of terms and conditions for obtaining loans on the competitive advantage of tier one commercial banks in Nakuru (No extent=0.0%). The study found that there was statistically significant relationship between terms and conditions for obtaining loans and competitive advantage due to a chi square results of $\chi^2(3) = 24.412$, $p = 0.001 < 0.05$. The opinion of a majority of respondents (44.7%) was that accessibility of agencies for cash to mobile app transfer influences the competitive advantage of tier one commercial banks in Nakuru. This opinion was held by 29.8%, 12.8%, and 8.5% to moderate, small, and very large extents, respectively. Respondents who cited contradicting opinions were 4.3% who perceived the accessibility of agencies for cash to mobile app transfer not to have any influence on the competitive advantage of tier one commercial banks in Nakuru. The study found that there was statistically significant relationship between accessibility of agencies for cash to mobile app transfer and competitive

advantage due to a chi square results of $\chi^2(4) = 22.983$, $p = 0.002 < 0.05$.

The limit on amount of money that can be transferred was perceived to influence on the competitive advantage of tier one commercial banks in Nakuru by 48.9% of respondents to a large extent, 23.4% of respondents to a moderate extent, 6.4% of respondents to a very large extent, and 14.9% of respondents to a small extent. The study established that 6.4% of respondents cited no influence at all of limit on amount of money that can be transferred on the competitive advantage of tier one commercial banks in Nakuru. The study found that there was statistically significant relationship between limit on amount of money that can be transferred and competitive advantage due to a chi square results of $\chi^2(4) = 18.662$, $p = 0.0012 < 0.05$. A majority of respondents agreed to a large extent (38.3%) that compatibility of the mobile banking app with the phone influences the competitive advantage of tier one commercial banks in Nakuru. Some other respondents also agreed with the statement to very large (10.6%), moderate (34.0%), and small extents (6.4%). Respondents who felt that compatibility of the mobile banking app with the phone had no influence on the competitive advantage of tier one commercial banks in Nakuru at all were 10.6%. The study found that there was statistically significant relationship between limit on amount of money that can be transferred and competitive advantage due to a chi square results of $\chi^2(4) = 17.321$, $p = 0.019 < 0.05$.

Influence of the Electronic Queue Management on Competitive Advantage

	NE (%)	SM (%)	ME (%)	LE (%)	VLE (%)	Chi-square Value	p
Perceived ease of use of the Electronic Queue Management System menu	12.8	14.9	34.0	29.8	8.5	26.301	0.000
Deployment of staff to assist customers select their preferred service	6.4	8.5	42.6	31.9	10.6	20.133	0.006
Variety of services offered by the Electronic Queue Management System	4.3	12.8	31.9	38.3	12.8	16.392	0.017
Use of reports from Electronic Queue Management System in decision making	2.1	17.0	27.7	34.0	19.1	15.732	0.023
Use of integrated digital signage for promotions	10.6	10.6	25.5	36.2	17.0	18.092	0.009

In respect to the extent in which perceived ease of use of the electronic queue management system menu influenced competitive advantage of commercial banks, a majority of 34.0% of the respondents indicated to a moderate extent. This is in comparison to 12.8%, 14.9%, 29.8%, and 8.5% of the respondents who indicated to no extent, small extent, large extent and very large extent respectively. The study found that there was statistically significant relationship between perceived ease of use of the electronic queue management system menu and competitive advantage due to a chi square results of $\chi^2(4) = 26.301$, $p = 0.000 < 0.05$. In respect to the influence of deployment of staff to assist customers select their preferred service on competitive advantage, a cumulative percentage of 42.5% of the respondents indicated to a large extent and very large extent the influence of staff assistance. This is in contrast to 6.4%, 8.5%, and 42.6% of the respondents who indicated to no extent, small extent and

moderate extent respectively. The study found that there was statistically significant relationship between influence of deployment of staff to assist customers and competitive advantage due to a chi square results of $\chi^2(4) = 20.133$, $p = 0.006 < 0.05$

A majority of 38.3% of the respondents indicated that variety of services offered by the electronic queue management system influenced competitive advantage of commercial banks to a large extent. On the other hand, 4.3%, 12.8%, 31.9%, and 12.8% influenced competitive advantage no extent, small extent, moderate extent, and very large extent respectively. The study found that there was statistically significant relationship between variety of services offered by the electronic queue management system and competitive advantage due to a chi square results of $\chi^2(4) = 16.392$, $p = 0.017 < 0.05$. In respect to the extent in which use of reports from electronic queue management system in decision making influences competitive advantage

the study results indicated that a majority of the respondents at 34.0% indicated the influence is to a large extent. This is compared to 2.1%, 17.0%, 27.7% and 19.1% who ranked the influence at no extent, small extent, moderate extent, and very large extent respectively. The study found that there was statistically significant relationship between use of reports from electronic queue management system in decision making and competitive advantage due to a chi square results of $\chi^2(4) = 15.732, p = 0.023 < 0.05$

Finally, the extent in which the use of integrated digital **Competitive Advantage**

	NE (%)	SM (%)	ME (%)	LE (%)	VLE (%)
Operational costs	17.0	14.9	19.1	29.8	19.1
Geographical reach	10.6	17.0	27.7	23.4	21.3
Visibility of bank	6.4	19.1	25.5	34.0	14.9
Client base	8.5	12.8	21.3	36.2	21.3
Customer service	12.8	8.5	34.0	27.7	17.0

The results indicated that 17.0%, 14.9%, 19.1%, 29.8% and 19.1% of the respondents indicated that independent variables cumulatively influenced operational costs to no extent, small extent, moderate extent, large extent and very large extent respectively. On the other hand, in respect to the extent in which the independent variables influenced geographical reach, a majority of 27.7% of the respondents indicated that it was to a moderate extent while 23.4% and 21.3% indicated that it was for large extent and very large extent respectively. This was in contrast to the 10.6% and 17.0% of the respondents who indicated that it was to no extent and small extent respectively. In respect to the influence of the independent variables to the visibility of bank, a majority of the respondents at 34.0% indicated that it was to a large extent compared to 6.4%, 19.1%, 25.5% and

Pearson Correlational Analysis

	Mobile Banking	Electronic Queue Management	Competitive Advantage
Mobile Banking	1		
Internet	.444*		
Electronic Queue Management	.563*	1	
ATMs	0.011	0.017	
Competitive Advantage	.707**	.695**	1
Advantage	0.000	0.000	

In respect to the influence of the independent variables on the dependent variable, the correlational analysis indicated that there was positive correlation between each of independent variable against a dependent variable all at 1% level of significance. The first correlation analysis was carried out to determine whether mobile banking applications significantly influenced competitive advantages of tier one commercial banks in Nakuru town. The correlation results showed that a strong positive significant relationship existed ($r = 0.707; p \leq 0.05$). This could be attributed to the fact that the mobile money lending is growing in Kenya especially amongst the youth as well as general population. The friendliness and flexibility of the terms and conditions of obtaining loans would thus drive usage amongst the target group and hence customer satisfaction and thus

signage for promotions influenced competitive advantage had a majority of 36.2% of the respondents indicating to a large extent. This is compared to 10.6%, 10.6%, 25.5%, and 17.0% of the respondents who indicated that use of integrated digital signage for promotions influenced competitive advantage to a no extent, small extent, moderate extent and very large extent respectively. The study found that there was statistically significant relationship between the use of integrated digital signage for promotions and competitive advantage due to a chi square results of $\chi^2(4) = 18.092, p = 0.009 < 0.05$.

14.9% of the respondents who indicated that it was to no extent, small extent, moderate extent, and very large extent respectively. In respect to the extent in which the independent variables influenced client base, a majority of the respondents indicated that it was to a large extent at 36.2% while a further 21.3% of the respondents indicated that the influence was to a very large extent. On the other hand, 8.5%, 12.8%, and 21.3% of the respondents ranked the influence at no extent, small extent and moderate extent respectively. Finally, in respect to the influence of the independent variables on the competitive advantage, 12.8%, 8.5%, 34.0%, 27.7%, and 17.0% of the respondents indicated that they influenced customer service to a no extent, small extent, moderate extent, large extent and very large extent respectively.

competitiveness of the bank. The study also sought to determine whether there was a significant relationship between electronic queue management system and competitive advantages of tier one commercial banks in Nakuru town. The correlation analysis showed that there was a significant relationship existing between the two variables ($r = 0.695, p \leq 0.05$). The results also suggest that the relationship between the two variables was strong implying that the electronic queue management system had a strong influence on competitive advantage in the Tier 1 banks. This can be attributed to the fact that the use of these reports can be used to make decisions that drive organizational performance of the commercial bank and hence competitive advantage of the commercial bank. These results were consistent with empirical results that had been examined, such as, Agwaro

(2017) examined the role of automated queuing on the service delivery in banks and found that its diverse uses including

customers having to get a ticket from the dispenser for service therefore improving service delivery. .

Multiple Linear Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients t		Sig.
	B	Std. Error	Beta		
(Constant)	.101	.266		.378	.707
1 Mobile Banking	.248	.048	.366	5.193	.000
Electronic Queue Management	.255	.045	.382	5.622	.000

a. Dependent Variable: Competitive Advantage

It can be deduced from the findings that Electronic Queue Management ($\beta = 0.382, p < 0.05$) has more influence on technological change management variable in the model was deposit taking compared to Mobile Banking ($\beta = 0.366, p \leq 0.05$). This indicates that the dependent variable, that is, the competitive advantage of the commercial banks in the area, would change by a corresponding number of standard deviations when the respective independent variables change by one standard deviation. The study therefore establishes that Mobile Banking Applications and Electronic Queue Management System as currently used in the Tier 1 commercial banks in the area were important variables giving them competitive advantage. Therefore, the resulting regression model is given as;

$$Y = 0.248X_1 + 0.255X_2$$

Hypothesis Testing

H01: There is no statistically significant influence of mobile banking applications on competitive advantages of tier one commercial banks in Nakuru

In respect to the first null hypothesis, the achieved value for t statistic was 5.193 and p value was less than 0.05 since the hypothesis is being tested at 5% level of significance. This led to the conclusion to reject the first null hypothesis and accept the alternative hypothesis indicating presence of a significant relationship between mobile banking applications and competitive advantage. The findings agree with Kithaka (2014) who found that there was statistically significant relationship between limit on amount of money that can be transferred and competitive advantage due to a chi square results. The study, further, found that out that the annual money moved through mobile banking and number of mobile users influence the competitiveness of the commercial bank.

H02: There is no statistically significant influence of electronic queue management system on competitive advantages of tier one commercial banks in Nakuru

In respect to the third null hypothesis, the achieved value for t statistic was 5.622 and p value which was less than 0.05 since the hypothesis is being tested at 5% level of significance. This led to the conclusion to reject the third null hypothesis and accept the alternative hypothesis indicating presence of a significant relationship between electronic queue management system and competitive advantage. The results agree with Agwaro (2017) who examined the role of automated queuing on the service delivery in institutions and found it significantly increases service delivery in organizations. Its diverse uses including customers having to get a ticket from the dispenser for service. The results also agree with Mohamud (2016) whose study found that

electronic queue management system are associated with diverse service delivery aspects such as electronic queue management system being easy to use.

V. CONCLUSION & RECOMMENDATION

A. Conclusion

The study established that mobile banking applications statistically significant influenced the competitive advantage of tier one commercial banks in Nakuru town. Therefore, it can be concluded that mobile banking application was a factor of competitive advantage of tier one commercial banks in the area.

The study further established that electronic queue management applications statistically significant influenced the competitive advantage of tier one commercial banks in Nakuru town. Therefore, it can be concluded that electronic queue management application was a factor of competitive advantage of tier one commercial banks in the area..

B. Recommendation

The study recommends that commercial banks should put a focus on the technology innovation in order to lead to competitive advantages amongst commercial banks. In this context, the study recommends that the commercial banks should need to invest in the development of universal mobile phone applications as it was found that there were compatibility issues with their mobile applications.

The study also recommends in regard to electronic queue management applications that there is need for system developers to further integrate the electronic queue management to the banking services, for example, by using mobile phone alerts as well so as to improve on the perceived ease of use of the System menu. The banks should also improve on their use of integrated digital signage for promotions.

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