

EFFECT OF PROCESS INNOVATION STRATEGIES ON PERFORMANCE OF TIER ONE COMMERCIAL BANKS IN KENYA

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ABSTRACT

The Kenyan banking industry is experiencing very stiff competition with banks outdoing each other from the front end of products, service delivery, and employees' retention amongst other fronts. In Kenya, Tier One Commercial Banks have been leading in the adoption of innovations including mobile banking, online banking and use of mobile applications. Scholarly evidence regarding the effects of strategic innovation on performance of commercial banks in Kenya with specific regard to tier one banks remain scanty. Against this backdrop, the present study sought to establish the effect of process innovation strategies on the performance of tier one commercial banks in Kenya. The study adopted a descriptive survey research design. The target population consisted of 494 senior, middle and lower management staff from the 8 Tier One Commercial Banks. A sample size of 221 was reached using stratified random sampling technique. Primary data was collected using structured questionnaires distributed to all management staffs of the tier one commercial banks in Nairobi. Secondary data on the other hand was collected from

journals and published financial statements within the period of 5 years from 2014 to 2019. Frequencies and percentages as well as measures of central tendency (means) and dispersion (standard deviation) were used. The regression and correlation analysis were used to determine both the nature and the strength of the relationship between two variables. Data was presented using tables. The study found that improved queuing; electronic funds transfer; and number and distribution of ATMs had improved the financial performance of the banks to a great extent. The study also concluded that process innovation strategies have a positive and significant effect on the performance of tier one commercial banks in Kenya. The study recommends that commercial banks should have an effective market research department that should conduct surveys in order to establish the new products by competitors, the advantages and disadvantages of the innovations. This will enable the banks to innovate and help in staying ahead of competition.

Key Words: Service delivery, Online banking, Strategic innovation, Process innovation strategies, Banks performance

INTRODUCTION

In the face of today's challenging market environment, corporate organisations are more aggressive and dynamic in the identification of competitive strategies that guarantee profitable existence. Competition may be attributed to business innovations, advancement in technology and the changing demand of customers (Misati, Njoroge, Kamau & Ouma, 2017). Achilla and Kemp (2018) note that an organization should align its strategies with structure, provide strategic leadership, establish a corporate culture and monitor the implementation of the strategies. These measures are particularly important in the banking industry considering

the market volatility marked by stiff competition for the masses by commercial banks (Hicks & Niehans, 2016).

Commercial banks play a very key role in the economic growth of any country. In Kenya, the sector holds assets worth 63% of the GDP (CBK, 2016). Other than the recent closure of three commercial banks in the country over the span of 14 months in the year 2015 (Dubai Bank and Imperial Bank) and April 2016 (Chase Bank), the banking industry in the country has generally experienced a high growth rate employing both acquisition and start-up in their regional expansion strategies. With only 20 per cent of Kenya's population banked, there is need for banks to strategize and reach more of the unbanked, which would constitute a big business growth as opposed to regional (Muthoni, 2018; Ngari & Muiruri, 2014). Therefore, competitive strategy is vital among commercial banks in the country to the adaptation of the changing business environment.

Motivated by the increasing competition in global markets, companies have started to grasp the importance of innovation, since swiftly changing technologies and severe global competition rapidly erode the value added of existing products and services. Thus, innovations constitute an indispensable component of the corporate strategies for several reasons such as to apply more productive manufacturing processes, to perform better in the market, to seek positive reputation in customers' perception and as a result to gain sustainable competitive advantage (Hitt et al., 2016). Johnson et al. (2015) described different types of innovation: new products, new methods of production, new sources of supply, the exploitation of new markets, and new ways to organize business.

A process innovation is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software (Menon & Varadarajan, 2017). Fagerberg et al. (2014) stressed that while the introduction of new products is commonly assumed to have a clear, positive effect on the growth of income and employment, process innovation, due to its cost-cutting nature, can have a more hazy effect.

According to the Central Bank of Kenya, there are currently 42 licensed commercial banks in Kenya. Three of the banks are public financial institutions with majority shareholding being the Government and state corporations. The rest are private financial institutions. Of the private banks, 25 are local commercial banks while 13 are foreign commercial banks (CBK, 2018). Bank financial performance in the recent past has significantly improved since 2016. Data from the Central Bank of Kenya shows a significant growth in the industry in all areas including financial performance (CBK, 2018). The banking industry in Kenya has grown over the years since the Central Bank of Kenya put up measures to regulate the banks in order to streamline the activities and more so to prevent the collapse of the banking industry as had been before and also recently with closure of two commercial banks.

There are eight (8) tier 1 commercial banks in Kenya, namely Stanbic Bank, Cooperative Bank, Barclays Bank of Kenya, Kenya Commercial Bank, Standard Chartered Bank (K) Ltd,

Diamond Trust Bank, Equity Bank, and Africa's Commercial Bank. This is based on a weighted index of all net assets, capital and reserves, deposits from customers, amount of loans and deposit accounts. These banks are regarded secure by CBK and control nearly 50 percent of the market share of Kenya's banking sector. According to Kenya's Central Bank, Tier 1 banks have a weighted index of five percent and above, Tier 2 banks have an index of between one and five percent, while Tier 3 banks have a weighted average of less than 0 percent (Mwangi, 2017).

Statement of the Problem

Commercial banks play a vital role in the economic industry of any nation in the world, primarily owing to their intermediation function. Poor performance can result in bank runs, bank crises and a significant financial crisis. Most of commercial banks haven't been performing well financially with most of them having cases of decrease in return of equity and assets due to the poor adoption of strategic innovation as described by Roberts and Amit (2018).

The Kenyan banking industry similarly experiences very stiff competition with banks outdoing each other from the front end of products, service delivery, and employees' retention amongst other fronts. Despite Kenyan banks great outlook, the poor use of various innovations such as Mpesa and Airtel Money has led to the deteriorating performance of tier one commercial banks. Examples of these Tier one banks are like KCB who experienced a Sh361 million loss in 2017 and was unable to realize more earnings, thus reducing their performance through low investment returns (CBK, 2018). DTB recorded a loss of 213 million despite various financials innovations in the bank (Misati, Njoroge, Kamau & Ouma, 2017). Thus this presented a need for a study to be conducted on the effects of strategic innovation on performance of tier one commercial banks in Kenya.

Previous studies like Pooja and Singh (2017), Franscesa and Claeys (2017), Batiz-Lazo and Woldesenbet (2016) and Mwanja and Muganda (2017) have not only focused on financial innovation broadly, leaving strategic innovation unexplored, but have also produced mixed results regarding the impact of financial innovations on bank performance. Pooja and Singh (2017) and Franscesa and Claeys (2017), in their studies concluded that financial innovations had least impact on bank performance, while Batiz-Lazo and Woldesenbet (2016) and Mwanja and Muganda (2017) concluded that financial innovation had significant contribution to bank performance. It is at the center of such mixed conclusions that created and necessitated the need to carry out a study from a Kenyan context to establish the effect of strategic innovations on commercial banks' performance.

Objectives of the Study

To examine the effect of process innovation strategies on the performance of tier one commercial banks in Kenya

Theoretical Review

Various theories underpin the understanding of the effect of process innovation on performance of commercial banks. Prominent among these theories and of particular relevance to the present study variable include Diffusion of Innovation Theory. Diffusion of Innovation (DOI) Theory, developed by Rogers (1962), is one of the oldest social science theories. It originated in communication to explain how, over time, an idea or product gains momentum and diffuses (or spreads) through a specific population or social system. The end result of this diffusion is that people, as part of a social system, adopt a new idea, behavior, or product. This theory is also known as the diffusion of innovation theory, is a theory concerning the spread of innovation, ideas, and technology through a culture or cultures.

The theory has been extensively studied by sociologists, psychologists, and anthropologists. Sundeep (2015) developed the Diffusion of Innovation (DOI) Theory. It originated in communication to explain how, over time, an idea or product gains momentum and diffuses (or spreads) through a specific population or social system. Oluoch (2013) defined innovation diffusion as the process by which innovation is communicated through certain channels over time among members of social systems. The driving force towards adoption is that the idea, product or behavior must be perceived as innovative. Diffusion theory states that there are many qualities in different people that make them accept or not to accept an innovation (Sundeep, 2015). There are also many qualities of innovation that can cause people to readily accept them or to resist them. According to this theory, there are five stages to the process of adopting an innovation.

Bryman and Bell (2011) state that the first stage is knowledge, in which an individual becomes aware of an innovation but has no information about it. Next is persuasion, in which the individual becomes actively interested in seeking knowledge about the innovation. In the third stage, decision, the individual weighs the advantages and disadvantages of the innovation and decides whether to adopt it. After the decision comes the implementation, in which the individual actually does adopt and use the innovation. Confirmation is the final stage. According to Thompson (2015), after adopting the innovation, the individual makes a final decision about whether or not to continue using it based on his own personal experience with it. These same stages apply, to varying degrees, to groups of people in addition to individuals.

Therefore this theory was relevant to the study in explaining products and process innovation on performance of tier one commercial banks in Kenya for are many factors of innovation themselves that determine how likely people are to adopt them and how quickly people adopted them. These qualities of the innovation are of the utmost importance to diffusion theory expounding on effect of products and process innovation on performance of tier one commercial banks in Kenya.

Empirical Review

According to Cumming (2016), process innovation embraces quality function deployment and business process reengineering. An efficient supplier who keeps working on productivity gains can expect, over time, to develop products that offer the same performance at a lower cost. Such cost reductions may, or may not, be passed on to customers in the form of lower prices (Gaynor, 2014). Process innovation is important in both the supply of the core product as well as in the support part of any offer. Both components of an offer require quality standards to be met and maintained. In the case of services, which by their very nature rely on personal interactions to achieve results, the management of process innovation is a particularly challenging activity (John & Storey, 2016).

The process alignment is designed to derive a quantified benefit to meet and outperform competition. Creation and optimization of process therefore goes beyond tools and practices. Custodians of a process differentiation logic views of how people connect in the work-flow of a process, carry out tasks, and define the outcomes benefit experiences, and where and how value happens, what are likely obstacles/pitfalls, eventually how it produces (and retains) a sustainable value for competitive advantage (Rose, 2017). There are a number of success factors found among best-in-class organizations that have embraced a culture of operational excellence. They include support from the top, the integration of initiatives into the firm's strategy, cooperation from business units, a common language, credibility within the organization and ability to measure results. Operations competency relates to all management-controlled activities that affect the work of an organization—the processes and way of working and the formal and informal organization design, including how management views work process change and all communication channels (Longstaff & Rajan, 2018).

Innovation-oriented firms specifically develop operational competencies that facilitate new learning, continuous change, and improvement in administrative and work processes and encourage gathering and disseminating information from an array of sources to improve the mechanisms and processes within the firm. Many authors have discussed this aspect of innovative firms by emphasizing the existence of quality and continuous improvement in processes and production (e.g., Damanpour, 2015; Troy, Szymanski & Varadarajan, 2015). Process innovation is a normative framework developed for identifying efficient service strategies for the different institutional settings, especially those enabled by modern information and communication technologies.

Process innovation embraces quality function deployment and business process reengineering (Cumming, 2016). It is a type of innovation which is not easy, but its purpose is now well understood. An efficient supplier who keeps working on productivity gains can expect, over time, to develop products that offer the same performance at a lower cost. Such cost reductions may, or may not, be passed on to customers in the form of lower prices. Process innovation is important in both the supply of the core product as well as in the support part of any offer. Both components of an offer require quality standards to be met and maintained. In the case of services, which by their very nature rely on personal interactions to achieve

results, the management of process innovation is a particularly challenging activity (Johne & Storey, 2014).

The issue of providing the right environment for innovation is central to the debate is whether the capacity to innovate is predominantly a personal attribute, or whether it is an emergent property of organisations amenable to systematic management. Taking the view that innovation is endemic within individuals, managers are immediately faced with the dilemma regarding recruitment and channeling talent in a way that is consistent with the organizations goals. Truly creative individuals are not always easy to manage (Djellal & Gallouj, 2014). Alternatively, there are those that are skeptical that such a thing as a distinct entrepreneurial personality exists. More important is that organisation forms are flexible so that an appropriate balance between order and freedom is maintained. Ensuring procedures are in place to encourage innovation, whilst also providing a systematic means to manage the new products process through to commercialization is key.

It is hardly surprising that making sure customers' needs act as the prime driver for innovation is deemed to be a critical issue (Foxall, 2017; Fifield, 2014). As originally conceived of, the marketing concept holds that all company activities must be organized around the primary goal of satisfying customers' needs. Organisational structures and procedures reflect a market-orientation, and all personnel are expected to be truly customer-focused. Market-oriented firms are also recognized to pay a great deal of attention to customer research prior to new products being developed and produced (Djellal & Gallouj, 2014). The idea of pushing products at customers is alien to the market-oriented firm. Rather, the prime goal of the organisation is to tap into customers' needs so well that new products generate their own source of marketing momentum.

The past 25 years have witnessed important changes in banks production processes. The use of electronic transmission of bank-to-bank retail payments, which had modest beginnings in the 1970s, has exploded owing to greater retail acceptance, online banking and check conversion. In terms of intermediation, there has been a steady movement toward a reliance on statistical models. For example, credit scoring has been increasingly used to substitute for manual underwriting and has been extended even into relationship-oriented products like small business loans. Similar credit risk measurement models are also used when creating structured financial products through "securitization".

Statistical modeling has also become central in the overall risk management processes at banks through portfolio stress testing and value-at-risk models – each of which is geared primarily to evaluating portfolio value in the face of significant changes in financial asset returns. Real Time Gross Settlement (RTGS) system is a funds transfer mechanism where transfer of money takes place from one bank to another on a —real time and Gross basis. Real time means the transactions are processed as they are received. Gross settlement means the transactions are settled on one to one basis without batching with any other transaction. RTGS system is primarily for large value transactions. As soon as transactions are remitted by the paying bank they are credited in the receiving bank.

A key process innovation in the banking industry, asset securitization: Asset securitization refers to the process by which non traded assets are transformed into securitization is widely used by large originators of retail credit – specifically mortgages, credit cards and automobile loans. As of year-end 2007, federally sponsored mortgage pools and privately arranged ABS issues (including private-label mortgage-backed securities) totaled almost \$9.0 trillion in U.S. credit market debt outstanding. By contrast, as of year-end 2017, these figures were \$1.3 trillion, respectively. One recent innovation in the structured finance/securitization area is the introduction of collateralized debt obligations (CDOs). According to Longstaff and Rajan (2018), these instruments, which were first introduced in the mid-2017s, are now in excess of \$1.5 trillion.

Risk Management has been another key area of process innovation in the banking industry. Advances in information technology (both hardware and software) and financial theory spurred a revolution in bank risk management over the past two decades. Two popular approaches to measuring and managing financial risks are stress-testing and value-at-risk (VaR). In either case, the idea is to identify the level of capital required for the bank to remain solvent in the face of unlikely adverse environments.

RESEARCH METHODOLOGY

Research Design

Research design is the strategy for a study and the plan by which the strategy was implemented. Kumar (2019) defines it as the blueprint for fulfilling research objectives and answering research questions while Saunders, Lewis and Thornhill (2016) describe it as the framework for meeting research objectives and providing reasons for choice of data sources, collection method and analysis techniques.

This is the overall plan of conducting the study in order to answer the research questions and achieve the objectives of the study. The study adopted a descriptive survey research design. Descriptive research involves collecting data that answers questions about the participants of the study. It is appropriate when the researcher wishes to provide an accurate representation of persons, events or situations, according to Saunders et al. (2016), and make inferences about the target population. This study design helped the researcher report situations as observed and produce statistical information which can be useful to various stakeholders in their decision making process. The current research design was preferred by the researcher because it not only confined to the collection of and description of data, but also sought to determine the existence of certain relationships among the research variables.

Population of Study

Population refers to the gathering of all elements about which the research wishes to make inferences (Ledford & Gast, 2018). Saunders et al. (2016) explain that the population is the full set of cases or items from which an appropriate sample is taken to study. A population

element, however, is the individual item on which measurement is taken, according to Ledford and Gast (2018). For this study, the target population consisted of the 8 tier one commercial banks in Nairobi County. The study focused on the management staff of these banks. This was deemed necessary with a view to get balanced perspectives based on diverse experiences across the commercial banks. The target population was as tabulated in Table 1.

Table 1: Target Population

Category	Population	Percentage
Senior management	47	9.5
Middle management	133	26.9
Lower management	314	63.6
Total	494	100.0

Sample Frame and Sampling Technique

Sampling frame is a list of elements from which the sample was collected and it is closely associated to the population (Ledford & Gast, 2018). From the sampling frame the required number of subjects, respondents, elements and firms are selected in order to make a sample, so it is important that the sampling frame is unbiased, current and accurate (Saunders et al., 2016). The sampling frame in the present study included all the management staff of tier one commercial banks owing to its large pool of customers and large market share relative to other smaller banks hence possessive of pertinent information of interest to the present study. A sampling technique explains how cases are to be selected from the population, for observation. Saunders et al. (2016) note that there are two types of sampling techniques, probability sampling and non-probability sampling. Probability sampling, which includes random sampling and cluster sampling designs for example, is often preferred as it applies random selection in order for all cases in the population to have an equal probability or chance of being selected.

Unlike, non-probability sampling such as purposive and convenience designs, probability sampling reduces sampling bias. Stratified random sampling technique was used to reach the said sample size whereby the three cadres that is top, middle and lower management formed the strata from which one employee was selected at random across the commercial banks purposely sampling their headquarters owing to their possession of pertinent information on variables explored in the study. Then three strata were considered adequate in the present study for diverse and balanced perspectives as informed by the different experiences across the three job cadres among the commercial banks.

A sample is a group of cases consisting of a portion of the target population that the researcher carefully selects for analysis in order to determine facts about that population (Kumar, 2019). The larger the population size, the smaller the percentage of the population required to get a representative sample, however Bresler and Stake (2017) advise that the greater the desired precision of the estimate, the larger the sample should be. The following formula by Yamane (1967) was employed to arrive at the desired sample size.

$$n = \frac{N}{1 + N(e)^2}$$

Where; N= population size

e= Tolerance at desired level of confidence, take 0.05 at 95% confidence level

n= sample size.

How the formula is used is shown below

n=494/(1+(494*0.05*0.05))

n=221.03

Thus the sample size, n=221

The determined sample size was distributed as shown in Table 2.

Table 2: Sampling Size

Category	Population	Ratio	Sample
Senior management	47	0.447	21
Middle management	133	0.447	60
Lower management	314	0.447	140
Total	494		221

To select a representative sample, the study had to first have a sampling frame (Kumar, 2019). A sampling frame is a list, directory or index of cases from which a sample could be selected from for observation in a study. In this study therefore, the sampling frame was a list of commercial bank employees that included top, middle and lower management staff. This method of sampling involved giving a number to every employee, placing the numbers in a container and then picking any number at random. The employee corresponding to the odd numbers was then issued with the questionnaires.

Research Instrument

Both primary and secondary data were collected. Primary data was collected by use of questionnaires. The questionnaires were designed to obtain broad range of answers from respondents, which sought to answer the research questions. The questionnaires comprised mainly of closed ended questions to seek specific answers on the variables in question. Primary data was collected using structured questionnaires distributed to all management staffs of the tier one commercial banks in Nairobi. Secondary data was on the other hand collected from journals and published financial statements within the period of 5 years from 2014 to 2019. This period was appropriate for the study as it gave the researcher an extended range of examination of how different innovation over the years has affected the performance of tier one commercial banks. Annual data was used in this study. The secondary data collection sheet was used in collection secondary data.

Pilot Study

The researcher conducted a pilot test of the questionnaire. Pilot testing was conducted in an attempt to test the reliability and validity of the research tools. The research tools were administered to the respondents who were allowed ample time to respond. The data was tested for reliability and validity to establish issues such as data sources, methods of data

collection, time of collection, presence of any bias and the level of accuracy. The researcher improved the instrument by viewing or deleting items from the instrument.

Validity and Reliability

Reliability is a measure of degree to which an instrument yields consistent results or data after repeated trials as well as under different conditions (Saunders, Lewis & Thornhill, 2016). Sekeran (2015) asserts that the aim of research is to establish accurate and truthful findings, yet study results is dependent on its measures and therefore imperative to appraise the adequacy of its measures. It was essential to pay particular consideration to reliability and validity. Proper data collection design is vital for reaching valid and reliable conclusions. Information ought to be gathered on a comparative foundation across persons if the meaning is to make general or aggregate statements on survey information basis. Zikmund (2017) defines reliability as the degree of consistency of a measure, arguing that a test was reliable when it gives the same repeated result under the same conditions. According to Ledford and Gast (2018), reliability is the extent to which the research instrument is able to have consistency in the results or data repeatedly.

Different authors recommend different cut off points for reliability, for instance Gliem and Gliem, (2017) indicate that Cronbach value of 0.7 is considered reliable whereas Bresler and Stake (2017) suggest a range of 0.7 to 0.9 Cronbach's alpha coefficient to be good for reliability test, while Asikhia (2015) recommends a reliability cut off point of 0.6. On their part, Hair et al. (2016) and Bagozzi and Yi (2018) instead recommend a value of 0.5 to be the reliability cut off point necessary for further analysis. This study adopts a cut off Cronbach value of 0.7 which is considered a strong measure of reliability consistency as suggested by Gliem and Gliem, (2017).

Hair et al. (2016) suggest that a pretest of 5 to 10 respondents selected from the targeted population is sufficient enough to allow validation of a questionnaire. These respondents were excluded from participating in the main survey. After the pilot study, the necessary modifications were made to the instruments and then validity and reliability tests were performed. Using SPSS version 25, to ascertain the internal consistency of the data collection instruments, the Cronbach's Alpha co-efficient was computed.

So as to test the reliability of the research instrument, three methods were adopted which include spit halves, internal consistency and test re-test methods (Collis & Hussey, 2017). The study adopted the internal consistency and the split halves methods in measuring the reliability which consume less time. The stable and consistency within the instruments can be the best way to measure what was required by the researchers' objectives.

The internal consistency was tested using the Cronbach's Alpha. It designated the degree to which a set of test items might be treated as assessing a single latent variable. To ensure reliability in the research instruments, a pre-determined threshold of 0.7 and above was required. Hence values above 0.7 indicate that the research instruments are reliable while

those of below imply lack of reliability (Dardac & Barbu, 2015). According to George and Mallery (2017) the alpha value of greater than 0.50 is suggested as being satisfactory and acceptable to test for the reliability of constructs. Whereas, Fletcher (2017) recommended that the modest reliability of a construct should be 0.7.

Table 3: Reliability of the Instrument

Reliability	Percentages
Not Reliable	$0.10 \leq V < 0.46$
Low Reliability	$0.46 \leq V < 0.64$
Sufficient Reliability	$0.64 < V \leq 0.82$
High Reliability	$0.82 < V \leq 1.00$

According to Fletcher (2017), based on the validity of the categories, the mid-point (cut-off point) the validity is 64%. Items with a value above 64% (sufficient validity) is considered as a research instrument, but if V equals to or less than 64, then the instrument has a minimum level considered adequate research instrument. Reliability coefficient is ultimately the accuracy of test scores, but only provides a measurement accuracy of relief for test scores (Mertens, 2015).

Validity tests were also carried out to determine the degree to which the data collection instrument measured the constructs and variables they were designed to. As defined by Saunders, Lewis and Thornhill (2016), validity is the ability of the research questionnaire or instrument to measure what was intended to measure in terms of accuracy and meaningfulness. According to Bagozzi and Yi (2018), it is a classic evaluation criterion used in science, referring to the extent to which conclusions drawn in a study provide an accurate description or explanation of what happened. There are a variety of validity tests including face to face validity, content validity, construct validity, criterion (predictive) validity and convergent validity.

Validity refers to the extent to which the empirical measure adequately reflects the real meaning of the concept under consideration (Kumar, 2019). It is the degree to which the observational measure enough mirrors the genuine significance of the idea under thought (Therkildsen, 2015). It represents the argument that an instrument should yield results precisely to measure the intended objective by enabling the researcher to hit a bulls' eye of the objective in the interest of the population of the study in general. Validity of data collection instruments further allows for generalizability of findings (Zikmund, 2017).

It is important to survey the legitimacy of instruments due to the way the investigation utilize instruments designed for the tests. The validity of a data collection instrument as proposed by Zikmund (2017) can be induced from three points of view. This incorporated the face and content validity, concurrent validity and constructs validity.

To determine the research instrument's validity, the researcher sought assistance from experts in the field of strategic management such as supervisors and lecturers. This was to facilitate

any necessary modifications to be made on the research instruments with a view to enhance validity and ensure the collection of relevant data that would address the research questions (Zikmund, 2017).

According to Dempsey (2017), the following validity conceptions are considered: criterion-related validity, internal validity; content-related validity; and construct related validity. Content Related validity is the degree to which the content of the items adequately represents the universe of the relevant items under study (Dempsey, 2017). Content validity was, through derivation, built into the scales from theories. Kothari (2017) notes that the contribution of internal consistency data to test validation is limited, and in the absence of data external to the test itself, little can be learned about what a test measures.

Criterion-related validity denotes the effectiveness of a measure in terms of being able to predict an individual's performance in specified activities (Zikmund, 2017), whereby a criterion is used to check performance, a direct and independent measure of that which it is designed to predict or other information about the individual's behavior. The study paid attention to the provisions around reliability issues and validity in respect to the data testing and collection processes.

Construct-related validity denotes the extent to which the measure may be said to measure a theoretical construct or trait, deriving from established relationships among behavioral measures (Kothari, 2017). To ensure construct validity, the scales were adopted and modified from prior studies (Langfred & Moye, 2014; Munyoki & K'Obonyo, 2015; Aitikiya, 2015; Folami & Jacobs, 2015; Ge & Helfert, 2016; Carneiro et al., 2017; Muia, 2018; Kago et al., 2018). Donald and Pamela (2014) submit that content validity is determined by expert judgment. The university supervisors scrutinized the instrument to find out whether it addresses all the possible areas that are intended to be measured, ensure its appropriateness, completeness, and accuracy. They were relied upon to determine whether items in the instrument are an adequate representation of all the areas that are under investigation.

Data Collection Procedure

The administration of the questionnaire to the selected respondents were conducted through drop and pick later method. This was necessary to give respondents enough time to give well thought out responses. The researcher called the respondent organizations at least two days before visiting the banks to drop the questionnaires to the various offices or homes since some organisations' are taking precautionary measures for Covid-19. The researcher personally administered the research instruments to the respondents. This enabled the researcher to establish rapport, explain the purpose of the study and the meaning of items that may not be clear as observed by Bryman and Bell (2011).

Data Analysis

The data analysis in this study involved the use of descriptive and inferential statistics. Descriptive statistics refer to methods of organizing and summarizing data, for this study frequencies and percentages as well as measures of central tendency (means) and dispersion (standard deviation) were used. Data was organized into graphs and tables for easy reference and better communication. Inferential data analysis was done using correlation analysis and regression analysis. Correlation analysis was done to establish the strength of relationship between the four hypotheses. Regression analysis was used to establish the relations between the independent and dependent variables. SPSS version 25 was the analysis tools used in this study. The regression analysis took the following model:

$$Y = \alpha + \beta_1 X_1 + \epsilon$$

Y = Performance of commercial banks

α = Constant term

β = Beta Coefficient

X_1 = Process innovation strategies

ϵ = Standard Error

RESEARCH FINDINGS AND DISCUSSION

Descriptive statistics

The research aimed at examining the effect of process innovation strategies on the performance of tier one commercial banks in Kenya. The respondents were asked to indicate the extent to which the process innovation strategy practices were being undertaken by their organizations to improve the financial performance. The results are as presented on Table 4.

Table 4: Effect of Process Innovation Practices on Bank Performance

	Mean	Std. Dev.
Digitalization of all retail products	2.977	0.967
Electronic Funds Transfer	4.235	0.723
Cheque processing	2.559	0.745
Automation	2.906	0.911
Improved queuing	4.259	0.718
Number and distribution of ATMs	3.929	0.753

The findings reveal that the respondents had indicated that improved queuing as illustrated by a mean of 4.259; electronic funds transfer as illustrated by a mean of 4.235; and number and distribution of ATMs as illustrated by a mean of 3.929 had improved the financial performance of the banks to a great extent. The findings also reveal that digitalization of all retail products as illustrated by a mean of 2.977; automation as illustrated by a mean of 2.906; and cheque processing as illustrated by a mean of 2.559 had improved the financial performance of the banks to a moderate extent. This is in accordance to Cumming (2016) who states that process innovation embraces quality function deployment and business process reengineering. An efficient supplier who keeps working on productivity gains can expect, over time, to develop products that offer the same performance at a lower cost. Such

cost reductions may, or may not, be passed on to customers in the form of lower prices. Further, the respondents gave their opinions on other process innovation strategy practices that can improve the financial performance of their bank. The respondents indicated that differentiation, cost reduction, introduction of new technologies can improve the financial performance of their banks.

Pearson Moment Correlation Results

This was conducted to assess the degrees of association between the variables. A Pearson moment correlation is a number between -1 and +1 that measures the degree of association between two variables. A positive value for the correlation implies a positive association while a negative value for the correlation implies a negative or inverse association. Table 5 shows the results for the Pearson moment correlation.

Table 5: Correlation Coefficients

		Performance of tier one commercial banks	Process innovation strategies
Performance of tier one commercial banks	Pearson Correlation	1	
	Sig. (2-tailed)	.000	
Process innovation strategies	Pearson Correlation	.796**	1
	Sig. (2-tailed)	.000	.000

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

The results also show that there is a positive association between process innovation strategies and performance of tier one commercial banks in Kenya where the correlation coefficient is 0.796, with a p-value of 0.000. These findings concur with John and Storey (2016) who noted that process innovation is important in both the supply of the core product as well as in the support part of any offer. Both components of an offer require quality standards to be met and maintained. In the case of services, which by their very nature rely on personal interactions to achieve results, the management of process innovation is a particularly challenging activity.

Regression Analysis

The regression analysis was conducted to establish the relationship between the process innovation strategies and performance of tier one commercial banks in Kenya. The findings were as illustrated in Table **Table 6: Model Summary** 6, 7 and 8.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.856 ^a	.733	.727	1.35307

From the results, it is clear that the four independent variable was statistically significant in predicting the performance of tier one commercial banks in Kenya which had an adjusted R squared = 0.727. That implies that the model explains 72.7% of the variance in performance

of tier one commercial banks in Kenya while the remaining 27.3% is explained by other factors that were not covered in this study.

Table 7: ANOVA Results

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	831.315	1	207.829	113.518	2.59E-46
Residual	302.083	168	1.831		
Total	1133.398	169			

From the ANOVA Table, p-value was 2.59E-46 and F-calculated was 113.518. Since p-value was less than 0.05 and the F-calculated was greater than F-critical (2.4264), then the regression relationship was significant in determining how process innovation strategies affects performance of tier one commercial banks in Kenya.

Table 8: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.104	1.329		-.078	.938
Process innovation strategies	.264	.035	.477	7.545	.000

Table 8 shows the regression model, where if process innovation strategies were held constant at zero, then the performance of tier one commercial banks in Kenya would be -0.104 which is insignificant since $p=0.938 < 0.05$. The findings also reveal that when a unit of process innovation strategies increase, there is a 0.264 increase in the score of performance of tier one commercial banks in Kenya. Process innovation strategies is significant since $p\text{-value}=0.000 < 0.05$. This finding agrees with Rose (2017) stated that creation and optimization of process therefore goes beyond tools and practices. Custodians of a process differentiation logic views of how people connect in the work-flow of a process, carry out tasks, and define the outcomes benefit experiences, and where and how value happens, what are likely obstacles/pitfalls, eventually how it produces (and retains) a sustainable value for competitive advantage.

Conclusions

The study concluded that process innovation strategies have a positive and significant effect on the performance of tier one commercial banks in Kenya. The study concluded that through the innovation process management, commercial banks were able to innovate in their product and service offering. They also understood and effectively met the evolving customer banking needs, hence achieving customer satisfaction that in turn lead to higher firm performance. Through innovation process management, the banks leveraged on open communication and information flow to respond to the emerging internal and external changes as a resulting of market force that had a bearing on their firm performance.

Recommendations

Since this study revealed a significant relationship between process innovation and performance of tier one commercial banks in Kenya, this study recommends that management at tier one commercial banks should ensure that process innovations are conducted in a manner that enhances competitive advantage. This should include ensuring that organizational processes are designed in a manner that enhances organizations strategic goals and objectives. There is need to ensure that employees and customers are involved in all aspects process innovation. Lack employee involvement can be detrimental to the success of the innovation process and thus hinder competitiveness. There is also need to ensure that process innovation is pegged to organizations vision for future competitiveness of the banks. The study recommends that the regulator (Central Bank of Kenya) should create an enabling environment that will enhance innovations in the tier one banks so that they realize the full benefits of innovation strategies. Through compliance with the regulations and policies the banks will realize profitability as a result of process, product, market and technology innovations among others which without a proper policy the banks would not operate effectively in the market to realize profits.

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