

# THE EFFECT OF FINANCIAL INNOVATION ON FINANCIAL PERFORMANCE OF LISTED BANKS IN KENYA

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**Abstract:** Globalization has brought about changes in the financial industry thereby markets with fast changing technology must make things happen. Financial Performance and innovation are interrelated in that banks cannot sustain themselves if they fail to embrace innovation in their operations. The main objective of the study was to determine the effect of Innovation on financial performance of listed banks in Kenya. Specifically, the study investigated the effect of product innovation, process innovation, service innovation and institutional innovation on financial performance of listed banks in the Nairobi Securities Exchange. The target population included 5 conveniently selected banks out of the 11 listed banks in the Nairobi Security Exchange. These included Equity bank, Kenya commercial bank, Cooperative bank of Kenya, National Bank of Kenya and Barclays Bank of Kenya. The study sample was drawn from the population using stratified random sampling technique with 94 respondents represented by the branch managers drawn from the different banks. The study used both primary data and Secondary data. Data analysis was carried out by use of descriptive statistics and inferential statistics that involved the use of regression analysis to determine the strength of association between the variables. The findings revealed that innovation has a significant effect on financial performance and recommended that banks should adopt innovation to enhance growth, competition, increased productivity and profits.

**Keywords:** Financial Innovation, Financial Performance, Listed Banks, Kenya.

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## 1. INTRODUCTION

History shows that Innovation has been a critical and persistent part of the economic landscape over the past few centuries in the years since Miller 's 1986 piece, financial markets have continued to produce a multitude of new products, including many new forms of derivatives, alternative risk transfer products, exchange traded funds, and variants of tax deductible equity.

Advances in technology and globalization process have had externalities on the financial sector. The financial sector is leveraging on these developments to enhance service delivery to its clients, as well as secure returns arising from these advances. These innovations have in turn enhanced at least the interconnectedness within the financial sector, and to the real economy. Financial innovations have led to a revolution in the way the banking business is conducted as found by Yin and Zhengzheng (2010) who demonstrates evidence that Chinese commercial banks have moved from the traditional business operation mode; the wholesale credit operations to the retail mode as a result of technological innovations.

In Africa the banking industry has undergone dramatic changes over the past 20 years. While dominated by government-owned banks in the 1980s. In Nigeria, internet banking has resulted to improved e-Commerce and e-Payment services with overall reduction in the amount of currency in circulation (Chiemeké, Ewwiekpaefe and Chete, 2006; Ayo, Adebisi, Fatudimu and Ekong, 2008; Aderonke and Charles, 2010). In Mauritius, Padachi, Rojid and Seetanah (2008) observe that the two main banks; Mauritius Commercial Bank and the State Bank of Mauritius improved their financial performance on implementation of new technology. Gardachew (2010) documented that Ethiopian banks have not been able to achieve

efficiency as a result of slow adaptation of technological innovations. In Uganda, adoption of electronic and mobile banking has increased access to banking services (Porteus, 2006).

Kenya's financial system has evolved rapidly over the years. In the last two or three decades, we have witnessed the development of mobile money transfers (including M-PESA and AIRTEL Money services), the growth of branch banking or agent banking, investment in long term government bonds for development finance, and more so, were moving closer and closer to a cashless economy, as seen in preference for visa cards for payment of bills, and so on. The effective use of Information Technology has led to better utilization of personnel and organizations assets, increased revenues and increased access to financial services by the general population (Mwania and Muganda, 2011).

### **Commercial Banks in Kenya**

The banking sector in Kenya is regulated and licensed by the central bank of Kenya (CBK) under the Banking Act (Cap 488). The CBK is responsible for formulating and implementing monetary policy and fostering the liquidity, solvency and proper functioning of the financial system. As at 31st December 2016, the Kenyan banking sector comprised of the Central Bank of Kenya, as the regulatory authority, 43 banking institutions (42 commercial banks and 1 mortgage finance company), 8 representative offices of foreign banks, 13 Microfinance Banks (MFBs), 3 credit reference bureaus (CRBs), 17 Money Remittance Providers (MRPs) and 77 foreign exchange (forex) bureaus. Out of the 43 banking institutions, 40 were privately owned while the Kenya Government had majority ownership in 3 institutions. Of the 40 privately owned banks, 25 were locally owned (the controlling shareholders are domiciled in Kenya) while 15 were foreign-owned (many having minority shareholding). (Central Bank of Kenya, 2016).

Commercial banks branch network has grown from 1,523 in 2015 to 1,541 in 2016, which translated to an increase of 18 branches. Nairobi County registered the highest increase in number of branches by 17 branches. A total of 15 out of 47 counties registered a decrease in the number of bank branches. The decrease in physical bank branches expansion is partly attributed to the adoption of alternative delivery channels such as mobile banking, internet banking and agency banking.

### **Innovation and Financial Performance**

The current banking sector has come up with many initiatives that oriented to providing a better customer services with the help of new technologies. Banking through internet has emerged as a strategic resource for achieving higher efficiency, control of operations and reduction of cost by replacing paper based and labor intensive methods with automated processes thus leading to higher productivity and profitability. In the last two decades. Advances in technology and changing economic conditions have created impetus for this change. All these developments coupled with changes in the international financial environment and the increasing integration of domestic and international financial markets have led to rapid financial innovation (Nyangosi, 2008).

Commercial banks in Kenya have developed new innovations that have influenced their financial performance these includes; mobile banking, internet banking, RTGS, ATM withdrawals and deposits, online account opening, unsecured lending, stock brokerage and insurance services; with commercial banks moving to acquire stock brokerage firms, Islamic banking guided by the Islamic (Sharia) law among many others CBK (2014). All these innovations contribute heavily in building customer base, capital base as well as enhancing their profitability, which results to improved financial performance.

Financial performance of banks is usually measured using a combination of financial ratios such as profitability ratio, asset management ratio, debt ratio, liquidity ratio, and market value ratio analysis, benchmarking, measuring performance against budget or a mix of these methodologies (Barley, 2000). The common assumption, which underpins much of the financial performance research and discussions, is that, increase of financial performance leads to improved functions and activities of the banks. The banking sector registered improved performance in 2016 with profit before tax increasing by 10.0 percent to Kshs 147.4 billion in December 2016 from Kshs 134.0 billion in December 2015. The increase in profitability is attributed to a higher increase in income compared to the rise in expenses. (The Kenya banking sector report, 2016) Innovations have been introduced into the market as a result of raising competition. The banks remained well capitalized where gross deposits stood at Kshs 348.7 billion compared to Kshs 347.8 billion in 2015 in addition total assets of subsidiaries stood at Kshs 445 billion compared to Kshs 413.2 billion (CBK, 2016).

### Statement of the Problem

The ever changing environment in the banking sector as well as the rapid rate of innovation has generated research interest in innovation. CBK has continued to approve new banking products where the financial services industry has been impacted by the ever changing consumer needs, innovative financial products, technological advancement and the use of multiple delivery channels. To remain competitive in the new landscape, banks have continued to introduce new products, expand the existing ones, and add new delivery channels. Central Bank of Kenya (2016)

The impact of innovation on financial performance, is still misunderstood due to inadequate knowledge about the drivers of innovation and the impact of innovation on bank's performance remaining unverified (Mabrouk and Mamoghli, 2010). A study by De Young, Lang and Nolle (2007) adopt an approach to the innovation performance relationship which does not take into account the past experiences to innovation inside and outside the banking organization, all of which could influence this relationship. Kenyan commercial banks have continued to deploy huge investments in technology based innovations and training of manpower to handle the new technologies. Towards the end of 2016, 15 banks applied to introduce PESALINK, a new product spearheaded by Kenya Bankers Association that enables bank customers to move funds from one bank to another using either mobile phones, internet, ATM, bank agents and branches (CBK, 2016).

Locally, Kamotho (2008) on his study on the mobile phone banking usage experience observed that competition triggers innovation and creativity. Continuous innovation not only yield new products but rather promotes efficiently in the performance of activities. Mwangi (2007) carried out a study on Factors Influencing Innovation of Companies listed at Nairobi Stock Exchange he argued that global financial competition and integration had an influence on Innovation with increased financial competition amongst financial institutions influencing Innovation the most.

Studies conducted in the banking sectors have produced results regarding the problems of ineffectiveness and poor financial performances. Pooja and Singh (2010), Franscesa and Claeys (2010), Batiz-Lazo and Woldesenbet (2006) and Mwanja and Muganda (2011) have varied results regarding the impact of innovations on bank performance. Pooja and Singh (2010) and Franscesa and Claeys (2010), in their studies concluded that financial innovations had least impact on bank performance, while Batiz-Lazo and Woldesenbet (2006) and Mwanja and Muganda (2011) concluded that financial innovation had significant contribution to bank performance. None of the studies has been put forward to look at the effect of financial innovation on financial performance of listed banks in Kenya. This creates an academic gap that this study seeks to fill.

### Objective of the Study

The general objective of the study was to determine the effect of Innovation on financial performance of listed banks in Kenya. Specifically, the study sought to investigate the effect of product innovation, process innovation, service innovation and institutional innovation on financial performance of listed banks in the Nairobi Securities Exchange

## 2. THEORETICAL REVIEW

The study was guided by three theories which included; Diffusion Theory of innovation, Technology Acceptance Model and Financial Intermediation Theory. These theories are explained below.

### Diffusion Theory of Innovation

Introduced in 1962, the Innovation Diffusion Theory was fine-tuned by Rogers (1995). Innovation diffusion theory focuses on understanding how, why and at what rate innovative ideas and technologies spread in a social system (Rogers, 1962). In terms of the theories of change, Innovation Diffusion theory takes a contrary approach to study changes. Instead of focusing on persuading individuals to change, it sees change as being primarily about the evolution or "reinvention" of products and behaviours so they become better fits for the needs of individuals and groups. In diffusion of innovations, it is not people who change, but the innovations themselves (Les Robinson, 2009).

The theory begins to describe the innovation-decision process within organizations, but not to the level of addressing whether and how the characteristics of an innovation interact to affect its adoption within organizations, or whether organizational type, size, or industry affect adoption. In addition, while there is an innovation-decision process described for individuals and within organizations, there is no description of how the variables interact when innovations are diffused across organizations (Lundblad and Jennifer, 2003).

The theory is relevant to the study in that for the banking sector new innovations are more advantageous than the operational ones. Banks are compelled to adopt to the new innovation that quickly diffuses in a social system. The degree of relative advantage is often expressed by a pot of sub dimensions (economic profitability, low initial costs, decreases in discomfort, social prestige, saving time and effort, immediacy of rewards) (Francesco, 2012).

### **Technology Acceptance Model**

The theory was developed by Fred Davis and Richard Bagozzi (Davis 1989, Bagozzi, Davis & Warshaw 1992). TAM was adapted from the Theory of Reasoned Action (TRA) by Ajzen & Fishbin (1980), is an information systems theory that models how user's come to accept and use a technology. The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they use it, notably: Perceived usefulness (PU). This was defined by Fred Davis as "the degree to which a person believes that by using a particular system would enhance his or her job performance: Perceived ease of use (PEOU). Davis defined this as "the degree to which a person believes that using a particular system would be free from effort (Effortless) Davis (1989).

According to Bagozzi, Davis and Warshaw (1992) new technologies such as personal computers are complex and an element of uncertainty exists in the minds of decision makers with respect to the successful adoption of them, people form attitudes and intentions toward trying to learn to use the new technology prior to initiating efforts directed at using. Attitudes towards usage and intentions to use may be ill-formed or lacking in conviction or else may occur only after preliminary strivings to learn to use the technology evolve. Masinge (2010) conducted a study on the factors influencing the adoption of mobile banking services at the bottom of the pyramid (BOP) in South Africa, and added perceived cost, trust and perceived risk as contrasts to TAM. The findings of the study revealed that perceived usefulness (PU), perceived ease of use (PEOU), perceived cost, and customer's trust had a significant effect on the adoption of M-banking at the BOP while perceived risk (PR) was found to have no significant effect.

This theory was used to explain how product, process, service and institutional innovation in financial institutions. For there to be effective product and process innovations, banking institutions must have requisite resources particularly in terms of technical expertise to enable them have the necessary technologies. The organizational culture must also be willing to embrace the innovations.

### **Financial Intermediation Theory**

The theory was first developed with the idea of transactions costs in the context of the theory of the firm by Coase (1937). Gurley and Shaw (1960) introduced the theory as a key form of friction in financial markets which was also based on the theory of informational asymmetry and agency theory. The theory is designed to account for institutions which take deposits or issue insurance policies and channel funds to other institutions. However, in recent decades there have been significant changes. Although transaction costs and asymmetric information have declined, intermediation has increased. New markets for financial futures and options are mainly markets for intermediaries rather than individuals or firms. These changes are difficult to reconcile with the traditional theories (Allen, 2008).

Kigen (2010) studied the impact of mobile banking on transaction costs of microfinance institutions where he found out that by then, mobile banking had reduced transaction costs considerably though they were not directly felt by the banks because of the then small mobile banking customer base. He sought to determine the impact that mobile banking bore on transactional costs of microfinance institutions. The financial intermediation theory highlights the role of financial intermediaries in economy; most of the studies performed highlight their role in achieving a durable economic growth, and the impact of regulations on financial intermediation, accentuating the role of the central bank in the regulation, supervision and control of financial intermediaries.

This theory was very useful in improving productivity of the banking institution, if adopted as a corporate philosophy. The "financial liquidity" banks provide to depositors and borrowers can be measured whereby deposits can be cashed on demand while banks' assets are mainly long-term. An appropriate corporate philosophy should result in goal congruence and should channel all efforts of the management and employees towards a pre-determined goal and strategies of the banks. Banks can enhance their value only if they are able to achieve optimal productivity through innovation given the flexibility and efficiency of the financial intermediaries.

### Empirical Review

The study reviewed other published work obtained from periodicals, journals and books relating to innovation and financial performance. Korir, William, Adam & Charles (2015) study comprised of all 43 commercial banks in Kenya as at 31st December, 2013 which have been in operation from 2008 to 2013. This period was considered long enough to provide sufficient variables to assist in establishing the effect of financial innovations on financial performance. This period was chosen in order to capture the most recent data and to give results that are conclusive and reflect the current trend. No sampling was done due to the small population size and the study employed a census where all the 44 banks were used in the study.

Muyoka (2014) investigated the relationship between financial innovation and performance of insurance firms in Kenya. In the study, it was noted that institutional innovations increase firm performance by considerably reducing administrative and transaction costs, reducing costs of service and improving labor productivity. The study established that institutional innovation in the MFIS companies were partnerships with organizations, strategic alliances with commercial banks and new branch networks. It was ascertained that institutional innovations positively influenced performance of the companies.

Muthoni (2013) undertook the study determining the causal effect of financial innovation on financial performance of insurance companies in Kenya. For this study 45 insurance companies and Re- insurance companies operating in Kenya as at 31st December 2012 were used. Data was drawn from a period of five years that is 2008- 2012. The primary data was collected through questionnaire and where appropriate the secondary data was obtained from published information. The data was analyzed using descriptive and inferential statistics to generate descriptive regression of co- efficient as well as to determine the fitness of the model. Results indicate the relationship between new product and financial performance is insignificant. Results reveal that operations process and system innovation is statistically significant in explaining return on assets of insurance companies.

Corolyne (2012) assessing the effects of financial innovation on commercial bank's financial performance in Kenya at 30th June, 2012. The study included all the 43 registered commercial banks at that time for a period of 4 years. She used secondary data from published central banks' annual reports whereby the independent variable was financial innovations unique to commercial banks while dependent variable was consolidated financial performance of all banks. She found out that financial innovation indeed contributes to and is positively correlated to profitability in the banking sector particularly that of commercial banks.

Ngari et al (2014), in assessing, the relationships between credit cards, mobile banking, influence of internet banking and agency banking on the performance of commercial banks in Kenya. They studied 40 commercial banks registered in Kenya by the central bank for the period 2008-2012. They used secondary data from published financial statements whereby the independent variables were credit cards, internet banking, mobile banking, and agency banking and the dependent variable was financial performance. They found out that some banks in Kenya had adopted some financial innovations such as credit cards, mobile, internet and agency banking and indeed financial innovations had great impact on the financial performance of the banks.

Duade et al (2011) in assessing the relationship between financial innovation and commercial banks performance in Nigeria used fifteen (15) major banks in the Country. Two null hypotheses based on two different sets of questionnaires were distributed to selected banks employees and customers were formulated to test whether there is no significant relationship between technology innovation and banks performance; and between technological innovation and Nigerian banks employee's performance. Pearson correlation coefficient was used to analyze the hypotheses. Findings revealed that technological innovation influenced banks employee's performance, customer's satisfaction and improvement in banks profitability.

The actual effect of innovation on financial performance was measured by regressing ROA and ROE against innovations. The main findings of the study were financial innovations such as number of ATM cards, number of credit cards issued to customers, number of debit cards issued to customers, number of minor/children account, number of special deposit account, number of youth oriented accounts, number of customers registered for e- banking, number of customers registered for mobile banking and number of agency banking had imposed ROA of the bank studied. The study recommends that however, financial innovation is yet to show significant positive effect on the performance of banks, there is need for future investigations beyond financial measures used in the study as technology continues to penetrate market.



### 3. RESEARCH METHODOLOGY

#### Research Design

This study used descriptive research design. Lavrakas (2008) describes a descriptive 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.

#### Population and Sampling

The target population included 5 conveniently selected banks out of the 11 listed banks. These included Equity bank, Kenya commercial bank, Cooperative bank of Kenya, National Bank of Kenya and Barclays Bank of Kenya. The target population for this study was at two levels. The first target population was at the institutional level where the study target 5 listed banks in Kenya. The second level of the target population was branch managers of the banks. The main reason for choosing branch managers is because they are responsible for performance of their respective banks and have higher level of appreciation on how innovations influence financial performance. They are also responsible for managing performance of their units through the departmental budgets and action plans (Ngumi 2014).

#### Data Collection

Primary data was collected through the administration of questionnaires to the respondents. Kothari (2004) describe primary data as those, which are collected afresh and for the first time, and thus happen to be original in character. Louis, Lawrence and Morrison (2007) describes primary data as those items that are original to the problem under study while Ember and Ember (2009) describe primary data as data collected by the investigator in various field sites explicitly for a comparative study. The entry point to the banks was through the branch managers. Secondary data was obtained from the Central Bank of Kenya, Kenya National Bureau of Statistics and the Banking survey reports.

#### Data Analysis

The collected data was subjected to the relevant data cleaning, processing and analysis respectively. A factor analysis on both the dependent and independent variable items was conducted upon which reliability analysis for the retained items were computed. Secondly, correlation coefficients between independent variables (product innovation, process innovation, service innovation and institutional innovation) and dependent variable (financial performance) elements obtained from factor analysis was computed to explore possible strengths and directions of relationships. Data processing and analysis was done by the use of the Statistical Package for Social Sciences (SPSS) Version 24 software. Data processing and analysis was done by the use of the Statistical Package for Social Sciences (SPSS) Version 24 software.

#### Analytical Model

Data analysis models used in the study included descriptive statistics and inferential statistics. Descriptive statistical tools, which include means, standard deviations. On the other hand, inferential statistics in form of Pearson's correlation coefficient and multiple regression analysis were used. The result of the analysis was presented in form of tables. The following regression model guided the study.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where:

Y is Financial Performance

$\beta_0$  is Constant

X1 is Product Innovation

X2 is Process Innovation

X3 is Service Innovation

X4 is Institutional Innovation

$\epsilon$  is Error term

$\beta_1$ ,  $\beta_2$ ,  $\beta_3$  and  $\beta_4$  are Regression coefficients of Independent variables that defines the amount by which Y is changed for every unit change in independent variable.

#### 4. ANALYSIS, FINDINGS& DISCUSSIONS

##### Descriptive Analysis

The descriptive findings in this section are presented in form of means and standard deviations. The questionnaire responses were based on a Likert scale which was coded with numerical values for ease of data analysis. The scale used had the values 1 to 5 representing level of agreement from strongly agree to strongly disagree. The study requested respondents to give their opinion in regards to the effect of product, process, service and institutional innovation on performance of banks.

Descriptive statistics enables the meaningful description of a distribution of scores or measurements using a few indices or statistics. Mean values informed the researcher on the expected score or measure from a group of scores in a study. Standard deviations inform the analyst about the distribution of scores around the mean of the distribution. The frequency distribution and percentages recorded the number of times a score occurs and the extent of occurrence of a particular observation respectively Babbie (2007).

**Table 1: Financial Performance**

Financial Performance	SA&A %	Neutral %	SD&D %	Mean	STDV
Income from new product innovations contribute positively to bank annual profitability	48.2	23.5	28.3	3.30	1.289
Bank automated processes have low maintenance costs leading to high levels of profitability over their economic lifetime	51.9	25.9	22.2	3.43	1.161
Bank investment in service innovation is mostly motivated by profits to the bank	59.3	14.8	25.9	3.48	1.266
Banks institutional innovation have enabled ease of operation and increased profitability	51.9	23.5	24.6	3.46	1.194

On the various performance factors observed by the study, the mean scores of between 3.30 and 3.48 indicated that various financial performance factors of listed banks in Kenya were significantly influenced by the innovation factors of product, process, service and institution. On the other hand, the study also observed a standard deviation of between 1.161 and 1.289 that indicated that the responses on the various financial performance factors were varied and that different respondents felt very different on the various aspect of performance.

##### Inferential Analysis

##### Regression Coefficient Analysis

**Table 2: Coefficient results of the Model**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.523	.333		1.571	.118
<b>Product Innovation</b>	.291	.086	.297	3.394	.001
<b>Process Innovation</b>	.200	.073	.200	2.735	.007
<b>Service Innovation</b>	.213	.069	.234	3.072	.002
<b>Institutional Innovation</b>	.351	.058	.385	6.000	.000

Dependent Variable: financial performance

Predictors: (Constant), Innovation factors

The regression test results presented in the table indicate that, all the coefficients are positive and are also significant as given by their p-values (sig. values) which are all less than 0.025 testing at 5% level with a 2-tailed test. Thus, with these values being less than the critical value at 5% level, the coefficients are statistically significant and explain significant

influence of the independent variables to the financial performance of the banks. These coefficients therefore are used to answer the following regression model which relates the predictor variables (independent variables) and the dependent variables;

The interpretations of the findings indicated the following regression model:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Therefore;

$$Y = 0.523 + 0.291 X_1 + 0.200 X_2 + 0.213 X_3 + 0.351 X_4$$

The Beta coefficients indicate the extent to which bank financial performance changes due to a unit change in the independent variable. The positive Beta coefficients indicate that a unit change in the innovation factors leads to a positive change in financial performance. Thus, the model indicates that, holding the predictor variables constant, the financial performance of commercial banks would be 0.523. This explains that, without the influence of the innovation factors, the Financial performance value of the banks would be 0.523. Also, the model shows that, a unit increase in product innovation transfer would result to 0.291 times increase in the bank's financial performance. Thus the two variables are positively related with a magnitude of 0.291 explaining the extent of influence to the dependent variable. Also, it is clear that a unit change (increase/ decrease) in the value of process innovation lead to a 0.200 times direct changes in the banks' financial performance. This indicates that, process innovation and the financial performance off the banks are positively related where increasing process innovation give a corresponding increase of 0.200 times to the financial performance and viceversa.

Further, the model indicates that, the coefficient of service innovation and the financial performance of the commercial banks is 0.213. This reveals that, given a unit increase in the service innovation, the financial performance of the commercial banks was be affected by 0.213 times increase consequently. Thus, the two variables are positively related and a unit change in service innovation resulted to 0.213 times changes in the same direction to the financial performance of the commercialbanks. Findings from the model shows that, a unit increase in institutional innovation transfer would result to 0.351 times increase in the bank's financial performance. Thus, the two variables are positively related and a unit change in service innovation resulted to 0.351 times changes in the same direction to the financial performance of the commercialbanks.

Out of the four factors investigated, Product innovation and Institutional innovation were the most important since to generate one unit of financial performance, 0.291 units of product innovation and 0.351 units of institutional innovation must be increased. Therefore, listed banks in Kenya should focus more on product innovation and institutional innovation.

### Model Estimation

Table 2 gives the regression model summary results. It presents the R value which is the measure of association between the dependent and the independent variables, the R Square which is the coefficient of determination measuring the extent at which the independent variables influence the dependent variable as well as the Adjusted R Square which measures the reliability of the regression results.

**Table 3: Regression Model Summary**

Model 1	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.821 <sup>a</sup>	.674	.670	0.77148

a. Predictors: (Constant) Product innovation, process innovation, service innovation, institutional innovation

The findings shown in Table 3 indicate the extent of variations on the financial performance which are explained by the independent variables. The R square value is 0.674. This means that the independent variables explain 67.4% of the variations in dependent variable. The rest 32.6% are explained by other factors that have not been included in the regression model under investigation. This means that the model used was appropriate and the relationship of the variables shown could not have occurred by chance. The results indicate a strong and positive association between the dependent variable (financial performance) and the independent variables (product, process, service and institutional innovation).



### Analysis of Variance

The significance of the relationship between each of the independent variables and financial performance of was established using the f-test. The significance level being 0.05 meaning 95% confidence level. In this study coefficient of correlation (r) and coefficient of determination ( $r^2$ ) was used determine the nature and magnitude of the relationship. Correlation coefficient was used to measure the degree of effect of innovation on financial performance of the commercial banks.

The results presented in table 2 gives the ANOVA results which shows the reliability of the model developed in explaining the relationship between the study variables. The significance of the model was tested at 5% level with a 2-tailedtest.

**Table 4: ANOVA Table**

Model 1	Sum of Squares	df	Mean Square	F	Sig.
<b>Regression</b>	185.741	7	26.534	22.016	.000 <sup>b</sup>
<b>Residual</b>	376.034	312	1.205		
<b>Total</b>	561.775	319			

a. Predictors: (Constant), Product innovation, process innovation, service innovation, institutional innovation

b. Dependent Variable: ROA, ROE

ANOVA was used to test the effects of innovation on financial performance of listed banks in Kenya. The table 4.11above shows a regression output of the innovation (product, process, service and institutional innovation) factors as valid ( $F(7, 312) = 22.016, P < 0.000$ ). This therefore reveals that the regression model developed has statistically significance and the variation in the results is insignificant that cannot result to a much difference in case of a change in the study units (population) and therefore the model can be relied upon to explain the effect of innovation on performance of banks.

## 5. SUMMARY

Regarding the effect of product innovation on financial performance, it emerged from the results that banks develop new products quite regularly. The findings revealed that product innovations have a positive effect on the financial performance of banks in Kenya. The effect is also statistically significant. Banks in Kenya have been using product innovations to curb competition and enhance their performance. Some innovations are at early stages and may not be easily accepted by customers and have much influence on performance. The outcome of process innovation on financial performance showed that banks have a well-articulated automated processes and design which reduces operational costs and increases banks savings. In addition, banks also have enacted changes in provision of services and have adopted cost effective operations. Process innovations result to general increase in customer satisfaction and enhance performance. As the innovations becomes widely adopted by competitor banks this may have negative results on profitability. The result of service innovation on financial performance indicated that banks offer high level of service automation and high quality of service to attract more customers and meet their demands. Well-enhanced service quality also reduces the operational costs and increases the banks profit. In addition, banks regularly update their existing services to enhance service performance and increase efficiency. Customer are more drawn to banks that have effective and efficient service delivery. According to the findings banks have a clear business structure that enhances performance; Banks have also adopted advanced technologies for growth, competition, increased productivity and profits and are also guided with a clear legal framework to mitigates against consequences of innovation malpractices. The study further established that banks have collaborated with various financial intermediaries to improve performance. It can therefore be suggested that banks act in accordance to its supervisory framework that ensures that all innovation in use are allowed and operationalized.

## 6. CONCLUSION

Based on the findings, the researcher concluded that bank innovations positively influence financial performance of commercial banks in Kenya. The bank also has a supervisory framework that monitors it. Banks in Kenya have continued to perform well even when other sectors of the economy show lagged behind. This is due to use of innovations which have enabled banks to start making profits from different services and products like mobile phones, internet, among others. It was also concluded that innovations can be a source of competitive advantage if a banks understands customer needs, competitors' actions and technological development and act accordingly to stay at par with rivals.

In relation to product performance, banks offer highly differentiated products. Product innovations indicators in terms of new, improved and quality products largely and positively influence bank performance. Innovation boosts bank performance by strategically placing a bank in a competitive market. On process innovation, it can be concluded that the delivery process in banks are up to date with automation in most service delivery. Process innovation also enhance speed and quality result to flexibility and cost efficiency. Institutional innovation positively enhances bank performance through transformational leadership, knowledge management, organizational learning and banks performance.

## 7. RECOMMENDATIONS

There is need for the listed banks in Kenya to improve their product innovation so that they are able to achieve high levels of financial performance. They should consider how they can continue developing new products that are able to meet the customers' needs and that the products are as competitive as possible. As technology improves in many sectors the banking institutions should also develop products that respond towards the present technological needs. There is also need for improved process through innovation if the listed banks in Kenya are going to improve their financial performance. The process needs not only to be effective but also efficient in order for the organizations to achieve the set out goals and objectives in terms of performance. On the other hand, the commercial banks need to ensure that they innovate ways that can reduce the process time of various services that are offered by the banking institutions.

The banking institutions should understand that the service innovation affect financial performance of listed banks strive to offer high level of service automation through continuous innovation in order to meet customers demand, the banks should offer high quality services to attract customers to their products. The banks institutions should also enhance service quality to reduces the operational costs and increases the profit. There is also need for the listed banks in Kenya to regularly update their existing services enhance the service performance and increases efficiency. Finally, yet importantly, the banks should have a clear business structure that can enhance performance, the banks have adopted enhanced technologies for growth, competition, increased productivity and profits and that the banks act in accordance to its supervisory framework that ensures that all innovation in use are allowed and operationalized. There is also need for the banks legal framework to be able to mitigate against consequences of innovation malpractices and partner with various financial intermediaries that include communication service providers such as Safaricom, Airtel and Telecom to improve performance.

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