EFFECT OF FINANCIAL INNOVATION ON FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN RWANDA: A CASE OF 14 LICENSED COMMERCIAL BANKS OPERATING IN KIGALI CITY

[1]Vestine Uriho, [2]Dr. Patrick Mulyungi

Jomo Kenyatta University of Agriculture and Technology

Abstract: **Commercial banks have continued to use huge investments in technology based innovations and training of manpower to handle new technologies. The relationship between the growing investment in technology based bank innovations and bank financial performance in Rwanda needs to be studied and establish whether drivers of bank innovations have contributed to the financial performance of commercial banks in Rwanda. This research studied innovations in automated teller machines, debit and credit cards, internet banking, mobile banking, electronic funds transfer and point of sale terminals. The general objective of this study was to determine the effect of financial innovation on financial performance of commercial banks in Rwanda. A descriptive survey design was used while a questionnaire was used to gather primary data. Secondary data was also used to validate the communicative and pragmatic validity of primary data. The target study units for this research were all 14 commercial banks registered by National Bank of Rwanda. The variables were subjected to correlation analysis and the Software Package for Social Sciences (SPSS) was used to analyze data. Frequency distribution tables and percentages were adopted to present the data. The relationship between the variables was tested using the Pearson's correlation technique. Ethical issues related to the study were addressed by maintaining a high level of confidentiality of the information given by the respondents. According to the findings, mobile banking (P=0.029), agent banking (p=0.041) and internet banking (p=0.006) were all significant in predicting the profits of the banks since all the p values were less than 0.05. However, as it can be seen Bank assurance had a p=value of 0.047 which that it was not as significant as the rest of the factors which had lower values of p. Since a low value indicates high significance of the variable on the dependent variable and vice versa. This is because agent banking was not practiced in many banks in Rwanda and therefore the number of the banks which had agent banking was few. The aggregate of the values was therefore not coming out as strongly as the rest of the factors which were almost in all the banks. Based on the findings of the study, it can be concluded that bank innovations influence financial performance of commercial banks in Rwanda positively. The adoption of innovations by commercial banks has a high potential of improving financial performance and hence better returns to the shareholders.**

Keywords: **Financial Innovation, Financial Performance, Commercial Banks.**

1. INTRODUCTION

Banking Industry is one of the most important service industries which touch the lives of millions of people. Its service is unique both in social and economic points of view of a nation (Benfratello 2012). During the last decades, many countries have witnessed great change in conditions surrounding banking industry. Such transformations are results of technological changes, financial globalization, and financial environment and deregulation (Nofie, 2011). Financial innovations arise due to several reasons. Gorton and Metrick (2010) summarize the reasons for the growth of modern financial innovation as; reduction in bankruptcy costs, tax advantages, reduction in moral hazard, reduced regulatory costs, transparency and customization. A highly turbulent environment leads to successful innovation creating a unique competitive position and competitive advantage and lead to a superior performance (Roberts and Amit, 2013). This can only be maintained by

ceaseless innovation and improvement of the product and the process (Porter, 2014). According to Ignazio (2009), financial innovation has not only opened up new opportunities for the sector participants, but also increased new market players arising from new products in the financial market.

2. STATEMENT OF THE PROBLEM

Banking environment in Rwanda had for the past decade undergone revolution and financial innovations. These reforms had brought about many structural changes in the sector and have also encouraged foreign banks to enter and expand their operations in the country. Innovations were then thought to hold the promise of a new commercial revolution by offering an inexpensive and direct way to promote bank products and services (Tuyishime et. al 2015). In Rwanda, currently, there was an increase in number of ATMs in the payment card industry, bank agents, and mobile money transfer usage. Additionally, Electronic Funds Transfer (EFT) transactions-based payments had continuously increased. This growth might be a problem to Commercial banks since customers \were not used to the banking technology. Despite the significance of financial innovation, in form of the effect of innovation on financial performance was still misunderstood for two main reasons, first, there was inadequate understanding about the drivers of innovation and secondly innovations impact on banks financial performance remained lowly untested (Mabrouk&Mamoghli, 2010). Despite, the adoption of financial innovation, the influence of innovation was not well understood therefore, this research wouldact as the channel to alerts commercial banks to use the financial innovation tools as it has the greatest impact in their performance.

3. OBJECTIVES OF THE STUDY

The general objective of this study was to determine the effect of financial innovation on financial performance of commercial banks in Rwanda.
The following specific objectives guided the study:
1. To investigate the effect of mobile banking on financial performance of commercial banks in Rwanda.
2. To establish the effect of agent banking on financial performance of commercial banks in Rwanda.
3. To find out the effect of internet banking on financial performance of commercial banks in Rwanda.
4. To investigate the moderating effect of bank assurance on independent variables of commercial banks in Rwanda.

4. CONCEPTUAL FRAMEWORK OF THE STUDY
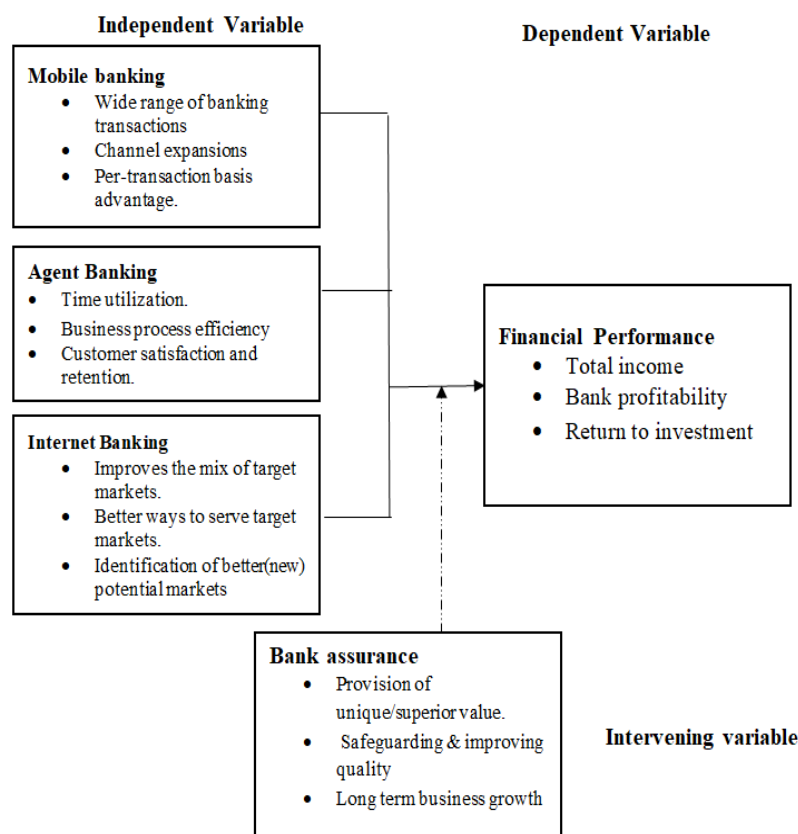
5. METHODOLOGY

- **Research Design**: The research adopted descriptive research design.

- **Target Population**: The target population was 14 licensed commercial banks in Rwanda.

- **Sample Size:** Census approach was applied in this study since the researcher utilized information from 14 commercial banks since there were the only 14 licensed and had been operational for the period of study.

- **Data Collection Instruments:** The study used questionnaires to obtain qualitative data for analysis which were further validated from analysis results from secondary data quantitative analysis.

- **Data Processing and analysis:** Data analysis technique that was used is the Ordinary Least Square to estimate a multiple regression equation. Both qualitative and quantitative data was obtained because of the nature of the study.

6. SUMMARY OF RESEARCH FINDINGS
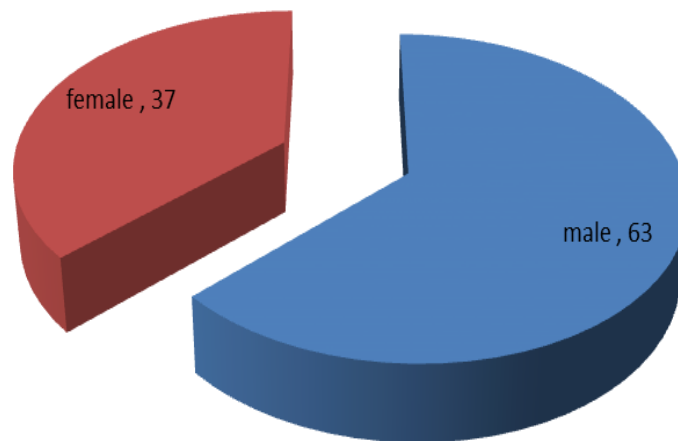
6.1 Demographic data

Figure 2: Classification of respondents by gender

The researcher issued the data collection instrument and wished to establish population gender representation. In this study majority (63%) of the respondents were male while female respondents were (37%). Figure 2 below shows the respondent's gender.

Table 1: Duration of working in the banking industry

	Frequency	Percent
<5	13	32.5
6 – 10	14	35.0
More than 10	13	32.5
Total	**40**	**100.0**

The study further sought to determine the duration which the respondents had worked in the banking industry. During this study, length of working experience was tabulated and respondents were asked to tick the relevant option provided. Thirty-two-point five percent (32.5%) of the respondents have worked in their respective organization for a period of less than five years, 35.0 % had worked for a period of 6 to 10 years whereas 32.5 % had worked for more than 10 years.

6.2 Descriptive statistics

Table 2: Descriptive statistics per variable

	N	Minimum	Maximum	Mean	Std. Deviation
Mobile_banking	40	3.00	5.00	4.3750	.48562
Agent_banking	40	3.00	5.00	4.2500	.53043
Internet_banking	40	2.00	5.00	4.2000	.54847
Bank_assurance	40	3.00	5.00	4.3750	.53006
Financial_performance	40	2.00	5.00	4.3500	.53554
Valid N (listwise)	40				

The study used 5 point Likert scale statement from strongly disagree to strongly agree by ascendant order. The Table 4.4 shows the descriptive statistics namely min, max, mean and standard deviation for each variable. For variables mobile banking, agent banking and bank assurance, the minimum was 3 and the maximum was 5, which means that none of respondents disagreed nor strongly disagreed with the statements, rather they agreed and strongly agreed with the statement but some of them were undecided regarding the statements. The mean for those three variables varies from 4.2 to 4.4 which means that many of the respondents agreed and strongly agreed with the statement regarding each variable. For the variable internet banking and financial performance the min was 2 and the max was 5; this implies that among respondents some disagreed with the statement and some were undecided. The mean in this case varies from 4.2 to 4.3 which show that a great number agreed and strongly agreed with the statement regarding each variable. The standard deviation varies from 0.48 to 0.55. This means that there was a certain degree of heterogeneity in the answers of respondent. For the detailed table of descriptive statistics see appendix III.

6.3 Inferential statistics

Table3: Pearson correlation coefficient

		Mobile_banking	Agent_banking	Internet_banking	Bank_assurance	Financial_performance
Mobile_banking	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	40				
Agent_banking	Pearson Correlation	.295	1			
	Sig. (2-tailed)	.064				
	N	40	40			
Internet_banking	Pearson Correlation	.270	.251	1		
	Sig. (2-tailed)	.092	.118			
	N	40	40	40		
Bank_assurance	Pearson Correlation	.274	.169	.146	1	
	Sig. (2-tailed)	.088	.296	.367		
	N	40	40	40	40	
Financial_performance	Pearson Correlation	.640**	.581**	.548**	.436**	1
	Sig. (2-tailed)	.000	.000	.000	.005	
	N	40	40	40	40	40

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

The table 3 helped to appreciate how much the model as a whole contributed to financial performance. The coefficient of determination (R^2) of 0.725 meansthat72.5%of the variationin commercial bank financial performance is caused by the financial innovation. Only27.5%ofthevariationin commercial bank financial performance is not explained by the

model. In order to assess if the model is a good fit for the data the p-value given by the analysis of variance (ANOVA) was computed and results are shown in next Tables.

Table 4: Coefficient of determination

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.851[a]	.725	.694	.40720

a. Predictors: (Constant), Bank_assurance, Internet_banking, Agent_banking, Mobile_banking

b. Dependent Variable: Financial_performance

Table 5: significance of the model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.297	4	3.824	23.063	.000[a]
	Residual	5.803	35	.166		
	Total	21.100	39			

a. Predictors: (Constant), Bank_assurance, Internet_banking, Agent_banking, Mobile_banking

b. Dependent Variable: Financial_performance

The Table5 shows the beta coefficients of the model. It helps to appreciate how much every independent variable contributes to the prediction of the dependent variable. One should notice that the $p(t)>0.05$ for all variables which means that every independent variable count in this model.

From the table above the regression equation may be written as follow:

$Y= \beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+M_+\varepsilon$

$Y= -2.379+0.489X_1+0.405X_2+0.367X_3+M+0.407$

The regression model demonstrated that a unit increase in mobile banking increased financial performance by 0.489 units, while other variables remain constant. One unit increase in Agent banking would increase financial performance of commercial bank by 0.405 units if other variables remain constant and one unit increase in Internet banking increased the commercial bank financial performance by 0.367. Finally, a unit change in bank assurance would increase financial performance by 0.304 units, while other variables stay constant.

Table 6: Regression coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-2.379	.731		-3.254	.003
	Mobile_banking	.489	.122	.389	3.998	.000
	Agent_banking	.405	.111	.347	3.659	.001
	Internet_banking	.367	.106	.324	3.446	.001
	Bank_assurance	.304	.126	.223	2.405	.022

a. Dependent Variable:Financial_performance

6.4 Discussion of research findings

6.4.1 Mobile banking and financial performance

The coefficient of correlation between mobile banking and financial performance equal to 0.640 and is significant at 0.01 level which means that there is a strong (Deborah, 2016) positive relationship between mobile banking and financial

performance. The regression analysis (Table 6) helped to appreciate statistically the influence of mobile banking to predict the financial performance. The regression coefficient of the variable team competencies is 0.489. The value of this coefficient means that if the variable mobile banking was increased by one unit, it would have caused the financial performance to increase by 0.489 units. P-value for mobile banking is 0.000 which means that there is almost zero chance in 1000 that the parameter mobile banking be zero, which implies that the term of the regression equation containing the parameter mobile banking cannot be eliminated without significantly affecting the accuracy of the regression. These results are in harmony with those of Ngumi (2013) who made a comparison of online banking in developed and emerging markets and this revealed that in developed markets lower costs and higher revenues are more noticeable. They are also in line with the findings of Sathye (1999) who conluded that encouraging customers to use innovation such as the mobile telephones for banking transactions can result in considerable operating costs savings.

6.4.2 Agent banking and financial performance.

According to the findings there is a moderate positive correlation between agent banking and financial performance. The Pearson correlation coefficient between them was .581. The regression coefficient for the variable agent banking was .405 this implies that if agent banking was increased by one unit, financial performance would have increased by 0.405 on one condition that other variables remain constant. The observation of the p-value of this variable (agent banking) indicated that it is a very important factor in predicting financial performance. Its p-value equal .001 which implies that there is only one chance out of one thousand that the term of the regression containing this variable be zero.

These results are in line with those ofAgboola (2006) in his study on Information and Communication Technology (ICT) in banking operations in Nigeria. Using the nature and degree of adoption of innovative technologies; degree of utilization of the identified technologies; and the impact of the adoption of ICT devices on banks, found out that technology was the main driving force of competition in the banking industry. During his study, he witnessed increase in the adoption of agent banking. He indicates that adoption of ICT improves the banks' image and leads to a wider, faster and more efficient market. He asserts that it is imperative for bank management to intensify investment in ICT products to facilitate speed, convenience, and accurate services, or otherwise lose out to their competitors.

6.4.3 Internet banking and financial performance

The Pearson correlation coefficient computed (.548) showed that there is moderate positive correlation between internet banking and financial performance. The β coefficient for internet banking (.367) implies that if this variable is increased by one unit, it caused the financial performance to increase by 0.367 units if other variable stay constant. The observation of p-value allow to conclude that the variable internet banking is of great importance in financial performance and particularly in the case of commercial banks in Rwanda because there is only 1 chance over 1000 that the commercial bank may succeed financially without internet banking. These findings have similarity with those of Acharya (2009) who found out that customers use bank websites to know the products, use mobile banking to check balance, know after sale services and buy products, writing checks, paying bills, transferring funds, printing statements and checking account balances online using a computer; an indication that mobile banking is gaining popularity and becoming vital in financial transaction events. They are also in harmony with the result of Nyangosi, (2011) argue that financial institutions adopted different electronic distribution channels to meet the demands of customers thus improving customer satisfaction. In his study to examine the adoption of information technology in Kenyan banks focusing on services provided through internet banking, he found out that inclusion of information technology in banking business was necessary to achieve excellence goal of customer satisfaction.

7. CONCLUSIONS

7.1 Mobile banking and Financial Performance

From the findings of the study; the study concludes that mobile banking has contributed positively to the financial performance of commercial banks in Rwanda. This could be attributed to the trends recorded in the variables where the number of users and annual transfers had a positive and significant influence on financial performance of commercial banks in Rwanda. This is in line with Wahome (2009) who posits that stiff competitions exist among banks in Rwanda. Some open seven days a week in an effort to attract more clients. They are aggressively pursuing growth in personal loan products. This therefore means that the more clients a bank has in the mobile banking platform and the higher the amount of money transacted through mobile banking the better the financial performance of a commercial bank in Rwanda.

7.2 Agent banking and Financial Performance

The study carried out shed light on the fact that the number of agents operated by commercial banks and the resultant volume of transactions (Deposits and withdrawals) are directly correlated with the banks financial performance as measured by the return on equity. In closing the study successfully showed that the agency banking model has significant effect on the banks financial performance. Agent banking has had the effect of increasing the number of transactions which the banks conduct in a day. The agent banks outlets have also increased competition among the banks and have been within the reach of the customers especially those at rural areas. The study concludes that the use of financial innovations which include the use of agent banking in Rwanda has had great impacts on the financial performance of commercial banks in Rwanda.

7.3 Internet banking and Financial Performance

The study established that the use of internet banking increased accuracy and efficiency, reliability and speed which give them competitive advantage over the rest of the banks. It is recommended that banks adopt internet banking to increase their competitiveness and service quality. The use of agent banking is mainly clustered among the banks in Rwanda. Those banks which are in the rural areas do not have enough agent banks. The study concluded that the influence of internet banking on income has been occasioned by the ease that internet has offer to both retail and corporate customers and hence making it easy, convenient and faster to make transactions. Therefore, internet banking is a key driver of cost management in banks. The study also concluded that internet banking is capable of growing the loan book of banks and even monitor how the loan accounts are behaving and be able to send electronic reminders and advice to customers. The study further concluded that internet banking had positive influence on customer deposits especially mobilization.

7.4 Bank assurance and Financial Performance

The study concludes that bank assurance has a significant influence in the profitability of commercial banks in Rwanda. Bank assurance has proved not only to be an additional source of revenue for banks but also an avenue of increasing its customer base and market share. This in the long run affects the revenues of the banks in a positive manner hence increased profits. The study established that bank assurance has enabled cross marketing hence saving on marketing costs to a very great extent. Hence the study concludes that banks have made tremendous savings due to cross marketing.

Bank assurance had increased the number of customers for the banks, the study therefore concludes that banks have obtained or gained customers due to the influence of bank assurance. The study concluded that bank assurance had increased the popularity of the banks. Regarding financial performance, the study concludes that banks have grown their asset value as well as realizing profits brought about by effective utilization of resources and revenues acquired from the insurance companies as commissions. The study therefore concludes that banks have gained a lot of income due to influence of bank assurance.

8. RECOMMENDATIONS

Based on the findings of the study, it can be concluded that bank innovations influence financial performance of commercial banks in Rwanda positively. The adoption of innovations by commercial banks has a high potential of improving financial performance and hence better returns to the shareholders. The versatility of innovations has made their adoption rate to be high among both the banks and their customers. It could have been challenging if the adoption was only with either the banks or the customers. Banks in Rwanda have continued to perform well even when other sectors of the economy show lagged performance. This can be explained by the use of innovations which have enabled banks to start making income away from traditional sources like interest, trade and asset financing. Banks have been able to make more commission income from transactions done on innovation channels like; mobile phones, agents, internet and bank assurance.

Since technological innovation is aggressively and continuously adopted in Rwanda, the government should provide incentives for research and development to research scientists who would continue to invest their time and skills in discovering more bank innovations. It is recommended that the government also pursues a strategy to provide incentives for technology transfer from more developed economies in order to promote the adoption of world class innovations. The ICT regulator should regulate partnerships between the banks and technology operators to ensure that there is fair play. The bank should not exploit the technology users buy overcharging. Information and communication technology (ICT) professionals should invest their time, effort and resources towards innovations. This meant more income for the professionals if the innovations become successful. In Rwanda there are some citizens who are still unbanked due to poor

access to financial services. ICT professionals should explore ways of providing innovative solutions for reaching the unbanked.

Due to the growing demand for the internet as a key service delivery, it is recommended to bank management to ensure that there is tight security of data and information being operated on the internet bank platform. The study also recommends that the bank managers should emphasize on training their clients on use of internet banking via advertisements as this made ease on communication. Commercial banks need to emphasize the use of internet banking as this enhanced banks growth and customers saving on much time which they could have wasted on queues to be attended the traditional way.

Areas for further research

This study did not include all bank innovations and a further study was recommended to include innovations like ATMs, securitization and credit guarantees and their influence on the financial performance of commercial banks. A more detailed study could be conducted to establish whether the adoption of financial innovations contributed to financial deepening in Rwanda.

<div align="center">REFERENCES</div>

[1] Al-Jabir, I. M. (2012). Mobile banking adoption: application of diffusion of innovation theory, *Journal of Electronic Commerce Research, VOL 13, NO 4, 2012*

[2] Ahmad, H. K., Raza, A., Amjad, W., &Akram, M. (2011). Financial Performance of Financial Companies in Pakistan, *Interdisciplinary Journal of Contemporary Research in Business,* 78(2), 557-596.

[3] Andy, F. (2009).*Discovering Statistics using SPSS.*3rd edition. Sage Publications

[4] Andrea, A. S. (2013). The economic effects of technological progress: Evidence from the banking industry. *Journal of Money, Credit, and Banking, 35, 2013.*

[5] Batiz- Lazo, B. & K, Woldesent, (2016). The dynamics of product and process innovation in UK banking, *International Journal of Financial Service Management 1(4), 400- 421*

[6] Bagorogoza, J., & Waal, A. D. (2010). The Role of Knowledge Measurement in Creating and Sustaining High Performance Organizations the Case of Financial Institutions in Uganda. *World Journal of Entrepreneurship Management and Sustainable Development,* 6(4), 307-323.

[7] Benfratello, L. (2012). Research joint ventures and firm level performance. *Journal of research policy* 31,493-507

[8] Berger. (2013). The Economic Effects of Technological Progress: Evidence from the Banking Industry"Vol. 35 No. 2. *Journal of Money, Credit and Banking*, pp. 141-76.

[9] CBK. (2010). Central Bank of Kenya Directory of Commercial Banks and Mortgage *Finance Companies, Kenya.*

[10] Ceylan, O., Emre, O., &Aslı, D. (2008) The impact of internet-banking on bank profitability- The case of Turkey.*Oxford Business &Economics Conference Program ISBN : 978-0-9742114-7-3*

[11] CGAP.2010. Understanding Branchless Banking Business Models International Experiences. *Focus Note No. 43Washington D.C.*

[12] Chen, L. (2011). *Sustainability Investment: The Merits of Socially Responsible Investing.*UBS Warburg,

[13] Ching M. C. Chuan, A. T., Sim, J. J. Kam, H. and Tan, B. (2011) Factors Affecting Malaysian Mobile Banking Adoption: *An Empirical Analysis, International Journal of Network and Mobile Technologies, Vol 2 / Issue 3*

[14] Clarke III, I., Flaherty, T. B. (2015). Advances in Electronic Banking. Hershey: Idea Group Publishing

[15] Cooper, D.R., & Schindler, P.S. (2011).*Business Research Methods, 11th, edition*. McGraw-Hill Publishing, Co. Ltd. New Delhi-India.

[16] Dawson, C. (2009). *Introduction to Research Methods: A practical guide for anyone undertaking a research project.*How to Books Ltd, 3 Newtec Place, United Kingdom.

[17] Donner, J. And Tellez, A. C. (2008), Mobile banking and economic development: Linking adoption, impact, and use, *Asian Journal of Communication, 18(4), 318- 322.*

[18] Francesca, A., &Claeys, P. (2010). Innovation and performance of European banks adopting Internet.*University of Milan and Cass Business School, City University London and University of Barcelona Centre for Banking Research, Cass Business School,City University London Working Paper Series,WP 04/10*

[19] Githikwa, P. W. (2011). The relationship between financial innovation and profitability of commercial banks in Kenya. Unpublished Master of Business Administration project, University of Nairobi.

[20] Goetzmann, W. N. (2009). *Financing Civilization.mimeo*, Yale University

[21] Geroski, P., Machin, S., & Walters, C. (2008).Corporate growth and profitability. *Journal of Industrial Economics*, XLV, 171–189

[22] Gorton, G., &Metrick, A. (2010).Securitized banking and the run on repo. Yale school of management, *Working Paper.*

[23] Halkano, M. (2012). Performance of Islamic and conventional banks in Kenya: *A comparative analysis. Unpublished MBA Project, University of Nairobi.*

[24] Hendrickson, J., & Nichols, M. W. (2011). Small bank performance: The case of U.S. commercial banks. *Journal of Money, Investment and Banking, 20 (2011).*

[25] Hyndman, R. (2008). Quantitative Business Research Methods.*Department of Econometrics and Business Statistics, Monash University (Clayton campus).*

[26] Ibrahim, O.H. (2009). *A comparative study on the financial performance of Islamic banks and conventional banks in Kenya.*Unpublished MBA Project, University of Nairobi.

[27] Ignazio, V. (2009). Financial Deepening and Monetary Policy Transmission Mechanism, *BIS Review* 124/2007.

[28] Jaffar, M., &Manarvi, I. (2011). Performance comparison of Islamic and conventional banks in Pakistan. *Global Journal of Management and Business Research, 11(1), 60-66.*

[29] Jongeneel, O.C.W. (2011). Bancassurance: Stale of Staunch? A Pan- European country analysis. Unpublished Msc. *Economics & Business Thesis, Erasmus University Rotterdam.*

[30] Kandie, C. (2013) *Impact of Agency banking on financial inclusion in Kenya*. MBA Thesis, University of Nairobi

[31] King, K. M. (2011). The problem of under-powering in nursing research.*Western Journal of Nursing Research, United States of America.*

[32] Kombo, D.K., & Tromp, D.L.A. (2009). Proposal and Thesis Writing: An Introduction. *Paulines Publications Africa, Don Bosco Printing Press, Nairobi Kenya*

[33] Korir, M. C., Sang, W., Shisia, A., &Mutung'u, C. (2015). Financial innovations and performance of commercial banks in kenya. *International Journal of Economics, Commerce and Management, 3 (5), 1242-1265*

[34] Kothari, C. (2012). Research Methodology: Methods & Techniques. 2nd edition. New age *International Publishers, New Delhi, India.*

[35] Lavrakas, P. (2008). Encyclopedia of Survey Research Methods Vol. 1 & 2.*Sage Publications, Los Angeles, United States of America.*

[36] Lundblad, B., & Jennifer, P. (2013). A review and critique of Rogers' diffusion of innovation theory as it applies to organizations. *Research Agenda. National Bureau of Economic Research (NBER) Working Paper Series, Working Paper 16780*

[37] Loof, M., Hans, S &Heshmati, J. (2016). Knowledge Capital and Performance Heterogeneity: A Firm-Level Innovation Study. *International Journal of Production Economics.*2002, 76, pp. 61-85.

[38] Lovelin, P.A, &Sreedevi, V. (2014).Preference of Bancassurance.*Journal of Business and Management, 16 (1), 08-13.*

[39] Lozano, D.M., &Mandrile, M. (2010). A New Agent Model for Branchless Banking in Colombia. *International Development Law Organization.*

[40] Mabrouk, A., &Mamoghli, C. (2010). Dynamic of financial innovation and performance of banking firms: Context of an emerging banking industry. *International Research Journal of Finance and Economics, 5,* 2010.

[41] Malhotra, P. & Singh, B. (2009). The impact of internet banking on bank performance and risk: *The Indian experience. Eurasian Journal of Business and Economics, 2 (4), 43-62*

[42] Miller, G. J., & Yang, K. (2008). Handbook of Research Methods in Public Administration.Newyork: Auerbach Publications, Taylor & Francis Group Modell.

[43] Mugenda, O.M. &Mugenda, A.G. (2003). *Research Methods: Quantitative and Qualitative Approaches*. Nairobi: Acts Press

[44] Mwangi, J.W. (2010). *An assessment of the Determinants of growth of Bancassurance in Kenya*.Unpublished MBA project, University of Nairobi

[45] Nader, A. (2011). The effect of banking expansion on profit efficiency of Saudi banks. 2nd *International Conference on Business and Economic Research (2nd ICBER 2011) Proceeding 269.*

[46] Nadia, M., Anthony, S., &Scholnick, B. (2013). Is there a customer relationship effect from bank ATM surcharges? *NYU Stern School of Business Department of Finance. Working Paper No. 03-020.*

[47] Njuguna, K. P., Ritho, C., Olweny, T., &Wanderi, M. P. (2012). Internet banking adoption in Kenya: The case study of Nairobi County. *International Journal of Business and Social Science, 3 (18), 246-252.*

[48] Nofie, I. (2011). *Financial innovation, monetary policy and financial stability*. Manchester Business School.

[49] Nyakundi, D.O. (2013). *Management Perception of Bankassurance as Risk Mitigation Strategy at Equity Bank.*Unpublished MBA project, University of Nairobi.

[50] Omondi, R.P. (2013). *Determinants of Adoption of Bancassurance by Commercial Banks in Kenya.*Unpublished MBA project, University of Nairobi.

[51] Onay, C. (2008). *The impact of Internet-Banking on Bank Profitability-The Case of Turkey proceedings from Oxford Business &Economics Conference Program*. (June 22-24, 2008)

[52] Ongore, V.O, &Kusa, G.B. (2012). Determinants of financial performance of commercial banks in Kenya. *International Journal of Economics and Financial issues, 3(1), 237-252.*

[53] Porter, M. E. (2012). *Capital disadvantage: America's failing capital investment system*. Harvard Business Review, 70, 65-82

[54] Pradhah, B., & Mishra, P. (2008).*Financial innovation and effectiveness of monetary policy,*Available at http://ssrn.com/abstract=1262657

[55] Porter, M.E. & S. Stern (2014). Measuring the "ideas" production function: *Evidence from International patent output, NBER Working Paper, No.7891.*

[56] Polit, D., & Beck, C. (2013).*Nursing Research: Principles & Methods, 7th Edition, Lippincott, Williams & Wilkins,* United States of America.

[57] Saloner J. & Shepard S. (2015). Adoption of Technologies with of adoption of automated Tellermachines, *Rand journal of Economics,*11(5) :5-12.

[58] Scherer, F.M. (2014). *Innovation and Growth: Schumpeterian Perspectives*. Cambridge, Mass.: MIT Press

[59] Schwab, D. (2015). *Research Methods for Organizational Studies. 2nd ed. Lawrence Erlbaum Associates,* London, United Kingdom.

[60] Silber, W. (2013).*The Process of Financial Innovation.*American Economic Review, 73 (2), 89- 95.

[61] Solow, R. M. (2009). Technical change and the aggregate production function. *Review of Economics and Statistics 39, 312-20.*

[62] Sumra, S.H., Manzoor, M.K., Sumra, H.H. & Abbas, M. (2011). The Impact of e-banking on the Profitability of Banks: *A Study of Pakistani Banks, Journal of Public Administration and Governance, l(1), 31-38.*

[63] Tchouassi, G. (2012) Can Mobile Phones Really Work to Extend Banking Services to the Unbanked? *Empirical Lessons from Selected Sub-Saharan Africa Countries, International journal of Development Societies, Vol. 1, No. 2, 2012, 70-81*

[64] Tian, X., & Wang, T. (2010).*Tolerance for failure and corporate innovation*. Working Paper, Indiana University

[65] Tufano P., (2012). "*Financial innovation*", in edition of "Constantinides G., Harris M.,Stulz R., *Handbook of the Economics of Finance", Vol.1A, North -Holland, Amsterdam pp: 307–336*

[66] Tuyishime R., Memba F. and Mbera Z. (2015). THE effects of deposits mobilization on financial performance in commercial banks in Rwanda. A case of Equity Bank Rwanda Limited. International Journal of Small Business and Entrepreneurship Research Vol.3, No.6, pp.44-71, November 2015

[67] Wambari, P. A. M (2009), *Mobile banking in developing countries*. A case study on Kenya.Unpublished Master's Thesis VaasanAmmattikorkeakoulu

[68] Watiri, T.A (2013). *The impact of agency banking on financial performance of Kenyan commercial banks*, MBA project, University of Nairobi

[69] Yildirim, H.S., &Philippatos, G.C. (2009). *Competition and contestability in central and eastern European banking markets*. Manage. Finance, 33, 195-209

[70] Zeitun, R. (2012). Determinant of Islamic and conventional banks performance in GCC countries. *Global Economy and Finance Journal 5 (1), 53-72*

[71] Zikmund, G.W., Babin, B.J., Carr,C.J. & Griffin, M.(2010). Business Research Methods th ed. South-Western, Cengage Learning