EFFECT OF BANK INNOVATION ON FINANCIAL PERFORMANCE OF COMMERCIAL BANK IN RWANDA. A CASE STUDY OF BANK OF KIGALI LTD MAIN BRANCH (2017-2019)

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ABSTRACT

Bank innovation in commercial bank is seeking to reduce costs, improve efficiencies, reach new customers or improve customer experience and of course, make money and financial performance. 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. 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. This study analyzed the bank innovation on finance performance of commercial bank in Rwanda, especially in bank of Kigali Ltd main Branch. The study aim was to finding out whether the influence of bank innovations were effective and whether they really had influence on the financial performance of commercial bank in Rwanda. The design of this study was a quantitative descriptive in nature. A sample size of 50 respondents were selected purposively to take part into this study and Descriptive statistics such as frequency, percentages, mean and standard deviation were obtained to describe the characteristics of the variables whereas multiple regressions model was used to establish the relationships between the variables. Data were analyzed using statistical package for social sciences (SPSS) version 20. The findings revealed that there is very significant and strong effect of bank innovation on the financial performance of commercial bank in Rwanda. The study also revealed that there is very strong correlation between bank innovation and finance performance of commercial bank.

Keywords: *Bank innovation, financial performance, mobile banking, agent banking, internet banking, automated tell machine*

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INTRODUCTION

Innovation consists of firms developing new products or new production processes to better perform their operations, in which case the new products could be based on the new processes (Tufano, 2002). In the financial services industry, innovation is viewed as the act of creating and popularizing new financial instruments, technologies, institutions and markets, which facilitate access to information, trading and means of payment (Solans, 2003). Worldwide, internet banks were larger, more profitable, had higher asset quality, lower administrative expenses and were more efficient compared to the non-internet banks and e-banking resulted to more satisfied customers and better long-term cost saving strategies (Pooja and Singh, 2009). In Africa internet banking has resulted to improved e-Commerce and e-Payment services with overall reduction in the amount of currency in circulation. In East Africa, adoption of electronic and mobile banking has increased access to banking services leading to a wide customer base.

Rwandan commercial banks have moved from the traditional business operation mode; the wholesale credit operations to the retail mode as a result of technological innovations. Innovation consists of firms developing new products or new production processes to better perform their operations, in which case the new products could be based on the new processes (Yin and Zhengzheng, (2010). The ability to assimilate data and to perform complex calculations has helped market practitioners to develop new financial products that decompose and repackage different components of financial risk. These new products can be matched more closely to the demands and risk preferences of both investors and borrowers and thus improve the completeness of financial markets. The innovation process has been underpinned by the widespread and ready electronic access to news and information on economic and financial developments and on market responses. Financial performance of financial institutions is measured in terms of profitability, market share through reduced customer complaints (Deumes & Knechel, 2016). In order to be able to perform financial institutions should critically look at customers and all stakeholders in business and know how best they are satisfying their needs, adds that financial institutions should continuously improve their services through assets accumulation, create value, improved quality services and flexibility (Parasuman *et al.,* 2019).

In Rwanda emergence of new technologies, products, processes, markets and competitor banks places demand on any commercial bank to apply any skills necessary to remain competitive and achieve competitive advantage. The banking industry has already been depicted (Parasuman *et al.,* 2019). In Rwanda long lines, transaction errors, queuing, insecurity and network failures have been said to be the most frequent problems using banking services. This highly lower customer's perception on the quality of service offered and hence reduces the bank's credibility hence profitability (Smith, 2019). A study by De Young *et al*., (2017) adopt an approach to the innovation performance relationship which does not take into account the antecedents to innovation inside and outside the banking organization, all of which could influence this relationship.

Previous studies like Pooja and Singh (2017), have produced mixed results regarding the impact of financial innovations on bank performance, in their studies concluded that financial innovations had least impact on bank performance, while Batiz-Lazo and Woldesenbet (2016) concluded that financial innovation had significant contribution to bank performance. In Rwanda, many commercial banks they are not innovative, they failing to put into consideration the antecedents to innovation internal as well as external to the banking institution, therefore they have lost track of some customers and thus don't perform well. Then the relationship between the growing investment in technology-based bank innovation and bank financial performance in Rwanda needs to be studied. There was need to establish whether innovations have contributed to the financial performance of commercial banks in Rwanda. This study filled this gap by investigating the effect of bank innovation on financial performance of commercial Bank in Rwanda and to what degree. The knowledge from this study will help in the development of appropriate policies to support the scale up of these financial innovation to improve the financial performance of commercial Bank in Rwanda.

LITERATURE REVIEW

Relationship between bank innovation and finance performance of commercial bank

After developing some innovations, and succeeding, a bank will find new opportunities that could be exploited further and that, in the end, will provide more income for the bank (Nofie, 2018). Based on the country level retail payment service data from across 27 EU markets, evidence confirms that banks perform better in countries with more developed retail payment services, as measured by accounting ratios and profit and cost efficiency scores (Iftekhar *et al.,* 2017). The EU provides a very good testing ground for the link between retail payments and bank performance because the current retail payment infrastructure in the European Union is still fragmented and largely based on traditional national payment habits and characteristics (Kemppainen, 2016).This relationship is stronger in countries with more retail payment transaction equipment, like bank innovation and POS terminals. Retail payment transaction technology itself can also improve bank performance and heterogeneity among retail payment instruments is associated with enhanced bank performance. Likewise, a higher usage of electronic retail payment instruments seems to stimulate banking business.

Bank innovations and profitability

Simpson (2016) suggests that e-banking is driven largely by the prospects of operating costs minimization and operating revenues maximization. A comparison of online banking in developed and emerging markets revealed that in developed markets lower costs and higher revenues are more noticeable. Furst, and Nolle (2016) also examined the determinants of internet banking adoption and observed that more profitable banks adopted internet banking. Nader (2018) analyzed the profit efficiency of the commercial banks his study indicated that availability of phone banking, number of ATMs and number of branches had a positive effect on profit efficiency of banks.

Bank Innovations and income

In financial services, the lifeblood of a bank is determined by how well it can gather funds from the customers at the lowest cost; buy money, do something with the money, and then sell it to their profit (Dew, 2017). Financial innovations enable firms from all sectors to raise money in larger amounts and at a cheaper cost than they could elsewhere (Lerner, 2016). It becomes obvious that there is a tendency for a bank to minimize costs and expenditures. The other major benefit from e-banking innovation is fee based income (Dew, 2017). If a bank joins in an ATM network, it can generate income from other banks' customers that use its ATM machines or from third parties that cooperate with it. The more transactions with a third party, the more fee-based income acquired, enforcing the bank to enrich the features of e-banking transactions, such as mobile telephone top-ups, ticketing, paying telephone or electricity bills, house taxes, etc. Joining a certain ATM network will also create customer awareness of that bank and influence the market share (Iftekhar, and Song, 2017).

Bank innovations and return on assets

Looking at the influence of technology on the banks Akram and Allam (2015) measured the level of investment in information technology on improving the matrix of financial and operational performances. The results of measurements using test of hypothesis showed that there is an impact on the use of Management Information Systems in banks increase in the market value added (MVA), Earnings Per Share (EPS), Return on Assets (ROA) and Net Profit Margin (NMP). However, the test of hypothesis also showed that there was no impact of

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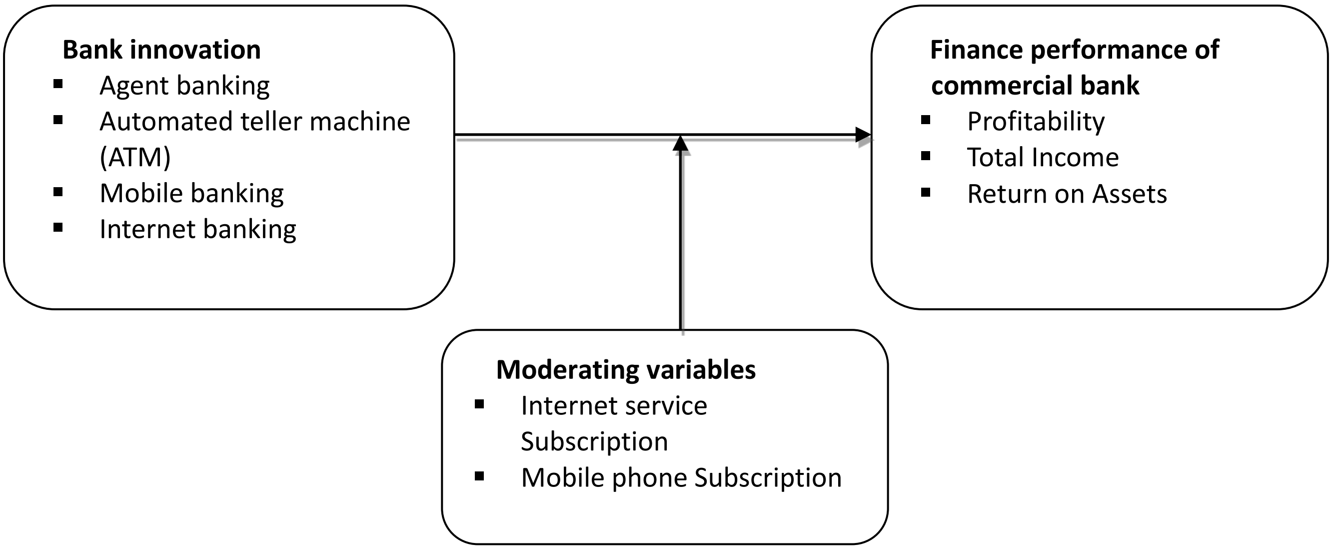
the use of MIS in banks to improve the Return on Equity. They concluded that due to the increased costs of investment in information technology which might work to reduce the return on the property.

Conceptual framework

The conceptual framework model below presents the empirical relationship between bank innovation and finance performance of commercial bank.



Independent Variable **Dependent Variable**

Figure 1: Conceptual Framework Model

METHODS

The study used descriptive research design with both qualitative and quantitative research approaches. The study population was 74 employees of bank of Kigali and 50 were used as a sample size purposively. Both primary and secondary data was used and questionnaires and interviews as well as documentary review were used to collect these data. Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 20. Statistical analysis using inferential statistics was used considering p-value 0.05 as the level of significance and 95% Confidence Interval (95% CI).

RESULTS AND DISCUSSION

The researcher gave the respondents various statement regarding bank innovation in terms of agent banking, mobile money, ATM, internet banking and analyzed their level of agreement.

Table 1: Perception of the respondents on agent banking and financial performance

Statement	Mean	ST D
Agent banking withdraw transactions generate incomes	4.43	0.45
Agent banking money transfer transactions generate incomes	3.33	0.36
Value of agent banking deposit transactions	3.36	0.42
Agent banking increases number of bank transactions	3.91	0.469
Agent banking has minimized fraud cases	3.78	0.469

Source: Primary data, 2021

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Table 1 revealed the perceptions of the respondents on agent banking and financial performance. Agent banking withdraw transactions generate incomes ($\overline{X}$ =4.43 and SD=0.45), Agent banking money transfer transactions generate incomes ($\overline{X}$ =3.33and SD= 0.336), Value of agent banking deposit transactions ($\overline{X}$ =3.36 and SD= 0.42), Agent banking increases number of bank transactions ($\overline{X}$ =3.91 and SD=0.469), Agent banking has minimized fraud cases ($\overline{X}$ =3.79 and SD= 0.469) this shows that there is high mean and strong evidence of the existence of the fact and homogeneity of responses. This is indicated that agent banking influence banks deposits in Bank of Kigali. In line with Chaia, (2018) agent banking has become one of the most promising strategies for offering financial services in emerging markets. In this model, financial institutions work with networks of existing nonbank retail outlets such as convenience stores, gas stations, and post offices to deliver financial services. This approach can be especially powerful when serving the unbanked poor because of its ability to reduce banks costs and reach low income workers where they live. Agent banking benefits arrange of stakeholders.

Table 2: Automated teller machines and financial performance of commercial bank

Statements	**Mean**	**SD**
ATMs have had a positive effect of increasing commission fee based income	3.83	0.43
ATMs have influenced positively the increase of interest based income	4.28	0.46
ATMs have expanded the income generating potential of the bank	3.99	0.37
ATMs influence reduction of operational costs and hence better return on assets for the bank	3.75	0.493
ATMs investments have payback period of less than 3 years and hence good return on assets	3.85	0.493

Source: Primary data, 2021

Data on table 2 show responses on statements regarding the effects of ATMs on the income of commercial banks, based on mean and standard deviation. ATMs have had a positive effect of increasing commission fee based income ($\overline{X}$ =3.83 and SD=0.43), ATMs have influenced positively the increase of interest based income ($\overline{X}$ =4.28 and SD= 0.46), ATMs have expanded the income generating potential of the bank ($\overline{X}$ =3.99 and SD= 0.37). ATMs influence reduction of operational costs and hence better return on assets for the bank ($\overline{X}$ =3.75 and SD=0.493), ATMs investments have payback period of less than 3 years and hence good return on assets ($\overline{X}$ = 3.85 and SD = 0.464). This shows that there was more agreement with the statements regarding the ability of ATMs to influence mobilization of customer deposits. Milne (2016) in a study conducted in Turkey concluded that ATMs led to increase of customers and hence deposits due to ease of accessibility to their bank accounts.

Table 3: Mobile banking and financial performance of commercial bank

Statement	**Mean**	**SD**
Mobile banking has had a positive effect of increasing commission fee based income	4.43	0.45
Mobile banking has influenced positively the increase of interest based income	4.81	0.46
Mobile banking has expanded the income generating potential of the bank	3.96	0.49
Mobile banking influence reduction of operational costs and hence better return on assets for the bank	3.98	0.448
Mobile banking investments have payback period of less than 3 years and hence good return on assets	3.76	0.434

Source: Primary data, 2021

Table 3 revealed the perceptions of the respondents on mobile banking and bank income. Mobile banking has had a positive effect of increasing commission fee based income ($\bar{x}$ =4.43 and SD=0.45), Mobile banking has influenced positively the increase of interest based income ($\bar{x}$ =4.816 and SD= 0.436), Mobile banking has expanded the income generating potential of the bank ($\bar{x}$ =3.96 and SD= 0.489). Mobile banking influence reduction of operational costs and hence better return on assets for the bank ($\bar{x}$ =3.98 and SD=0.448), Mobile banking investments have payback period of less than 3 years and hence good return on assets ($\bar{x}$ = 3.76 and SD = 0.493) this shows that there is very high mean and strong evidence of the existence of the fact and homogeneity of responses. This indicated that mobile networks can reach remote areas at low cost both to the consumer and the bank which influence bank deposit s of bank of Kigali. These findings are inconsistent with previous studies done by Simpson, (2016) Suggests that m-banking is driven largely by the prospects of operating under minimum costs and operating increasing revenues maximization. A comparison of online banking in developed and emerging markets revealed that in developed markets lower costs and higher revenues are more noticeable (Ngumi, 2013).

Table 4: Internet banking and financial performance of commercial bank

Statement	Mean	SD
Internet banking has had a positive effect of increasing commission fee based income	4.51	0.5
Internet banking has influenced positively the increase of interest based income	4.41	0.53
Internet banking has expanded the income generating potential of the bank	4.53	0.5
Internet banking influence reduction of operational costs and hence better return on assets for the bank	3.82	0.5
Internet banking investments have payback period of less than 3 years and hence good return on assets	3.22	0.73

Source: Primary data, 2021

Table 4 revealed the perceptions of the respondents on agent banking and bank income. Internet banking has had a positive effect of increasing commission fee based income ($\bar{x}$ =4.51 and SD=0.50), Internet banking has influenced positively the increase of interest based income ($\bar{x}$ = 4.40 and SD= 0.53, Internet banking has expanded the income generating potential of the bank (4.53 and SD= 0.50) Internet banking influence reduction of operational costs and hence better return on assets for the bank ($\bar{x}$ =3.82 and SD=0.500), Internet banking investments have payback period of less than 3 years and hence good return on assets ($\bar{x}$ = 3.22 and SD = 0.730) this shows that there is high mean and strong evidence of the existence of the fact and homogeneity of responses. Internet banking therefore provides cost savings on the operations of a bank account to both the banks and their customers. These findings are in line with Frustand Nolle (2010) who said that internet banking refers to the use of the internet as a delivery channel for banking services, which includes all traditional services such as balance enquiry, printing statement, fund transfer to other accounts, bills payment and new banking services such as electronic bill presentment and payment without visiting a bank.

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Table 5: Correlations analysis

		AB	MB	ATM	IB	FP
AB	Pearson Correlation	1	.794	.659*	.810	.894**
	Sig. (2-tailed)		0.000	0.00	0.000	0.000
	N		50	50	50	50
MB	Pearson Correlation		1	.866**	.718**	. 889**
	Sig. (2-tailed)			0.000	0.000	0.000
	N			50	50	50
ATM	Pearson Correlation			1	.490**	. 812**
	Sig. (2-tailed)				0.000	0.000
	N				50	50
IB	Pearson Correlation				1	. 739**
	Sig. (2-tailed)					0.000
	N					50
FP	Pearson Correlation					1
*. Correlation is significant at the 0.05 level (2-tailed).						
**. Correlation is significant at the 0.01 level (2-tailed).						

Source: Survey data, 2021

Key

AB: Agent banking **MB**: Mobile banking **ATM:** Automated Tell Machine
IB: Internet Banking **FP:** Financial Performance of commercial bank

From the correlation Table 5, the results showed that there is a moderatecorrelation between agent banking and financial performance as Pearson correlation is 0.894. The p-value is 0.000, which is less than both standard significance levels of 0.05 and 0.01. This indicates that, out of the considered determinants of financial performance as measured by agent banking has significant effect on its financial performance of commercial bank. From the correlation table, the results show that there is very strong correlation between mobile banking and financial performance as Pearson correlation is 0.889. The p-value is 0.000, which is less than both standard significance levels of 0.05 and 0.01. This indicates that, out of the considered determinants of financial performance as measured by mobile banking has significant relationship with financial performance of commercial bank.

Table 5 revealed that questionnaire were answered by 50 respondents, p-value is 0.000, which is less than standard significance levels of 0.05. In this research, researcher confirmed a relationship between ATM and financial performance of commercial bank of BK. Since the Pearson Correlation value was 0.812 and it is significant, the researcher proved that there is moderate and positive relationship between ATM and financial performance of commercial bank. From the correlation table, the results show that there is very strong correlation between Internet banking and financial performance of commercial bank as Pearson correlation is 0.739. The p-value is 0.000, which is less than both standard significance levels of 0.05 and 0.01. This indicates that, out of the considered determinants of profitability as measured by internet banking has significant relationship with financial performance of commercial bank.

Table 6. Regression coefficient results

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	SD. Error	Beta		
(Constant)	6.751	4.732		1.427	.043
Agent banking	1.244	0.589	.296	1.733	.017
Mobile banking	1.021	.697	.338	1.785	.033
Automated teller machine (ATM)	.761	.720	.362	1.057	.023
Internet banking	.663	.680	.342	989	.019

a. Dependent Variable: Financial Performance of commercial bank

Source: Survey data, 2021

Findings in table 6, revealed a positive relationship between commercial bank and all the independent variables. Taking the regression model: Y = α + β1X1 + β2X2 + β3 X3 + β4 X4 +ϵ; where, Y= commercial bank; α = Constant; β1 - β4 = Beta coefficients; X1 = Agent banking; X2 = automated teller machine (ATM); X3 = Mobile banking X4 = Internet banking and Є = Error term, the established regression equation was: Commercial performance = 6.751 +1.244 (Agent banking) + 1.244 (Mobile banking)) + .761 (automated teller machine (ATM) + .663 (Internet banking).

A unit change in agent bank would thus lead to a 1.244 change in Financial Performance of commercial bank ceteris paribus; a unit change in mobile banking would least to 1.021 change in commercial bank performance ceteris paribus a unit change in automated teller machine (ATM) would lead to a .761 change in commercial bank performance ceteris paribus and a unit change in internet banking would lead to a .663 change in commercial bank performance ceteris paribus while a unit change in. This implies that among other factors, agent banking, automated teller machine (ATM), mobile banking, and internet banking were strong significant determinants of Financial Performance of commercial bank of BK main branch. Those concluded by Gutu (2017) who said that bank innovation is available strong effects on the profitability of bank innovation activities because of inadequate information technology infrastructure of the branch and ATM network are limited. The case is also real for online banking activities. Internet infrastructure based on relatively old technology blocks the achievement of expected performance of banks in developing countries.

CONCLUSION AND RECOMMENDATIONS

This study was conducted with the main objective to effect of bank innovation on the performance of financial institutions in Rwanda, 2016-2018. The study established that agent banking, automated teller machine (ATM), mobile banking and internet banking are the bank innovation effected financial performance of BK Ltd main Branch. Furthermore, in view of the findings and problems associated with the use bank innovation in bank of Kigali which significantly influence financial performance, increase profitability, total income, and return on assert and increased deposits. The study established that there are positive relationships between bank innovations on the performance of financial of commercial bank in Rwanda. Based on these findings the study concluded bank innovation effect the performance of commercial bank in Rwanda.

Based on the above findings and conclusion, the following recommendations were given to not only to the BK LTD but also to the future researchers.

The management of BK Ltd should prepare periodic educational campaigns about the technological facilities and their usage by the banks to promote customer patronage. This helps customers to know all the technology services provided by the bank, how it is used and familiarized them with it. This will help both customers and bank to fully benefit from technology as expected. It will also help erode some of the fear and perception that customers have concerning technology facilities and its use. Furthermore security measures are supposed to be tightening day by day to make sure customers are safe in using technology facilities, the bank should subscribe to reliable internet providers for effective and efficient service delivery and the bank should employ skilled personnel with more experience on network management in order to ensure the reliability of network.

Suggestions for futures researches

Based on the findings, conclusion and recommendations of the study, the ability to generalize the result of this study is restricted. Hence, it is suggested that to study the contribution of bank innovation on the profitability of financial institutions, the role of bank innovation on service delivery of commercial banks and the role of bank innovation on customer satisfaction in banking institutions.

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