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Original Research Article

IMPACT OF MOBILE BANKING ON FINANCIAL PERFORMANCE OF UNGUKA MICROFINANCE BANK LTD, RWANDA

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Abstract: - This study is for providing an analysis of the impact of mobile banking in financial performance of Unguka Bank Ltd (2012-2016). It is analyzing in depth previous studies to review the effect of mobile banking in financial performance of Unguka Bank Ltd.
Both Quantitative and Qualitative research methods such as questionnaires and interview were used towards answering the research questions in order to generate primary data. Furthermore, the study tackled on second data for attaining the objectives of the study. The questionnaires were distributed to all senior and employees who have experience with mobile banking. The interview was also administered to managers in order to fully understand the topic under research. This interview, also aimed at compensating for the eventual shortcomings of the questionnaires.
On the basis of the data collected and interpreted, a number of findings and conclusions were made and presented. Findings revealed that mobile banking products offered by Unguka Bank Ltd some of which include, Fund Transfer between Accounts, Bill Payment, and order for cheque books and bank statements and mobile money. And these mobile banking products were found to have increased the revenue of Unguka ltd in the last three years.

Key words: Mobile banking, financial performance, microfinance, profitability, revenue and liquidity

Introduction: Mobile banking is an innovative service, which has been perpetuated by the development and diffusion of the mobile communication technology. Bangens & Soderberg, (2008) look this innovative as "the financial services delivered via mobile networks and performed on a mobile phone. Indeed, this service provides much convenience and promptness to the banks' customers along with cost savings. Many banks and telecommunication companies are interested in expanding their market through mobile services such mobile banking and mobile money.

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For instance, the traditional widespread method is giving way to mobile banking system. Some years ago, banking transactions have been carried through offline retail banking system but today the mobile banking system is proving to hold bright future trend in banking transactions through electronic banking (e-banking). As described by Bangens & Soderberg (2008) Mobile banking provides personalized, anytime - anywhere banking services which allowing it to be seen as the future banking approach.

Accordingly, Mobile phones affect the lives of billions of people around the globe, including the poor. As referred by (Oluwatayo, 2012), changing mobile technology has revealed opportunities and allowed nearly three billion people without bank accounts" to access financial services. The lack of opportunities to access financial services by vulnerable and poor groups has motivated innovation by financial institutions in a variety of ways and that includes the concept of mobile banking. The significance of mobile banking in this regard is that has been brought financial services to the previously 'unbanked' areas. However, "despite these obvious potential benefits of mobile banking, but according to Ismail and Masinge (2011) questions remain about whether mobile banking has an effect on financial performance of Microfinance Financial Institutions.

For instance, although the usage of mobile banking has been strong growth over the last few years, it is still in its infancy. Thus, there is a need to study and understand users' acceptance of mobile banking services in order to identify the factors affecting their intention to use mobile banking. Indeed, the previous related research that conducted by Goh, (2002) in Vietnam does not clearly illustrate the factors that may affect the adoption of mobile banking services. Furthermore, Considerable research has been carried on mobile banking, mobile money and MFIs. However, a clear picture of the relationship between mobile banking and financial performance of MFIs has not emerged from previous studies. Of course, the existing body of knowledge is not sufficient enough to explain the influence of mobile banking on the financial performance of micro finance institutions. Therefore, this study seeks to focus on Unguka Microfinance Bank Ltd in order to investigate those factors and the effects of using mobile banking on the performance of microfinance institutions in Rwanda.

Objectives: The study was guided by the following specific objectives

i. To identify the volume of transactions and products of mobile banking services offered by Unguka Bank Ltd to its customers
ii. To analyze financial performance indicators of Unguka Bank Ltd before and after adoption of mobile banking system.
iii. To measure the relationship between transactions volume and products of mobile banking and the financial performance of Unguka Microfinance Bank Ltd.

Literature review: In this reviews of literature broad categories were derived which helped in identifying the critical impact of financial effect of mobile banking on the financial performance of MFIs in Rwanda. Indeed, things like theoretical framework that guided the study, financial effect of mobile banking and empirical literature have been addressed under this section.

Conceptual Framework: The conceptual framework model gives an overview of the research. The variables to be studied are the independent variables, dependent variables and moderating variables chosen for the study so that the relationship is established.

Financial System in Rwanda: Financial system is very important in the economy of any country and without reliable financial system, the economy cannot be sustainable and the business cannot be developed and successful.

The Rwandan financial system comprises Banks, Non-Bank Financial Institutions (NBFIs - mainly insurance and pension funds) and Microfinance Institutions (MFIs). All these organizations are regulated and supervised by the National Bank of Rwanda (BNR).

Instance, at the end of August 2015, the Rwandan banking industry included eleven commercial banks and six specialized institutions (including four microfinance banks, one development bank, and one cooperative bank).

Financial service providers tend to operate along major infrastructural development axes. Financial services are therefore unevenly distributed. In particular, rural areas are still underserved and competition remains limited, despite the huge improvements brought about by Umurenge SACCOs. Given their nature, SACCOs are seen as a positive element to reach full financial inclusion and do not constitute a threat for other microfinance institutions, as they operate in remote areas not otherwise covered, offering a very limited range of services at higher interest rates. It should be noted that there are plans to consolidate all SACCOs into a cooperative bank at national level, in an effort to ensure effective monitoring and improve efficiency in the microfinance sector (Micro Finanza Rating, 2015).

Regulation and Control: The financial sector is supervised by the National Bank of Rwanda. The activity of supervising Microfinance Institutions (MFIs) is based on the Law n° 55/2007 of 30/11/2007 governing the Central Bank of Rwanda, the Law n° 40/2008 of 26/08/2008 establishing the organization of microfinance activities and its implementing Regulation n°02/2009 of 27/05/2009.

Microfinance Institutions: Otero (1999) says in essence that microfinance is 'the provision of financial services to low-income poor and very poor self-employed people'. Schreiner and Colombet, (2001) on the other hand define microfinance as 'the attempt to improve access to small deposits and small loans for poor households neglected by banks.

Because of this ability of microfinance institutions to reduce poverty alleviation and enhance economic development by providing credit and savings services to those people earning low incomes. The attention has been raised to develop different arguments regarding microfinance performance.

Independent of the definition provided to microfinance it is a general agreement in the economic field that micro financing alleviates economic development. The money or funds that are provided by microfinance institutions in terms of credit and micro loans enables those who are poor to invest into productive activities that are bound to earn them income helping them boost their economic level and alleviate poverty in the entire economy. Microfinance institutions therefore are an opportunity for sustainable development.

A developed Micro finance system broadens access to funds; conversely, in an undeveloped financial system, access to funds is limited and Srikanth, (2013) argued that people are constrained by the availability of their own funds and have to resort to high cost informal sources such as money lenders

The rapid pace of technological change in the financial sector has led to the development of new products and forms of settling payments. For instance, from Kenya, mobile phone payment platforms such as M–Pesa dramatically changed the financial landscape by offering customers a simple efficient and cost-effective method of savings, transfer money and make payments. In addition, government regulations such as the Kenyan National Payment System have also spurred investments in technologies that facilitate the instantaneous flows of finances between institutions.

These technological changes i.e. introduction of new products like M-Pesa, agency and mobile banking, rolling of bank branches, ATMs among others have not only brought new avenues for access of financial services but also impacted on the number of people accessing these services. Notably the introduction of mobile money coupled with its high penetration has enhanced access to finance and greatly contributed to financial inclusion albeit prudentially unregulated. Mobile technology has brought new possibilities to the continent. Across urbanrural and rich-poor divides, mobile phones now connect individuals, markets and services (Aker & Mbiti, 2010).

Microfinance and mobile Banking: Prof. Mahammad Yunus the founder and Chairman of Grameen Bank identified that microfinance are growing dramatically not only in the provision of credit but also a wide range of financial services ranging from savings to insurance for the low income people. However, Kohen, Hopkins, & Lee, (2008) challenged him by stating that despite the exponential growth experienced in the last couple of years 'as well as the growing success in reaching the—"unbanked", many low income households still continue to lack access to formal or semi-formal financial services.

Currently, a major constraint to microfinance is the high cost of operating in remote areas. Many institutions are now working toward low-cost delivery options such as internet banking and cashless transactions to help the rural poor. In fact, it may not be the internet, but the mobile devices that could be a more efficient tool for such transactions. For people in such rural areas, using computers is often a problem due to faulty Internet connections and frequent power failures. Hence, providing Micro-Credits through a mobile platform (SMS-based) could be the best way to reach out to the poor in the rural areas.

Indeed, while countries such as the Philippines and Vietnam rely on a large microenterprise sector to fuel the economy, not many financial institutions, including rural banks, until recently, were enthusiastic and well equipped to service their needs. However, currently, the scenario is changing and there has been a growing market in the developing countries for lending services provided mostly by non-governmental organizations. The rapid growth in the recent years coupled with commercialization of microfinance services has led to the emergence of more innovative and creative delivery channels of financial services to the rural areas.

The Performance Measurement of Microfinance Institutions: Normally, the issue of performance evaluation is more crucial in financial firms like banks as they are mobilizing the resource of the society. MFIs also share similar properties with banks as they are regulated or supervised by a regulatory body due to the fact that they collect deposit. Nonetheless, with regard to measuring their performance, the situation is more complicated. MFIs face a double challenge: not only do they have to provide financial services to the poor, but they also have to cover their costs in order to avoid bankruptcy. Both dimensions must therefore be taken into account in order to assess their performance (Ferro Luzzi and Weber, 2006).

The term outreach covers a wider range of concepts beside the number of clients served by an MFI. To Lafourcad *et al*. (2005), outreach is the efforts of MFIs to extend microfinance services to the people who are underserved by financial institutions. Therefore, they can be seen as stable organization that are able to finance themselves so as to stay in the economy and put a long lasting positive impact on the living standards of the society. In other words, sustainability and profitability should be crucial measures which put the MFIs under scrutiny. However, the Rwandan's MFIs are still heavily relying on donations and debts in order to finance their business.

Financial performance: According to Al-Hussein *et al*. (2009), financial performance is explained as the degree to which financial objectives are being or has been accomplished. It is the process of measuring the results of a firm's policies and operations in monetary terms. It is used to measure firm's overall financial health over a given period of time and can also be used to compare similar firms across the same industry or to compare industries or sectors in aggregation.

On other hand, the profitability of commercial banks depends heavily on the net of income generating activities and the related activities expense. Due to the problem of profitability and stiff competition in the industry, commercial banks have changed their behavior of income sources, by increasingly diversifying into non-intermediation income generating activities as opposed to the traditional intermediation income generating activities. For a commercial bank to remain competitive there is need to develop and adopt new products and technology. Such products include use of technology i.e. internet banking and mobile phone banking (McKay & Pickens, 2010).

Bank performance indicators: Profit is the ultimate goal of commercial banks hence all the strategies designed and activities performed thereof are meant to realize this grand objective. To measure the profitability of commercial banks, there are variety of ratios used such as Return on Asset, Return on Equity and Net Interest Margin (Murthy &Sree, 2003).

Return on Equity (ROE) is a financial ratio that refers to how much profit a company earned compared to the total amount of shareholder equity invested or found on the balance sheet. A business that has a high return on equity is more likely to be one that is capable of generating cash internally. Thus, the higher the ROE the better the company is in terms of profit generation While, Return on Asset measures the ability of the bank management to generate income by utilizing company assets at their disposal. In other words, it shows how efficiently the resources of the company are used to generate the income. It further indicates the efficiency of the management of a company in generating net income from all the resources of the institution.

CAMEL rating system: CAMEL is an acronym for five components of bank safety and soundness: Capital adequacy, Asset quality, Management quality, Earning ability and Liquidity.

Karlyn (1984) defines the capital adequacy in term of capital-deposit ratio because the primary risk is depository risk derived from the sudden and considerably large scale of deposit withdrawals. While Frost (2004) sees the asset quality as indicators that highlight the use of nonperforming loans ratios (NPLs) which are the proxy of asset quality, and the allowance or provision to loan losses reserve. Furthermore, Grier (2007), argue that “poor asset quality is the major cause of most bank failures”. On other side, the same author defined management quality to be the single most important element in the CAMEL rating system because it plays a substantial role in a bank’s success. However, it is subject to measure as the asset quality examination. The two remaining forces are earning ability which viewed by Grier (2007) as a consistent profit not only builds the public confidence in the bank but absorbs loan losses and provides sufficient provisions. It is also necessary for a balanced financial structure and helps provide shareholder reward. And then after liquidity that expresses the degree to which a bank is capable of fulfilling its respective obligations.

Mobile Banking: Mobile banking has been defined by Porteous (2006) as a subset of electronic banking in which customers access a range of banking products, such variety of savings and credit instruments, via electronic channels. According to Venable Telecommunications (2008), mobile banking can be defined as financial transactions that are based on wireless handsets. Hence, it involves accessing and providing banking and financial services through a mobile device with the help of mobile telecommunication devices.

Mobile banking today is most often performed via SMS or the Mobile Internet, providing two different types of customer account access: a web-based interface and a simple text messaging interface. This therefore means the customer can bank virtually anywhere anytime.

Mobile banking and financial performance: Financial institutions have been in the process of significant transformation. The force behind the transformation of these institutions is innovation in information technology. Information and communication technology is at the Centre of this global change curve of mobile and internet banking. Strategic management in financial institutions demand that they should have effective systems in place to counter unpredictable events that can sustain their operations while minimizing the risks involved through technological innovations.

Mobile banking applications are continuously being developed and have now become banks‟ favorite channels for offering banking services. According to Coelho (2003), one of the main strategies for growth and a major focus for mobile network providers and the banking industry, is the mobile banking and the potential it offers in providing various services. For instance, the mobile banking applications would enable offering of real-time 2-way data transmission, banking services, among other services (Daniel, 1999).

Mobile banking and Increasing Sales Volume

One of the primary tasks of a distribution channel is to increase the volume of demand for products at profitable prices. This objective is arrived by increasing operational efficiency so that those losses are minimized that are caused by delays in catering to customer orders. Furthermore, a favourable reputation of the firm's logistical capacities may help generate additional orders. Mobile Banking can contribute to achieve this goal by following means anytime, anywhere access to banking services.

Mobile Banking Transactions Volume

In recent years, banks, payment system providers, and mobile operators have begun experimenting with branchless banking models which reduce costs by taking small value transactions out of banking halls into local retail shops, where agents such as airtime vendors, gas stations, and shopkeepers, register new accounts, accept client deposits, process transfers, and issue withdrawals using a client's mobile phone then communicate transaction information back to the telecommunication provider or bank. This enables clients to send and receive electronic money wherever they have cell coverage. They need to visit a retail agent only for transactions that involve depositing or withdrawing cash (Salzaman*et al.*, 2001).

Mobile Banking Products: The terms M-banking, M-payments, M-transfer and M-finance refer collectively to a set of applications that enable people to use their mobile telephones to manipulate their bank accounts, store value in an account linked to their handsets, transfer funds or even access credit or insurance products. These have enhanced accessibility to financial service in both developed and developing world.

Theoretical Review: In particular, this section looks at the financial intermediation theory which deals with the core function of financial institutions which in intermediating between the surplus and the deficit units for sustained economic development. It also reviews the modern economics theory which holds that for a business to make returns, it has to obey the modern economics..

Innovation diffusion theory: Mahajan & Peterson (1985) defined an innovation as any idea, object or practice that is perceived as new by members of the social system and defined the diffusion of innovation as the process by which the innovation is communicated through certain channels over time among members of social systems. Diffusion of innovation theory attempts to explain and describe the mechanisms of how new inventions in this case internet and mobile banking is adopted and becomes successful (Edwin, 2014). The same author stated that not all innovations are adopted even if they are good it may take a long time for an innovation to be adopted. He also stated that resistance to change may be a hindrance to diffusion of innovation although it might not stop the innovation it will slow it down.

1.1.1. Financial intermediation theory

Financial intermediation is a process which involves surplus units depositing funds with financial institutions who then lend to deficit units. Bisignano (1992) identified that financial intermediaries can be distinguished by four criteria. First, their main categories of liabilities or deposits are specified for a fixed sum which is not related to the performance of a portfolio. Second, the deposits are typically short-term and of a much shorter term than their assets. Third, a high proportion of their liabilities are chequeable which can be withdrawn on demand and fourthly, their liabilities and assets are largely not transferable. The most important contribution of intermediaries is a steady flow of funds from surplus to deficit units.

According to Scholtens &Van (2003), the role of the financial intermediary is essentially seen as that of creating specialized financial commodities. These are created whenever an intermediary finds that it can sell them for prices which are expected to cover all costs of their production, both direct costs and opportunity costs.

1.1.2. Modern economics theory

Modern economics has gone far in discovering the various pathways through which millions of expectations of, and decisions by, individuals can give rise to emergent features of communities and societies like rate of inflation, productivity gains, and level of national income, prices, and stocks of various types of capital, cultural values, and social norms. According to Sohail and Shanmugham, (2003) there are two factors make economic theory particularly difficult. Those include individual decisions at any moment are themselves influenced by these emergent features, by past decisions learning, practice, and habit, and by future expectations. And then after the emergent features that can be well handled by existing economic theory and policy concern only fast-moving variables.

1.2. Empirical Review

Several studies have been conducted on the effects of mobile banking and the performance of commercial banks. For instance, Tchouassi (2012) conducted a study to find out whether mobile phones really work to extend banking services to the unbanked using empirical Lessons from Selected Sub-Saharan Africa Countries. Cleary, the study sought to discuss how mobile phones could be used to extend banking services to the unbanked, poor and vulnerable population. Thus, he noted that poor, vulnerable and low-income households in Sub Saharan Africa (SSA) countries often lacked access to bank accounts and faced high costs for conducting basic financial transactions. The study concluded that the mobile phone presented a great opportunity for the provision of financial services to the unbanked. In addition to technological and economic innovation, policy and regulatory innovation was needed to make these services a reality.

On other side, Donner & Tellez (2008) launched a study on mobile banking and economic development where they sought to link adoption, impact, and use. Through their study they come out with that offering a way to lower the costs of moving money from place to place and offering a way to bring more users into contact with formal financial systems, m-banking/m-payments systems could prove to be an important innovation for the developing world. However, the true measure of that importance required multiple studies using multiple methodologies and multiple theoretical perspectives before answering the questions about adoption and impact.

For instance, Wambari (2009) studied mobile banking in developing countries using a case of Kenya. This study sought to establish the importance of mobile banking in the day to- day running of small businesses in Kenya and to understand the challenges involved in using m-banking as a business tool and appreciate the advantages and disadvantages therein. This study elaborated that the adoption and use of mobile phones is product of a social process, embedded in social practices such as SMEs Practices which leads to some economic benefits.

Therefore, banks should focus on communicating information that emphasizes the relative advantage and usefulness of mobile banking compared to other banking channels like physical presence to the bank or using ATM machines. Banks must seek to reduce risk perceived by their customers by offering specific guarantees protecting them and taking their complaints seriously and urgently.

According to Koivu (2002) uptake of mobile phone in Kenya has been unprecedented. Mobile banking in Kenya affects performance of organization, behavior and decision making of the entire economy. The trend of continued reliance on mobile devices to execute monetary transaction is steadily gaining momentum. Mobile banking is one innovation which has progressively rendered itself in pervasive ways of cutting across numerous sectors of economy and industry.

1.2.1. Effects of mobile banking on withdrawals and deposits

Mobile banking has revolutionized the way people within the developing countries transfer cash and currently it is poised to provide of refined banking services that may build a true distinction to people's lives. This kind of banking can give good type of services starting from account data that should do with alerting the customers on the updates and transactions on their account through their mobile phones. People receive short messages on their phones informing them of their immediate transactions in their bank accounts. In addition, they assist in payments (utility bills), deposits, withdrawals, transfers, purchase airtime, request bank statements and perform thirteen different crucial banking tasks, bushed real time over their mobile phones (Vincent *et al.*, 2016)

1.2.2. Effects of mobile banking of funds transfer

In 2006, Mari conducted a study on adoption of M banking in European nation. The study conducted a survey of 2006 customers of banks placed in land. The data inside the empirical study were collected by suggests that of a type armored to banking customers. The results from the study indicated that certain attributes of M banking influence its usage. The attributes include; relative advantage, compatibility, communication and tradability. The investigation of quality and risk of pattern M banking yielded no support as being barriers to adoption. The finding collectively disclosed that, technology perception and certain demographical variables of the customers have a serious impact on adoption. In a very completely different study titled "An empirical investigation of mobile banking adoption", conducted by (Vincent *et al.,* 2016), the results indicated that perceived relative advantage, simple use, compatibility, ability and integrity significantly influence perspective.

3.0. Research Methodology

This section indicates various methods and techniques used by the researcher during the course of gathering relevant information from the field. The method that applied in this study was selected to use depending on specific research topic, along with research approach and philosophical position opted in the same study.

3.1. Research design

According to Kothari (2008), research design is the conceptual structure within which research is conducted, it constitutes the blueprint for the collection, measurement and analysis of data as such the design includes an outline of what the researcher did from writing the hypothesis and its operational implications to the final analysis of data.

The researcher used a descriptive research design, where qualitative and quantitative approaches are used. In quantitative approach the researcher employed data in form of numbers collected from employees on mobile banking and financial performance of MFIs. Qualitative is used through interviews in order to describe the activities and its impact of mobile banking on financial performance of MFIs.

3.2. Target population

All the items under consideration in any field of inquiry constitute a 'universe' or 'population'. It can be presumed that in such an inquiry when all the items are covered no element of chance is left and highest accuracy is obtained (Kothari, 2004).

The case study of this research was Unguka Microfinance Bank Ltd and the population was 67 employees and the questionnaire was administered to 50 employees composed by all 24 senior managers and 26 employees who have experience on mobile banking.

3.2. Sample design & Sample technique

A sample design is a definite plan for obtaining a sample from a given population. It refers to the technique or the procedure the researcher would adopt in selecting items for the sample (Kothari, 2004).Sampling technique is used to choose the staff to be investigated and this followed Census and purposive whereby the researcher has taken the selected respondents composed by selected staff of different departments.

Purposive sampling procedure is used because the researcher believes it is convenient and time saving. The members are purposively selected depending on their ability to easily analyze and understand the problem of study.

3.4. Data collection instrument

Questionnaires and documentary review are the essential data instruments that helped the researcher to collect the necessary information to verify the research hypotheses by establishing the relationship between independent variables and dependent variables.

The questionnaire comprised of background questions about gender, age, education, working experience with Unguka Bank Ltd and structured questions were asked to collect the information from the respondents. Furthermore the structured questionnaire had multiple-choice questions in which the researcher provided a choice of answers and respondents were asked to select one or more of the alternatives and open ended questions. The study also used 'Likert Scale' (considered on 1-5 points scale) to measure the respondents' perceptions based on few statements to perceive the impact of mobile banking on financial performance of Unguka Bank Ltd. The points of the scale indicate the degree of agreement '1' represents the lowest level of agreement or high disagreement, whereas '5' represents the highest level of satisfaction or high agreement.

On other hand, this research also reviewed literature from the case study organization. The documentation review included bank financial statement, annual reports and other reports from the bank. This method was chosen because; it is vital in providing background information and facts about mobile banking on performance of the bank before primary data could be collected. Indeed, before field data is collected, a wide collection of data had been collected and this was used to cross check with the primary data that is to be obtained by the field.

3.5. Validity and reliability

The validity of data was checked before processing the results. This helped to establish the reliability of the tools used in data collection. According to George &Malley (2003), "Cronbach's alpha is used as only one criterion for judging instruments or scales. It only indicates if the items "hang together"; it does not determine if they are measuring attribute. Therefore, scales also should be judged on their content and construct validity". George & Malley (2003) provide the following techniques:

3.6. Data processing and analysis

The researcher collected both secondary and primary data. For primary data the researcher used questionnaires to obtain quantitative and qualitative data for analysis which further were validated from analyzed results from secondary data quantitative analysis. Both quantitative and qualitative data are collected in this study. The quantitative data are analyzed using SPSS. The study used (ROA) and (ROE) as a measure of profitability of financial performance. In order to establish the relationship between Mobile banking and Financial Performance of Unguka Bank Ltd, the following regression model is applied,

$Y= \beta 0 + \beta 1X1 + \beta 2X2$

4. Results and discussion

This section discusses the findings of the study in three main sub-sections corresponding to the objectives of the study. After the demographic information, the first sub-section describes the relationship between mobile banking transactions volume and financial performance indicators of Unguka Bank Ltd, the second sub-section discusses the relationship between mobile banking products and the financial performance of Unguka Microfinance Bank Ltd, and the third sub-section includes the analysis of the correlation between financial performance indicators and mobile banking transactions volume and mobile banking products.

4.1. Demographic information

Variables assessed for getting demographic data are age of respondents, gender, level of education and working experience with Unguka Bank Ltd**.** Obtained results through the study illustrated that all respondents were 50 members composed by 33 men who represent 66% and 17 women who represent 34% of all respondents. The respondents were concentrated between 25 and 44 years (80% of all respondents), the respondents who have more than 44 years were only (12%) while 8% have less than 25 years.

For the repartition of respondent based on education level, a big number of respondents have diploma level (62% of all respondents). The respondents with high school level were 20% and 14% for the respondents with undergraduate level of education while 4% have postgraduate level. Concerning working experience 2% have between 1-2 years, 30% between 2-3 years, 38% between 3-4 years and 28% have more than 5 years of experience with Unguka Bank Ltd.

4.2. Relationship between financial performance indicators and mobile banking transactions volume in Unguka Bank Ltd

4.2.1. Financial performance indicators in Unguka Bank Ltd

Financial performance indicators selected for this analysis are ROE, ROA, Revenue and Liquidity. Historical analysis of these indicators revealed its variations since 2012. The mobile banking system has been introduced in 2014. The study aimed to identify the contribution of this new system in the improvement of financial performance with the only four indicators mentioned above

4.2.2. Return on equity (ROE)

Return on Equity (ROE) is the most important profitability indicator; it measures an MFI's ability to reward its shareholders' investment, build its equity base through retained earnings, and raise additional equity investment (Isabelle Barres et al, 2005).The return on equity ratios of Unguka Bank Ltd from 2012 to 2016 are shown bellow

A business that has a high return on equity is more likely to be one that is capable of generating cash internally. Thus, the higher the ROE the better the company is in terms of profit generation. From the study findings above, the study established that Unguka Bank Ltd's Return on Equity was 5.4%, 6.60%, 2.30% and -10.70% respectively in 2013, 2014, 2015 and 2016. ROE dropped deeply to 2.30% in 2015 to reach its lowest point in the study

In the light with the above authors, ROE which is the financial performance indicator is not showing a good performance and it seems that there is no effective good management in utilizing the shareholders capital period at -10.70% in the year 2016.

4.2.3. Return on Assets (ROA)

The Return on Assets is an indication of how well an MFI is managing its asset base to maximize its profits (Ruth*et al.*, 2008). The ratio includes not only the return on the portfolio, but also all other revenue generated from investments and other operating activities (Isabelle *et al.*, 2005). The study analyzed the consolidated financial performance of Unguka Bank Ltd during the study period.

From the study findings above, the study established that Unguka Bank Ltd Return on Assets is decreasing from 2014 up to 2016 respectively from 1.60% to -2.50% meaning that ROA decreased the year to year. This decrease of ROA could be attributed to many factors beyond this study as the performance of Unguka Bank Ltd in a function of more variables including the macroeconomic variables besides the mobile banking effects being looked at in this study.

In additional, the researcher found that Unguka Bank Ltd for the last year 2016 has known a decrease in net income largely caused by the increase of personnel expenses along with the increase of provision expenses due to the increase of NPL. The decrease of ROA cannot be attributed to the mobile banking system.

3.2.4. **Liquidity**

The liquidity of Unguka Bank Ltd increased greatly under the period of study but for 2014 and 2016 slightly dropped. Once again the researcher cannot say that this decrease is due to mobile banking, it can be attributed partially to other factors

	Year **2012**	Year **2013**	Year **2014**	Year **2015**	Year **2016**
Liquidity	3,367,227,739	5,903,744,584	5,486,384,720	7,950,728,993	6,955,131,530

Source: Extracted from Unguka Bank Ltd Factsheet 2012-2016

The researcher is in agreement with Grier (2007) who emphasizes that "the liquidity expresses the degree to which a bank is capable of fulfilling its respective obligations". Banks makes money by mobilizing short term deposits at lower interest rate, and lending or investing these funds in long term at higher rates, so it is hazardous for banks mismatching their lending interest rate

4.2.5. Study of mobile banking transactions volume in Unguka Bank Ltd.

Under this section the study sought to establish whether Unguka Bank Ltd s had been offering mobile banking services for the last three years. All the respondents indicated that Unguka Bank Ltd has been offering mobile banking services to its clients for the last three years for several services such as deposits, over the counter withdrawals, and fund transfer.

	N	Minimum	Maximum	Mean	Std. Deviation
Deposits	50	1	4	1.88	.849
Withdrawals	50	2	5	4.34	.772
Transfer	50	1	3	1.36	.598
OVERALL MEAN				**2.5**	

Source: Research Findings, 2017

As depicted in this table of deposit by mobile banking, withdrawals, and level of transfer by mobile banking revealed that withdrawals are the main service provided by Unguka Bank Ltd to its customers using mobile banking. As given in the above table, the minimum answer of respondents is 2= Disagree while the highest answer for withdrawals is 5=strongly agree. The mean of the answers collected is 4.34 which is above 4=agree. This means that respondents are totally agreeing that the withdrawals are the most transactions made by customers through mobile banking.

4.3. Relationship between mobile banking products and the financial performance in Unguka Microfinance Bank Ltd.

The study requested the respondents to state their opinion about the Mobile banking products offered by Unguka Bank Ltd. The respondents indicated that Unguka Bank Ltd offered at different levels the products of Fund Transfer between Accounts, Bill Payment, order for cheque books and bank statements. Findings are summarised in the following table:

	N	Min	Max.	Mean	Std. D
Funds transfer between accounts	50	1	3	1.52	.544
Bill payment	50	3	5	4.16	.792
Bank statement checking	50	3	5	4.00	.833
Mobile Money	50	2	5	3.20	.670

Book check order	50	1	4	1.96	.856
Valid N (list wise)	50				
OVERALL MEAN				3	

Source: Research Findings, 2017

In the above table, five variables analyzed revealed that Bill Payment, Bank Statement checking and Mobile Money are the most used mobile banking products with the mean of 4.16, 4.00, and 3.20 respectively. The overall mean for the 5 variables assessed is 3=neither disagree nor agree. But this mean has been decreased by the variable Fund transfer between accounts (mean=1.52) and Book check order (mean=1.96) indicating that these two products are not intensively used.

These findings leads to conclude that Bill Payment, Bank Statement checking, and Mobile Money are the most used mobile banking products which can have a positive impact to the financial performance since they make revenues in terms of commission the Bank received from them.

The researcher agrees with Karjaluoto, (2002) who argued that by complementing services offered by the banking system, such as cheque books, ATMs, Voice mail/landline interfaces, smart cards, point of sale networks and internet resources, the mobile platform offers a convenient additional method for managing money without handling cash.

4.4. Analysis of the correlation between financial performance indicators and mobile banking transactions volume and mobile banking products

The third objective of the study was the analysis of the correlation between financial performance indicators and mobile banking transactions volume and mobile banking products. To achieve this objective, a correlation analysis was conducted between three variables of the study: Mobile Banking transactions Volume, Mobile Banking Products and Financial Performance.

From the findings, the study concludes that the mobile banking transactions volume had a positive influence on the financial performance of Unguka Bank Ltd. Given that the secondary data used was for a short period of almost three years and customers being not accustomed to the mobile banking system, all the mobile banking services are not used for example withdrawal was the most used, deposits and transfers are used at a very low level.

The study also concluded that mobile banking products had a positive impact on the financial performance of Unguka Bank Ltd with bill payment intensively used and this has brought revenues from commissions paid by customers; but other products like transfer between accounts, bank statement, mobile money and book check order are not used at a satisfactory level. The opinions from the respondents showed that mobile banking has many advantages than the bank-based services in terms of customers' satisfaction and reduction of operating costs.

The study concludes that there is a positive correlation between financial performance indicators before and after the introduction of mobile banking. As seen in appendix the regression analysis it is shows that the $R2$ value of the independent variables has a low positive effect on the dependent variables. In the correlation analysis there are low significant relationship between the independent variables and the dependent variable. The main reason is the lack of experience by customers because mobile banking is newly introduced by Unguka Bank Ltd; then the effort must be made to sensitize the customers the benefits of mobile banking by stating granting loans at a low interest rate for those who sign up with mobile banking system

On the influence of mobile banking products on the financial performance of Unguka Bank Ltd, findings revealed that mobile banking products offered by Unguka Bank Ltd some of which include, Fund Transfer between Accounts, Bill Payment, and order for cheque books and bank statements and mobile money. These mobile banking products were found to have increased the Unguka Bank Ltd revenue in the last three years.

This study shows how the respondents have appreciated how customers do appreciate and embrace mobile banking system even if it is not yet at the satisfactory level. This could be attributed to the advantages offered by mobile banking which include convenience and flexibility.

5. Conclusion and Recommendation

5.1. Conclusion

The study provided an analysis of the impact of mobile banking in financial performance of Unguka Bank Ltd. A wide selection of literature was reviewed on the effect of mobile banking in financial performance of Unguka Bank Ltd. By using both Quantitative and Qualitative research methods, On the basis of the data collected and interpreted, a number of findings and conclusions were made and presented. Almost all the respondents agreed on the importance of mobile banking in financial performance of Unguka Bank Ltd. Based on the findings, Unguka Ltd has to continue to improve mobile banking services in terms of the quality of services offered, to expand its services to all domains namely disbursement and collection of loans and increase client outreach for its performance in terms of profitability and sustainability. The study has also shown that there is positive correlation between financial performance indicators before and after the adoption of mobile banking system and shown the positive relationship between mobile banking transaction volume and products and financial financial performance of Unguka Bank Ltd.

5.2. Recommendation

The study recommends that Unguka Bank Ltd should lower the transaction charges incurred by customers, introduce in mobile banking the repayment and disbursement service and ATM and improve the quality of mobile banking services so as to motivate them use the mobile banking services. This will increase the number of transactions and hence improve the financial performance of Unguka Bank Ltd.

It also recommends further research be conducted on the effects of mobile banking on the financial performance of banking institutions in Rwanda in order to provide in depth the challenges can be faced by Financial Institutions in adopting mobile banking.

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Appendix

Table of Correlation analysis

		TRANSVOLUME	PRODUCTS	FINPERFORMANCE
TRANSVOLUME	Pearson Correlation	1	.292*	-.047
	Sig. (2-tailed)		.039	.745
	N	50	50	50
PRODUCTS	Pearson Correlation	.292*	1	.182
	Sig. (2-tailed)	.039		.205
	N	50	50	50
FINPERFORMANCE	Pearson Correlation	-.047	.182	1
	Sig. (2-tailed)	.745	.205	
	N	50	50	50

*. Correlation is significant at the 0.05 level (2-tailed).

Analysis of Variance (ANOVA[b])

Model	Sum of Squares	df	Mean Square	
1	Regression	18.233	2	9.117
	Residual	393.147	47	8.365
	Total	411.380	49	

a. Predictors: (Constant), PRODUCTS, TRANSVOLUME

Regression analysis

Model	Unstandardized Coefficients	Standardized Coefficients	t		95% Confidence Interval for B			
	B	Std. Error	Beta	Sig.		Lower Bound	Upper Bound	
1	(Constant)	9.936	3.521		2.821	.007	2.851	17.020
	TRANSVOLUME	-.243	.330	-.110	-.737	.465	-.906	.420
	PRODUCTS	.318	.221	.215	1.439	.157	-.127	.764

a. Dependent Variable: FINPERFORMANCE

From the data in the above table the established regression equation was: $Y = 9.936\ \ 0.243X_1 + 0.318X_2$