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Marthe Uwamariya

*University of Cologne*, [uwamarim@smail.uni-koeln.de](mailto:uwamarim@smail.uni-koeln.de)

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## The Role of Mobile Banking in Fostering Microfinance Performance – A Case Study of Urwego Opportunity Bank in Rwanda

Marthe Uwamariya,  
Department for Media and Technology Management, University of Cologne, Germany,  
uwamarim@smail.uni-koeln.de

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### ABSTRACT

*Microfinance Institutions (MFIs) have the potential to alleviate poverty across the world. However, they face many challenges before they can grow to meet set objectives. In Rwanda, high costs and loan defaults are the biggest threat to microfinance profitability and sustainability. The use of Information and Communication Technologies (ICTs), particularly mobile banking (m-banking), holds promise to enable such profitability and sustainability. Some MFIs in Rwanda had already tried to develop this opportunity by launching m-banking projects and small-scale experiments across the country. But though these initiatives exist—so far with limited achievements—there is no clear indication that integrating mobile technology banking into MFIs has contributed to the greatest challenges faced by MFIs in Rwanda. This qualitative study examines the possibilities for MFIs being more efficient by introducing m-banking. The case study was applied to Urwego Opportunity Bank (UOB), a Rwandan microfinance bank that had launched m-banking. The analysis focused on two major dimensions including transaction costs and loan defaults. Those dimensions were found restricting the Rwandan's MFIs from achieving profitability and sustainability. The analysis results indicate that the adoption of m-banking could contribute towards efficiency in operation that allows for lowering the transaction costs and higher repayment rates in microfinance industry in Rwanda.*

**Keywords:** ICTs, M-Banking, Microfinance, Urwego Opportunity Bank, Rwanda

## 1. Introduction

The government of Rwanda recognizes the role that Microfinance Institutions (MFIs) could play in fighting poverty, and desires to promote the saving's investment cycles that lead to economic development (Tumwine, Mbabazi & Shukla, 2015). The government has undertaken several initiatives and reforms to boost financial inclusion through developing a microfinance sector. Microfinance is defined as the provisioning of financial services to poor or low-income clients, including consumers and entrepreneurs who would otherwise not be served by traditional financial institutions (Agnihotri, 2013).

Most of the MFIs in Rwanda do not reach out to poor people because of the high operational costs involved (Tumwine, Mbabazi & Shukla, 2015) and a high rate of loan defaults (Maharana, 2014). Rwanda still has a large population without bank accounts, otherwise referred to as the unbanked (Consultative Group to Assist the Poor, 2015). Only 38.4% of the country's population are served by formal financial sectors (Consultative Group to Assist the Poor, 2015). In 2014, the MFIs loan default rate reached 7% (National Bank of Rwanda, 2014), 40% higher than the maximum default rate required to sustain a microfinance business (Consultative Group to Assist the Poor, 2015).

The roll-out of ICT-enabled microfinance services represents a paradigm shift for the sector (Sabyasachi, 2009). Mobile phones could be an alternative channel for delivering financial services to less advantaged and unbanked people, without requiring a traditional bank with a branch network (Afshan & Sharif, 2016). With mobile banking (m-banking), MFIs can be in a position to provide more efficient loan and monitoring services than in the traditional cash based systems (Wamai & Kandiri, 2015). Such a system could improve operational efficiencies and enable a sustainable outreach to underserved populations (Afshan & Sharif, 2016).

In Rwanda, although there have been increased attempts to introduce m-banking technology, its use is still in its infancy stage (Harelimana, 2018; Nuwagaba, 2014). Most of the MFIs in Rwanda are still operating in their traditional channel and have not managed to reduce their operating costs (Harelimana, 2018); this makes them dependent on donors and hence, unsustainable (Tumwine, Mbabazi & Shukla, 2015).

The main objective of this study is to investigate the use of m-banking as a tool to enhance efficiency of the MFIs in Rwanda – the aim is to provide practical information on how an MFI can leverage existing challenges and increase its chances of successfully implementing m-banking. The study responded to the following research questions: *Does m-banking offer a solution to high*

*costs transaction in microfinance? Does m-banking offer a solution to loan defaults in microfinance?*

We conduct a qualitative research to understand the underpinning phenomena at more depth, to gain different perspectives on problems, and to take advantage of in-depth data, which may be difficult to analyze quantitatively (Creswell, 2017). We conduct depth-semi-structured interviews to allow for the most direct, research-focused interaction between researchers and interviewees (Creswell, 2017). Based on our findings, we determine several anchor points where MFIs could improve the usage of m-banking in microfinance sector in Rwanda. The suggestions from this study could be used as a set of best practices for MFIs anywhere in the developing countries that may be making ICT decisions in the future.

## **2. Microfinance and M-banking in Rwanda: A Contextual Background**

Rwanda is a small landlocked country located in East Africa covering a total surface area of 26,000 km with approximately 12 million inhabitants. Rwanda's development policy is guided by the Rwanda Vision 2020 (Ministry of Finance and Economic Planning, 2013), which articulates the Rwandan Government's aim to transform Rwanda into a middle-income country, as well as an economic trade and communications hub, by the year 2020.

The ideas and aspirations towards microfinance are not new in Rwanda. Microfinance was first formalized with the creation of the first "Banque Populaire du Rwanda" (BPR) in 1975 by the Rwandan and Swiss Governments. A few years later, the various BPR initiated in the country formed a "Union des Banques Populaires" (Harelimana, 2017). After the Tutsi Genocide of 1994, the microfinance sector has known dramatic progress through the support of relevant international and Non-Government Organizations (NGOs) especially for humanitarian reasons. These NGOs helped people by supporting the daily use of equipment like foods but included also a micro-credit teaching program. During the above emergency period, the loans did not differ to grants or donations, and sowed confusion among the population. The result was a culture of non-repayment, leading to non-performing loans which adversely affected the operations of MFIs (Alliance for Financial Inclusion, 2014). The Government of Rwanda initiated an urgent response in 2007, publishing the national microfinance policy implementation strategy 2008-2012 followed in 2008 by the microfinance law and its accompanying regulations (Ministry of Finance and Economic Planning, 2013). Now, the microfinance sector included 514 institutions (National Bank of

Rwanda, 2015). Rwanda's microfinance industry is developing rapidly. However, industry faces similar challenges to other African countries (Harelimana, 2017). None-performing loan rates and limited institutional capacity in management and information systems are as problematic in Rwandan's MFIs (Harelimana, 2017) as they are in other states on the continent. Many MFIs are also deficient when it comes to reducing transaction costs and offering better products and services that meet clients' needs (Gasheja & Harelimana, 2016).

To curb these challenges, the Government of Rwanda believes that through m-banking, the current majority of the unbanked will be reached (Gasheja & Harelimana, 2016). The Government, through the Rwanda Development Board (RDB), has laid the fibre-optic network at most headquarters of financial institutions to facilitate the prospering of mobile financial services. Nevertheless, the uptake of m-banking in Rwanda remains low and did not gain the expected progress (Gasheja & Harelimana, 2016). The economy of Rwanda is still cash-based (Isaboke & Ukwimanishaka, 2017). Most Rwandans use m-banking to perform mainly limited financial transactions such as sending money to someone else and bill payment (Isaboke & Ukwimanishaka, 2017). Only two MFIs are offering m-banking services and internet banking (National Bank of Rwanda, 2015). Other MFIs still rely on their traditional manual processing systems which are inefficient and result in poor performance (Parikh, 2005). In Rwanda, the microfinance sector is a nerve center and blood vessel of the whole economy. When its operations generate good effects, it will contribute a lot to the country's socio-economic development (Hudon & Meyer 2016).

### **3. Relevant Literature Review**

#### **3.1. Transaction Costs in Microfinance**

The primary objective of MFI leaders is to make microfinance's operations profitable and sustainable (Baland, Somanathan & Wahhaj, 2013). Unlike commercial banks with larger loans and a long maturity, most of the poor people served by microfinance require small loans with shorter maturity. Such types of loan are expensive to administer and involve high follow up costs as well as high defaults, which all in all results into high transaction costs (Brandt, Santa-Clara & Valkanov, 2009). A better understanding of transaction costs—an important determinant of an MFI—would be useful in evolving strategies to reduce lending costs in a hasty manner (Harelimana, 2017). Transaction cost is defined in economic terms as comprising costs of search, information, bargaining, decision-making, policy, and enforcement (Nalukenge, 2003). Applying this definition

to the microfinance transaction framework, transaction cost comprises three main components: group formation cost, cost of direct administrative activities, and cost of monitoring (Sudhir, Priti, Kratika & Bhawana, 2017). Formation cost is defined as the cost of formation and training of the group with the objective of using it to deliver credit. Costs of direct administrative activities comprise cost of appraisal, documentation, disbursement, and other direct admin activities related to administration. Monitoring cost is the cost of loan utilization checks and collection of installments (Bazinzi, Mangeni, Nakabuye, Akankunda & Agasha, 2013). In the context of customers, transaction costs are the costs paid by borrowers while seeking the services of MFIs (Martha & Neha, 2013). They may include for instance the time borrowers have to spend away from their businesses, their transportation expenses, and other costs for receiving loan funds (Nalukenge, 2003). Many institutions are now working towards low-cost delivery options such as internet banking and cashless transactions to help poor people (Mersland & Strøm, 2008a). In fact, it may not be the internet, but the mobile devices that could be more efficient tools for such transactions cost (Harelimana, 2017). The mobile revolution has transformed the lives of many people in developing countries, providing not just communications, but also basic financial access in the forms of phone-based money transfer and storage (Demombynes & Thegeya, 2012). Researchers argued that m-banking is the main technological innovation being discussed in economic and social development, especially among low-income groups (Kweyu & Ngare, 2014; Donner & Tellez, 2008). According to Anderson (2010), m-banking provides simple banking services to low-income populations' in developing countries. This is a new channel of transmission of formal financial services to those who have been excluded from the traditional banking sector. MFIs benefit from the mobile's low transaction costs, and the foothold it gives them in difficult-to-access rural markets (Martha & Neha, 2013).

### **3.2. Loan Defaults in Microfinance**

Loans are the primary products of MFIs (Angelucci, Karlan & Zinman, 2015). Each MFI tries to maximize its repayment performance, whether it is profit oriented or not (Donner & Tellez, 2008). One indicator of effective MFIs is the loan repayment performance of the borrowers (Welderufael, Tesfatsion & Wondmagegn, 2015). High repayment rates are associated with benefits both for the MFI and the borrowers (Godquin, 2004). If there is a high repayment rate, the relationship between the MFI and their client will be good. Bond & Rai (2009) argue that a high repayment rate helps

to obtain the next higher amount of loan and other financial services. In contrast, if there is a low repayment rate, both the borrowers and the MFI will be affected (Ashta, Couchoro & Musa, 2014). In this case, the borrowers will not be able to obtain the next higher loan and the lender will lose their clients. Improving repayment rates helps reduce the dependency of the MFIs on subsidies, which would improve sustainability (Boateng & Oduro, 2018; Bourlès & Cozarenco, 2014). High loan defaults affected negatively the dual objectives for the establishment of MFIs (Ibtissem & Bouri, 2013). MFIs aim to achieve both the social mission of alleviating poverty among the poor and financial profitability (Ibtissem & Bouri, 2013). Profitability occurs when borrowers make timely loan repayments (Dodson, 2014). Because payment delays and defaults significantly affect both lenders and borrowers in fragile economies, strategies to improve timely loan repayment are needed to help make credit markets work smoothly (Siaw, Ntiamoah, Oteng & Opoku, 2014). M-banking promises to increase the efficiency and outreach of microfinance loans in developing countries (Gasheja & Harelimana, 2016). M-banking offers the potential for MFIs to offer their clients the ability to repay loans from any location and to receive timely loan reminders has generated widespread excitement among development practitioners and MFIs (Karlan, Morten & Zinman, 2016).

## **4. Methods**

### **4.1.Data Collection**

Given the exploratory nature of this study, I opted for a qualitative approach for depth investigation of the m-banking adoption among microfinance in Rwanda. The qualitative method enables the researcher to use interpretive perspectives to reconstruct reality (Merriam & Tisdell, 2015). I used a single exploratory case study design to gain a thorough understanding of the real value of m-banking on costs reduction and loan defaults. A qualitative case researcher uses the single exploratory case approach when the research question requires more depth into a single case rather than a few cases (De Massis & Kotlar, 2014). The study focuses on one case, namely “Urwego Opportunity Bank” (UOB) that provides microfinance services in Rwanda. UOB was selected because it was the accredited first MFI in Rwanda with operations, including transactions that are mobile-based. The approach, I took was interpretive. The mode of inquiry of an interpretive approach is rooted in the philosophical ideas of hermeneutics and phenomenology (Walsham, 2006). Interpretive approaches produce an understanding of the context of the information system,

and the process whereby the information system influences and is influenced by the context (Walsham, 2006). Interpretive research does not predefine dependent and independent variables, but focuses on the complexity of human sense making as the situation emerges (Kaplan & Maxwell, 2005); it attempts to understand phenomena through the meanings that people assign to them (Orlikowski & Barrett 2014).

Our study site was at Kigali. I choose the site because it was there that UOB's m-banking was initiated and this is where the project's main architectural ground is located.

The sources of data for this study consist mainly of secondary sources, but for the purpose of supporting the finding of the research, primary data was used to some extent. For the secondary data, I read the academic literature and other available data to extract m-banking adoption issues and gain insights on the scope of m-banking in developing countries. Further, the different UOB's reports (e.g. annual reports, weekly and monthly loan monitoring reports, financial reports, and training reports) available at its head office was explored. Other documents and websites from different stakeholders (e.g.: Rwanda Ministry of Finance, National Bank of Rwanda, mVisa Rwanda, MTN Rwanda) was also included to better define the research context (Boote & Beile, 2005).

Rather than focusing on any theory per se, this study decided to focus on practical aspects that generate consistent results that are reliable and valid in its context. To that end, the data collected involves analyzing two important aspects including transaction costs and loan defaults. In Rwanda, high costs and loan defaults are the biggest internal threats to microfinance profitability and sustainability (National Bank of Rwanda, 2015). These aspects are not exhaustive but are the key issues that need to be addressed.

Primary data was collected using in-depth interviews (n=52) with UOB staff including top managers at its head office, branch managers, loan officers and UOB's customers have been also interviewed (table 1). These interviewees are a suitable source of evidence in qualitative case study (Walsham, 2006). They were all familiar with the UOB's m-banking system and were interested in participating in this study (Krippendorff, 2013; Patton, 2002). To select the interviewees, I applied a purposeful sampling method for selecting key informants at managerial level (n=10) and a convenience sampling for the customers (n=42).



The participants were informed of their right to withdraw from the interview at any time, and were told what measures will be taken to protect their anonymity at all stages in the analysis process. To open communication lines necessary for the data collection, I benefitted from my previous working experience in the microfinance industry of Rwanda. The questions were open-ended and respondents were encouraged to express their own point of view that may be arising in their minds during the interview. The interviewer had a list of talking points that guided the conversation with the respondents. However, I did not follow the same sequence consistently throughout all interviews as the conversation was based on the responses of the participants and therefore somewhat flexible in its progression. The first set of questions gave participants the opportunity to describe their experience and qualifications. The focus of the second set of questions was to describe current practices, operations, services, and products associated with m-banking with which the participant has an affiliation. The third set of questions was the most detailed part of the interview, as it provided the foundation for the role that m-banking could play in reducing transaction costs and enhance loan repayment. In the final set of questions, the participants had the opportunity to extend the collaborative effort by suggesting potential key elements that could improve m-banking implementation.

<b>Position</b>	<b>N</b>	<b>Location</b>	<b>Duration (in Min.)</b>
IT management	1	UOB head office	30 min
Service Delivery management	1	UOB head office	40 min
Branch manager	1	Gisozi Branch	60 min
Branch manager	1	Kimironko Branch	45 min
Branch manager	1	Kicukiro Branch	60 min
Loan officer	2	Gisozi Branch	30 min
Loan officer	2	Kimironko Branch	45 min
Loan officer	1	Kicukiro Branch	50 min
Customers	14	Gisozi Branch	75 min
Customers	15	Kimironko Branch	75 min
Customers	13	Kicukiro Branch	45 min

**Table 1. Study Interviewees (N= 52)**

The interviews took place between June and August 2018. Each interview lasted between 30 and 90 minutes. During and immediately after each interview, I took extensive field notes in order to highlight important and valuable information and extract relevant quotations.

## **4.2.Data Analysis**

I used a content analysis technique to generate and categorize items (Saunders, Lewis, & Thornhill, 2016) and paid attention particularly to avoiding any researcher bias as I have been involved in Rwanda's m-banking ecosystem. I discussed the role of m-banking at both institutional and clients perspective. The interview content was read many times to identify the recurrent categories which emerged from different interviews. The codes were developed and then grouped into categories that emerged from similar interviewee views related to the research question. These categories were then grouped into themes and subthemes. To extract relevant quotations, alphabet codes (A, B, C) have been attributed to the UOB branches to anonymize the respondent's statements.

## **5. Implementing and Diffusing UOB's M-Banking**

### **5.1.The Beginning**

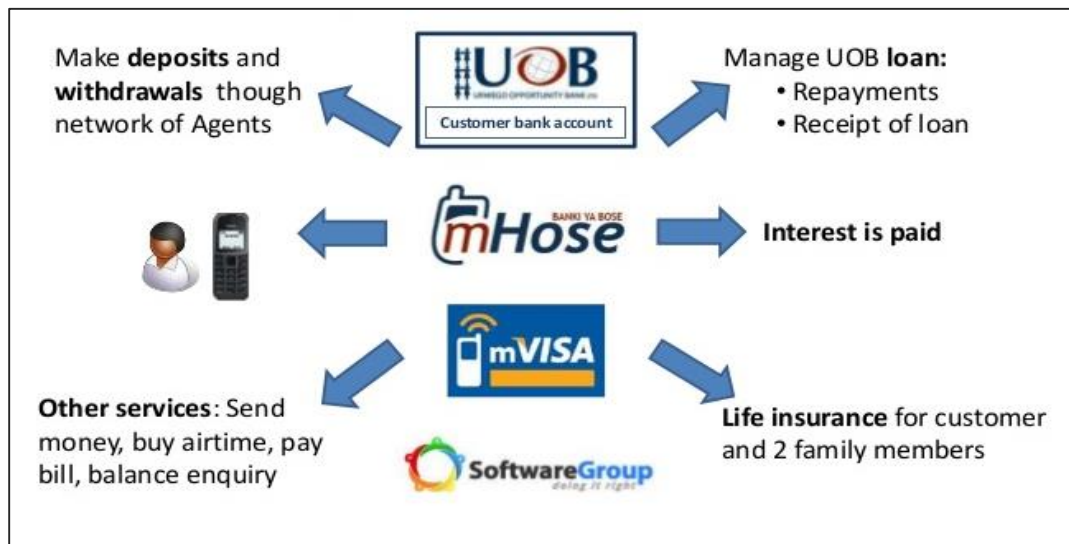
Urwego means 'ladder' and hints to the bank's commitment to pull Rwandans out of poverty. Initially founded in 1997 by World Relief as Urwego community banking, the bank joined the HOPE International network in 2005, as the two organization joined arms with World Relief to better serve clients. In 2007, the bank merged with Opportunity International Bank to become Urwego Opportunity Bank (UOB). In 2017, Opportunity International and its affiliates in Canada and Germany have completed a share purchase agreement to sell its 50 % ownership of Urwego Opportunity Bank to HOPE International, a network of Christ-centered micro-enterprise development programs in 16 countries (UOB, 2018). HOPE International, which has been a partner of Opportunity International in Rwanda for the last 11 years, is now a 99 % shareholder of the bank with World Relief continuing to own 1%. UOB has 18 fully operational microfinance branch offices located in 11 districts across Rwanda (UOB, 2018). UOB has two types of loans: group and individual loans. The latter is only made available for a select number of customers who have a long-standing relationship with the organization, have additional business requirements and are not members of any loan group. UOB focuses on the traditional group lending model where the group represents as the borrower (Kodongo & Kendi, 2013). The groups consists of about 30 homogeneous members.

### **5.2.UOB's M-Banking Deployment**

After an unsuccessful attempt to partner up with MTN Rwanda for offering m-banking, UOB was approached by Visa in early 2012 to explore collaboration. Visa had selected Rwanda as one of

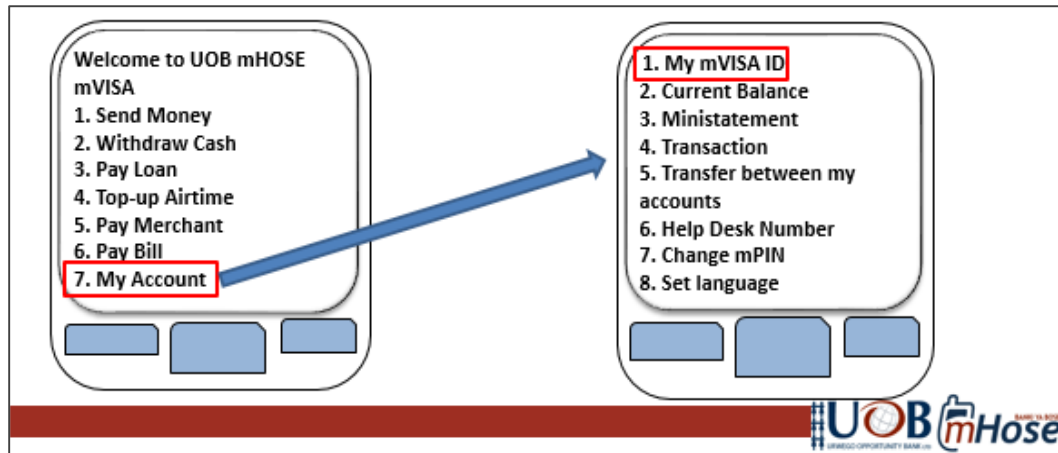
the first countries worldwide to roll out their new mobile commerce platform called mVISA, which was designed to meet the basic banking needs of Rwanda's unbanked and underserved population. Following a 2012 pilot with 157 loan customers, the UOB introduced an m-banking system called "mHose" where "m" stands for mobile and "Hose" is the Kinyarwanda word for "everywhere" hence "mobile everywhere". Operations were launched in Rwanda in 2013 and now UOB has a total of 45,000 customers who transact within the mHose. Through mHose, UOB is giving customers access to the full range of banking services through their phones as described in the figure 1 below.

**Figure 1: mHose services**



**Source:** Printed UOB's training report (2018)

UOB offers different services through mHose but loan repayment emerged and represents 90% of the total services offered today. UOB develops its own agent network, which allows its customers to cash in and cash out from their mHose accounts; now the system has 110 active agents.

**Figure 2:** mHose menu emerges on the mobile phone of the customer

**Source:** Printed UOB's training report (2018)

Both clients and agents receive an 'mVISA ID' after registration, which in combination with their phone number became their personal identification. After clients set their mPIN in the given timeframe, the registration is completed.

### 5.3. The Value of mHose on Transaction Costs

#### *Customer Perspectives*

(a) **Weekly pre-loan trainings:** UOB uses a group lending model in whose basic philosophy lies in the fact that shortcomings and weaknesses at the individual level are overcome by the collective responsibility and security afforded by the formation of a group of such individuals. Prior to the approval or disbursement of any credit facility, the group beneficiaries are to undertake pre-credit trainings facilitated by a loan officer. The period of training depends on the group, length of sessions, and type of credit facility requested, but most of the time, the trainings took between 4 and 6 weeks. In this period, mHose is not for establishing savings for customers—weekly transportation expenses have to be paid for attending training before entering into a lender group.

*“Every week, I make sure that I have 700 Frw ((\$1) to pay a motorcycle for attending those trainings. Imagine if it is my 1<sup>st</sup> loan where I get RWF 30,000 (\$35), what business can I do with the remaining amount?” [Customer, Branch A, 2018]*

(b) **Loan repayment:** Each loan is secured by the social guarantee that the groups provide. Loans can range between RWF 30,000 (\$35) and RWF 1.5 million (\$1750), and are repaid over a period of 4 to 6 months. Before mHose was used, customers had to endure a lengthy

repayment process. In some cases UOB branches are not accessible nearby. Loan officers used to travel to villages regularly with large amounts of cash. Due to safety and security issues, UOB avoided this kind of operative and required its customers to come to the weekly meetings and at the same time pay-back the loan. In such circumstances, a customer would carry his/her cash to the group gathering location which is usually located next to the UOB's branches. Meetings used to be quite long as each customer's cash had to be counted and recorded by the loan officer individually. This could take a particularly long time in Rwanda since fake bills are common, and the loan officer must verify every note to make sure it is genuine. Afterwards, a loan officer would have to take all the group's cash to the bank, wait her/his turn there, and finally deposit the money. In such circumstances, a customer would spend a significant amount of time while waiting for a loan office to come back from the bank to continuing their meeting. Transaction costs could be substantial in this process. The time borrowers have to spend away from their businesses could lead to a dent in business profits and growth. Once a firm does not grow, it would call for a continuous need for micro-credit with high interest charges that could bring a risk of loan defaults. Though this process, a customer also incurred substantial security risks while walking and taking public transport (eg: bus or motorcycle) with large amounts of loan-cash for repayment.

The risks that are common when reimbursing with cash are, loss due to theft on the one hand, and for those that remit cash through third parties such as friends or bus drivers, on the other hand, there are chances of the cash not reaching the intended beneficiary.

With mHose however, the process is simple and safer. At any time during the repayment period, customers pay their loan through agents before the meetings, and the loan officer confirm at the meetings that the loan payments have been received. Meetings with the loan officer now involve a quick verification of the payment proof, which allows the customers to return to his/her business faster. The time saved can be effectively and efficiently utilized for business development. Customers are no longer in need to travel with cash for loan reimbursement and thus, are saved the related costs.

*"It is easier, actually. I no longer have to get into long queues at the loan officer site. I tries to save by cutting down my transport expenses for depositing small amounts."* [Customer, Branch C, 2018]

The risks of theft and fraud are also minimalized while a customer pays through mHose.

- (c) ***Weekly post-loan trainings***: UOB uses mHose for loan repayments albeit with measures to ensure group cohesion is maintained. Loan officers still need to be close to their clients. Attendance at weekly group meetings is still compulsory. Consequently, the weekly travel costs are still emerging for customers who must respond to the requirement of cohesion.

### ***Provider Perspectives***

- (a) ***Weekly meetings (pre-and post-loan)***: Though mHose, loan officers are able to spend less time with cash collections and have more time for the group or to attend more meetings.

*“While other MFIs in Rwanda who do not implement m-banking could only visit two groups a day, UOB’s loan officer can now visit up to eight groups a day.” [Loan officer, Branch B, 2018]*

*“If payments are made and tracked electronically, it is clear that, it increases staff efficiency. One loan officer could do more than before using mHose.” [Branch manager, Branch B, 2018]*

A simple extrapolation then implies that, the UOB could readjust the transaction expenses by cutting half of the existing number of staffs for reaching the customers in the field.

Furthermore, mHose saves UOB from some sorts of fraud and risks from loan officers. When the loan officers maintain records manually, there is a huge chance of corruption.

*“Some UOB’s loan officers had under-represented loan repayments, only to be caught days or weeks later, it was really very complicated.” [Branch manager, Branch C, 2018]*

mHose provides security to loan’s staff as they do not need to carry cash. UOB also would not have to equip all of its loan officers with a private vehicle to make loan payments – all have impact and results.

*“Before the introduction of mHose, loan officers used to travel to villages regularly with large amounts of cash. In another case, UOB had to equip all of its officers with a private vehicle because it was found not to be safe to ride the public bus to meetings with a large amount of cash in hand.” [UOB, IT management, 2018]*

- (b) ***The information-flow***: mHose has facilitated the automation of the process of uploading and reconciling the repayment data. Traditionally, loan officers used to collect transaction information from clients mostly in paper form and reported to the branch offices. Then, branch offices summarized the transaction information collected from all loan officers and send it to the head office either directly or via a regional office. The information-flow from the branch

office to the head office is done manually on a weekly or monthly basis. The head office accumulates all information from all branch offices and stores it in an electronic database, a paper register, or both. The head office manages its entire operational structure based on this information exchange and faces a challenge when it does not have up-to-date information about work being done at the branch office or loan-officer level. Many errors may occur in such long data reporting process. However, the process has been enhanced by the adoption of mHose.

*“With mHose now, each head office, regional office, branch office, and loan officer have the capability to connect to the centralized platform, access an individual account, and conduct daily operations. Information is no longer needed to be collected in paper form or be transmitted via e-mail. Our staff can now be able to focus their efforts on their core strengths, which are to provide financial services to the poor.” [UOB, Service Delivery management, 2018]*

mHose opens the gate to a broader range of information; it improves management supervision capabilities, giving UOB the tech tools to better monitor and follow up on loan disbursement and savings data; this was rather difficult within a paper-based banking system. All above elements could then impact significantly UOB’s transaction costs.

#### **5.4. Value of mHose on Loan Defaults**

In UOB, group meetings used to be dominated by cash collection. With mHose however, there is no need for extensive time to be spent collecting money, addressing missed payments, and reconciling bank slips. This time could instead be spent going through training on discussing business problems and financial education and after which, it is possible to encourage customers to make loan repayments. UOB would experience a lower risk of default when borrowers understand the implications of nonpayment.

*“In training, we learned that the secret of preparing for the next loan is to repay the current loan. So, when we took a loan for growing our businesses, we make sure that these businesses generate profits to enable us to repay the loan, to expand our business, and to allow us to achieve our vision that in future, we should not rely on loans anymore.” [Customer, Branch B, 2018]*

Further, mHose offers UOB a means to monitor loan payments by providing a transaction history that is automatically linked to a database without the need for manual entry required in traditional loan disbursements and payments. Digitizing customer’s loan data would provide valuable

information that influence management decisions and possibly the automation could dramatically help to reduce their portfolio at risk. Other benefits include allowing existing customers to query the system directly for their loan balances and records of their most recent statements, rather than relying on information from their loan officers—for this to be attained, loan defaults have to be minimized.

## 6. Conclusion and Way Forward

From the findings of this case study, mHose's business model benefits its customers and the institution itself. There are numerous signs that point to the fact that mHose plays an important role in dealing with challenges of transaction costs and high loan defaults. The overall values of mHose to the existing customers are their time-saving and reduction of theft and fraud, although the travel costs are still existing due to the persisting weekly meetings. Taken all together—could lead to the decrement of transaction costs for the customers. Further, mHose facilitates UOB to centralize the information regarding the client and loan and monitor portfolios—this typically could improve repayment rates which in turn impact profitability and self-sufficiency on a certain level. However, given the benefits of mHose noted earlier, especially for members who absolutely love the flexibility of paying at any time of the day, some customers feel that it could make no sense for them to turn back in weekly basis, pay related travel expense and sometimes pay penalties for arriving late at meetings while they have reimbursed their loans through mHose. Shankar (2007) studied transaction costs of borrowers and concluded that a weekly compared to a monthly meeting schedule increases transaction costs by 34 percent. To that end, UOB could maintain social benefits of customer collectivism while strategically reduce group meetings—the interviewed customers suggested that group meetings could be reinstated once a month instead of once a week. The assessment I undertook has also allowed for the identification of the other principal dimensions in which UOB may need to consider in order to benefit from the potential the m-banking services offer. Thus, beyond transaction cost and loan defaults, emerging issues in mHose include in particular:

(a) *Cash transfer fees*: Most customers that I had conversations with, feel that mHose is cheaper than other providers within Rwanda. One of the reasons that have been cited is the zero deposit required to maintain a non-bank led m-banking account which only charges transaction fees.



Nevertheless, as demonstrated (table 2), mHose tends to be expensive compared to other providers operating within the country.

Table 2: Comparing Transfer fees of mHose and MTN- Rwanda

Cash Transfer at mHose			Cash Transfer at MTN Rwanda		
<i>Min (in Rfw)</i>	<i>Max (in Rfw)</i>	<i>Fees</i>	<i>Min (in Rfw)</i>	<i>Max (in Rfw)</i>	<i>Fees</i>
1500	10 000	275	1500	10 000	250
10 001	25 000	400	10,001	25 000	250
25001	50 000	600	25001	50 000	400
50 001	100 000	900	50 001	100 000	550
100001	200 000	1300	100001	200 000	900
200001	500 000	2700	200001	500 000	1,000
500 001	1 000 000	5500	500 001	1 000 000	1,500

**Source:** Compiled by Author, 2018

The risk of being perceived by the market as a very expensive solution makes it difficult for UOB to market themselves as a low-cost bank for the poor. Lower costs could allow the institution to achieve a far greater scale and serve exponentially greater numbers of poor families who are financially excluded (Haile, 2015).

**(b) Savings:** Through the joint liability approach adopted by UOB, each group member is accountable for his or her loan and the loans of other group members (Hadi & Kamaluddin, 2015). In that sense, if one or more members of a group fail to repay their loans, all group members get punished commonly in the form of a ban from accessing more loans and repay the loan of those who are not paid. The application of the collective punishment principle is more useful when used to reduce loan default (Mookherjee & Motta, 2016, De Quidt, Fetzer & Ghatak, 2016). On the other hand, however, this collectivism could discourage the saving principle. Thus, UOB has developed a mechanism that requires members to deposit into a voluntary saving account—usually paying no interest. This provides a source of security in case of loan default. The willingness of customers to deposit voluntary savings is discouraged in that sense that, if a member of a group has defaulted on his loan and lacks sufficient security funds to cover the balance, UOB extracts saving funds from other subgroup members to cover the outstanding loan balance. Consequently, fear of losing savings to cover a group member's defaulted loan augments and customers are less likely to deposit voluntary savings in their account. Consequently, the joint liability contract has not yet actively promoted mHose for savings and added revenues from such saving is far negligible. Within the boundaries of these constraints, savings services should be tailored to meet the demands of prospective customers.

Offering multiple types of savings accounts would enable better targeting of different needs, including short-term and long-term concerns of clients. Paying interest on savings could also be a favorable element to motivate UOB customers to save and earning revenues.

(c) **Agent networks:** The poor population requires banking services that are available at its doorstep and are also flexible in the timing of undertaking the banking transaction to minimize the transaction cost of the customer (Carpenter & Demiralp, 2012). Thus, the lack of mHose agents who receive money in some areas is making it difficult for UOB to reach some people without access to financial services. Most of the mHose agents are located closest to the UOB branches and this could add costs to the customers who travel several kilometers to reach agents. Besides, some agents do not have the liquidity, or the required cash for them to keep in their account which causes problems in meeting the demand of clients. UOB needs to find a way to provide liquidity through a network of cash-in/cash-out agents. Supporting agents to spread transactions over the day and providing them more options to manage liquidity will result in better service and could foster an increase in usage of mHose services.

(d) **Visibility:** Compared to all the other provider brands in Rwanda, mHose visibility remains at lower level of acceptance. Thus, mHose agent locations are not easy to be found; tariff information for specific transactions is rarely displayed by agents and no information about current fees or new promotional services were visible at agent locations. The agent's external and internal appearance and the visibility of the informational materials inside their premises are key ingredients of a customer's choice of an agent (Wright, Golder & Kate, 2015). Customers who choose to transact with visible agents have more successful transactions and higher satisfaction levels with such agents' services (Wright, Golder & Kate, 2015). Thus, although there may be initial costs involved, UOB could increase mHose visibility which in turn would increase its popularity and income or earnings (Wongnaa & Awunyo, 2013).

## 7. Implications and Future Research

Scholars and practitioners, the implications of these findings are manifold. Firstly, contribute towards knowledge on how m-banking could help alleviate some of MFI's challenges by providing an elucidating example of how m-banking can be used to help scaling up microfinance services. Secondly, we outlined strategies for UOB and comparable MFIs to foster m-banking usage.

Increased m-banking usage in Rwanda should yield economic benefits such as new jobs, a more diversified portfolio of economic activities, and thereby ultimately the nation's economic and societal development and the national welfare (Guo & Bouwman, 2016). Future research opportunities are various. For instance, one may want to dig deeper into external challenges, especially, regulations and financial infrastructures. Further, as the current study had only focused on the m-banking aspect of one MFI, a multiple case study could be adapted to investigate various banking channels being implemented by different MFIs in Rwanda and their current success.

## 8. References

- Afshan, S., & Sharif, A. (2016). Acceptance of mobile banking framework in Pakistan. *Telematics and Informatics*, 33(2), 370-387.
- Agnihotri, A. (2013). How much is strategic fit important? *Business Strategy Series*, 14 (4), 99-105.
- Alliance for Financial Inclusion (2014). Rwanda's financial inclusion success story: Umurenge SACCOs (AFI Case Study). Retrieved from [http://www.afiglobal.org/sites/default/files/publications/afi\\_case\\_study\\_rwanda\\_finalweb.pdf](http://www.afiglobal.org/sites/default/files/publications/afi_case_study_rwanda_finalweb.pdf)
- Anderson, J. (2010). M-banking in developing markets: competitive and regulatory implications. *Emerald Group Publishing Limited*, 12(1), 18-25.
- Angelucci, M., Karlan, D., & Zinman, J. (2015). Microcredit impacts: evidence from a randomized microcredit program placement experiment by Compartamos Banco. *American Economic Journal: Applied Economics*, 7 (1), 151–82.
- Ashta, A., Couchoro, M., & Musa, M. S. A. (2014). Dialectic evolution through the social innovation process: from microcredit to microfinance. *Journal of Innovation and Entrepreneurship*, 3(4), 2-23.
- Baland, M. J., Somanathan, R., & Wahhaj, Z. (2013). Group lending and endogenous social sanctions, retrieved from <https://www.econstor.eu/bitstream/10419/129983/1/814788696.pdf>
- Bazinzi, N., Mangeni, P., Nakabuye, Z., Akankunda, B., & Agasha, E. (2013). Transaction costs and outreach of microfinance institutions in Uganda. *Business Management and Economics*, 1 (6), 125-132.
- Boateng, E. Y., & Oduro, F. T. (2018). Predicting microfinance credit default: a study of Nsoatreman rural bank, Ghana. *Journal of Advances in Mathematics and Computer Science*, 26(1), 1-9.
- Boateng, A. A. (2015). An examination of challenges and prospects of microfinance institutions in Ghana. *Journal of Economics and Sustainable Development*, 6(4), 52-60.
- Boote, D. N., & Beile, P. (2005). Scholars before researchers: On the centrality of the dissertation literature review in research preparation. *Educational Researcher*, 34 (6), 3-15.
- Bond, P., & Rai, A. (2009). Borrower runs. *Journal of Development Economics*, 88 (1), 185–191.
- Bourlès, R., & Cozarenco, A. (2014). State intervention and the microcredit market: The role of business development services. *Small Business Economics*, 43 (4), 931-944.

- Brandt, M.W., Santa-Clara, P., & Valkanov, R. (2009). Parametric portfolio choices: Exploiting characteristics in the cross section of equity returns. *Review of Financial Studies*, 22(9), 3411–3447.
- Carpenter, S., & Demiralp, S. (2012). Money, reserves, and the transmission of monetary policy: does the money multiplier exist? *Journal of Macroeconomics*, 34, 59-75.
- Consultative Group to Assist the Poor (2015). New data finds mobile money on the cusp in Rwanda and Ghana. Retrieved from [www.cgap.org/blog/new-data-finds-mobile-money-cusp-rwanda-and-Ghana](http://www.cgap.org/blog/new-data-finds-mobile-money-cusp-rwanda-and-Ghana).
- Creswell, J. (2017). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.), Thousand Oaks, CA: Sage.
- De Massis, A., & Kotlar, J. (2014). The case study method in family business research: Guidelines for qualitative scholarship. *Journal of Family Business Strategy*, 5(1), 15-29.
- Demombynes, G., & Thegeya, A. (2012). Kenya's Mobile Revolution and the Promise of Mobile Savings. *World Bank Policy Research Working Paper No. 5988*. Retrieved from <https://ssrn.com/abstract=2017401>
- De Quidt, J., Fetzer, T., & Ghatak, M. (2016). Group lending without joint liability. *Journal of Development Economics*, 121(C), 217-236.
- Dodson, C. B. (2014). Bank size, lending paradigms, and usage of Farm Service Agency's guaranteed loan programs. *Agricultural Finance Review*, 74 (1) 133-152.
- Donner, J., & Tellez, C. (2008). Mobile banking and economic development: Linking adoption, impact, and use. *Asian Journal of Communication*, 18(4), 318-322.
- Gasheja, F., & Harelimana, J.B. (2016). Mobile banking and microfinance institutions sustainability: analysis of digital financial services in Rwanda (2011-2015). *British Journal of Economics, Management & Trade*, 15(1), 1-12.
- Godquin, M. (2004). Microfinance repayment performance in Bangladesh: How to improve the allocation of loans by MFIs? *World Development*, 32 (11), 1909–1926.
- Guo, J., & Bouwman, H. (2016). An analytical framework for an m-payment ecosystem: A merchants' perspective. *Telecommunications Policy*, 40(2), 147-167.
- Hadi, N. A., & Kamaluddin, A. (2015). Social collateral, repayment rates, and the creation of capital among the clients of microfinance. *Procedia Economics and Finance*, 31(2), 823-828.
- Haile, F. (2015). Determinants of loan repayment performance: Case study of Harari microfinance institutions. *Journal of Agricultural Extension and Rural Development*, 7(2), 56-64.
- Harelimana, J.B. (2017). The determinants of financial and operational sustainability of microfinance institutions: Case Study of Clecam-Ejoheza Ltd. *Global Journal of Management and Business Research: Finance*, 17(4), 33-44.
- Harelimana, J.B. (2018). Impact of mobile banking on financial performance of Unguka microfinance bank LTD, Rwanda. *Journal of Harmonized Research in Management*, 4(1), 26-40.
- Hudon, M., & Meyer, C. (2016). A case study of microfinance and community development banks in Brazil: private or common goods? *Nonprofit and Voluntary Sector Quarterly*. 45(4), 116-133.
- Ibtissem, B., & Bouri, A. (2013). Credit risk management in microfinance: The conceptual framework. *Journal of Finance and Risk Perspectives*, 2 (1), 9-24.
- Isabokeye, P. K. N., & Ukwimanishaka, C. (2017). Mobile banking services empowering youth in Rwanda: a case of Gisenyi sector of Rubavu district. *International Journal of Research in Sociology and Anthropology*, 3 (4), 01-09.

- Kaplan, B., & Maxwell, J. A. (2005). Qualitative research methods for evaluating computer information systems. In J. G. Anderson, C. E. Aydin, & S. J. Jay (Eds.), *Evaluating the organizational impact of healthcare information systems* (2nd ed., pp. 30–55). Newbury Park, CA: SAGE Publications.
- Kodongo, O., & Kendi, L. G. (2013). Individual lending versus group lending: An evaluation with Kenya's microfinance data. *Review of Development Finance*, 3(2), 99–108.
- Karlan, D., Morten, M., & Zinman, J. (2016). A personal touch in text messaging can improve microloan repayment. *Behavioral Science & Policy*, 1(2), 25–31.
- Krippendorff, K. (2013). *Content analysis: An introduction to its methodology* (3rd ed.). Thousand Oaks: Sage.
- Kweyu, M., & Ngare, P. (2014). Factor analysis of customer's perception of mobile banking services in Kenya. *International journal of emerging trends in economics and management science*, 5(1), 1-8.
- Maharana, N. (2014). A Case study of gifted child. *Innovare Journal of Business Management*, 2 (1), 1-5.
- Martha, R., & Neha, S. (2013). Microfinance and mobile banking for the bottom of the Pyramid. *Journal of Enterprising Communities: People and Places in the Global Economy*, 7 (2), 155-166.
- Merriam, S., & Tisdell, E. (2015). *Qualitative research: A guide to design and implementation* (4th ed.). San Francisco, CA: Jossey-Bass.
- Mersland, R., & Strøm, R.Ø., (2008a). Performance and trade-offs in microfinance institutions - Does ownership matter? *Journal of International Development*, 20(5), 598-612.
- Ministry of Finance and Economic Planning (2013). *Economic Development and Poverty Reduction Strategy 2013-2018*. Retrieved from <http://www.minecofin.gov.rw/index.php?id=149>
- Mookherjee, D., & Motta, A. (2016). A theory of interactions between MFIs and informal lenders. *Journal of Development Economics*, 121(C), 191-200.
- MTN-Rwanda mobile money (2018). *Mobile money tariffs*, Retrieved from [http://www.mtn.co.rw/Content/Pages/115/Mobile\\_Money\\_Tariffs](http://www.mtn.co.rw/Content/Pages/115/Mobile_Money_Tariffs)
- Nalukenge, I. K. (2003). Impact of lending relationships on transaction costs incurred by financial intermediaries: case study in central Ohio. Retrieved from [https://etd.ohiolink.edu/rws\\_etd/document/get/osu1068473959/inline](https://etd.ohiolink.edu/rws_etd/document/get/osu1068473959/inline)
- National Bank of Rwanda (2015). *Monthly interest rate*. Retrieved from <http://www.bnr.rw/index.php?id=329>
- Nuwagaba, A. (2014). Reality of having a cashless society in Rwanda: Case study of national bank of Rwanda. *International Journal of Business and Management Invention*, 3(3), 63-69.
- Orlikowski, W., & Barrett, M. (2014). *Digital innovation in emerging markets: a case study of mobile money*. MIT Sloan Management Center for Information Systems Research Briefings. Massachusetts Institute of Technology MIT Sloan, Cambridge, MA.
- Parikh, S.T. (2005). Rural microfinance service delivery: gaps, inefficiencies and emerging solutions. *International Conference on Information and Communication Technologies and Development*, retrieved from <http://tap2k.org/papers/ictd2006-parikh.pdf>
- Patton, M. (2002). *Qualitative research and evaluation methods*. Third Sage Publications: Thousand Oaks, CA.
- Sabyasachi, K. (2009). *Microfinance: Leveraging ICTs*. Retrieved from <https://www.microfinancegateway.org/sites/default/files/mfg-en-paper-microfinance-leveraging-icts-jun-2009.pdf>

- Saunders, M., Lewis, P., & Thornhill, A. (2016). *Research method for business students*, 7th edition. New York: Prentice Hall.
- Shankar, S. (2007). Transaction costs in group microcredit in India. *Management Decision*, 45(8), 331-1342.
- Siaw, A., Ntiamoah, E., Oteng, E., & Opoku, B. (2014). An empirical analysis of the loan default rate of microfinance institutions. *European Journal of Business and Management*, 6 (22), 12-17
- Sudhir, S., Priti, S., Kratika, S., & Bhawana, C. (2017). Group lending model - A Panacea to reduce transaction cost? *International Review of Economics & Business*, 20 (2), 46-63.
- Tumwine, F., Mbabazi, M., & Shukla, J. (2015). Savings and credit cooperatives (Sacco's) services' terms and members' economic development in Rwanda: A case study of Zigama Sacco Ltd. *International Journal of Community and Cooperative Studies*, 3(2), 1-56.
- Urwego Opportunity Bank (2018). Company background. Retrieved from <http://urwegobank.com/about.html>
- Wamai, J., & Kandiri, J. M. (2015). Determinants of mobile banking adoption by customers of microfinance institutions in Nairobi County in Kenya. *International Journal of Science and Research*, 6(6), 2279-2286.
- Walsham, G. (2006). Doing interpretive research. *European Journal of Information Systems*, 15 (3), 320–330.
- Welderufael, L. L., Tesfatsion, S. D., & Wondmagegn, G. A. (2015). Factors influencing MFIs group loan repayment performance: A case of MSEs' service sector in Mekelle City, Ethiopia. *Research Journal of Finance and Accounting*, 6(5), 154-170.
- Wongnaa, C. A., & Awunyo-Vitor, D. (2013). Factors affecting loan repayment performance among yam farmers in the Sene District, Ghana. *Economics and Informatics*, 5(2), 111-122.
- Wright, K., Golder, S., & Kate, L. (2015). What value is the CINAHL database when searching for systematic reviews of qualitative studies? *Systematic Reviews*, 10(4), 2-8.