EVALUATING THE IMPACT OF MOBILE BANKING DEPLOYMENT FOR MICROFINANCE INSTITUTIONS

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Abstract: *Financial inclusion is the priority of every developing country in the world. However, there are large numbers of poor people do not have access to financial services. Opening a new branch and offering small services to the poor people are always costly and unprofitable for formal financial institutions. In this case, mobile banking has demonstrated a great power to bring financial services close to the doorstep of poor people. The main purpose of this paper is to explore the benefits and challenges of mobile banking deployment for microfinance institutions. Based on the online survey and interview, this study shows that microfinance institutions are trying to reach as many poor people as possible by using mobile technology. The study revealed that more than 80% of the respondents have given high marks on benefits of increasing new customers, branding & images and staff familiarity with technology. The study demonstrated that most of the MFIs started mobile banking with a view to increase new customer, reduce operational costs and, to provide better services to existing customers. The study also shows that 85% of the respondent mentioned low literacy of clients about financial and technology is the main challenge for m-banking success.*

Keywords: *financial services, mobile banking, formal financial institution.*

INTRODUCTION

About 2.6 billion people in the developing country do not have access to bank account whereas 1 billion of them have mobile phone (Dermish et al., 2012). In the book "Portfolio of the poor", Collins, et. al., (2009) argued that, poor people's income is very small and irregular and they have to deal with their daily cash flow from different sources. Therefore, they need easy, flexible and convenient financial services, which can smooth their daily cash flow system (Collins et al., 2009). But, it is always costly, unappealing and unprofitable for formal financial institutions to offer small and infrequent services to the poor people (Mas, 2011). Microfinance has shown promise of providing financial services to the poor people. It is praised as an effective tool to fight against poverty (Armendariz and Morduch, 2010). Initially, it started with only lending products but, currently, they are offering many financial services like deposits,

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insurances, remittances, ATMs, housing and money transfer (Ahmed, 2012). Though, the promise of microfinance is to reach the poor people, but it is still far away to serve the poorest of the poor particularly in the remote areas. To reach large clients and offer better services, MFIs should bring the banking services to the doorstep of poor people (Nestor and Edelstein, 2011). Opening a new branch is always costly for the microfinance institution (Andrew, 2009). In this connection, mobile banking can carry financial services close to the poor people lives (Alexandre, 2011). It can reduce the problem of lack of proximity and high cost to reach distant clients with bricks and mortars branches (Breul, 2012). Therefore, providing products and services through mobile banking channel have a great potential for microfinance institutions.

Currently, there are a considerable number of microfinance institutions using mobile banking tools. According to the PHB Development[1], there are 154 microfinance institutions using mobile banking channel around the world (Voorrips et al., 2012). Among them, 42 in Sub-Sahara Africa, 107 in Asia (including 73 rural banks in Philippines), 4 in Latin America and 1 in Middle East and North Africa (Voorrips et al., 2012).

However, there is limited information available in the market about development of the mobile banking for microfinance institutions. In this paper an attempt is therefore made to identify the potential benefits and challenges of using mobile banking by microfinance institutions through a qualitative study.

LITERATURE REVIEW

Mobile Financial Services: M-Banking, M-Payment and M –Transfer:

Generally, mobile financial services (MFS) include mobile banking, mobile payment and mobile transfer. Mobile banking is using mobile phone to execute transactions directly through bank account like loan repayments, loan disbursements, cash withdrawal, and deposit on savings accounts (Bangenss and Soderberg, 2008). It is a way to access bank accounts directly and operates usual operations like account management, transfer of payment to other accounts (Voorrips et al., 2012). Mobile payment is a process through which different kind of payments can be executed by using the cell phone like telephone bills, electricity bills and school fees (Voorrips et al., 2012). On the other hand, mobile transfer is using the mobile phone to send money from one place to another place. In this case, clients can make cash in and cash out at agents shops, branches or ATMs.

Mobile banking models for microfinance institutions:

The mobile banking models for microfinance institutions depend on the available infrastructures in the country (Kumar et al., 2010). If infrastructure is unavailable,   MFI can build up their own system and if not, they can establish a partnership with mobile network operators. Kumar, et al. (2010) elaborated three mobile banking models for microfinance institutions in "the CGAP focus note

62". These are **(a)** bank led model where, bank is mobile financial services provider and build its own platform; **(b)** telco-led where, mobile network operator owns the m-banking platform and; **(c)** third party led where, third party owns the m-banking platform and link with operators or banks (Kumar, et. al., 2010). Porteous (2006) has identified "additive" and "transformative model" for microfinance institutions. He argued that, "additive model" is using the mobile technology to provide better services to existing clients whereas "transformative model" is using mobile technology to reach the poor people who are excluded from financial services (Porteous, 2006). Jimenez and Vanguri (2010) have identified three models: **(a)** private single model where mobile operator or bank set off the mobile banking; **(b)** private shared model where both parties worked together and; **(c)** public sector model where banks, mobile operators and government work together to build the mobile platform. In the "PHB brief note 2", Voorrips et al. (2012) also identified four models for microfinance institutions which are **(a)** acting as a cash in/out agent of mobile money operators or mobile network operators ; **(b)** using mobile phone for internal efficiency; **(c)** partnering with operators to sale and support existing products and ; **(d)** building own m-banking system. In this research, we have followed Voorrips et al. (2012) models that are explaining below.

Model 1 Acting as an agent of mobile operators: The most fundamental and simple model for microfinance institutions is working as a cash in and cash out agent for mobile operators or mobile money providers. Under this system, MFI perform as cash in, cash out points of mobile operators or banks, and earn revenue in the form of fees and commissions (Voorrips et al., 2012)

Model 2 Partnership with mobile operators to support sales and services: In this case, microfinance institutions establish a partnership with mobile network operators and use mobile technology to deliver better service to existing products and services. MFIs can use mobile phone to offer repayment of loan, saving mobilization and money transfer services (Voorrips et al., 2012)

Model 3 Using of mobile phone to improve the internal operation: Under this model, microfinance institutions use mobile phone to improve their internal operation and mechanism. They use it to facilitate their daily operations like reminding clients or communicating directly with loan officers in the field (Voorrips et al., 2012).

Model 4 Build up own mobile financial services: Model four is a sophisticated model. Under this system, MFI build up their own mobile banking platform where clients can access to their account via mobile phone and make necessary transaction directly (Voorrips et al., 2012). To build own system, MFI needs authorization from regulatory body.

Voorrips et al. (2012) identified that, currently, there are twenty one (21) MFIs using model-1, twenty four (24) using model-2, twenty two (22) using model-3

and twelve (12) have built up owned system worldwide. In the following table, it has shown:

Table 01: Information about MFIs using different mobile banking models

Region	Total	Model-1	Model-2	Model-3	Model-4
Sub Sahara Africa	42	13	17	12	5
Asia	107*	6	6	8	6
Latin America	4	1	0	2	1
Middle East and North Africa	1	1	1	0	0
Total	154	21	24	22	12

* Including 73 rural banks in Philippine (who are using only SMS service)

Source: Voorrips et al. (2012) PHB brief note 2.

Benefits, costs and constrains for mobile banking implementation

Implementation of mobile banking has many advantages for microfinance institutions. Kumar et al., (2010) argued that mobile banking helps microfinance institutions to serve exiting customers better as well as to reach new customers. In Kenya, SMEP (Small & Microenterprise Enterprise Program) has started mobile banking in 2008 with only 200 clients, and reached 50,000 clients within one year; In Tanzania, Tujiijenge bank started with only 30 clients in 2009, and reached 12,000 clients in 2010 (Kumar et al. 2010). Nestor and Edelsteing (2011) argued that m-banking can amplify trust and transparency for MFIs by sending short message services (SMS) to customers after repayment or disbursement of loan. Mobile banking can reduce costs for the clients. Due to mobile banking, rural banks in Philippine, reduced interest rate monthly from "2.5% to 2% and "fees from 3% to 2.5%" (Kumar et.al., 2010). In Philippine, mobile banking also reduces at least 2.20 cents travel costs for clients (Kumar et al., 2010). The major costs involved in m-banking are consultancy fees, marketing, advertising, server, internet, router, internet, license fees and hiring skilled human resources (Brawerman, 2011). Success of mobile banking is hindered by many challenges. Garg and Wright (2012) argued that, "lack of financial and technological literacy", "trust", "and "transaction bar" by regulator are main challenges for mobile banking expansion.

Empirical studies review:

There is almost no study done related to mobile banking and microfinance. In this research, few empirical studies are illustrated from both institutional and clients perspective.

Client's perspective: Dzokoto and Mensah (2011) have conducted a qualitative study to review the clients' attitude toward mobile money in Ghana and the study shows that, clients value mobile services as a safe, fast, and convenient for them. Moshy and Mukwaya (2011) conducted a survey on clients, mobile operators, IT professionals, agents in Uganda and Tanzania, to assess the usages and adoption of mobile financial services by clients. They argued that mobile financial services reach to rural areas and greater number of clients who were previously excluded from financial services. On the other hand, CGAP (2010) has done a survey on 327 clients of the Tameer Microfinance Bank in Pakistan where they found that, forty-one (41%) percentage of clients surveyed were living under 2.5 dollar in a day. Ivatury and Pickens (2006) have done a study on "215 WIZZIT users" and "300 non-users" in South Africa to review the usages of mobile services by low-income people and the study show that people value WIZZIT as "convenient", "affordable" and "flexible". It is less costly than retail banks but customers still prefer cash transaction (Ivatury and Pickens, 2006). Yousif et al. (2011) identified some challenges like financial literacy, transaction limit, and KYC control.

MFI perspective: There are limited studies have done on mobile banking and microfinance issue. Yousif et al. (2011) conducted an online survey and telephone interviews with twenty six (26) microfinance institutions in developing country to see the MFIs experiences of using mobile banking and the study shows that, financial literacy of clients and IT infrastructure/MIS are the key challenges for the mobile banking deployment. Yousif et al. (2011) also argued that, 60% of mobile money market is dominated by mobile operators. Only few MFIs are offering credit and savings services via m-banking channel. Conzett et al. (2011) also made another study with microfinance institutions in Tanzania to see the impact of mobile banking on microfinance institutions and their preliminary results show that mobile banking increases outreach in rural areas. They also identified that "IT integration" is the main challenge for m-banking success.

OBJECTIVES

The main objective of the study is to evaluate the impact of mobile banking deployment for micro finance institutions. However, in order to achieve the main objective the specific objectives of the study are as follows:

1. To identify the products and services offering through mobile banking channel.
2. To identify the benefits of mobile banking for clients (from the MFI perspective).

3. To identify the benefits of using mobile banking for microfinance institutions.
4. To find the challenges for using mobile banking for microfinance institutions.
5. To know the objectives and approaches of using mobile banking.
6. To evaluate the costs of mobile banking implementation for MFIs.

METHODOLOGY

A qualitative study was conducted for the purpose of this research. Primary data were collected through online survey, telephone interview and field visit in South Africa. Microfinance institutions were selected conveniently from the PHB branchless banking database[2]. Thirty (30) microfinance institutions were invited to online survey to which twenty 20 MFIs participated. A structured questionnaire was prepared based on literature review and, in consultation with mobile money experts of PHB. Questionnaire was sent to respondents through email. The major respondents were Head of Mobile Banking Unit, Head of ICT, Managing Director, Executive Director and Program Manager of different microfinance institutions. Based on online survey results, eight (8) MFIs were invited to telephone interview. Before sending questionnaire, email address of respondents was collected from the mix market database, PHB development and website. Interviews were conducted over telephone and skype. Each respondent was interviewed at least 20 minutes to get insights about their mobile banking deployment. Face-to-face interview was conducted with the managing director of one institution in South Africa. Data have been processed through excel spreadsheet. Before analyzing, each questionnaire was verified properly. The major questions were pre coded. Dichotomous questions were pre-coded as on 1 for "Yes" answer and 2 for "No" answer. Scale questions were adapted after online survey, and coded as 1 for "agree", 2 for "neutral" and 3 for "disagree". Findings of the study are depicted in tabular and graphical presentation.

Among the total twenty (20) sample microfinance institutions, twelve (12) are from Asia, seven (7) from Africa and one (1) from Latin America. Most of the MFI has implemented mobile banking very recently. Twelve (12) MFIs have started in 2011, three (3) started in 2010, and four (4) started in 2009, whereas only one (1) started in 2005 (Table 01). The 25% of institutions serve in rural area whereas, 35% serve in urban, semi-urban and rural areas. Among all institutions, eight (8) MFIs established partnership with mobile operators. Six (6) MFIs work with third party (mainly in India) and the remaining six (6) MFIs have built up their own system. There are 85% of the institutions have core-banking software or MIS, which is congenial to m-banking system. There is huge difference between financial inclusion and mobile penetration in the country, where MFIs are located (Table 02). It indicates the prospect of mobile banking expansion.

Table 02: Mobile-banking operation by sample MFIs

SL	MFI	Country	Year of starting m-banking	Mobile Penetration (%)	Financial Inclusion (%)
1	Tameer Microfinance Ltd	Pakistan	2009	57%	11%
2	Falu Kenya	Kenya	2011	56%	42%
3	Keef Kenya	Kenya	2011	-	-
4	Jamii Bora Kenya Ltd.	Kenya	2011	-	-
5	Kadet Kenya Ltd.	Kenya	2009	-	-
6	Molyn Credit Ltd.	Kenya	2011	-	-
7	Musoni Kenya Ltd.	Kenya	2010	-	-
8	Xac Bank	Mongolia	2010	56%	25%
9	Bank South Pacific Ltd.	Papua New Guinea	2010	19%	8%
10	Nationwide Micro bank Ltd.	Papua New guinea	2011	-	-
11	World Vision Cambodia	Cambodia	2009	46%	20%
12	ALCDA	Cambodia	2011	-	-
13	AMK	Cambodia	2011	-	-
14	Tamweelem Ltd	Jordan	2011	56%	42%
15	b-Kash brac Ltd	Bangladesh	2011	33%	22%
16	Wizzit Bank	South Africa	2005	97%	46%
17	Aadhar Microfinance	India	2009	52%	35%
18	Cashpor Microfinance	India	2011	-	-
19	Saija Finance Ltd.	India	2011	-	-
20	Fape	Guatemala	2011	87%	32%

Source: Adapted from the PHB Development branchless banking database and wireless intelligence database.

DATA ANALYSIS, RESULTS AND DISCUSSION

The results of this research are described from the managerial perspective. The findings are based on responses from the managers or heads of the mobile banking unit of sample microfinance institutions. The findings of the study are presented according to the research objectives.

Products and Services offered through m-banking channel: In this study, we have tried to identify the available products and services offering through m-banking channel. Fortunately the study revealed that most of the microfinance institutions have deployed mobile banking for loan repayments and cash in &

cash out services. Figure 01 shows that 70% of microfinance institutions offered loan repayment and 65% cash in & cash out services whereas 55% institutions provided savings on deposit account via m-banking. Among all respondents, only 40% of the respondents replied that, their organization is offering bill payments services through mobile banking. During the interviews, it has revealed that microfinance institutions are also offering innovative services via mobile channel like salary payment, air ticket purchase, school fees, government payments, transportation fees and donations.

Figure 01: Products and services offered via m-banking channel
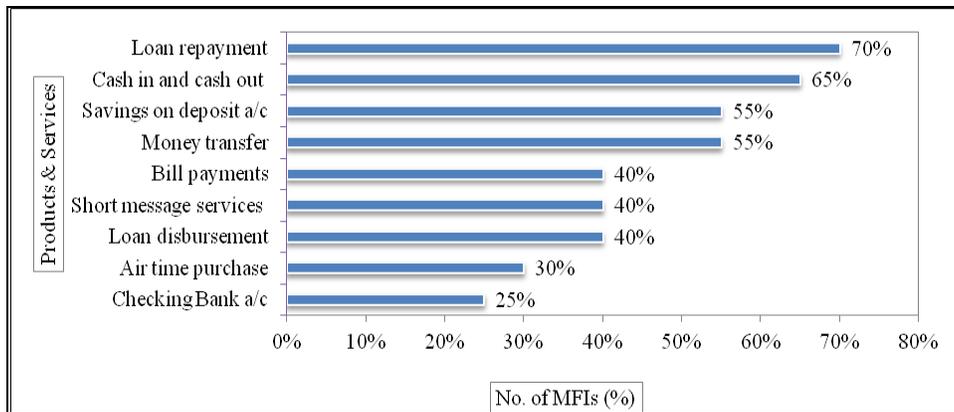
Benefits of mobile banking for clients (from MFI's perspective): As stated earlier, one of the objectives of this study is to know the benefits of mobile banking for clients. In this regard, survey results (Figure 02) show that, all the respondents answered that, mobile banking is "faster" and "convenient" for clients. It ensures "availability of services" (90%) and "reduced travel costs" (95%). It is also "flexible" (80%) and "less costly" for customers (70%).

Figure 02: Benefits of mobile banking for clients (MFI's perspective)
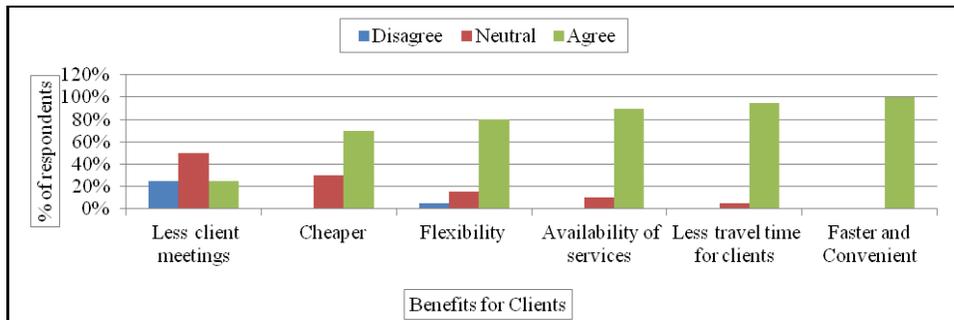
The above findings revealed that mobile banking is faster and convenient for clients and it ensures flexibility and availability of services for client.

Realized benefits of mobile banking implementation for MFIs: Another major objective of this study is to identify the benefits of mobile banking for micro finance institutions. In this regard, the study reveals that 75% of MFIs launched mobile banking in 2011 and 2010. Among the total respondents, eighty-five percentages (85%) articulated that, it brings benefits to their organization. The survey results (Figure 03) revealed that, most of the respondents give high marks on the benefit of "reaching new customers" (85%), "increasing branding and images" (90%) and "staff familiarity with technology" (85%). However, the respondents had no quantitative information in this regard. On the other hand, 60% of respondents answered that, it improves the security for MFIs by reducing cash handling. During the telephone interviews, many respondents replied that, it has improved their outreach and images in the market. One respondent mentioned that, central bank and donor agencies are very happy with their m-banking initiatives[3]. In the online survey, 40% of the respondents mentioned that m-banking increase revenue, whereas 50% of them are "neural" about it. It may indicate that measuring direct effect on revenue is not very easy or it takes time to realize benefits. During the interviews, few respondents quoted that, it takes at least 4 to 6 years to increase deposit and revenue after the deployment of mobile financial services.[4]

Figure 03: Benefits of mobile banking for microfinance institutions
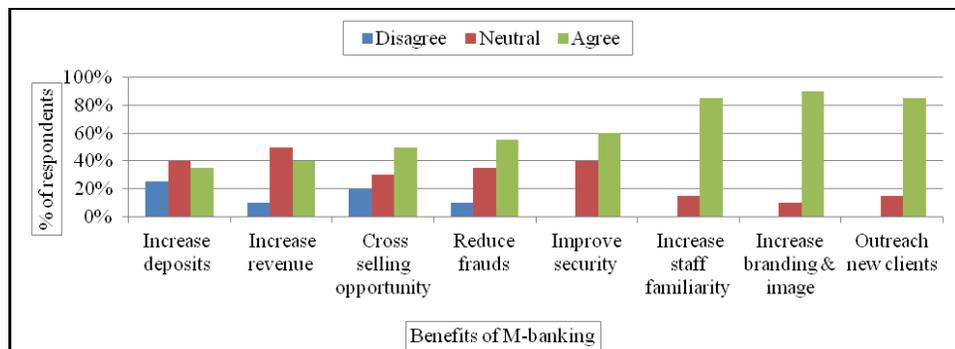
During the telephone interviews, top officials of many microfinance institutions also expressed several benefits for their organization. Some of the excerpts are as follows:

Respondent quotations

> *"It has reduced approximately 60% of our operational costs"* – **Antony Kamundia, Head of ICT , Kadet Kenya Ltd.**
>
> "*M-banking increases our deposits. We have always 10 to 15 million deposits balance in AMAR mobile banking account"*- **Battsog H, Head of E-banking Department, Xac Bank, Mongolia.**
>
> *"One million clients registered in Easy Paisa Account and 1, 50,000 transactions take place everyday"*- **Habib Ali, Head of Easypaisa Operations, Branchless Banking, Tameer Microfinance Bank Ltd, Pakistan.**

Challenges of M-banking implementation for MFIs: This section of this study explains that, 85% of the respondents claimed that, low financial and technology literacy of clients is the main challenge for m-banking success (Figure 04). During the telephone interviews, respondents reiterated that most crucial challenge is "making clients believe on technology". Other respondents answered that "trust and acceptability" are key constraints for m-banking success. He added, *"We made our internal study and found that, 50% of our clients do not have trust on m-banking".*

**Figure 04: Challenges of m-banking deployment for MFIs**
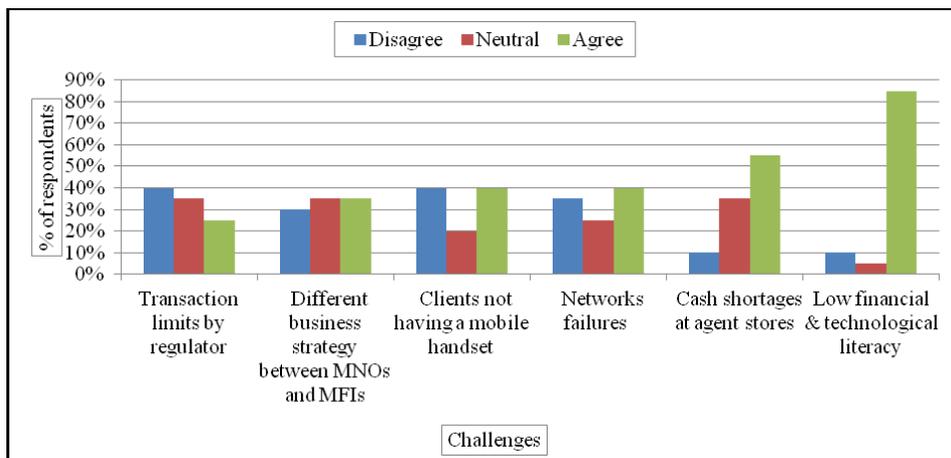
The second most important challenge is "cash shortages at agent stores" (55%). Head of the mobile banking unit of Tameer Microfinance Bank in Pakistan, during telephone interview, articulated that they are facing huge problem in cash

management at agent stores. "*Sometimes customers go to agents store but could not withdraw their money"-he added.* Among all respondents, 40% of them uttered that, divergent strategy between MFIs and MNOs is also a problem for mobile banking success. One respondent said that building partnership with MNOs was a big hassle for them. When they started mobile banking, mobile operators were also planning to set up m-banking[5].

Lack of funds for marketing and promotion is another big challenge for microfinance institutions. During the telephone interview, the managing director of one MFI claimed that, they are losing their competitive position due to lack of promotional budget. Head of the E-banking Department of one MFI expressed that, *"our clients could not make big transactions due to transaction limit by supervisory body".* Other than the above constraints, reluctance of regulatory authority was discovered during field visit in South Africa. It found that, regulatory authority is indifferent on mobile banking for micro finance institutions[6]. They are unwilling to give m-banking license to the microfinance institution. Based on online survey and telephone interviews, it can conclude that the key challenge for mobile banking success is low financial and technology literacy of customers; the other constrain is lack of clients' trust and cash shortages at agent stores.

Objectives and approaches of M-banking implementation for MFIs: The findings of this section reveals that, most of the microfinance institutions deployed mobile banking with a view to reach more customers, operational costs and, to offer better services to existing customers. Detailed results (Figure 05) revealed that, 75% of the respondents answered, "to reach new customers" and "to reduce operational costs" whereas 70% said, "to offer better services to existing clients". During the interviews, few respondents answered that they would like to incorporate the mobile banking with their core banking activities[7]. They desire to reach the *"bottom of the pyramid (BOP)"* through innovative delivery channel.

Figure 05: Objectives of mobile banking implementation
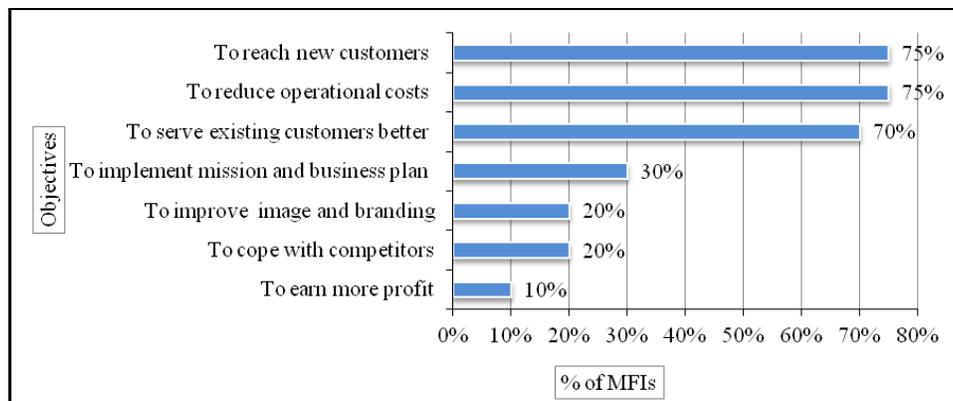
Costs/ risks of M-banking implementation for MFIs: Implementation of mobile banking requires large investment. Survey results (Figure 06) revealed that major costs involved in mobile banking implementation are "investment in IT infrastructures" (60%) and "strong management & negotiation skills" (60%). During the interview, many respondents also articulated these same costs.

Figure 06: Costs of m-banking implementation
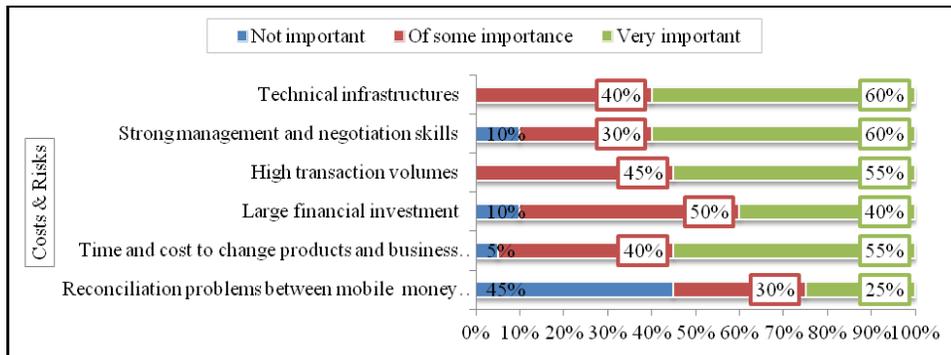
To become sustainable, mobile banking requires high transaction volume. Among all respondents surveyed, 55 % of them claimed that high transaction volume is "very important" whereas, 45% claimed it as "of some important". During the field visit, it revealed that institutions have large number of registered clients, but few of them are making transaction regularly. It has found that one MFI have 7,60,000 registered clients but only 50,000 of them are active[8]. Reconciliation problem does not seem very important to our respondents. Other than the above costs, many respondents mentioned other costs like marketing & promotion, consultancy fees and annual license fees. Therefore, IT infrastructures and strong management and negotiation skills are the major costs involved in mobile banking implementation.

CONCLUSION

The target of microfinance is to serve the poor people but it is still struggling to reach the poorest of the poor. Opening a new branch and providing small services to the poor people are always costly and unprofitable for formal financial institutions. In this connection, mobile banking has shown the power to bring the banking services close to the doorsteps of poor people. However, many microfinance institutions have deployed mobile banking, but there is little information available about the benefits and challenges of mobile banking implementation for MFIs. This paper identified few insights about benefits, challenges, objectives and approaches of using mobile banking by MFIs.

According to the respondents surveyed, microfinance institutions are trying to reach as many poor people as possible by using mobile technology. The study shows that respondents give high marks on benefits of increasing new customers, branding & images and staff familiarity with technology. The study also revealed that, low financial and technology literacy of clients is the main challenge for mobile banking success. Microfinance institution requires large investment in IT infrastructures and strong management & negotiation skills for deploying mobile banking platform. The study shows that most of the MFIs deployed mobile banking with a view to increase new customers, reduce operational costs and, to provide better services to existing customers. The findings of this study are based on qualitative answers of respondents. Data of this research were collected through emails and telephone interviews. As mobile banking is a new phenomenon in microfinance sector, there is huge scope to do further study. More qualitative and quantitative study should be conducted to measure the impact of mobile banking on microfinance institutions based on large sample. Research should be done to identify the barriers for usages and adoption of using mobile financial services.

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Endnotes:

[1] PHB Development is a consulting firm based in Brussels, working in the area mobile banking with microfinance institutions, banks, and mobile operators in developing countries.

[2] PHB branchless banking database is an internal database of the organization where they have information about 154 MFIs who are using mobile banking.

[3] Telephone interview with Battsog H, Head of E-banking, Xac Bank, Mongolia .

[4] Interview with Brain Richardson, Managing Director, Wizzit ,South Africa , and Tarek Ahmed, Team Leader ,b-Kas Ltd, Bangladesh.

[5] Telephone interview with Battsog H. Head of E-banking, Xac Bank, Mongolia.

[6] Expressed during interview with Wizzit Management, South Africa .

[7] Telephone interview with Head of Easypaisa Operation, Tameer Microfinance Ltd.,Pakistan

[8] Discovered during the field visit in South Africa