

Bankers' Perceptions of the Role of Technology in Addressing Financial Exclusion

by

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AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract

Financial inclusion is a measure of the ability of a population to make use of financial services. High rates of financial inclusion in a country are empirically correlated with high levels of economic development in that country; low rates of financial inclusion are correlated with low levels of development. Thus, policy makers are generally agreed that one method to increase economic development is to increase the level of financial inclusion.

Not all attempts to increase financial inclusion are successful. Initiatives to improve financial inclusion can fail when policy makers or financial service providers have incorrect perceptions about financial inclusion. They may have incorrect perceptions about the purposes and beneficiaries of financial inclusion, or incorrect perceptions about how technology can encourage financial inclusion.

This thesis investigates the perceptions of Pakistani bankers about financial inclusion in Pakistan. A survey of 125 Pakistani bankers was conducted. The results of the survey show that while bankers want to improve financial inclusion, they have perceptions that limit their effectiveness in reaching this goal. First, bankers' perceptions of the actual financial inclusion levels in the country are higher than generally accepted empirical measures. Second, their perceptions about the reasons for financial exclusion are limited to socio-economic factors like low income and education of people. Finally, they have limited appreciation of the role that technology can play in elevating the level of financial inclusion. Bankers show more interest in customer-facing technology than in back-end technical infrastructure, thus limiting the scalability and interoperability of their systems.

Our guidance to policy makers is to address these perceptual problems through education and through government-backed technical infrastructure programs, thus better enabling the banking industry to improve financial inclusion in Pakistan.

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Chapter 1

Financial Inclusion

1.1 Introduction

This thesis looks at financial inclusion: the level to which a country's population uses financial services. We are interested in the following topics:

1. The importance of financial inclusion to the economic development of a country
2. The likely causes of low financial inclusion
3. The methods by which we can improve financial inclusion in countries that are both under-developed and have a low level of financial inclusion
4. The role of technology in banking and its impact on financial inclusion
5. How the perceptions of those in financial services (i.e. bankers) impact the behaviour of banks in addressing financial inclusion

The literature on financial inclusion, as well as empirical data from The World Bank and other databases, including Finscope surveys, were studied. We discovered that there is a strong correlation between financial inclusion and the level of economic development. We also found that socio-economic conditions such as high poverty and low education are widely considered to be the main reasons for low financial inclusion. We also found that much emphasis is given to improved technology to increase accessibility and remove cost in financial services. Technology has enabled banks to achieve economies of scale and offer low-cost, high-availability solutions, even though banks have sometimes been slow to innovate solely for the benefit of consumers.

We were interested in the perceptions of bankers about financial inclusion and technological impacts upon financial inclusion. Based on the literature and personal experience, we hypothesized the following about bankers' perceptions:

1. Bankers will likely not know the level of financial inclusion in their country
2. Bankers in developing countries will perceive the primary barriers to financial inclusion to be lack of education and low income.

3. While bankers may perceive technological factors to be important, they don't consider them to be as important as education and income

To test our hypotheses, we conducted a survey of 250 professionals working in various areas of banking (commercial banks, microfinance institutions and government institutions) in Pakistan. Of the 250 professionals contacted, 125 provided responses that were deemed complete. Our analysis of their responses confirms our hypotheses:

1. Bankers believe the level of financial inclusion in Pakistan to be higher than is generally accepted to be the level
2. Bankers perceive low education and high poverty as the prime reasons for low financial inclusion in Pakistan
3. Bankers generally don't consider lack of banking and payments technology to be the cause of low financial inclusion in Pakistan. However, they do think that certain initiatives relating to electronic banking are likely to have a high positive impact on financial inclusion.

As a result of this study, we recommend that Pakistani policy makers take actions to create awareness among banking professionals about the real level of financial inclusion and the need to improve it. We also recommend that policy makers invest in technology infrastructure directly intended to improve the interoperability and reduce the per-transaction cost of payments so as enable financial institutions to offer more cost-effective financial services.

1.2 Management Science and Financial Inclusion

Various theories in management science are pertinent to the topics of financial inclusion and the impact of payment systems on financial inclusion.

Diffusion of innovation, for example, describes how new ideas and technology spread through a culture. Innovations in payment systems have their own specific diffusion mechanism that (we shall see) relies significantly on network effects and the existence of a large base of payers and payees willing to use the innovation.

Intrinsic and extrinsic motivation describes how people respond to internal and external motivations to complete a task. This theory might guide us in developing policies to encourage bankers to improve payment systems or to increase financial inclusion.

Transaction costs theory posits that firms develop in order to avoid transaction costs of the price mechanism. It may be the case that very effective micropayment systems could actually reduce transaction costs to the level where individuals and small companies can play a key role in economic development through the normal market mechanism, without requiring the creation of large firms.

In this thesis we have not explored any of these theories directly, although each of them has relevance and it would be worthwhile to explore their predictive value against our empirical results. Instead, we have proceeded on a more simplistic concept of management science as “the use of analytical skills to help managers and innovators make tough decisions more confidently” (Waterloo). The tough decision in this case is: how should we improve financial inclusion in a country like Pakistan? This problem requires the coordination of a large number of actors and institutions—and thus it is a management problem. The analytical skills we bring to bear are a careful study of World Bank data and our own empirical survey data, as well as its statistical analysis and the inferences based on that analysis. The result of our work is a set of policy recommendations for use by managers who are responsible to improve financial inclusion in Pakistan.

1.3 Organization of the Thesis

This thesis has six chapters. Chapter 1 introduces the concept of financial inclusion and discusses certain aspects of the problem. Chapter 2 discusses innovations in banking and payments technology and their impact on improving financial access. Chapter 3 describes key indicators of finance in Pakistan and the state of financial inclusion in that country. Chapter 4 outlines the research hypothesis and survey methodology. Chapter 5 presents the survey results and analyzes them. Finally, Chapter 6 presents our conclusions and recommendations.

1.4 The Problem of Financial Inclusion

Financial institutions and mechanisms in an economy are usually considered to facilitate the exchange of goods and services through instruments and mechanisms for borrowing, saving, and payments. Certain country-level indicators such as its institutional quality, macroeconomic policies, geographic and cultural characteristics and the level of its income reflect its level of financial development (Huang, 2005).

Much of the research on finance during the last century argued that financial development follows economic development in a country. In 1911 Joseph Schumpeter suggested the reverse, that the services provided by financial intermediaries instead lead economic development because they are

essential for “technological innovation and economic development” (Schumpeter 1911). This view was later confirmed by numerous researchers who found that a higher level of financial development is positively associated with rapid economic growth, and that finance enables entrepreneurs to invest in productive activities and promote growth (Levine & King, 1993), (Bittencourt, 2010). In recent years, there has been a general agreement that improving financial access may lead to reduction in poverty (Chibba, 2009).

If we believe that finance can lead economic development, then it seems reasonable to expect that the more widespread are financial services in a country, the more that the population of that country can participate in and lead its economic growth. *Financial Inclusion* (or FI) is the name for a set of measures of the degree to which a country’s population has access to financial services. The International Monetary Fund (IMF) defines the term Financial Inclusion to mean “the efforts directed towards making financial services accessible for everyone, especially the poor”. Financial inclusion is measured in many different ways, such as the use of bank accounts, the availability of Automatic Teller Machines (ATMs) or Point-Of-Sale (POS) terminals, the number of financial transactions per head, the use of credit/debit cards, and other such indicators.

The level of financial inclusion is generally high in developed countries, but low in less developed countries. According to the World Bank, 19% of adults in developed countries and a massive 72% of adults in developing countries don’t have a bank account (Kendall, Mylenko, & Ponce, 2010). Calculations have revealed that on an average half of the world’s adult population is unbanked (Chaia, Dalal, Goland, Gonzalez, Morduch, & Schiff, 2009).

Recently there has been a growing effort to improve the world population’s access to financial services, regardless of income, social, or cultural status. World leaders, especially those from developed countries, have committed to work toward improving access to financial services for the poor. The G20 summit in Pittsburgh USA in 2009 committed to work toward this objective by focusing on innovation and its lessons; promoting regulatory and policy approaches that encourage financial inclusion; and developing elaborate standards on financial access, financial literacy, and consumer protection (G20 Leaders Statement: The Pittsburgh Summit, 2009).

1.5 Formal and Informal Financial Inclusion

Financial inclusion may involve formal, informal, or so-called “innovative” financial services. Formal financial services are comprised of (but not limited to) banking services like loans and credit, making and receiving payments, insurance (especially health insurance), and other such services. Formal

financial services are usually delivered using formal channels, principally bank accounts. Informal financial services are those that are delivered using informal channels such as family, local money lenders, or grocery stores, and are usually restricted to the provision of loans and credit and limited payment remittance services. According to the IMF, innovative financial inclusion means “improving access to financial services for poor people through the safe and sound spread of new approaches” (IMF, 2010). For the purpose of this thesis, financial inclusion will refer to formal financial inclusion unless stated otherwise.

Research has shown that if financial services are accessible to poor people, they stand a better chance of exiting the vicious cycle of poverty and income inequality (Kappel, 2010), (Kendall, Mylenko, & Ponce, 2010). Despite this research, the true impact of financial inclusion on poverty reduction is not certain. Nevertheless, the policy goal of increasing financial inclusion is gaining popularity and priority around the world.

Improved financial inclusion is closely related to the objective of improving formal financial access. Populations that have the access to formal financial services, regardless of whether they use them or not, can be defined as being formally financially included. Those who don't have access to formal financial services are termed financially excluded. Perhaps the most important and basic formal financial service is a bank account. A bank account is usually a prerequisite to other financial services such as credit, loans, leasing or insurance. A bank account enables its holder to access payment and remittance related services such as funds transfer, bill payments and convenient cash withdrawals (and deposits) from ATMs and other payments terminals.

Informal financial service providers often fill the gap where there is low access to formal financial services. The use of informal service providers is more prevalent in developing countries than developed ones. One end of the spectrum of informal providers are family, friends and local grocery stores; the other end are organized loan cartels or “loan sharks”. Borrowing from friends and family and from local merchants is usually less expensive than borrowing from loan sharks or organized loan cartels; the latter are also more coercive. Although formal financial services can be less expensive than disreputable informal services, their income and collateral requirements may be prohibitively high for a low-income population.

Governments around the world are giving more attention to improved financial access for the poor (Consultative Group to Assist the Poor/The World Bank Group, 2010). Researchers from academia and international agencies study not only the underlying factors that may be responsible for this

lacuna, but also suggest innovative policy prescriptions to address it. Before considering these policy prescriptions we will first consider how to measure financial inclusion.

1.6 Measuring Financial Inclusion

A review of the literature suggests that measuring financial inclusion is a key step in addressing financial inclusion. Numerous indicators have been developed in order to measure the extent of financial inclusion in different countries. However the problem of measuring financial inclusion is not simple, as the following discussion will illustrate.

When measuring financial access, it is important to differentiate between access to and use of financial services. According to (Claessens, 2006), “access refers to the availability of a supply of reasonable quality financial services at reasonable costs” whereas “use refers to the actual consumption of financial services”. Hence according to Claessens, in a demand/supply framework, access refers to supply and use is “the intersection of supply and demand schedules”.

Non-users of formal financial services can further be categorized into voluntarily self-excluded and involuntary excluded. Voluntary non-use may occur because of (perceived) lack of need, religious or cultural objections, or satisfaction with indirect access through friends and family. Involuntary exclusion may be due to low income of households or individuals, discriminatory policies, or price and product features (Thorsten, Asli, & Honohan, 2009).

Those who are classified as having access to financial services may in practice include the voluntarily excluded—that is, those who have access, but choose not to use. Individuals may choose not to use these services because of perceived high cost or the inability of the financial sector to offer low-cost solutions to them because of the sector’s inherent inefficiencies or lack of desire to serve this market.

In some cases, access exists but use is low because of the lack of understanding of the functions of a bank account. Many people think a bank account is needed only for borrowing and savings, even though in the modern economy a bank account is a necessity for accessing other services such as payments and insurance. Lack of understanding of this aspect, whether on the part of consumers, bankers, or policy makers, may result in unbanked individuals who could benefit from a bank account for their daily purchases, remittances and cash flow management, or it may result in people having a bank account but not understanding or make use of it.

The direct measurement of financial usage can be difficult. Country-level household surveys concerning the use (or access) of financial services is one way of gathering data. These surveys are

not readily available for each and every country. Another approach is to collect and assemble data for the number of accounts maintained at different financial institutions. However, datasets generally have information for specific types of institutions only (for example, commercial banks or microfinance institutions) and they differ across countries. Further, accounts are not associated one-to-one with individuals; multiple accounts may be used by single individuals or firms, or many individuals may share a single account. Finally, accounts may be inactive or dormant. Thus the number of accounts is not an exact measure of the number of banked individuals.

Consider expressing FI in terms of number of households. If 50% of households in an economy have bank accounts, then FI from household data might suggest an inclusion of 50%. However, if on the average, there are 2 adults living in each household, then the individual adult FI may be as low as 25%. While the proportion of households with an account is likely to be somewhat higher than the adult proportion, the difference may not be all that great (Honohan, 2008). According to the World Bank there are approximately 6.9 billion bank accounts worldwide. However, in the developed world each person has on average 3.2 accounts and 19% of adults don't have an account, whereas in the developing world each person has on average only 0.9 accounts, and 72% of adults don't have an account. Since this thesis is not primarily about measuring access or use, access and usage are used synonymously here, which may not be a bad approximation (Honohan, 2008).

Despite differences in FI measures, Honohan has tried to "splice" data sources from different household surveys and for bank account information and using Ordinary Least Square (OLS) regression estimated the following for all countries (Honohan, 2008):

- The number of bank accounts per 100 adults
- The household survey-based percentage access for all countries. If data on access from a household survey were not available, the author constructed the percentages as a function of the estimated number and average size of bank accounts.

The composite measures of access to financial services as computed by Honohan are given in Appendix A . We will refer to this as measure “Honohan’s FI”.

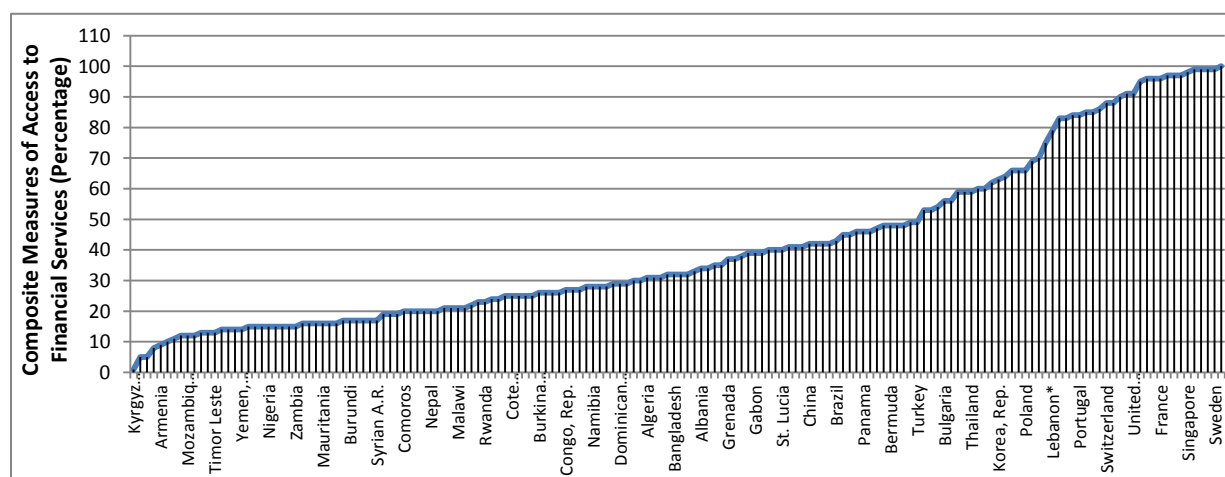


Figure 1: Honohan's composite measures of access to financial services

While this approach of estimating levels of financial access may have shortcomings of its own and the accuracy of estimates for any country may be questionable, it provides us with at least a first approximation of the state of FI in a country. Moreover, it can be used in cross-country comparison and regression analysis (Honohan, 2008). Despite being somewhat dated, these estimates are used by a number of researchers in their studies. See (Kappel, 2010) for example, or (Chaia, Dalal, Goland, Gonzalez, Morduch, & Schiff, 2009) in the financial access framing note of 2009. They used Honohan’s FI in addition to some other indicators to estimate the number of adults who do not use formal financial services, and to show their distribution according to income.

In this thesis, we will use Honohan’s FI estimate as an indicator of formal FI in a country.

1.7 The Account is Not Enough

As noted above, the measurement of financial inclusion can be done on the basis of access, or usage, or both. This leads to the question of whether just having a bank account is sufficient. Some governments, in their bid to promote financial inclusion, have mandated that banks must provide basic banking or no-frills savings accounts, with relaxed business conditions such as a lower minimum account balance requirement or lower fee. While this has led to an increase in the number of accounts, in many cases these accounts stand unused (de Souza, 2010). For example, in India, the government extensively targeted improving financial inclusion as one of its main policy goals, and as a result nearly 60% of the Indian population is banked. However, a majority of these bank accounts

are not utilized, especially by the poor (Morawczynski, Hutchful, Rangaswamy, & Cutrell, 2010). We will see that most of the reasons for non-utilization (discussed in the next section) stem from demand-side problems such as access, cost and financial literacy which could be improved by taking certain steps on the supply side.

The World Bank has recently¹ issued the Global Findex (Global Financial Inclusion Database) that includes a variety of indicators of financial inclusion for different countries and regions of the world (The World Bank, 2011). Selected indicators for different regions are presented in Appendix J. Figure 2 shows a distribution of accounts and usage for different regions of the world (from Appendix J). Generally, accounts are used for receiving wages for most of the middle and lower income regions of the world. It can also be observed that accounts are used for other purposes more often in high income countries than in middle or low-income ones.

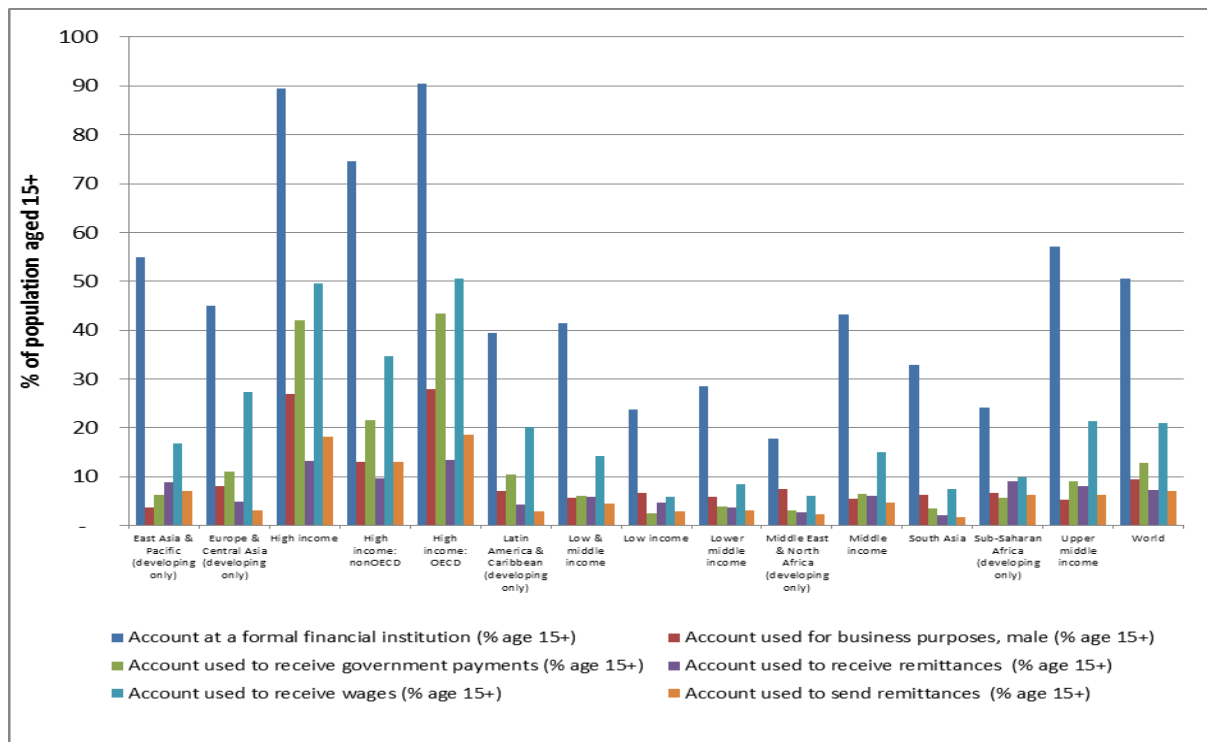


Figure 2: Accounts and their usage (The World Bank, 2011)

From the strategic management point of view, the suppliers of financial services have to address the problem of lack of use if they wish to stimulate demand and hence usages of their services, thus making them profitable in the longer run. Where cash usage is high, employers and governments

¹ 19th April 2012 (Source: <http://databank.worldbank.org/Data/Home.aspx?&auth>)

may be able to encourage account usage by depositing paycheques or accepting payments through bank accounts, thus “priming the pump” for other uses.

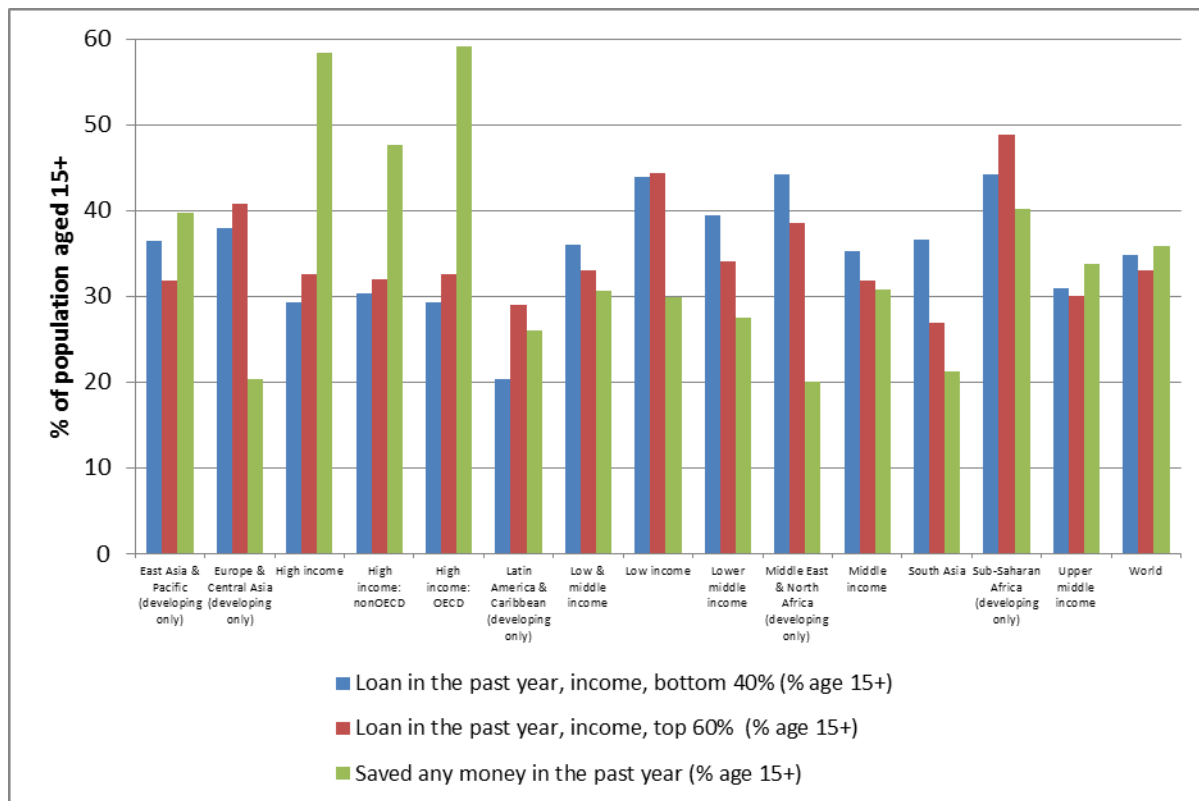


Figure 3: Loans and savings (The World Bank, 2011)

From the demand side, Figure 3 shows that nearly as many people in the bottom 40% income group borrowed as did people from top 60% income group. This shows that the demand for credit by lower income populations is similar to (and in certain cases like the South Asia, East Asia and the Pacific, may be greater than) that of high income populations.

Figure 4 shows sources of borrowing. We can see that borrowing from friends and family is widely prevalent especially in low-income regions. Possible reasons for this may include the fact that personal loans frequently have little or no interest and that personal loans typically require no documentation or institutional processing. On the other hand, loans from financial institutions are more numerous in high income countries than low-income countries. Store credit is also high compared to financial institution credit in countries from sub-Saharan Africa, Middle East (low-income only), lower middle income and Europe and Central Asia (developing only).

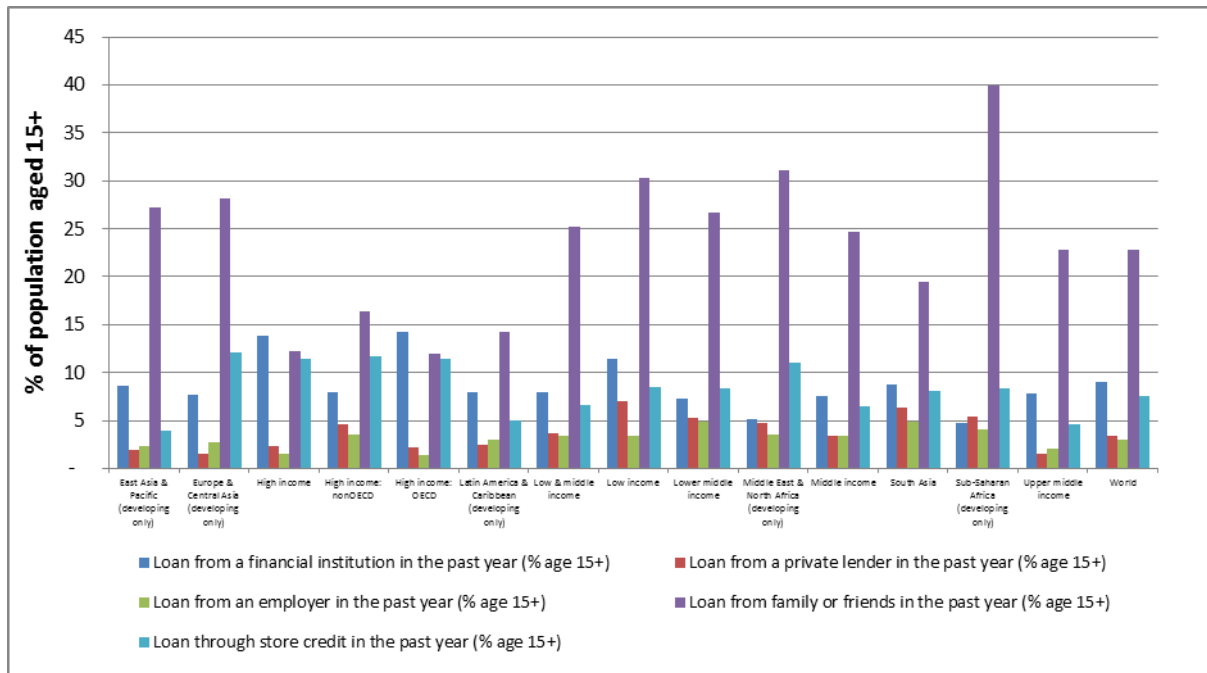


Figure 4: Sources of borrowing (The World Bank, 2011)

Many governments want to address the demand for credit from lower income populations by promoting microfinance institutions. Such institutions have a basic goal of funding entrepreneurial activity. While such activity will help a country develop, it is important to understand that entrepreneurial borrowing is not the main reason that low-income individuals borrow. Figure 5 shows the main reasons for borrowing. In underdeveloped countries most borrowing is for health emergencies or for paying school fees. The reason for this borrowing is probably the absence of social safety nets or support in these areas from the state. On the other hand, comparatively few low-income people borrow to purchase a home, compared to people in high income (including OECD and non-OECD) countries. This may be because of a lack of home mortgage schemes suitable for low-income individuals offered by financial institutions.

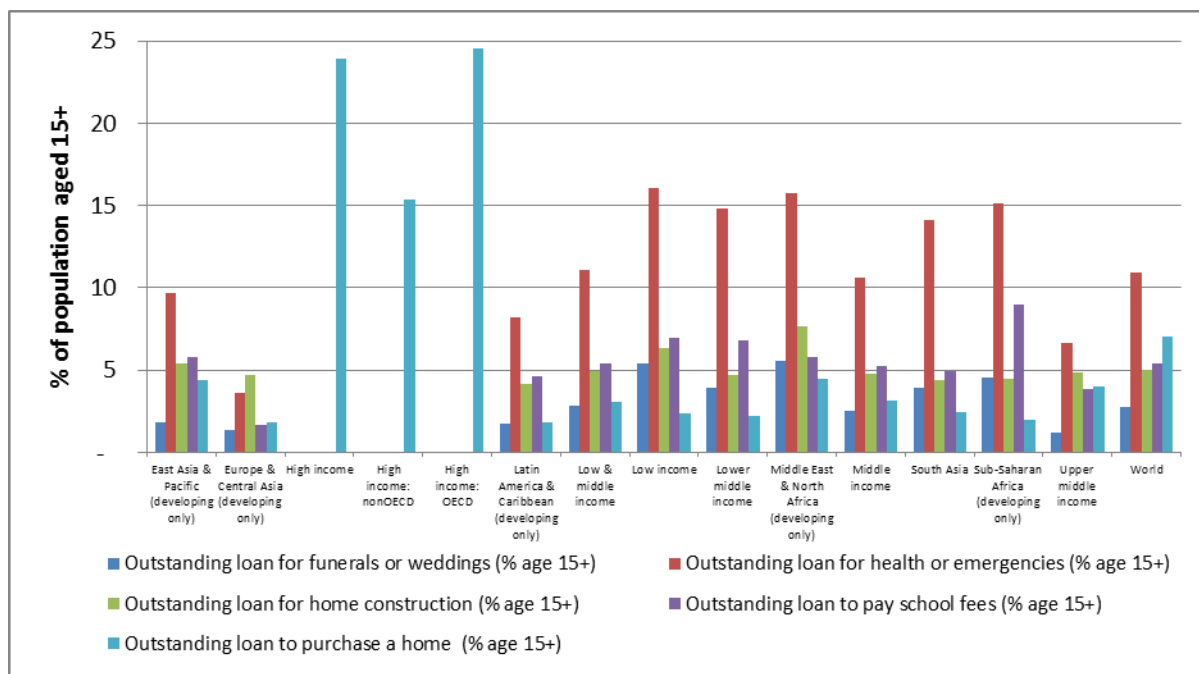


Figure 5: Purpose for borrowing (The World Bank, 2011)

1.8 Reasons for Financial Exclusion

During the last decade work has been done to determine the reasons for formal financial exclusion. Most of these studies have centred on the idea of a “household” and seek to identify reasons that members of a household remain unbanked. Beck and Brown conducted a survey of households from 29 transitioning economies (28 East European countries and Turkey) and found that the use of banking products is more prevalent among households with higher income, with adult members with higher education and formal employment, and those located in urban areas. Use of banking products is less prevalent among those who rely on transfer payments or belong to the Muslim minority religion. They also found that improvements in financial infrastructure such as deposit protection, improvements in payments system and strong credit protection are associated with higher use of banking services among high-income households, but not necessarily among marginal groups (Beck & Brown, 2010)).

Similarly, Honohan (2009) used data from Finscope² surveys for certain African countries to show that the key demand-side determinants for formal banking are education and income: higher education and higher income levels are associated with higher rates of being banked. He found that

² Details about Finscope surveys can be accessed at <http://www.finscope.co.za/new/pages/default.aspx>.

increased trust in banks, and increased financial sector knowledge increase the likelihood of one being formally banked. He also confirmed that the supply-side constraint for determining the financial status of sub-Saharan Africans is their location, as measured by “distance to services or urban-rural divide”. Other researchers have shown that the poor may also not have information about financial services; their lack of education may make it difficult for them to fill out the application forms; and they may face prejudice from banking staff, who are usually located in well-to-do locations (Thorsten, Asli, & Honohan, 2009).

Perhaps another reason for financial exclusion is that a bank account is usually linked to a bank’s borrowing and savings (safe-keeping) function, and these functions may be considered as too “businesslike” by low-income individuals. This view is prevalent in developing countries where formal borrowing is considered primarily an entrepreneurial and business activity and thus not suitable for people with low-income. In Indonesia, for example, half of the borrowings of poor and very poor households surveyed in that country were for non-business purposes³ including consumption (Morduch, 2008). Similar findings are reported for Bangladesh, India and South Africa (Collins, Morduch, Rutherford, & Ruthven, 2009). A similar sentiment was also expressed by Pakistani consumers in the Finscope survey, as will be discussed in Chapter 4. People with low or irregular income need to borrow for the purpose of meeting their day-to-day consumption needs and thus need access to willing sources of funds. For formal service providers, then, citing poverty is perhaps more an excuse than a reason for not providing financial services to those of low income.

Even if it is assumed that borrowing is the main purpose of a bank account, the amounts required by the poor are so small that it is infeasible for even the most well-meaning of financial institutions to offer cost-effective services that are still profitable. This problem is present, albeit to a lesser extent, in developed countries: a study of consumers who closed their accounts in the US shows that they did so because of banks’ “overdraft-based revenue models” that raise the cost of basic banking (Martínez-Jerez, Tufano, & Campbell, 2012).

Besides bank accounts, there are other products and services that banks can offer, such as payments and remittance services that would be equally attractive for all population segments. As an example, a proliferation of Point of Sale (POS) terminals coupled with pre-paid cards can act as an incentive for the general population to use banking payments services so that they avoid the risk of carrying cash. Another example would be offering low-value credit cards, issued jointly with retailers, to provide “bridge-financing” facilities to address daily emergencies in the face of irregular

³ Such as paying for school fees, medical treatment, home repair, social and holiday expenses.

income streams. Such products require technological systems for their cost-effective operation; thus policy makers can make use of technological innovations as a means to promote the expansion of financial services (Morduch, 2008).

From a demand or consumer perspective, the following barriers to financial access are described in the literature:

- Low levels of education, especially about finance and financial products, may result in people not demanding financial services from formal service providers (see for example, (Honohan & King, 2009))
- Cost is the primary reason due to which financial services become prohibitive for a low-income population. Poor people usually conduct small-sized transactions which may not be feasible as banked transactions due to their high fixed costs (see for example, (Claessens, 2006))
- Regions with less developed financial infrastructure or remote populations have the problem of non-availability of financial services (Beck, Demirguc-Kunt, & Martinez Peria, 2005). It may be practically, financially or culturally (especially for women in some cultures) infeasible for segments of the population to travel long distances to access these services. The channels through which the financial services are delivered have a big impact on the level of availability of such services, especially to remote regions. Bank branches had traditionally been the main channel of services delivery, but now are being supplemented or displaced by electronic channels including mobile phones
- Proximity is one form of convenience; others include ease of use (extent of documentation required, language being used, waiting times etc), rapport with staff, level of back office automation (for example low level of back office automation may increase the wait time⁴) and so on
- In certain cases, cultural or religious factors may prove to be inhibiting for certain groups and population segments (see for example, Beck, 2010)

From a supply-side or institutional perspective, the following barriers to financial access are described in the literature:

⁴ The author has personally witnessed customers (including widows and pensioners) waiting for a full day to get their payments from banks and government saving centres in Pakistan despite the staffs' extraordinary efforts to assist them, due to long transaction processing times.

- Financial service providers with traditional brick-and-mortar delivery channels (bank branches) are usually interested in quickly offsetting their cost with revenues and breaking even as soon as possible, and hence may not be interested in customers at the “bottom of the pyramid⁵”. This may present formal financial service providers with an opportunity to partner up with non-financial (or non-conventional) entities like post offices and retail stores to use their massive delivery channels to reach out to the consumers in a cost effective manner
- Weak systems may impede the desire of institutions to reach out to unbanked individuals. These include “weak legal systems”, “weak information infrastructure” and “lack of competitiveness in the banking system” (Claessens, 2006). Weak systems increase the risk and cost of services, thus making the business proposition economically infeasible. Banks may limit their investment in new technologies if they perceive that serving poor populations is an activity of low returns, even if innovative use of new technology meant that such services can be delivered in a profitable manner
- Banks (especially in less developed markets) may perceive services like payments and remittances as secondary to their core function of credit provision. Historically, financial regimes with credit and interest rate ceilings were also supportive of this core function (Claessens, 2006). In developing countries, institutions who are responsible for product innovation and finding new avenues for revenues were (and are still in many cases) laid-back in their approach. In Pakistan, for example, extensive borrowing by the government from the financial sector offers a lucrative source of income for banks, who thus are not incentivized to offer services to more risky individuals. This has been called “lazy banking” (The Economist, February 11th, 2012). The liberalization of financial sector, especially in developing countries, has meant that this traditional role of banks is challenged as they are now expected to earn higher margins from non-core activities and to try to capture non-traditional markets
- Banks may have problems in offering services to areas of low population density and with less security. Security may be low if there are local or international conflicts, or weak government control resulting in lawlessness. Lack of security usually adds the cost of doing business for the banks. Low density reduces the base on which to amortize fixed costs, and the smaller size of an individual transactions means each transaction cannot bear a high

⁵ A term that was used by C.K. Prahalad in 1998 in order to refer to the poorest but largest socio-economic group

burden of variable (or fixed) cost. Poor consumers and smaller firms may not be willing to pay more for these transactions. Accordingly, any efforts to provide services to low-income population may fail because of lack of economies of scale

- Poor households frequently borrow for non-remunerative needs (like marriage, crop planting or health care) which the banks may be reluctant to approve because of contractual difficulties (Claessens, 2006). Formal financial institutions face what may be called “the access possibilities frontier” with risk management on one axis and cash management on the other (Thorsten & de la Torre, 2005). They rely heavily on information (about credit, collateral and payments processing) and rules and regulations in order to protect them from risks while proactively managing transaction costs. While expanding this access frontier may be possible in the long run (by improving macroeconomic stability and improving the contract processing infrastructure), certain solutions may even work in the short to medium run too

1.9 Correlations

Before moving on with some of the other aspects of financial inclusion, we will explore what factors impact financial access. A simple way of doing this is to perform a regression analysis on existing financial inclusion data to see if we can identify which of selected economic and infrastructure variables have significant correlations with measures of financial access.

1.9.1 Poverty, literacy and Gross National Income

We will now look at simple correlations between Honohan’s FI as dependent variable, and independent (predictor) variables including literacy, poverty and gross national income. The data for this analysis have been taken from the World Bank’s World Development Indicators (WDI) database which is “the primary World Bank database for development data from officially-recognized international sources” (World Bank, 2011). The correlation and simple regression analysis for predictor variables poverty gap, literacy rate and Gross National Income (GNI) are shown in Table 1.

Predictors	N ⁶	Correlation		Regression			
		Correlation Coefficient (r)	Significance Level	B	SE(B)	t	R ²
Poverty gap at \$1.25 a day (PPP) (%) -2008	44	-0.3	p < .05	-0.859	0.42	-2.014 (p<.05)	0.09
Poverty gap at \$2 a day (PPP) (%) -2008	44	-0.365	p < .01	-0.603	0.237	-2.544 (p<.05)	0.134
Literacy rate, adult total (% of people ages 15 and above)-2008	21	0.465	p < .05	0.493	0.216	2.288 (p<.05)	0.216
GNI per capita (constant 2000 US\$)-2008	97	0.782	P < .01	0.002	0.000	12.237 (p<.01)	0.612

Table 1: Simple regression for four social predictor variables (from Appendix C)

The scatter plot between Honohan's FI and literacy shows a correlation of 0.465 (significant at 0.05 level) suggesting a positive relationship between literacy rates and financial access.

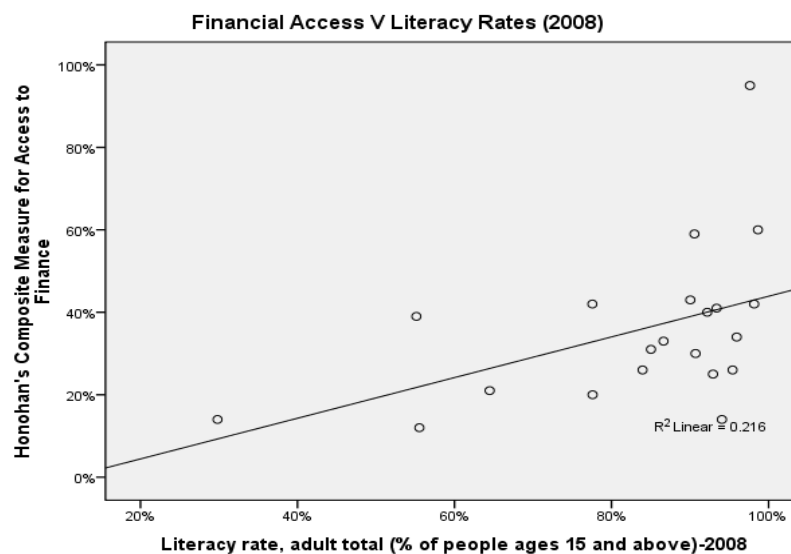


Figure 6: Literacy and financial access rates

A comparison of 44 selected countries⁷ shows that Honohan's FI has a correlation of -0.3 with poverty gap at \$1.25 per day (significant at the 0.05 level) and a correlation of -0.365 with poverty

⁶ Number of countries from Appendix C for which data was available for the predictor variable

gap at \$2 per day (significant at 0.01 level). This suggests that decreasing poverty level is correlated with higher financial access.

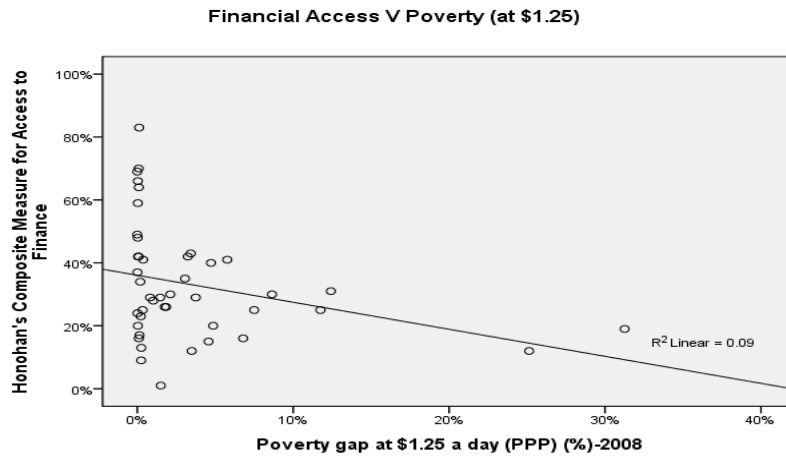


Figure 7: Poverty gap at \$1.25/day and financial access rates

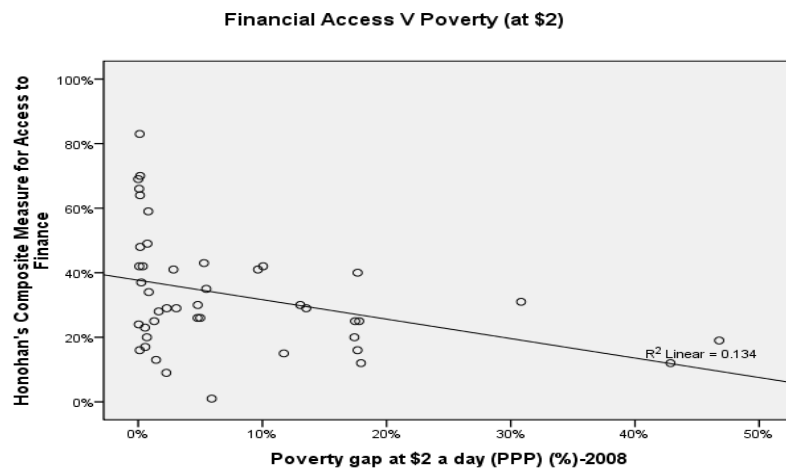


Figure 8: Poverty gap at \$2/day and financial access rates

Similarly, a comparison of 97 selected countries shows that Gross National Income per capita has a correlation of 0.782 with the composite measures of financial access (significant at 0.01). This may be strong evidence that countries that are able to improve national income levels are more likely to have higher financial access.

⁷ Only countries appearing in Appendix A and those whose poverty rates were available in Appendix C were considered here.

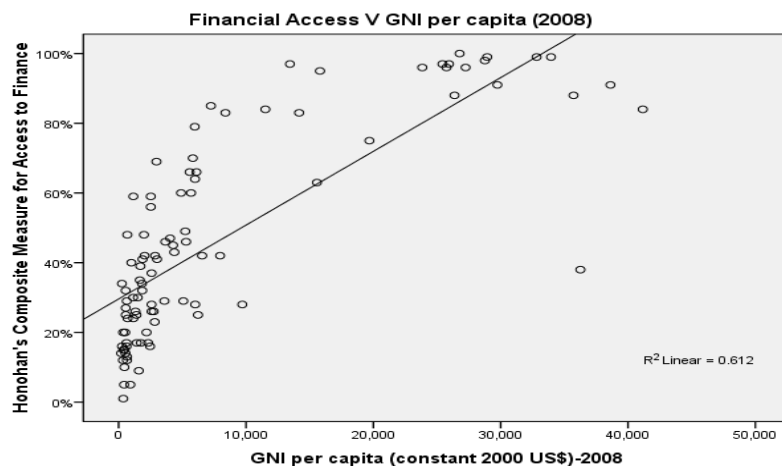


Figure 9: Financial Access and GNI per capita (USD 2008)

1.9.2 Selected infrastructure variables

Next we will determine the simple correlation between Honohan’s FI (as dependent variable) and independent (predictor) infrastructure variables including internet usage, point-of-sale terminals, mobile cellphones, and ATMs. This analysis is based on the data from World Bank’s World Development Indicators (WDI) database which is “the primary World Bank database for development data from officially-recognized international sources” (World Bank, 2011). The correlation and simple regression analysis for predictor variables is shown in Table 2.

Predictors	N	Correlation		Regression			
		Correlation Coefficient (r)	Significance Level	B	SE(B)	Beta	R ²
Automated teller machines (ATMs) (per 100,000 adults)-2009	83	0.579	p<.01	0.334	0.052	6.389 (p<.01)	0.335
Point-of-sale terminals (per 100,000 adults)-2009	70	0.698	p<.01	0.02	0.002	8.049 (p<.01)	0.488
Internet users (per 100 people)-2009	127	0.825	p<.01	0.868	0.053	16.3 (p<.01)	0.680
Mobile cellular subscriptions (per 100 people)-2009	130	0.592	p<.01	0.395	0.047	8.321 (p<.01)	0.592
Telephone lines (per 100 people)-2009	130	0.769	p<.01	1.265	0.093	13.59 (p<.01)	0.591
Access to electricity (% of population)-2009	73	0.572	p<.01	0.294	0.050	5.871 (p<.01)	0.572

Table 2: Simple regression for six infrastructure-related variables (from Appendix C)

All the infrastructure variables are significantly correlated with Honohan’s FI. The simple regression analysis also shows that, keeping all other factors constant, improvement in the number of internet users and telephone lines is likely to have a positive impact on financial access. Similarly improving the number of ATMs, mobile cellular subscriptions and access to electricity is also likely to have a positive impact on the financial access, keeping all other factors constant. While the number of Point of Sale terminals is strongly correlated with the measure of financial access, increase of one terminal per 100,000 adults is only likely to increase the access rate by 0.02.

Scatter plots of financial access and each of the independent variables are shown in Figure 10 to Figure 15.

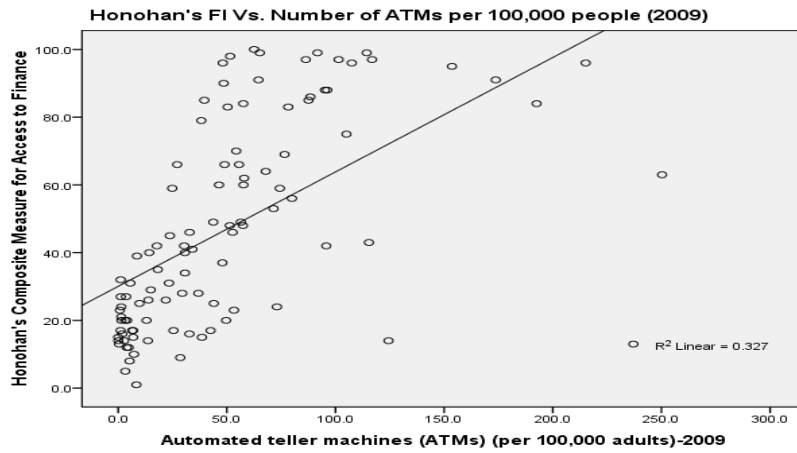


Figure 10: Financial access and ATMs per 100,000 adults—2009

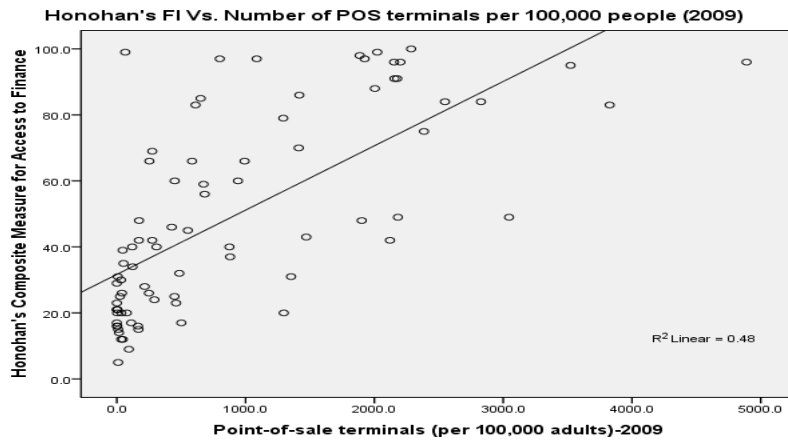


Figure 11: Financial access and POS terminals per 100,000 adults—2009

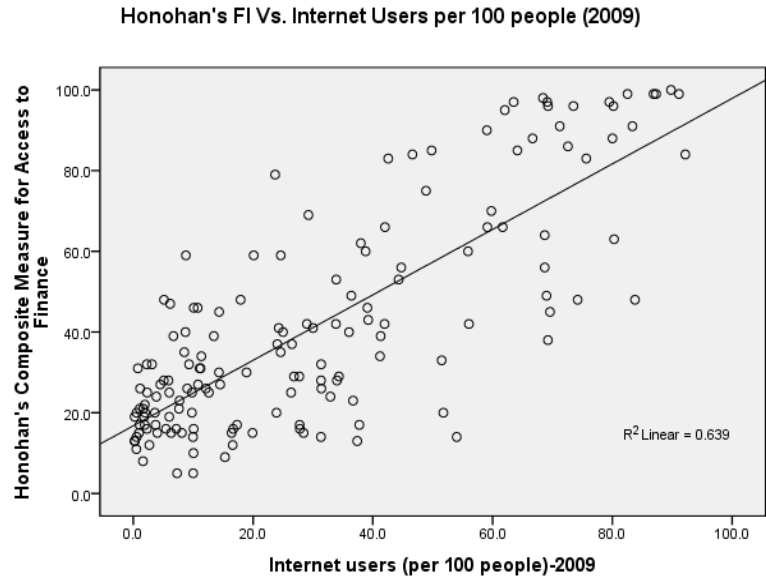


Figure 12: Financial access and internet use (per 100 people)—2009

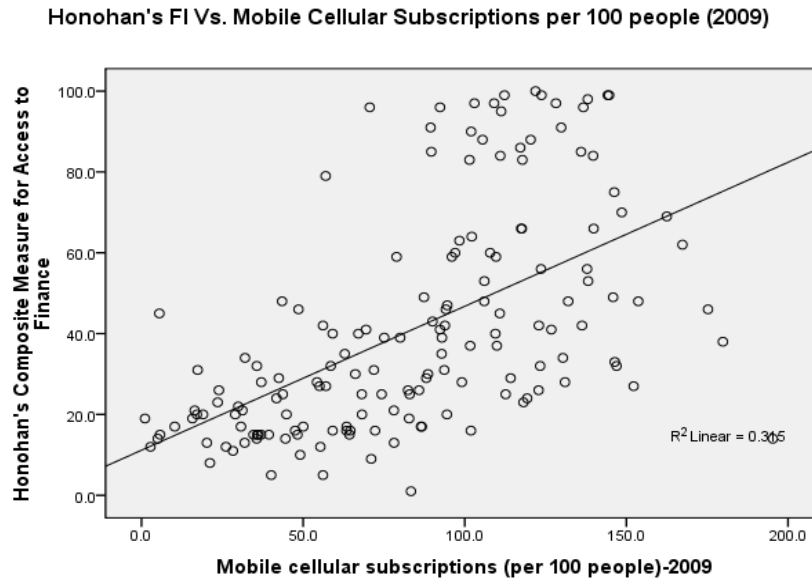


Figure 13: Financial access and mobile cellular subscriptions (per 100 people)—2009

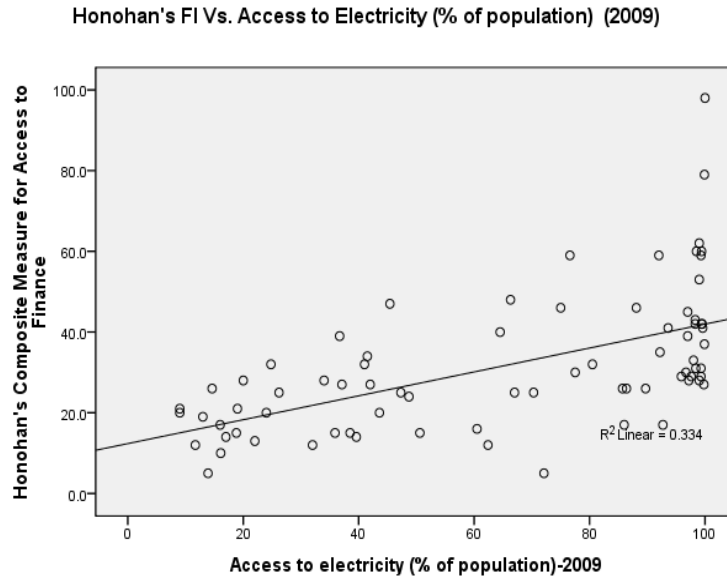


Figure 14: Financial access and access to electricity—2009

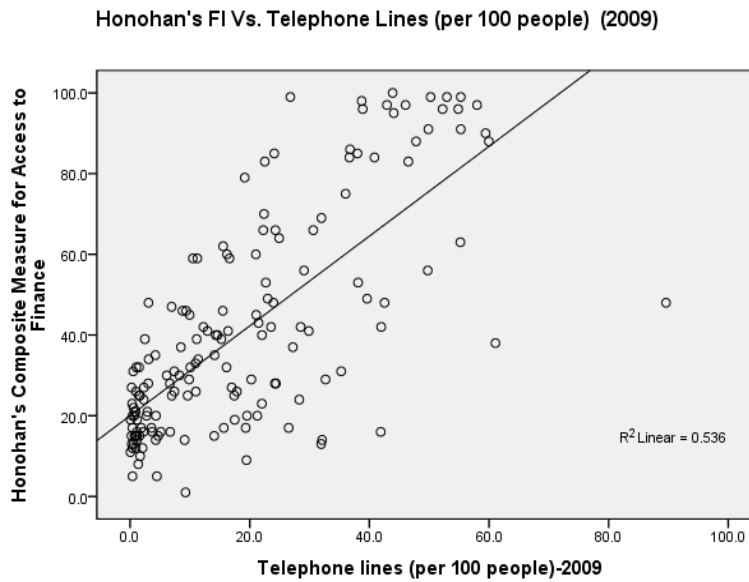


Figure 15: Financial access and telephone lines (per 100 people)—2009

Appendix C also shows the multiple regression analysis of the six (6) predictor infrastructure variables. None of the variables except Point of Sale terminals and mobile cellular subscription were significant predictors in this model. However, from simple linear regression, if we assume variables

such as the number of POS terminals, ATMs, internet users, mobile phone subscribers, and telephone lines are indicators of technology infrastructure availability, then we can see that there is a strong correlation between technology infrastructure and financial access. However, one must not lose sight of the possibility that any individual country may be an outlier on one or more of these variables. It is also possible that countries at different stages of development (either financial or economic) may correlate more or less strongly. As we will see in Chapter 2, technology has a direct role in the adoption of banking by the masses.

1.10 Microfinance Institutions

Specialized Microfinance Institutions (MFIs) use innovative methods to overcome banks' problems, such as loan officers reach out to the poor instead of waiting for them, peer monitoring is used to encourage repayment, short periodic installments are provided instead of lump sums, and group lending schemes are used (Thorsten, Asli, & Honohan, 2009).

In recent years there has been a considerable focus on these institutions as a mean of reaching the financially excluded segments of the population. MFIs tend to focus on providing access to credit (usually referred to as microcredit) because such institutions are founded on the notion that this is the best way to improve economic conditions.

Contrary to popular belief that microfinance is an invention of developed countries, history shows that it started in as early as 1720 in Ireland and 1778 in Germany (Seibel, 2003). The reason for microfinance then is the same as now: high levels of poverty, but bankers who were unable or unwilling to lend to poor people.

MFIs have made significant progress throughout the underdeveloped world and have made loans to millions of clients, with impressive repayment rates. A number of governments and international donor agencies make it a policy to support microfinancing initiatives. A considerable portion of microcredit goes to meet important consumption needs (Morduch, 2008).

While successful case studies are widely cited from different parts of the world, the overall impact of microfinance on poverty is still unclear (Thorsten, Asli, & Honohan, 2009). This is a problem since microfinance is generally subsidized, usually from international donors. As this sector relies on the continued benevolence of donors to maintain its viability, it must eventually demonstrate its beneficial impact more clearly.

The best use of MFI funds is still in question. While lending is still the primary use, one point of view is that subsidizing savings and payment services may be a better option than credit services

because the former are basic services for participation in a modern economy (Thorsten, Asli, & Honohan, 2009).

Where MFIs are unable to achieve high rates of market penetration, they may face the same dilemma as banks: high cost per transaction. This situation can be aggravated because of the lending-based focus of MFIs which may limit their ability to capture new markets. Unlike MFIs, banks provide services other than lending (such as payments and remittances); the lack of a mandate to do the same may deter MFIs from competing with banks.

Finally, today's MFIs are not as organizationally developed as banks. This low level of organizational development may make it more difficult for MFIs to innovate and serve new markets. Policy makers are encouraging the microfinance sector to be more efficient, innovative and transparent (State Bank of Pakistan, 2011).

Although in some countries MFIs have seen rapid success, in the absence of strong regulatory infrastructure and risk management capability, troubling events in the microfinance industry have also been observed (Economist Intelligence Unit, 2011).

1.11 Role of Technological Innovation in Improving Financial Access

The importance of technology in improving financial access is acknowledged in the literature although "it does not address the underlying distortions limiting access" (Claessens, 2006).

Nevertheless, improvements in technological infrastructure can enable not only traditional banks but MFIs and other institutions to offer their services to the financially excluded where traditional brick and mortar channels are not available. Two areas of technology are of particular importance:

1. Technology for providing and exchanging information regarding credit and collateral
2. Technology for processing banking transactions and payments, especially those that facilitate immediate exchange of value from payers to receivers

In order to fully benefit from the above two types of technologies, banks and other formal financial institutions may find they need to invest in two areas:

1. Improve and upgrade their existing technological infrastructure
2. Introduce standards that will encourage common platforms and systems

These two areas are interrelated, since the introduction of standards and thus common platforms may by itself cause upgrades in technological infrastructure. Furthermore, they are related because private institutions frequently cannot see any early-mover advantage in a new platform or upgrade infrastructure, unless it is required to adhere to standards. It may be useful for governments to step in

with initial investments to encourage the introduction of such standards and upgrades, and to promote their use among financial institutions.

As was shown in Section 1.9.2, there is a strong correlation between financial access and infrastructure readiness. While high correlation does not necessarily imply causality, it is reasonable to assume that development of technological infrastructure will improve financial inclusion.

Improved banking transactions frequently involve such aspects as the interoperability of systems and payments messaging and the clearing infrastructure. In the next section we will see how these factors have helped foster the growth of banking and payments services in more developed countries, as well as enabled the general population to benefit from them.

1.12 Discussion

The foregoing analysis suggests that there is a significant demand for financial products by low-income populations in less developed regions of the world. The existing banking framework and (possibly) the perceptions of bankers and policy makers about the high risk of consumers from lower income segments may be an inhibiting factor to offering them financial services. Even if a no-frills (or basic banking) account is offered, it may not be used due to the absence of related product offerings such credit on easy terms for consumption purposes, or the ability to conveniently make or receive payments. To address this problem, financial institutions might partner with retailers (or shopkeepers) and with private health providers (and insurance companies) or education providers to devise innovative financing products for those of low income. These providers or retailers can act as a “front office” for the financial institutions, scanning their customers for very high risks and checking that the financing is being used for its intended purpose, while banks can focus on their core function of devising and operating product offerings, spreading risks across different portfolios, and reducing overall cost by attaining economies of scale.

In our view, untying certain services like payments and remittances from bank accounts may be one way of stimulating demand and improving non-interest based margins. Banks have traditionally offered products and services like demand drafts and payment orders to walk-in customers in exchange for a fee; the concept could be extended to account-free prepaid cards and low-limit credit cards in addition to “recharging” the account balance on a mobile phone so it can be used for transferring funds and buying goods. Initiatives like these require extensive investments in technology infrastructure that would improve not only customer-facing systems, but interoperability between members of the supply-side (for example, through immediate clearing and settlement of funds).

Chapter 2

Banking and Payments Technology

2.1 Introduction

This chapter briefly discusses the business of banking and the role of banking and payments technology in its evolution, especially in developed countries. We briefly discuss banking and payments systems, the evolution and impact of banking and payments technology, and the role it played in the promotion of banking at retail levels as well as its impact on the ability of financial institutions to offer various products. We then discuss certain aspects of the economics of payment systems and its impact on innovations in this area. Finally, we discuss the global state of payment systems and some recent innovations like mobile banking and their impact on financial inclusion.

2.2 Banking and Payments

Banking has traditionally been defined as the business of accepting deposits for the purpose of lending. Banks have generally served as financial intermediaries who extend credit (capital) and offer the safekeeping of money (Johnson, 1912). Whatever the type of banking, certain properties of banks have always been of prime importance, including their knowledge of credit history and their reputation for safety, security and trust.

Central banks differ from commercial banks in that there is only one central bank in a country. The central bank is the issuer of money and (in many countries) also the banker to the government. Central banking later was extended (again in many countries) to such tasks as supervising the banking system, acting as lender of last resort, owner or operator of the (large value) payment systems and the settlement agents (Rambure & Nacamuli, 2008).

The business of banking gave rise to banking instruments such as cheques. Cheques are payment orders that are drawn on a bank and required to be paid upon presentation. The existence of cheques and other bank instruments such as money orders and bank scrip required the ability to identify individuals and the instruments with confidence, and to communicate and process payment messages with safety and efficiency. With the advent and proliferation of information technology, electronic payment messages also came to be recognized as payment orders.

With the rise in the number of transactions, clearing houses were established to bring efficiency into the process. A clearing house is an institution which accepts payments and claims for payment from several banks, and maintains and manages the net payment between them. Clearing houses serve partly as a means to rapidly and efficiently process payments (by using economies of scale and interbank knowledge), and partly as a mechanism to enable banks to operate on a net rather than gross basis (Rambure & Nacamuli, 2008).

A historical example will show the value of clearing houses. Due to the rapid increase in the use of checks in London in the 18th century, an army of delivery boys had to run through the city of London to exchange checks for cash between the city's banks. To mitigate the risk of robbery and loss, and to improve the efficiency of the process, the delivery boys agreed to meet on Lombard Street to exchange their liabilities and receive cash. This reduced the amount of travel, risk, and loss, and also resulted in less cash changing hands as the obligations could be netted. Observing the benefit of this centralization, the bankers decided to establish the Bankers Clearing House (BCH) at 10 Lombard Street (Millo, Muniesa, Panourgias, & Scott, 2005). In later years, automation of these clearing houses provided much needed efficiency for handling the increasing volume of payment instruments.

Since the net cleared positions are normally settled at the end of the day, usually in central bank money, central banks became concerned that a participant might fail to meet its obligations for an entire day, impacting other banks and thus creating systemic risk⁸. Therefore, mechanisms were devised to ensure that the settlement⁹ of cleared positions was done in the safest possible manner, or zero settlement risk. Such a mechanism is the Real Time Gross Settlement (RTGS) system, which uses modern telecommunication infrastructure and computer systems to settle large-value funds payments on gross basis, in real time. Since these systems settle large-value transactions on a gross basis, the overall settlement risk in the financial markets is significantly lowered. For low-value, high-volume payments, usually an Automatic Clearing House (ACH) is established that “nets” the claims of member institutions over different time periods, and then sends them to the RTGS system for settlement using central bank funds.

The increase in banking activities over the years was accompanied by an increase in fraud and bank failures. In order to protect the system as a whole, bank regulators were forced to devise and impose strict regulations. Bankers themselves have always been considered as strictly conservative, giving much importance to “credit worthiness”. The cost of determining credit worthiness and of

⁸ The risk that the failure of one participant to meet its required obligations will cause other participants to be unable to meet their obligations when due (Rambure & Nacamuli, 2008)

⁹ Settlement is the actual transfer of money between banks' accounts, usually done by central banks.

working on other aspects of risk management can lead to an “access possibilities frontier” [discussed in Section 1.8 above] that can limit a bank’s ability to offer cost-effective solutions to low-income segments of the market. However, effective use of technology and commitment to cater to “consumer-based” market segments has historically enabled banks to overcome these issues.

Today consumers in developed countries have many different options for making payments. These options are both paper-based and paperless, and are operated by different types of institutions including banks and financial institutions, credit and debit card companies, multinational corporations, remittance service providers (such as Western Union and MoneyGram), issuers of stored-value prepaid cards, non-bank credit card issuers, mobile phone companies issuing pre-paid airtime that can be transferred to other subscribers, and many more. Advances in internet and mobile technology have also resulted in novel payment systems and aggregators like Pay Pal¹⁰, Dwolla¹¹ and Square¹². Some of these systems are subject to legal oversight because of their reach and systemic importance for the economy.

2.3 The Evolution and Impact of Technology on Banking

Banking technology is the collection of information technology components (hardware, software, standards and telecommunications) that help financial institutions to conduct the business of banking efficiently. Payments technology is a subset of banking technology that is used for the transmission of payment messages, payment clearing and payment settlement. Banking and payments technologies complement each other in ensuring that customers are able to conduct their financial transactions with low-cost, quickly and with high security.

The rest of this section will broadly discuss systems, technologies and products that enable banks to offer commonly used retail payment products (like credit cards and payments and funds transfer services) to individual customers. Since we are not concerned with investment banking or other uses of banking technology, we will use the terms “banking systems” and “payments technology” interchangeably.

2.3.1 Innovations in banking and banking technology

Banking technology is more prevalent and ubiquitous in developed countries than developing countries. This is likely not only because of the early adoption of banking and information technology

¹⁰ <https://www.paypal.com>

¹¹ <https://www.dwolla.com/>

¹² <https://squareup.com/>

by developed countries, but also a result of the constant innovations in this area in line with the overall development of information technology.

In 1846, the use of the telegraph had a financial impact, reducing the stock price differentials between New York and other geographically dispersed markets. The 1866 trans-Atlantic cable enabled integration of securities-related trades taking place in New York and London (Garbade & Silber, 1978). In the 19th century, banks began to link their head offices with their branches, allowing more centralization, coordination and better management of funds across their network. Information technology during this period did not have direct customer impact; customer dealings were basically done through retail bank branches (or agency representatives) and employed paper-based records and pass-book controls (Batiz-Lazo & Wood, 2002).

In the 19th century, innovations led by the private sector (such as the telegraph and cable) were more successful than those introduced by regulatory authorities, such as the consolidated tape introduced by the US Securities and Exchange Commission. While the consolidated tape only improved the flow of information, the telegraph was used both for rapid information flow and for faster transmission (and hence execution) of orders (Garbade & Silber, 1978).

Until the 1950s, there were relatively few technological improvements in banking. The introduction of computers in banking in the 1950s started with the objective of reducing the cost of labour-intensive tasks such as cheque clearing. By 1965, major banks in the US and UK were using electronic data processing. This automation of data processing permitted major organizational changes to be undertaken to improve efficiency and increase service offerings to customers. This was followed by centralization of operations (through centralized data processing) and to standardization of service offerings (Batiz-Lazo & Wood, 2002).

In the US prior to 1950s, consumer banking was not as prevalent as commercial banking, and was not viewed by the senior management of banks as a good source of revenue and profitability. The introduction of information technology and the economies of scale that resulted encouraged banks to move rapidly into retail banking. The merger of Chase National of New York City with the Bank of Manhattan Company (Wolters, 2000) was a big step towards the advancement of retail banking in the US.

Credit cards were issued in the first part of the 20th century by major retailers like Sears, Roebuck and Company. Their main objective was improving sales rather than to profit from credit alone. The first profit-making charge card was the Diner's Club card, started in 1949. Commercial banks followed suit with their own cards in 1951, mainly to serve smaller and local retailers. In the

beginning these card operations faced huge difficulties because of large overheads associated with their operations and limited economies of scale. As a result many such banks were not able to continue their credit card programs (Wolters, 2000).

Bank of America (BOA) was one of the initial card issuers, starting its credit card program in 1958 on a limited scale in the greater Fresno metropolitan area in California. The main initial driver for the BOA card seems to be the recently enhanced data processing capability of the bank. BOA undertook this initiative despite a large number of failed attempts by other banks. BOA's approach was to mail credit cards to a large number of existing BOA customers; the existence of a base of card holders was expected to reassure retailers that it would be worthwhile to join the program. The program's success in Fresno led to it being immediately expanded to a state-wide level. The BOA credit card program did face significant problems, including the refusal of some retailers to join the program (as they perceived that the program would hurt their sales), as well as prejudices about the "societal evil" of credit, and concern over high levels of fraudulent activity. BOA overcame these problems through enhanced marketing, improved level of awareness of its customers, reduced merchant charges and improved overall management of its operations to achieve economies of scale. Later Bank of America started licensing its trademark to other banks and then joined the newly created, member-owned entity, National Bank Americard Inc (NBI). In 1977, NBI changed its name to VISA (Wolters, 2000).

2.3.2 Development of payments clearing systems

Innovations in telecommunications in the shape of telegraph and cable not only marked the beginning of banking technology but of payment systems as well. The importance of information technology for payments systems was realized in the late 1960s, when Bankers Automated Clearing System (BACS) was introduced in the UK. BACS grew to be the world's largest automated clearing house, handling 262 million items annually by 1976. The development of BACS was intended to reduce the cost of cheque processing, but it also created new sources of bank business by introducing non-cash wage payments, standing orders, direct debits and payroll credits in the UK (Batiz-Lazo & Wood, 2002). In April 1970, the Clearing House Inter-bank Payments System (CHIPS) started its operations in the US to facilitate bank-to-bank electronic transfers.

As discussed earlier, the final settlement of clearing operations usually takes place in central bank money. Until the 1980s, most countries (with the exception of USA) settled banks' mutual obligations on a net settlement basis¹³. The biggest benefit of net settlement is that it reduces the liquidity

¹³ The settlement of a number of obligations or transfers between or among counterparties on a net basis (agreed offsetting of positions).

requirement, since the gross obligations of one bank against another are “netted” to produce only the minimal difference to be transferred in currency. A disadvantage of net settlement is that it may give rise to systemic risks; if one party fails to meet its settlement obligations, some or all of its counterparties may need to unwind their payments or may even be put at risk of failure themselves. These systemic risks in netting pushed central banks of advanced countries to prefer Real Time Gross Settlement (RTGS) systems that were able to settle each and every payment on a gross basis. An RTGS eliminates the settlement risk from one or more participants’ failure to settle by settling payments with finality and irrevocability on an individual and gross basis, in real time (Bech & Hobijn, 2006). As information and communication technology and the emergence of new technological innovations have reduced cost, RTGS systems have been rapidly adopted by most countries (see Appendix D).

High value payments are considered systemically important because of the significant impact that they can have on the economy. Consequently, such systems have been a focus of regulatory authorities in many countries. Retail payments, on the other hand, directly influence customers at the retail level, but since they are generally low-value and high-volume, they are considered of secondary importance by central banks. Much of the research on RTGS systems concentrates on liquidity management and other regulatory issues rather than investigating the impact of RTGS on banks’ ability to offer new products or to streamline their own internal processes.

During the late 1960s, there was growing realization among the industry that the existing telex-based communication system was a hindrance to standardization. Efforts were made by some institutions to introduce proprietary messaging standards (for example, Citibank’s MARTI –Machine Readable Telegraphic Input) but these were resisted by the industry mainly due to competitive concerns (Scott & Zachariadis, 2010). On May 3rd 1973, the Society for Worldwide Inter-bank Financial Telecommunication (SWIFT) was founded as a cooperative non-profit organization headquartered in Brussels, with 239 banks from 15 countries as members. The objective of SWIFT was to introduce a “common standard and community network capable of addressing the problems” inherent in the telex technology, and to allow member banks access to each other’s systems and networks using a single interface.

Today, the internet is rapidly changing the nature of innovation in banking technology. Customers, at least in developed countries, have access to a large number of payment aggregation services and networks; consequently service providers have to work harder to retain their existing customers as well as gain new ones. Section 2.6 below further discusses new innovations in this area.

2.3.3 Impact of technology on the banking business

Advances in communication and information processing technology resulted in rapid growth in the retail banking business. After 1970 computer usage throughout the banking industry was ubiquitous. Commercial banks in the US hired highly qualified and trained individuals working in the defense industry to build applications and systems for their treasury and investment divisions. As a result, the banking industry in Europe and North America saw an enhancement in the skill level of their IT staff (Batiz-Lazo & Wood, 2002). Large banks including Citibank N.A., Bank of America and Chase Manhattan in the US, and Barclays, Lloyds and Midland Bank in Europe invested strategically in building their own networks using circuits and satellite facilities from postal, telephone and telegraphic authorities (Scott & Zachariadis, 2010).

Technology also changed the front office nature of the branch and customers were offered the facility to “bank anywhere”. The introduction of Automatic Teller Machines (ATM) and magnetic stripe plastic cards marked the beginning of electronic consumer banking. Banks realized that in order to amortize the huge expenses on the ATM infrastructure, they needed to collaborate and enter into strategic alliances (Batiz-Lazo & Wood, 2002). Collaboration involved standardization for international financial transactions as well as improved interoperability of national transactions. Efforts were made by some institutions introduce proprietary messaging standard (for example, Citibank’s MARTI) but these were resisted by the industry mainly due to competitive concerns (Scott & Zachariadis, 2010).

The use of SWIFT’s proprietary network resulted in many benefits including improved speed, lower cost (compared to telex), ability to handle high volumes of transactions, improved security and uniform message formats (Scott & Zachariadis, 2010). Later on, SWIFT in collaboration with the International Standards Organization (ISO) implemented various message types that were to become industry standards in messaging, thus facilitating systems integration and improving their interoperability.

Different periods of technological innovation within the banking industry resulted in different service offerings as well as changes in the organizational structure of banks, reduced cost of labor-intensive activities, growth of alternative delivery channels such as e-banking, real-time availability of information and the introduction of a variety of products (Batiz-Lazo & Wood, 2002). Most importantly, technology opened the way for banks to reduce their cost structures, provided they were able to educate the customers and change their behavior in the intended direction (Batiz-Lazo & Wood, 2002).

One of the observations we can make is that technology both permitted extensive expansion in the branch network, and also required it. Banks desired expansion in their branch network in order to reach a broad consumer base. To handle the high volumes of a large branch network and to implement uniform controls and checks, banks required investment in information and payments technology. Conversely, the high cost of technological investment could be offset only by achieving high economies of scale, which implies a large network. And finally, extensive campaigning had to be done in order to educate consumers and address any negative perceptions about credit and banking.

A factor in successful use of technology is to understand the underlying needs of ordinary consumers. Large retailers were quick to do so, as can be seen by their early offering of credit to their customers. As we observed in 0, grocery stores in developing countries are a major source of informal lending. Perhaps because they deal with their customers on a regular basis, retailers seem to understand the need for small amounts of credit much earlier than do bankers. They are also presumably better aware of the creditworthiness of their customers because of their long term face-to-face dealings and knowledge about their spending patterns and payment histories.

While retailers may better understand their customers, banks' expertise in credit-related products and services and their scale means they are in a better position to address customers' financial needs. This was demonstrated in the US: once banks understood this need and took initiatives to address it, they were better able to offer and manage credit cards, to achieve economies of scale, and to combine their offerings in large national and international services. In the short term many banks incurred heavy losses, but persistence and commitment enabled them to emerge as winners (Wolters, 2000).

Another lesson is that markets can be created by raising awareness about the possibilities and opportunities of formal finance. This awareness can be created for both consumers and the suppliers. In case of financial services, this is the most critical task. For example, more Electronic Funds Transfer Point-Of-Sale terminals at retailers can lead to the success of the credit or debit card products, because the POS consume those cards. Awareness is not limited to the retail payments chain; there are other actors including utilities and other services, with the government being the major player. Governments are usually the largest single spenders (and payment collectors) in an economy; consequently their adoption of technology can play an important role in people's willingness to use financial services (Consultative Group to Assist the Poor (CGAP), 2009). Today, a large part of the population living in developed countries is able to use financial services because they

have a good payments infrastructure, and moreover they also they need to use these payments services in order to perform their daily life functions.

2.4 Economics of Banking Technology and Payment Systems

Banks can settle payments to each other either through a clearing and settlement mechanism, or by using correspondent banking and making payments directly to each other. While most off-shore payments may still be done on the basis of correspondent accounts, on a domestic level settlement is widely done by local clearing and settlement mechanisms. This is due to the rise in the number of bank payments in the second half of the 20th century and the adoption of technology for managing payments systems.

A payments system, naturally, improves the flow and execution of payments. But such a system also improves liquidity by enabling banks to settle their liabilities in central bank money and thus use their internal funds more efficiently and cost effectively. Further, payments systems exhibit characteristics of networks where costs are largely fixed and additional (high volumes of) transactions reduce the unit processing cost, thus resulting in economies of scale (Rambure & Nacamuli, 2008, pp. 69-73). A good payments system is one that is not only efficient and secure but also cost effective. Generally the cost of deployment for payments systems is significant, and the overall per-unit cost is achieved only after the number of users exceeds the threshold needed to create network effects, and thus make the whole operation cost effective and sustainable for the service provider.

High investment costs and competitive pressures act as deterrents to investment in a payments system. Even after a system has been established, new entrants may be reluctant to join the system because of high joining fees or terms and conditions that may not be in line with their business objectives. The failure of Citibank to establish the MARTI messaging standard is a case in point. Hence it is not surprising to observe that collaboration among banks is often a path to success in establishing payments systems.

Apart from network externality, large aggregating systems and service providers also tend to conceal the total pricing from ordinary consumers; as a result, the actual costs involved in utilizing the payments systems remains hidden. For example, in addition to high interest rates (usually calculated in a complex manner) charged by the credit card companies in many countries, there is a fixed annual cost that may be charged to the consumers, as well as per-unit costs imposed on retailers. The cost of interoperable ATM and POS services also remains relatively high in many (especially developing) countries.

Another problem with improved payments infrastructure is the reduction or elimination of “float” or funds in transit. Payers generally want to delay the transfer of funds to the receiver until the last minute in order to benefit from retaining the funds. On the other hand, the receiver would like to receive the funds as early as possible. From an economic point of view, the net impact on float may be a zero-sum game; however, from an individual perspective float is an important element for the paying banks and hence its lack would tend to deter them from participating in any such arrangement.

For credit cards, costs tend to be higher than other forms of payment. There are many reasons for this excess cost (Scholnick, Massoud, Saunders, Carbo-Valverde, & Rodríguez-Fernández, 2008). Credit cards work on a revolving line-of-credit basis and provide convenient access to credit when consumption needs arise or when spending is unpredictable; these additional advantages would naturally be expected to have a cost. While credit cards may result in higher consumer debt levels, they also are a source of stimulus to economic activity by allowing consumers to “buy now, pay later”. Another important factor in credit card costing is the interchange fee: the amount paid by the acquirer (bank of the merchant) to issuer (bank issuing the credit card) for each transaction. Interchange fees are set by the banks that own the network and may be collusionary in nature (Scholnick, Massoud, Saunders, Carbo-Valverde, & Rodríguez-Fernández, 2008). Acquirers may charge whole or part of the interchange fee by the merchants, known as merchant discount, which may not be acceptable to consumers.

Today, card companies like Visa and Master Card have considerable presence in developing countries. According to World Bank’s Global Payments Survey, 29 countries mentioned that their card market is dominated by domestic brands as opposed to 86 where the market is dominated by international brands (10 mentioned the market being dominated equally by both). This is also reflected in Appendix G where a majority of countries from Appendix A mentioned being dominated by international cards. International card suppliers have expertise and organizational reach, but their fees (especially when converted in local currency) and risk management structure may make them infeasible for low-income markets.

ATMs also play an important role. Research shows that banks have been able to attract customers by adopting ATM technologies (Padilla & Matutes, 1994). The value of a bank’s ATM network is directly proportional to its size—another example of network effect. While depositors prefer access to larger and thus more convenient ATM networks, banks on the same network face the risk of being substituted for each other by their consumers (Padilla & Matutes, 1994). Group members of an existing network may place entry conditions or restrictions to raise the bar for banks wanting to join

their network, which they feel might be a threat to their own business. Simultaneously, larger banks may impose high usage fees for non-member banks to lure their customers to bank with them (who will then have access to their ATMs without paying any fee). Smaller banks may also be compelled to invest heavily in technology themselves, or else join an existing network with a large number of ATMs (Massoud, Saunders, & Scholnick, 2006) possibly on disadvantageous terms.

Banks operating in a cash-based economy may find themselves forced to invest in cash-based ATMs or cash dispensers, even if from a policy perspective it is more desirable to promote non-cash usage. Cash usage may decline as more Electronic Funds Transfer Point of Sale (EFTPOS) terminals and networks become available (Scholnick, Massoud, Saunders, Carbo-Valverde, & Rodríguez-Fernández, 2008).

The cost of transacting in cash may be lower for banks compared to alternative electronic payment instruments. But as shown by the example of 11 countries in the Euro zone (Bolt, 2007) consumers prefer to use a debit (or credit) card to make their purchases since carrying cash is perceived as less efficient and secure and even more costly (in the sense that consumers forgo the interest earned if the money would have been in a bank account—this is consumer “float”). From the banks’ and merchants’ point of view, they are more likely to adopt EFTPOS terminals provided they have sufficient number of customers willing and able to use that channel. Banks may be forced to do the cost benefit analysis between investing in ATMs or EFTPOS, and their decision would likely be driven by consumer demand and the cost structures inherent in the operations of those specific networks (such as finding locations for ATM machines and/or providing merchants with POS terminals).

While banks may be concerned about the cost of deploying payments systems, studies have shown that in countries with developed payments systems, banks do better in terms of financial performance, stable revenues and reduced risk. The results are even better in countries with high level of retail payments transactional instruments like EFTPOS (Hasan, Schmiedel, & Song, 2012).

One way to ameliorate bank concerns about competitive problems and critical size of networks is through government intervention to guarantee equal access to all institutions and to establish a large, stable network. Systems like Real Time Gross Settlement (RTGS) are usually sponsored (that is, established and operated) by a central bank, and hence are subsidized in the interest of risk reduction and as a ‘public good’ (Rambure & Nacamuli, 2008, p. 10). In certain cases of payment systems usage, policy action by the authorities may be encouraged; for example, Gowrisankaran and Stavins examined billing data from 11,000 US banks who were members of the automated clearing house

(ACH) that was operated by the US Federal Reserve, and found significant evidence of network externalities. They also found that ACH is relatively underused compared to its socially optimal level and recommended that the Federal Reserve encourages its adoption and usage (Gowrisankaran & Stavins, 2002).

Government intervention for the development of payments systems is frequently necessary because overall the rate of innovation in this area has been slow, despite the fact that banks have been early adopters of information technology. According to (Leinonen, 2008) some of the major reasons for this are as follows:

- Lack of interest by the current service providers because of high switchover costs, increased interbank dependencies and continuing profitability from the existing systems
- Strong network externalities in electronic payments systems due to which “every new technological design has to fight for its existence and overcome the chicken-and-egg problem” (Leinonen, 2008)
- The layered structure of the payments industry leads to a situation in which competitors are forced to cooperate
- Consumers who wrongly perceive that they are getting the existing service at a much lower cost because of aggregate billings (and thus price concealment) by the service providers – thus leading to the lack of demand for innovation by the consumers (de Souza, 2010)

As opposed to large-value payments systems, retail payments systems are driven by economies of scale and scope which have a direct impact on innovation. Retail payments systems operate in the so-called two-sided market; in order to be successful they need to be adopted by both sides (Committee on Payments and Settlement Systems, 2012). For example, in order for a particular card to be successful, it has to achieve the critical mass both of users as well as merchants.

The management of a payments system is crucial because payment information is shared among the members of the payment group, as well as the shared risk of individual acts (honoring payments within time) that, if not performed reliably, may increase the risk of the system as a whole. Hence the rules and regulations of a payments system are stringent and need to be collectively accepted and enforced by all members.

The major factor determining the economics of payments systems is membership of a clearing and settlement system. Members can be either direct or indirect. Direct members are generally in a position to offer better and more efficient payment services (such as faster credit) to their customers than the indirect members, who have to rely heavily on the direct members. Eligibility criteria for

direct membership are usually stringent and include sound documented procedures, robust and efficient IT infrastructure, and business practices that are acceptable to the operators of the clearing and settlement houses (Rambure & Nacamuli, 2008, p. 9)

For individual members, the total cost of obtaining direct membership is much higher than the transactional cost. Fixed cost may include the cost of deploying or upgrading back and front office systems, improving business processes and devising strategies for enhancing the customer base. Accordingly, the major factor that determines (and justifies) the level of investment in payments infrastructure by a financial institution is the number of transactions. The more the number of transactions, the less the amortized fixed cost per transaction and quicker will be the recovery of investments.

Conversely, economies of scale can also hinder the further development of payments systems at the institutional level or at country-wide level. The result is that existing networks may become saturated or continue on into obsolescence or monopoly. Networks by their nature tend to become monopolistic in the long run when used by an oligopoly of participants (Rambure & Nacamuli, 2008, p. 71). Monopolistic networks lead ultimately to complacency and reluctance to invest in new developments. In order to address this problem, authority actions such as encouraging competition, moral suasion, policy recommendations, provision of subsidies, initial investments, operational involvement, and regulations are recommended for fostering rapid innovation in the payments industry (Leinonen, 2008).

2.5 Global Status of Payment Systems

Payment systems form a very important component of the financial infrastructure of any country. Countries with an advanced and well-developed financial infrastructure also have a well-developed payments system infrastructure. While traditionally payments systems have been considered extremely important because of their crucial role in ensuring stability and economic growth in a developed economy, more recently, they have also been acknowledged to have a substantial role in supporting financial inclusion in developing countries (The World Bank, 2011). Due to the recognition of the importance of payments systems in development, international agencies are giving special attention to this area of financial sector development.

In this section we investigate information from the Global Payments Systems Survey (The World Bank, 2011) to assess the global level of payments system infrastructure. Characteristics of payments systems development can be divided into the following areas:

- Legal and regulatory
- Large-value funds transfer
- Retail payments systems
- Cross-border payments and international remittances
- Securities settlement systems and
- Payment system oversight and cooperation

While all these areas are equally important for policy makers, this thesis will emphasize selected characteristics that improve technological infrastructure, thus enabling banks and other financial service providers to collaborate better, rapidly achieve economies of scale, and offer basic and low-cost products and services to the financially excluded population.

2.5.1 High-value settlement systems

High-value payments systems process large-value inter-bank payments. These systems are considered critical because of the significant systemic risk that they pose to the financial system. As discussed earlier, at first these large-value systems processed payments at the end of the day by netting them against each other, thus reducing the need for liquidity. However, with the growing volume of large-value payments, the risk of one or more parties defaulting at the end of the day also increases. This led some of the developed countries to adopt Real Time Gross Settlement (RTGS) systems for large-value settlements in 1980s. Today almost all countries have adopted RTGS systems for at least part of their payments infrastructure.

Appendix D shows the year the present RTGS was implemented in each country, and the volume and value of transactions that were processed by the respective systems in 2009. An RTGS system is a back-end system processing wholesale payments, and thus may not be perceived as having an impact on front-end technology diffusion; however, RTGS frequently does act as a strong enabler for front-end technology. For example, adoption of RTGS can lead banks to upgrade their legacy systems to more modern and efficient ones, thus reducing the cost for front-end products and services. Similarly, since RTGS processes payment orders and is generally mandatory for all the banks in a country, they may be forced to adopt standardized payment messages (and account numbers as well)—thus improving interoperability and hence opening up the possibility of lower-cost payments systems. Upgrade of legacy systems and standardization are infrastructure elements that facilitate the future interoperation of banking systems and thus enable future improvements in inter-bank payments technology.

2.5.2 Retail payments systems

Retail payments systems are collections of payment instruments, payments procedures and (usually) payments technology that ensure quick transfer, processing and settlement of payment orders for small (or retail) payments. Retail payments are low-value, high-volume payments and may require special netting processes to reduce the need for continuous availability of large amounts of liquidity. Examples of retail payments systems include but are not limited to Automatic Clearing Houses (ACHs), check clearing houses, credit/debit card networks, electronic payment message processing systems (like SWIFT) and payment switches.

Statistics for some common payments systems are given in Appendix E. Appendix F shows the countries that reported having an ACH in The World Bank's Global Payment Systems Survey (The World Bank, 2011). There are very few countries with an ACH that can process direct debits or direct credits.

While the above statistics give a brief idea about the overall state of retail payments system in different countries, it is very difficult to assess their impact on the overall level of financial inclusion. We can see that generally, countries with high levels of financial inclusion have more types and quantities of payments systems, while countries with low levels of financial inclusion have fewer. But this correlation does not demonstrate causation. Further analysis of the development of these systems and technologies over a period of time may reveal some correlation with the corresponding levels of financial inclusion thus enabling us to suggest a cause-and-effect mechanism.

Countries with less developed payments systems may not only be losing out on the front of financial inclusion but also on overall economic growth as well. Even countries with advanced and well-developed payments systems, such as Canada, are beginning to feel that they are being left behind by newer electronic payments mechanisms (Task Force for Payments Systems Review, 2011), and thus plan to improve the infrastructure for supporting electronic payments.

For developing countries, active government involvement as the largest and most important participant in retail payments systems can help bootstrap the systems to the required economies of scale. In undeveloped countries, governments are usually the biggest generators and collectors of payments, and their adoption of electronic payments will not only encourage ordinary citizens to use electronic payment mechanisms, but help to convince large companies and employers to adopt them as well.

2.6 Innovations in Banking and Payments

Until the year 2000, banks indulged in innovation in a limited fashion and with the primary objective of improving their internal transaction processing capability. Bank customers were offered only basic service efficiencies. However, the emergence of the Euro currency in late 1990s and the Y2K problem forced many banks to overhaul their incompatible legacy systems. Traditionally, banks have tried to develop their own custom technology solutions, but the Euro and Y2K problems challenged their technological knowledge and resources. The availability of off-the-shelf core banking software made the task of system deployment rapid, without turning banks into software houses. These new systems, coupled with changing regulations (like BASEL II) pushed banks to converge on industry standards, thus achieving strategic competitive advantages over a relatively short period of time.

According to Bank of International Settlements (BIS)'s Committee on Payments and Settlement Systems (CPSS), financial inclusion has been an important driving force in many countries either because of government efforts or because of the new business opportunities offered by the untapped market (Committee on Payments and Settlement Systems, 2012). Many innovations in the area of payments systems intended to improve financial inclusion were introduced, but only a few have been successful.

Since the retail payments infrastructure is shared by all the banks, they may well need to move collectively to foster innovation in this area. However, promotion of competition by the regulatory authorities may also play an important role in the development of retail payments systems as is the case in Finland and USA (Milne, 2006).

Another recent aspect of innovation in retail payments systems is the entry of non-banking entities into this arena. These entities offer new payment messaging and aggregating services, and have gone further, even to the extent of issuing their own currencies—such as Facebook Credits¹⁴ and Bit coin¹⁵. Although these virtual (or designer) currencies presently have limited acceptability, they nevertheless have the potential to gain major acceptance in future. New technologies are also enabling rapid launch of new products and services, as well as enhancements to the existing ones. Near Field Communications (NFC) technology is being promoted by card issuers and mobile phone makers who promise convenience and ease of use (Ondrus & Pigneur, 2007). Large internet companies are now offering products that would allow customers to store information about different cards on their mobile phones and use them to make payments. Some mobile apps even advise their users about

¹⁴ <http://www.facebook.com/credits/>

¹⁵ <http://bitcoin.org/>

which card to use and in which circumstances that card would incur least cost to the customer or would provide them with a discount. Mobile Network Operators (MNOs) have been able to offer banking services using their already existing and extensive network of agents. They have also been able to successfully enter into partnership with banks and offer banking services using mobile phones (thus called “mobile banking” in many parts of the world).

These interesting new products may face difficulty in penetrating the market due to the replacement of existing infrastructure and even resistance from the banks, who may be reluctant to share their profits or customer information with the non-banks. While some consumers find it nice to keep a new gadget in their pocket, many consumers in low-income markets may not find any real added value to the underlying payment product and may find themselves averse to the risk involved in non-bank payments schemes.

2.6.1 Branchless banking

The traditional location for banking is at a bank branch. While ATMs and POS offer certain account-based transactional facilities outside of a bank branch, branchless banking goes further, including non-bank retail outlets for banking activities and the use of technology such as mobile phones or cards for the identification of customers or as a store of value. The back-end accounting function of a branchless bank is performed by an institution that is regulated by a bank regulator or central bank. The use of non-bank retail outlets provides a cost effective method of reaching customers on a broad scale without incurring any new fixed or establishment cost (Mas, 2009).

In recent years, there has been growing publicity about agent-based branchless banking, and the media reports success stories from many developing countries. A number of countries and international institutions have taken initiatives to support this new channel of delivery of financial services in order to improve financial inclusion. Despite these reports, it is still difficult to ascertain the level of success that branchless banking has had in improving financial inclusion. However, all future projections points to the optimistic possibility that branchless banking will improve the number of financially included, if adequate government and institutional support is available (CGAP, 2009).

2.6.2 Mobile banking

A special form of branchless banking, mobile banking is transforming the way payments are made on an individual basis. In developed countries, mobile companies are using NFC-based contactless devices, while in many developing countries, SMS (Short Message Service) based phones are being

used to receive and send payments. More than the technology, it is the regulatory environment that may prove to be a challenge as there are multiple players in the mobile banking value chain. The mobile banking payment stream includes banks, Mobile Network Operators (MNOs) and agents, who are regulated by different regulators with different objectives (Merritt, 2011). Some countries opt for a bank-led model in which banks play a dominant role, while others will follow the telco-led (also called MNO-led) model in which financial institutions play a lesser role (Merritt, 2011).

An interesting case for mobile payments is Kenya's M-PESA, which is widely used in Kenya. Although Appendix A shows Kenya to have an estimated FI of 10%, recent studies have estimated the present inclusion rate (2011) to be around 50% of its adult population, with over 40% having an account at a formal financial institution (The World Bank, 2011). Some 66% of M-PESA users employ a mobile phone to receive money and 60% to send it. Mobile banking is offered by Safaricom, an MNO with a cellular market share of over 80%. Safaricom was able to leverage an existing network of airtime resellers to build a strong and reliable store network, and to offer flexible prices to different customer segments (Mas & Ng'weno, 2011).

Countries like Senegal, who tried to replicate the same scheme, failed to achieve the expected levels of success. This shows that Kenya may have had some specific local environmental factors that enabled Safaricom to succeed with M-PESA. Hence, we can conclude that successful mobile payment models may need an in-depth understanding of the local markets, local technology, and localization of the products being offered in order to succeed.

2.7 Summary and Discussion

In Chapter 1, we observed that two types of technologies play a significant role in the improvement of financial inclusion by supporting the institutional infrastructure:

1. Technology for providing and exchanging information regarding credit and collateral
2. Technology for processing banking transactions and payments especially those that facilitate immediate exchange of value from payers to receivers. We refer to this type of technology as the "banking and payments technology" for the purpose of this thesis

In this chapter we briefly looked at the role of banking and payments technology in the growth and evolution of banking at retail levels. We observed that the business of retail banking grew rapidly during the last few decades. One of the enabling factors for this growth is the adoption of information

technology by the banks that in turn enabled them to handle increased transaction volumes, improve control and lower costs by standardizing their processes and automating labor intensive jobs.

Simultaneous developments in payment systems mechanisms have enabled banks to collaborate and efficiently process large number of transactions. This includes the introduction of SWIFT messaging, automated clearing houses and settlement mechanisms like the RTGS. Hence it is not surprising that in countries with high level of financial development (including the developed technological infrastructure), banks are able to offer low-cost solutions (Claessens, 2006).

However, the high cost of investments, network externality and competitive pressures in payment systems introduces inertia due to which banks and financial institutions may be reluctant to invest in them. Left to market forces, the development of these systems may take a long time; it may take even longer for the benefits to trickle down to the general public.

We also observed from the literature review that in the past, banks have been slow to innovate and offer products at retail levels. Credit cards, for example, were introduced by retailers which were later on introduced by the banks on a mass scale. Banks, probably because of their traditional expertise in banking and early adoption of technology, were in a better position to offer their services to a large segment of population while overcoming the initial barriers to adoption.

Recent developments in information technology, especially the growth of internet, may be resulting in the entry of non-banking players in the area of payments processing. In developed countries payment aggregators like PayPal and Square are rapidly gaining acceptance. In developing countries, the rapid influx of mobile technologies is enabling mobile network operators to launch mobile banking initiatives (mostly text-message based). However, the impact of these new initiatives on financial inclusion rates still remains to be seen.

We may therefore conclude the following:

- (i) Adoption of payments and banking technology is likely to play the role of catalyst in improving the ability of banks to offer low-cost basic financial products at retail levels. With new mobile and internet based technologies, it is more likely that service providers find new alternative delivery channels for reaching not only low-income high population density areas, but remote regions as well
- (ii) Since low-income population segments in developing countries are likely to be seen as unattractive markets for banking products by the bankers, they may not be interested in

investing in payments and bank technology. This lack of availability of payments technology is likely to act as a road block for new channels like mobile and branchless banking

- (iii) As seen in Chapter 1, governments are taking a keen interest in improving financial inclusion rates by issuing regulations that promote alternate delivery channels., By investing in new payments technologies governments, especially those of developing countries, are more likely to speed up the process of financial innovation aimed at improving financial access rates

Chapter 3

The Case of an Underdeveloped Country: Pakistan

3.1 Introduction

The main work of this thesis is to investigate the perception of bankers in Pakistan and to determine the extent to which their perceptions impact financial inclusion. Pakistan was chosen for this study for the following reasons:

1. It has one of the lowest rates of financial inclusion (12%) in the world; hence this makes it a country of interest to study the phenomenon of low FI
2. Its banking system is usually considered to be very good. The regulatory environment is conducive for banking and is generally inclined towards supporting efforts for promotion of banking among the masses
3. We had access to the bankers in Pakistan and could encourage them to complete a survey questionnaire

In this chapter, we first briefly discuss Pakistan's demography by examining selected socio-economic and infrastructure indicators. We then discuss Pakistan's banking sector, the state of electronic banking and payment systems in the country, and the recent focus of its policymakers on microfinance and branchless banking for promoting financial inclusion. Finally we will examine some indicators from The World Bank's Global Financial Inclusion Database, and the perceptions of Pakistani consumers regarding financial services and the service providers in the country using Finscope's survey findings.

3.2 Demography

3.2.1 Financial inclusion

Pakistan is a country with low formal financial inclusion. Various estimates have shown the rate of formal financial inclusion in Pakistan to be about 12% of the adult population. Honohan's FI shows the rate to be 12%. The Governor of the Central Bank (State Bank of Pakistan – SBP) in a recent speech also acknowledged that 56% of the adult population is totally excluded and another 32% are

informally served (Yaseen Anwer, Governor SBP, 2012), thus indicating that only 12% of the adult population is formally served.

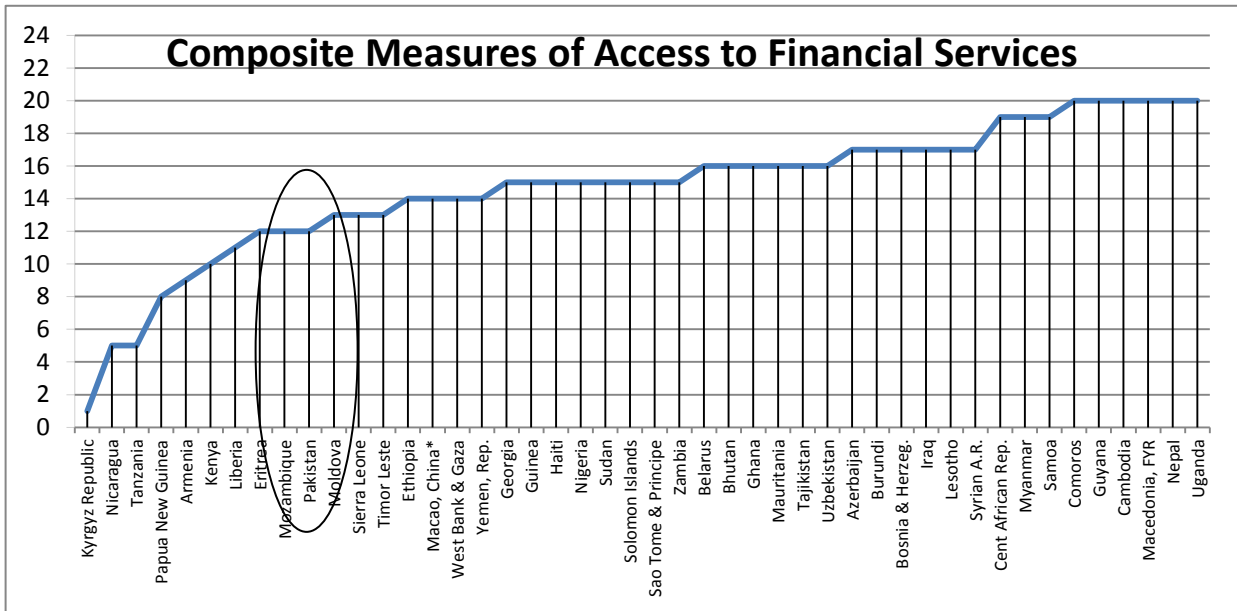


Figure 16: Tail of Honohan's FI curve from Figure 1

The State Bank of Pakistan has decided that a key objective will be improving financial inclusion. It has introduced a Financial Inclusion Programme (FIP)¹⁶ with the goal of improving access to formal financial services at an affordable cost.

Selected indicators for Pakistan are presented in Appendix B. Pakistan is classified by The World Bank as a “lower middle income” country with a 2010 population of about 173.6 million and GDP around USD 177 billion (The World Bank, 2012). By income, Pakistan was ranked at 177 along with Senegal, with a Gross National Income per capita of USD 1050 in 2010 (The World Bank, 2011). The 2010 inflation rate (in consumer prices) was 14%. Figure 17 shows the 2010 population and Honohan's FI rates of selected countries.¹⁷

¹⁶ <http://www.sbp.org.pk/MFD/FIP/about.htm>

¹⁷ Only countries appearing in Appendix A and with population of more than 10 million people have been considered here

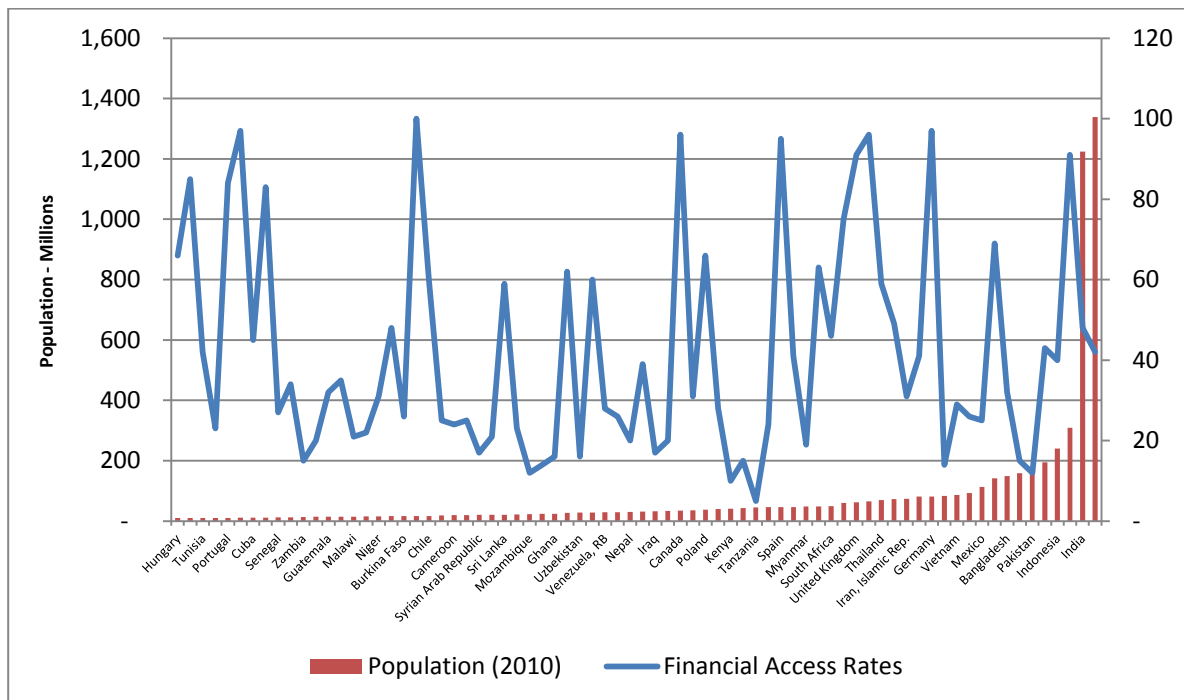


Figure 17: 2010 Population and FI for selected countries (Appendix C)

In 2010, almost 65% of Pakistan’s population was over the age of 14 years and about 50% were women. Some 63% of the population lived in rural areas however, due to migration, the population growth rate in rural areas was decreasing and that of urban centers increasing, albeit slowly (The World Bank, 2012).

3.2.2 Literacy rates

The 2008 adult literacy rate in Pakistan (% of people ages 15 and above) was 56% with adult male and female literacy rates at 69% and 40% respectively. However, among younger people (ages 15-24) the rate was higher at 71%. With 35% of Pakistanis under the age of 14 years, it is likely that literacy will increase in the future.

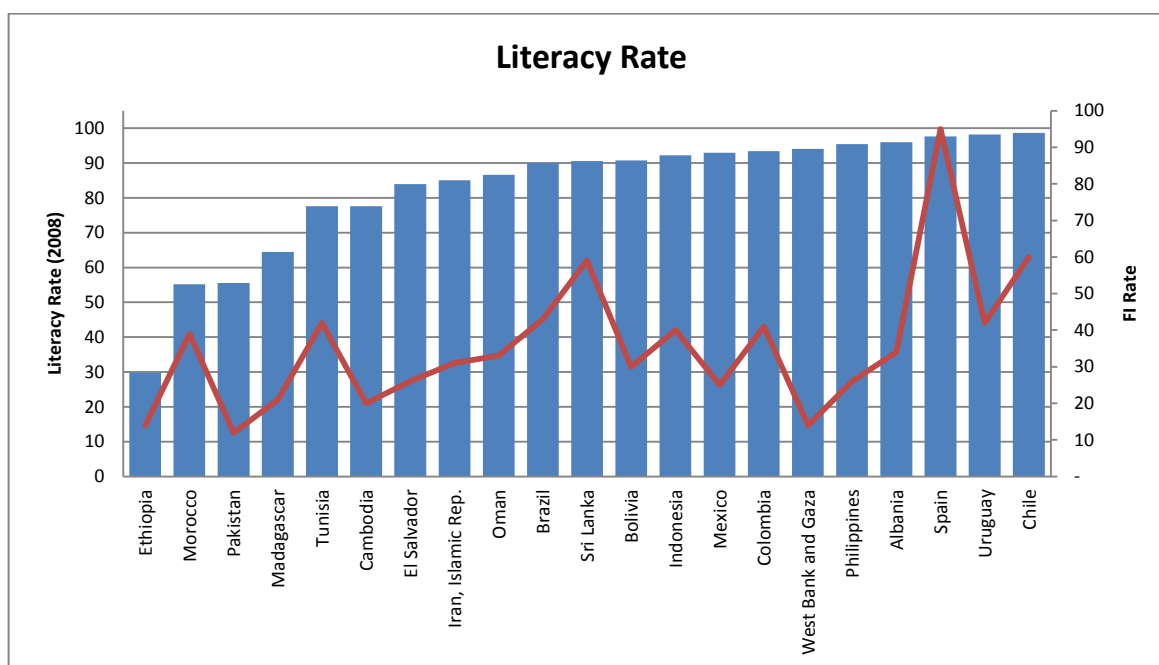


Figure 18: Literacy rate (2008) and Honohan's FI for selected countries

Figure 18 shows a comparison of literacy rates (from Appendix C) for some countries¹⁸ with their respective composite measures of financial access. It is interesting to note that higher literacy rates don't necessarily reflect high levels of financial inclusion. For example, while Morocco and Pakistan have similar literacy rates, their financial inclusion differs by almost 27%. However, as shown in Chapter 1, on a global level, financial access is significantly related to the literacy rates.

3.2.3 Poverty

Pakistan is one of the poorest countries in the world. As Table 3 shows, the level of poverty decreased between the years 2002 and 2005 but since then it has been almost constant. The massive floods of 2008 and rising food and fuel prices may have increased this number since 2008.

	2002	2005	2006	2008
Poverty gap at \$1.25/day (PPP)	35.87	22.59	22.58	21.04
Poverty gap at \$2/day (PPP %)	73.91	60.31	60.98	60.19

Table 3: Poverty gap headcount for Pakistan (The World Bank, 2012)

¹⁸ Only countries appearing in Appendix A and whose literacy rates were available in Appendix C were considered here.

In 2008, 76% of people were living on \$2.50/day or less and 93% were living on \$4/day or less, as shown in Figure 19.

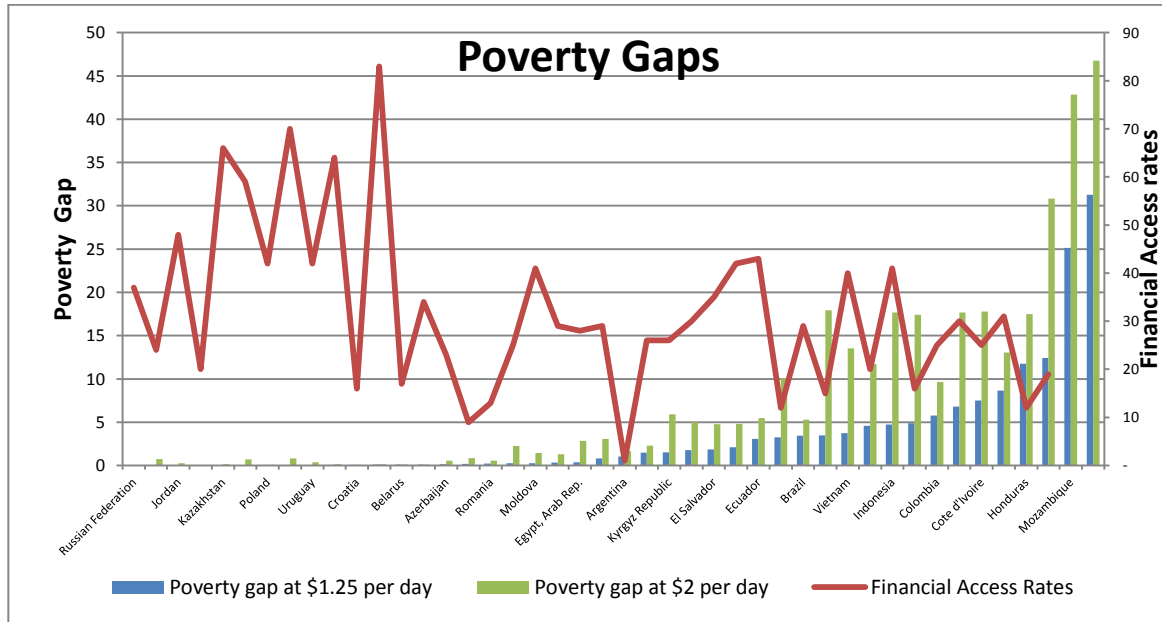


Figure 19: Poverty rate (2008) and Honohan's FI for selected countries

At country level, the Gross National Income (GNI) has a positive relationship with financial inclusion. India and Sri Lanka from South Asia stand out as two countries with relatively higher financial access rates as compared to their GNI level.

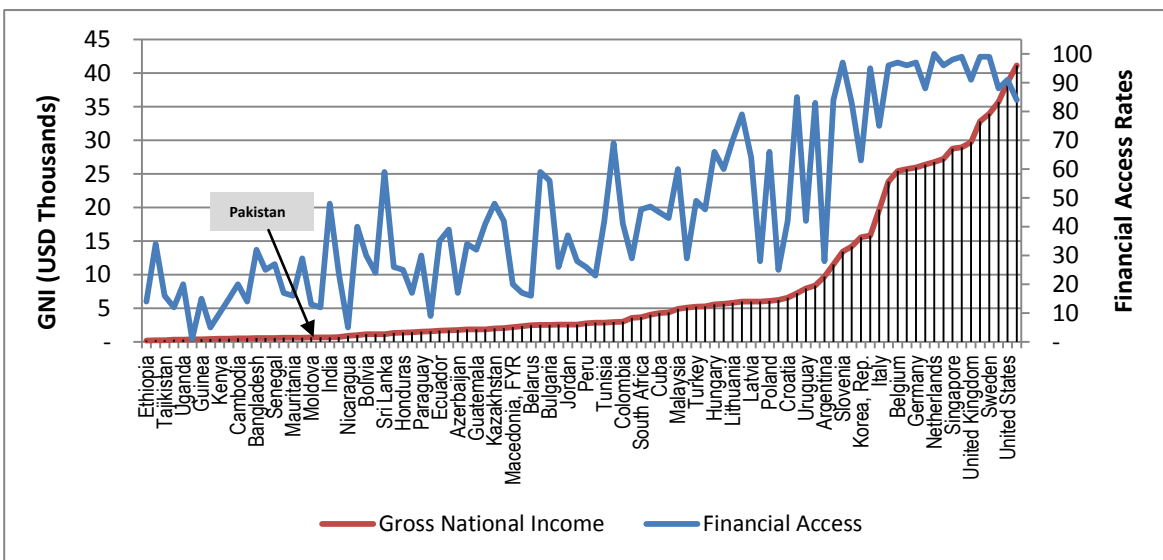


Figure 20: Gross National Income compared to FI (2008)

3.3 Infrastructure

Selected indicators relating to infrastructure in Pakistan are given in Table 4 for the years 2003 to 2010. The road infrastructure improved during the period 2002-2006 but deteriorated after 2007, most probably because of the devastating floods in 2008.

Indicator	2003	2004	2005	2006	2007	2008	2009	2010
Roads, total network (km)	254,410	258,340	258,214	260,420	259,189	258,350	258,350	
Roads, paved (% of total roads)	60.00	64.70		65.36				
Vehicles (per km of road)		7	7	7	7	8	8	
Mobile cellular subscriptions (per 100 people)	1.57	3.22	8.05	21.36	38.22	52.57	55.33	57.14
Internet users (per 100 people)	5.04	6.16	6.33	7.08	10.11	15.77	16.59	16.78
Telephone lines (per 100 people)	2.64	2.89	3.30	3.24	2.92	2.64	2.07	1.97

Table 4: Selected infrastructure-related indicators for Pakistan (The World Bank, 2012)

Pakistan made considerable progress in telecommunications during the period 2001-2010. The number of cellular subscribers per 100 persons grew from 0.5 in 2001 to 59.2 in 2010. Similarly, the number of internet users per 100 persons grew from almost 1.3 in 2001 to 16.8 in 2010 as shown in Figure 21. There is thus a strong potential for internet and mobile technologies in Pakistan to become a medium of choice for providing banking and other financial services.

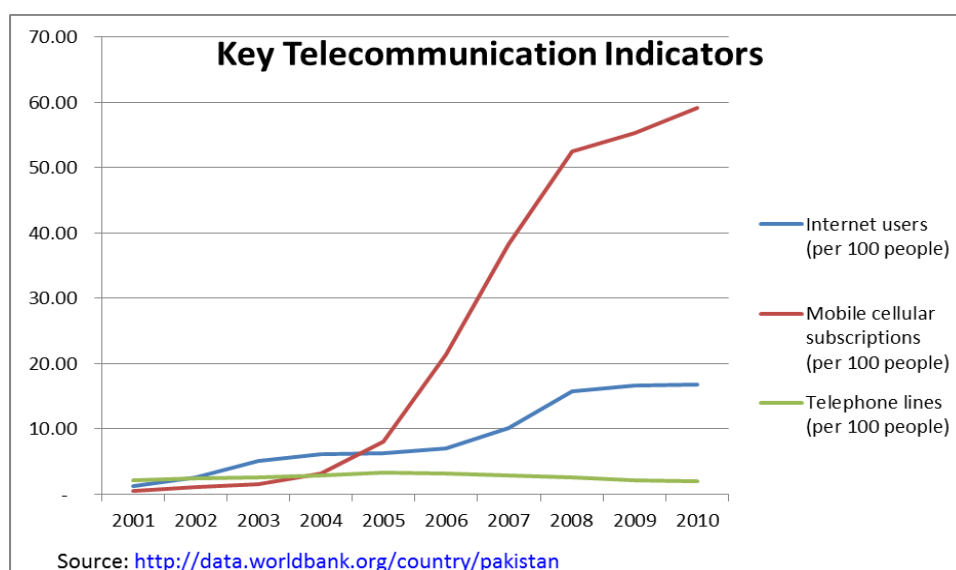


Figure 21: Key telecommunication indicators for Pakistan (The World Bank, 2012)

3.4 Banking Sector

Pakistan inherited an almost non-existent banking system at the time of her independence in 1947. However, today the banking system in Pakistan is considered to be strong and resilient, and banks are “well-capitalized, profitable and liquid” (The World Bank, 2010). The State Bank of Pakistan established in 1948 as the country’s central bank has played a leading role in transforming the banking sector since the 1990s. Its regulatory and supervisory framework is in line with international best practices and norms (The World Bank, 2010). As of 2010, the distribution of scheduled¹⁹ banks with their branches (State Bank of Pakistan, 2010) is as shown in Table 5.

Type of Banks	Count	Number of branches
Public Sector Commercial Banks	5	1,641
Local Private Banks	23	7,154
Foreign Banks	6	49
Specialized Banks ²⁰	4	546
Total	38	9,390

Table 5: Distribution of bank branches by type of banks

The public sector commercial banks, local private banks and foreign banks are usually classified as commercial banks and share among themselves 8,844 branches. However, a closer look at Appendix H will reveal that the top four banks— Habib Bank (1462), National Bank (1269), MCB Bank (1135) and Allied Bank (809)—have about 53% of total commercial bank branches. The Finscope survey of 2008 (Finscope, 2009) also reveals that the top five banks (National, Habib, MCB, United and Allied) have the maximum penetration among users (respectively, 30%, 22%, 17%, 11% and 10% of those surveyed).

Banks have assumed the traditional role of providers of credit, savings and payment-related services to the general population. In the following section, a brief picture of selected aspects of banking in Pakistan is provided.

3.4.1 Savings and deposits

As discussed in Chapter 1, measuring access and use of formal financial services is a difficult task. However, the number of accounts held by financial institutions does provide some indication of the state of financial inclusion in a country. The 2010 Annual report of the State Bank of Pakistan shows

¹⁹ Banks that are granted a licence by the State Bank to conduct the business of banking in Pakistan

²⁰ Includes Industrial Development Bank of Pakistan, Zarai Tariat Bank Ltd. (Agricultural development bank), SME (Small and Medium Enterprises) Bank and Punjab Provincial Cooperative Bank Ltd.

that personal²¹ deposits are 47% of total deposit accounts; whereas personal advances accounts are 9% of total advances account (State Bank of Pakistan, 2011).

The provincial distribution²² of personal deposit and advances accounts is shown in Figure 22 and Figure 23. Punjab, which is the largest province, also has the largest share of deposit accounts, followed by Sindh, which is the second-largest province. A majority of large urban cities are also situated in these two provinces. However, in the case of deposits, Baluchistan, which is the poorest province with low population density, has only 2% of deposit accounts. Other far-flung regions like Gilgit-Baltistan and FATA have almost no deposit accounts. One can therefore infer, albeit cautiously, that the penetration of personal banking is dismally low in less developed areas.

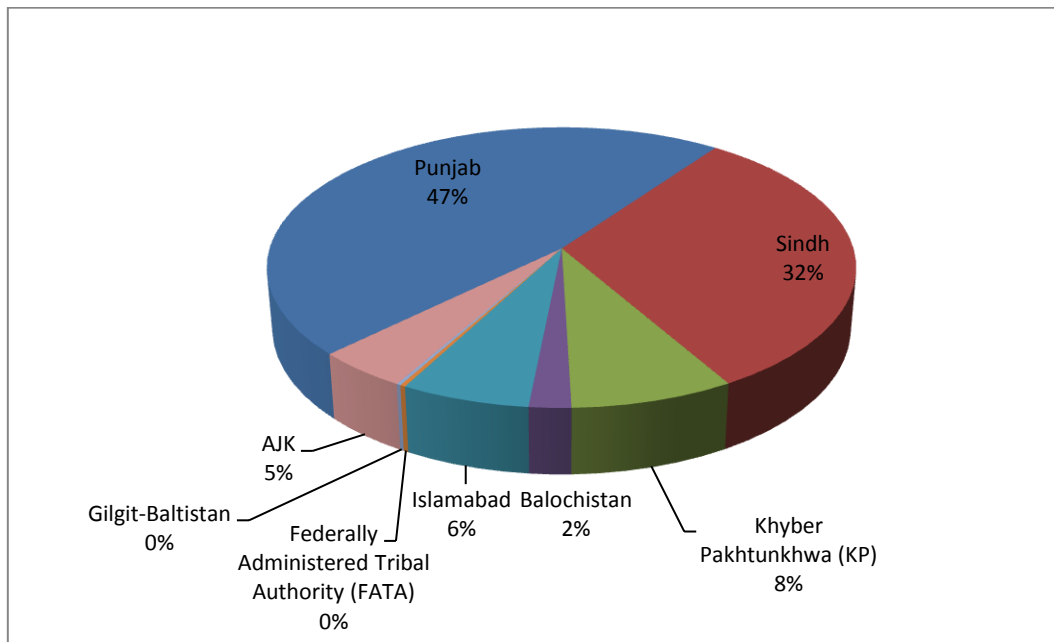


Figure 22: Province-wise distribution of personal deposit accounts (2010)

²¹ A personal observation: In the case of advances these include bank employees and consumer financing whereas in case of deposits, these include salaried, self-employed, housewives, students etc.

²² The footnote on page 65 (State Bank of Pakistan, 2011) specifically mentions that “The regional position may not reflect the true picture since offices of large companies operating in different regions might have used banking facilities located in different regions”. However, in case of personal accounts, the author is assuming that the actual residents of the regions will utilize the banking facilities from that same region.

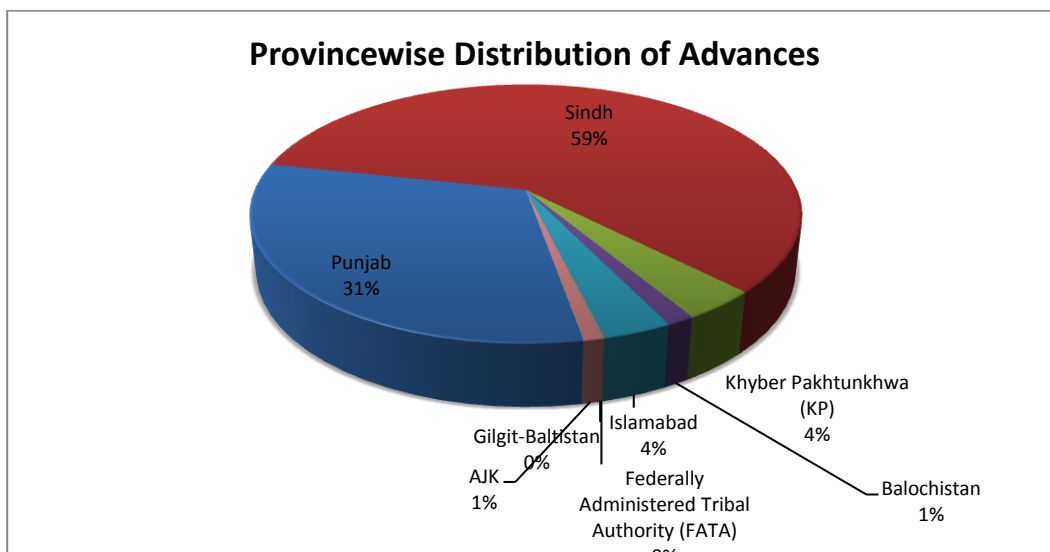


Figure 23: Province-wise distribution of personal advances accounts (2010)

3.4.2 Bank income

In Pakistan, as in most of the world, banking is mostly about accepting deposits for the purpose of lending both to the private sector and the government. Banking in Pakistan is a highly profitable business with most of the profit coming from interest income. According to State Bank of Pakistan (Banking Surveillance Department, State Bank of Pakistan, December 2010), the overall banking sector's profits were around Rs. 111.2 billion (USD 1.3 billion²³) with a Return on Equity (ROE) of 16.7%. A major portion of banks' income comes from interest-based earnings which form 91% of net income. The rising trend in interest income is mainly due to a rising proportion of income from investment in government securities and from government borrowing. The Economist referred to this phenomenon as "lazy banking" which is simply investing deposits in government bonds for a safe return (The Economist, February 11th, 2012). In Pakistan, it takes more than 20 days to process a consumer loan application, which is among the highest in the world (average 4 days) (Beck, Demirguc Kunt, & Martinez Peria, 2008).

On the other hand, a major part of non-interest income comes from fee-based income from banking services. According to SBP, this income has remained stagnant because e-banking solutions have reduced banks' margins (Banking Surveillance Department, State Bank of Pakistan, December 2010).

²³ Using USD-PKR exchange rate as of 31 December 2010 (amounts converted by the author)

3.4.3 Electronic banking

In Pakistan, paper-based payments are still dominant. The common forms of paper based instruments are currency notes, cheques, payment orders and demand drafts. The inter-institutional paper based instruments are cleared through National Institute Facilitation Technologies (NIFT) Pvt. Limited which is a joint venture of six major commercial banks and the private sector²⁴.

The overall electronic banking infrastructure in Pakistan has shown considerable growth in recent years. In large value payments, State Bank of Pakistan was able to launch its Real Time Gross Settlement System in 2008. In retail banking, considerable overall growth has been witnessed in ATMs, Internet and mobile banking.

The data from State Bank of Pakistan shows an overall increasing trend both in the number of electronic transactions and their value during the last 6 years. The increase in the value of electronic transactions has not kept pace with the increase in paper-based transactions. On the other hand, the increase in the volume of paper-based transactions has stayed steady at between 80-90 million transactions per quarter, while electronic transactions have increased in volume by a factor of almost 3, from around 16 million in 2006 to almost 63 million in 2011. This can be seen in Figure 24 and Figure 25.

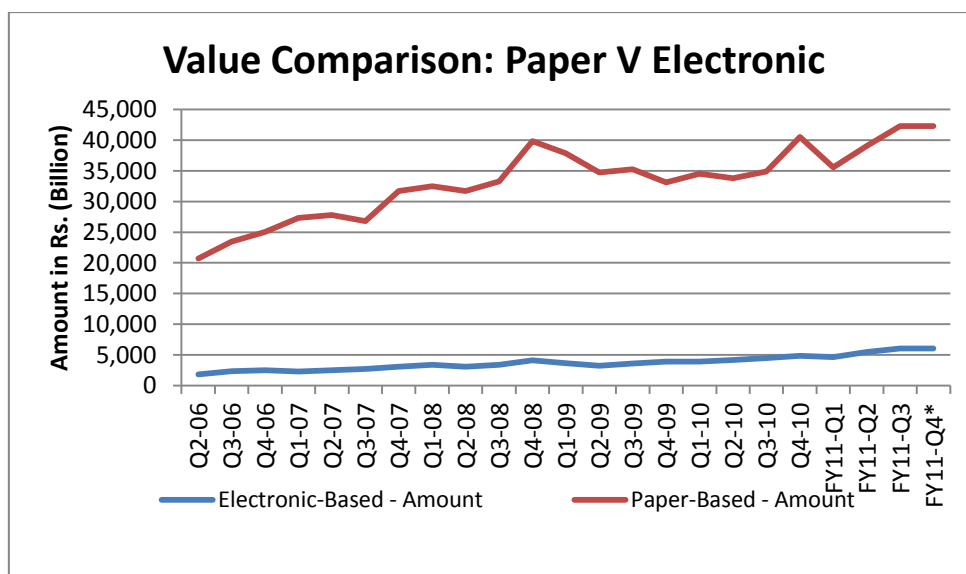


Figure 24: Comparison of paper vs electronic banking growth—by value

²⁴ <http://www.nift.com.pk/>

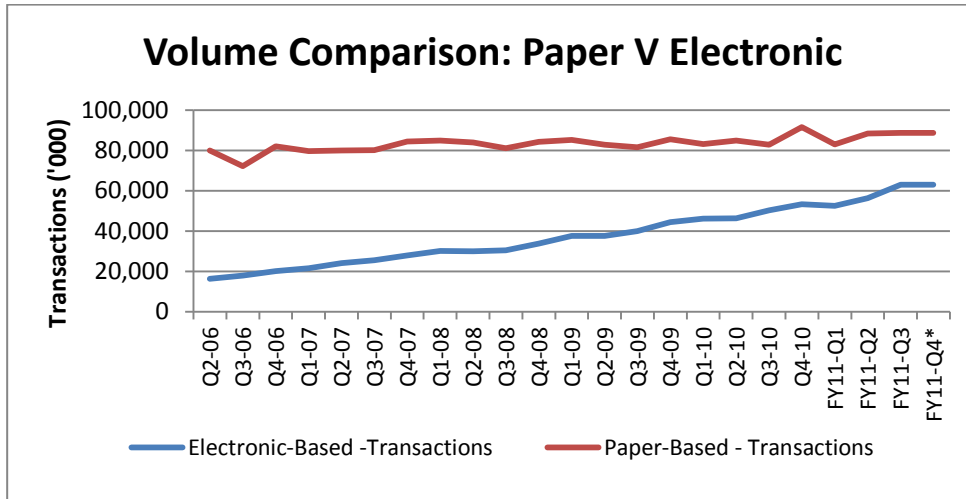


Figure 25: Comparison of paper vs electronic banking growth—by transactions

Overall, between 2006 and 2011, electronic transactions grew 285% in volume and 236% in value compared to paper-based transactions that grew 104% in volume and 11% in value. Although electronic transactions have not yet caught up with paper, the rate of increase in electronic banking is much higher than in paper-based banking.

Figure 26 shows the overall electronic banking infrastructure has grown significantly during the past seven years. Overall, the number of Real Time Online Branches (RTOBs) and Automated Teller Machines (ATMs) has maintained a steady growth. Presently, there are 5,200 ATMs and 7,416 online branches. Since the total number of commercial bank branches in the country is 8,844, almost 84% of them are online (assuming that all online branches are those of commercial banks).

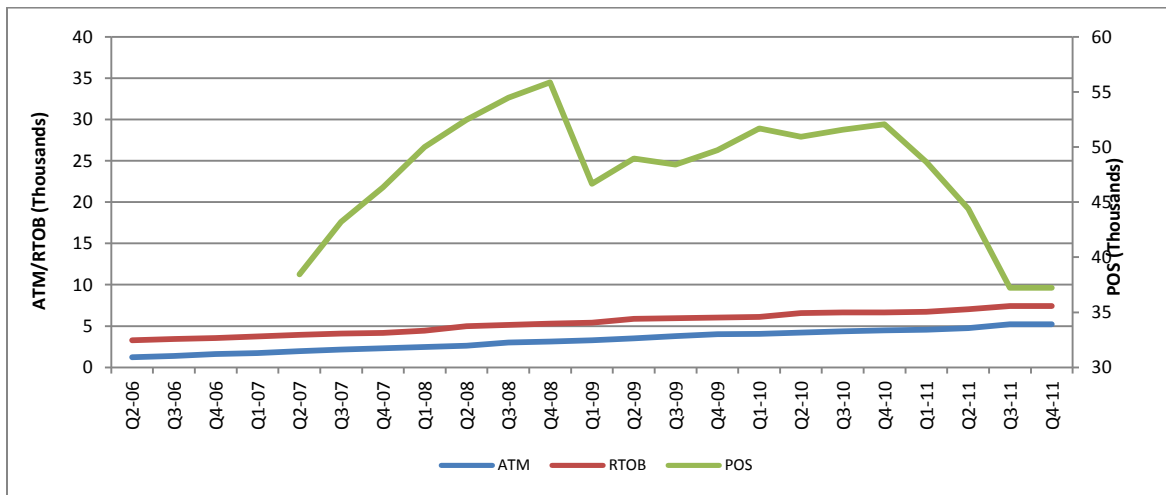


Figure 26: E-Banking Infrastructure (2006-2011)

The number of Point of Sale (POS) terminals showed a sharp increase between 2007 and 2008, from about 38,000 to about 56,000. However, their numbers dropped sharply between the 4th quarter of 2008 and the 1st quarter of 2009. Although their numbers started picking up from 2nd quarter of 2009, they never seemed to have fully recovered. From 1st quarter 2011, the number of POS terminals fell drastically. According to the recently issued half yearly report on payments systems, “this decline in the number of POS terminals is explained by certain participants’ business considerations in terms of which investment in ATMs was considered a more viable strategic option in comparison” (Payment Systems Department, State Bank of Pakistan, 2011).

In its Annual Report for 2008-9, the State Bank of Pakistan explained that in order to address the rising number of complaints and disputes relating to card operations (and to provide enhanced security to consumers), it recommended that banks in Pakistan issue EMV (Europay, Master Card, Visa) compliant cards, which they agreed to do by the end of 2010. As a first step, banks replaced the existing POS terminals with EMV-compliant terminals. Studies have shown that the adoption of EMV standards is a very costly proposition, where the cost of replacing the cards and the terminals may account for only up to 10% of total costs, with the rest going towards upgrading the backend infrastructure and trainings. Hence it is not surprising that by the end of 2010, banks would find investment in EMV-enabled infrastructure to be exorbitant and thus lead to fewer POS terminals. This analysis is anecdotal and further investigation is warranted to confirm it.

In view of the above, it is not surprising that while the use of ATMs and Real Time Online Branches (RTOBs) is increasing, the overall use in Point of Sale (POS) is decreasing. This is despite the fact that the average ATM fee in the country is 40 cents, among the highest in the world—the worldwide average is 10 cents (Beck, Demirguc Kunt, & Martinez Peria, 2008). Figure 27 and Figure 28 show that the amounts transferred using RTOB and ATM channels are considerably larger than those from ATM and POS. This may be because of the large funds transfers of corporate customers who use the branch networks for their transfers. ATMs and POS are channels that are typically used by consumers. Also, in case of ATMs, around 86% of the transactions in the last quarter of 2010 (2nd quarter of financial year 2011), were related to cash withdrawals and 14% to funds transfer (inter-account and inter-bank) (Payment Systems Department, SBP, 2011).

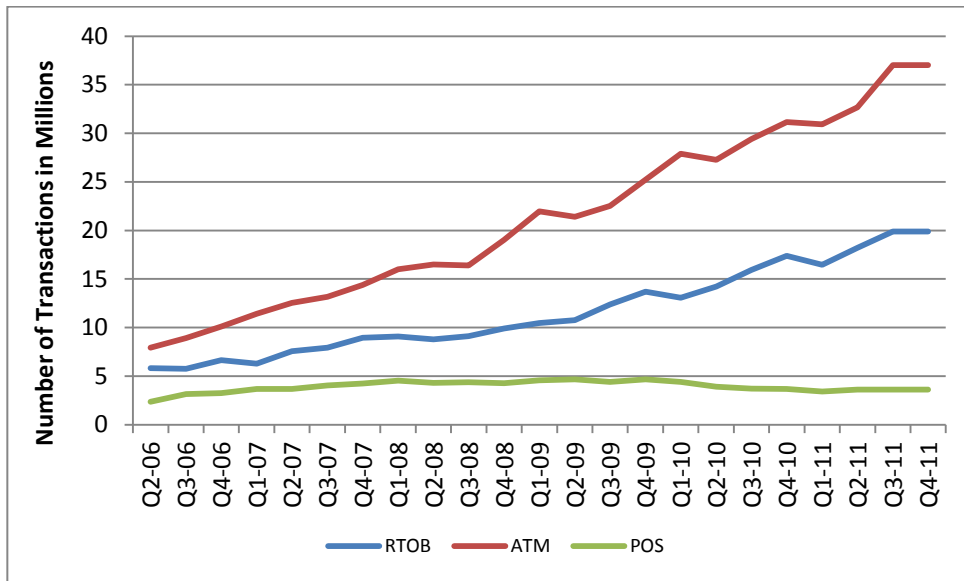


Figure 27: Number of transactions via RTOB, ATM, and POS

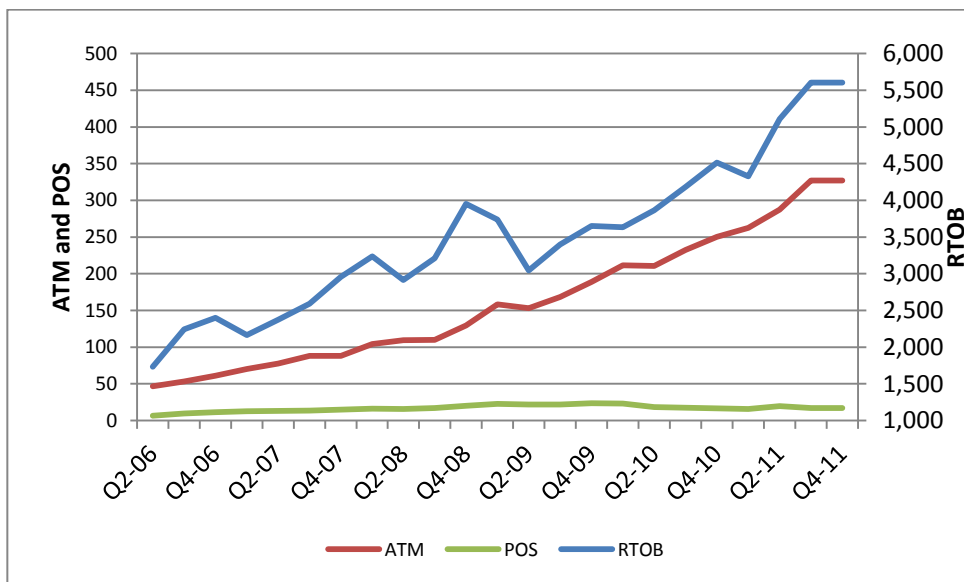


Figure 28: Value of transactions via RTOB, ATM, and POS

3.4.4 Internet and mobile banking

Internet banking in Pakistan has seen a steady increase over the last five years as shown in Figure 29. The amount transacted using this channel was over Rs. 60 billion during the last quarter of 2010. Since 2010, there has been a gradual rise in the value and volume of payments using this channel.

According to the State Bank, the main reason for the increase is the bulk payments made to parent companies by the franchises of telecom companies using internet banking (Payment Systems Department, SBP, Oct-Dec 2010).

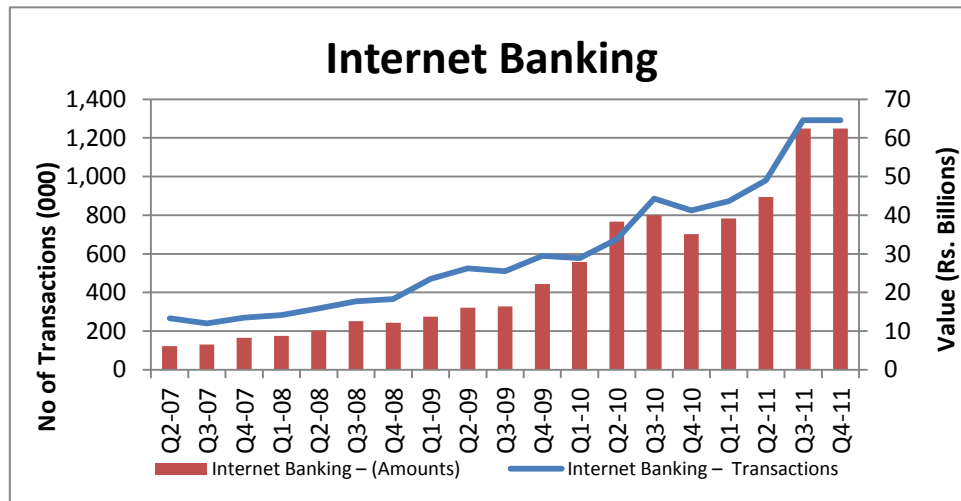


Figure 29: Internet Banking

As shown in Figure 30, Pakistan has seen a rapid increase in the number of mobile phone users. This led to innovative delivery channels in the form of telco-led branchless banking. Telco companies saw mobile banking as a lucrative channel not only improving their sales but also providing new avenues of business using an already established technology. We believe that the interest and support of the regulatory authorities in the country, and the deployment of a successful business model by Tameer Microfinance bank has forced the banks to look towards this medium as another delivery channel.

Figure 30 shows that mobile banking, which was virtually non-existent in the early 2000's, experienced a steep rise after 2009. The smaller average transaction size may also suggest that the channel is being used at the consumer level to transact in small amounts.

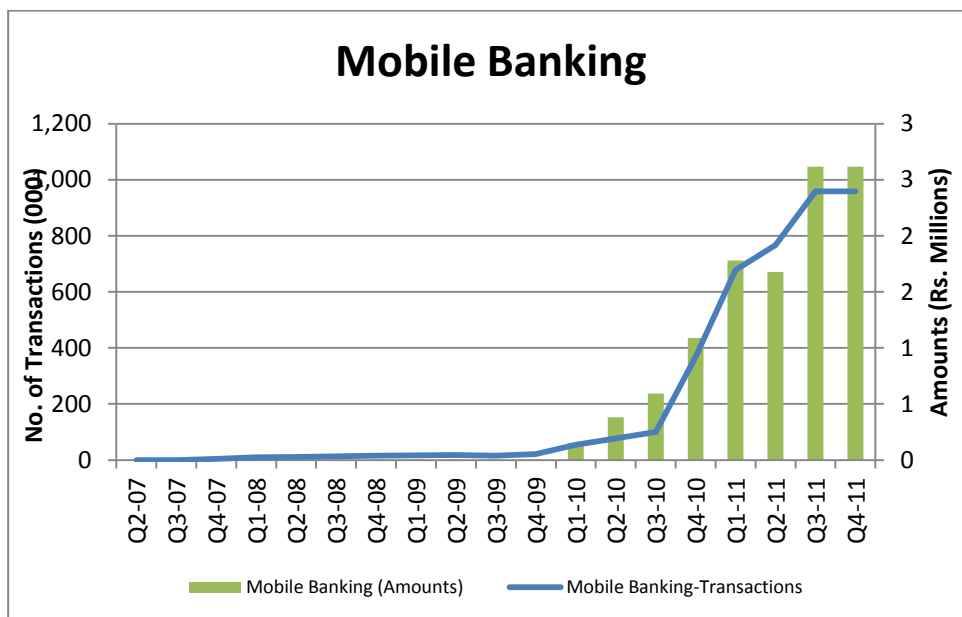


Figure 30: The rise of mobile banking

3.5 Microfinance in Pakistan

As previously noted, Pakistan has one of the lowest financial inclusion rates in the world: 56% of the adult population is completely excluded and another 32% are served informally (Microfinance Department, State bank of Pakistan, January 2011). That leaves 12% who are served by formal financial channels.

Pakistani governments began to take an interest in expanding financial services to the poor and low-income population in the early 1970s. These efforts were undertaken with the help of international funding agencies, and their main focus was on providing credit. Because of political interventions, these efforts largely resulted in financial losses and loan defaults. During this era, initiatives like the Aga Khan Rural Support Programme, Orangi Pilot Project and Rural Support Programs (RSPs) were launched, focusing mainly on providing social services. Some of the RSPs created specialized microfinance units in mid 1990s (Consultative Group to Assist the Poor (CGAP), 2007).

During the 1980s and 1990s, there was a mushrooming growth of finance companies and cooperative societies that promised lucrative returns to people. Unfortunately, many of them proved to be fraudulent (more like Ponzi schemes) and because of the lack of any government oversight, people lost a lot of money. This phenomenon caused a loss of trust of people in the financial system.

The emergence of successful microfinance models such as the Grameen Bank in Bangladesh attracted the attention of the Pakistani government and the SBP in late 1990s. The Government of Pakistan took major initiatives to establish the Khushhali Bank and Pakistan Poverty Alleviation Fund (PPAF) during this time. The SBP also established a separate unit dealing with microfinance in the country. The Microfinance Ordinance was promulgated in 2001, which laid the foundation for renewed efforts towards improving financial access and enabled the SBP to establish direction and take steps for the promotion of this sector. By 2007, licenses were issued to six microfinance banks (Consultative Group to Assist the Poor (CGAP), 2007).

Non-Governmental Organizations (NGOs) also played an active role in providing microfinance services. Some NGOs ran microfinance operations as a part of their development programs; others had a specialized focus on microfinance. The Rural Support Programs (RSPs) also ran MF operations as part of their development programs (Consultative Group to Assist the Poor (CGAP), 2007).

Before 2006, commercial banks in Pakistan did not provide widely-available microfinance products. While many banks had some form of offering, they were limited in quantity; only certain government institutions like the National Bank of Pakistan, Bank of Khyber and the First Women Bank identified microfinance as distinct product categories (Consultative Group to Assist the Poor (CGAP), April 2007).

The Pakistan Post, in collaboration with First Microfinance Bank, also played a major role in providing money and savings transfer services via its more than 60 branches throughout the country. Similarly, the National Savings Scheme (NSS) also played a very important role in promoting savings using formal channels (Consultative Group to Assist the Poor (CGAP), 2007).

In 2007, the government of Pakistan approved a national strategy, prepared by SBP after consultation with the stakeholders, called “Expanding Outreach of Microfinance” (EMO). This strategy set a goal of promoting “sustainable growth and institutional reforms” by enabling the industry to adopt cost cutting business models, developing human resources and mobilizing private capital. SBP was to play a lead role in sector development by licensing Micro Finance Banks, developing policy and regulations, and developing donor-funded initiatives in order to reach a target of three million borrowers by 2010 and ten million by 2015. Under this strategy, key reforms were implemented and the microfinance industry experienced high growth rates in 2007 and 2008. These high growth rates stalled after 2008 and only about two million microfinance borrowers were reached or served as shown in Figure 31 (Microfinance Department, SBP, 2011).

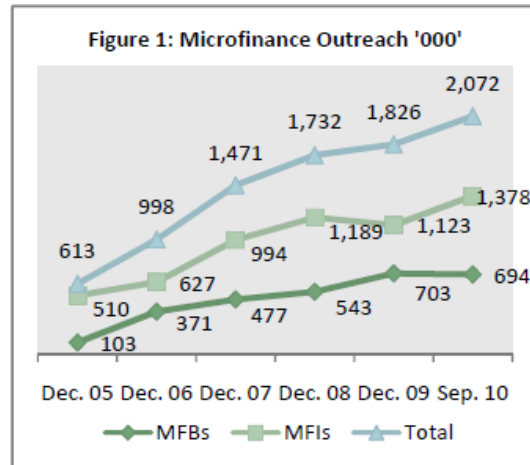


Figure 31: Microfinance Outreach (Microfinance Department, SBP, 2011)

Two of the major factors in this decline were lack of funding and portfolio risks, both related to the key operations of an MFI organization: lending. Two other problems that were identified by the SBP were lack of organizational development and cost ineffectiveness (Microfinance Department, SBP, 2011). It was also realized that microfinance institutions had not been able to develop alternate delivery channels for their businesses. SBP recommended that the MFI industry move away from a “credit-only” approach and “offer comprehensive financial services such as micro-savings, remittances and micro insurance” by developing management capability and improving IT-led applications and focusing on technological innovation (Microfinance Department, State Bank of Pakistan, January 2011).

In recent years, SBP has focused on the growth of microfinance sector in the country, especially for the purpose of providing credit for entrepreneurial purposes. On 20th June 2012, the first private sector credit information bureau specifically targeted for microfinance borrowers was launched by full support of the central bank. The outcome of this effort on the expansion of microfinance is yet to be seen, however, at the policy level this will address to a certain extent the need for using technology for providing and exchanging information regarding credit and collateral (as discussed in Section 1.11 above). However, a lot of work may need to be done to enable technology for processing banking transactions and payments, especially those that facilitate immediate exchange of value from payers to receivers.

3.6 Branchless Banking

In recent years, Alternate Delivery Channels (ADCs) have caught the attention of Pakistan's banking industry. SBP started working on branchless banking regulations in 2006 and issued comprehensive and updated regulations in March 2008²⁵. These regulations were primarily aimed at promoting a bank-led model, according to which banks had entire control and responsibility of the product and the program. The alternative telco-led model was not permitted, due to assumed inherent risks and the constraints of the existing legal framework (Saleem Raza, Ex-Governor SBP, 2010). As a result, there has been an increased focus on branchless banking by the banking industry in the last two years.

Tameer Microfinance stands out as an innovative and leading example with its successful rollout of its product "easy paisa" (or easy money). It partnered with Telenor, a Swedish telecommunication company operating in Pakistan to launch this product that enabled customers to transfer money (including bill payments and maintaining a deposit account – called M-wallet) using Short Messaging Service (SMS) on their cell phones. A network of over 11,000 agents was established for providing these services. Mobile accounts were set up in the Tameer MFB's books and their operations were outsourced to Telenor, to be handled via its technology platform. According to Nadeem Hussain, CEO and President of Tameer Microfinance Bank, the core proposition of Easypaisa is to offer something better than cash to ordinary people so that they can make micro payments and transfer money without having to travel to a bank branch. According to Nadeem Hussain, "initially transformational banking will be a transaction processing opportunity –it will develop into deposit taking opportunity" (Hussain, 2010).

Following the success of Easypaisa and promotion of branchless/mobile banking by the Central Bank, a number of banks started offering similar initiatives. This may be the reason that the number of transactions relating to mobile banking increased dramatically as shown in Figure 30.

In April 2010, the State Bank of Pakistan organized "Pakistan Branchless Banking Conference 2010" with the theme of "leveraging technology and networks for financial inclusion". Major financial institutions involved in mobile banking, telecommunication providers, government agencies and international agencies participated in this conference and provided their input and suggestions. There seemed to be a consensus that using mobile phones for providing financial services results in significant cost reductions, expands outreach where traditional brick-and-mortar don't exist and creates opportunities for efficient and profitable product diversification, especially for savings and remittance products.

²⁵ http://www.sbp.org.pk/bprd/2008/Annex_C2.pdf

During the conference, three major concerns were expressed by Dr. Muhammad Yaseen, Chairman of Pakistan Telecommunications Authority (Muhammad Yaseen, Chairmain PTA, 2010):

- How to maintain a balance between prudential controls and allowing innovations to flourish within the financial and telecommunication sectors?
- How to create and maintain confidence in payments systems as the risk due to systems interdependence may be high and may result in loss of consumer confidence?
- How to address the issue of cross-sector regulatory requirements?

These three concerns may well identify the challenges that policy makers and regulators in the country will face in the long run in the promotion of financial inclusion.

Pakistan was ranked third overall on the Economist Intelligence Unit's Global Microscope Index comparing countries and regions across two broad categories: regulatory²⁶ practices and supporting institutional²⁷ frameworks. Within East and South Asia, Pakistan came at the top in terms of overall microfinance business environment category "suggesting strong regulatory regimes and good prospects for micro finance institutions to enter the sector and perform effectively". In the supporting institutional framework category, Pakistan was the only Asian country in the top 25.

In the last two years, the Central Bank has pushed to improve product diversity within the banking sector by adopting innovative alternate delivery channels based on technology platforms. Successful branchless banking models in countries like Kenya and Philippines might have been the motivating drivers in this push.

Overall, at least among the policy makers in Pakistan, there seems to be a consensus on the following:

- Financial inclusion can play a pivotal role in improving economic situation of the general population. Every citizen has the right to low-cost and basic financial services
- The traditional brick- and-mortar banking channel has been unable to offer low-cost services due to its high cost overheads
- Microfinance can play a major role in improving financial inclusion. However, until recent years the use of microfinance was restricted to providing credit. Further, microfinance institutions are restricted by their low level of technology adoption and management capability

²⁶ Regulatory framework practices: assesses market-entry and regulatory dynamics

²⁷ The supporting Institutional Framework category addresses institutional and business practices including financial reporting, transparency, client protection, credit bureaus and technological innovations

- The Central Bank has begun major initiatives to enable banks to offer branchless banking services. These initiatives include establishing kiosks on retailers' premises, using agent networks at retail level, partnering with telecom companies for offering mobile banking solutions and even allowing telecom companies and other retailers to establish their own banks
- The Central Bank and the Telecom Regulatory authority need to work together towards the development of a technology platform for resolving inter-operability issues

3.7 The World Bank's Global Financial Development Index for Pakistan

Appendix I shows some selected Financial Inclusion Index Indicators for Pakistan from The World Bank's Global Findex database (The World Bank, 2011). All the analysis in this section will be based on the data from this source.

As shown in Figure 32, only 10.3% of Pakistanis over the age of 15 years have an account at a formal financial institution. However, more people over the age of 25 have an account as compared to those under it. Men are more likely to have a bank account than women. More people with higher income, secondary education and living in urban areas have a bank account than those with lower incomes, only primary education or living in rural areas, respectively.

Figure 33 shows account usage in Pakistan. Most people (albeit only 5.3%) use an account for receiving wages. This is not surprising as the Finscope survey shows that about 90% of Pakistanis receive wages in cash. Only 2.9% and 2% use an account for business purposes and receiving payments from government, respectively.

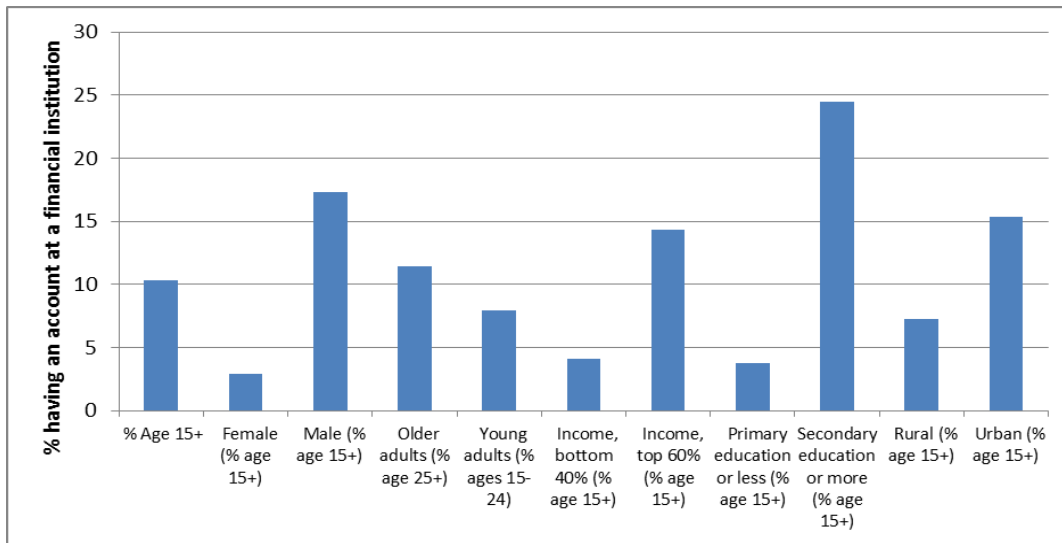


Figure 32: Profile of Pakistani account holders (2011)

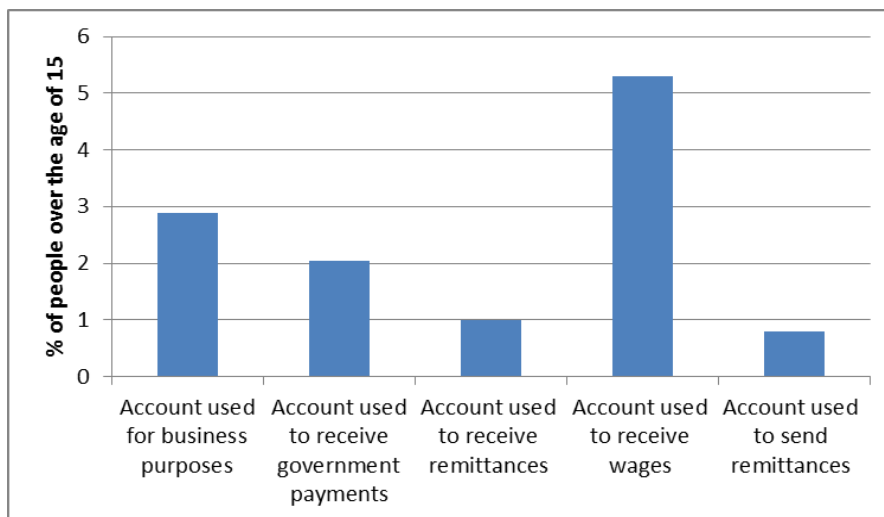


Figure 33: Account usage in Pakistan (2011)

Figure 34 shows ATM usage patterns in Pakistan. Because Pakistan's economy is largely cash-based and most of the ATMs in Pakistan are simple, the ATMs are primarily used for cash withdrawals. About 32% of Pakistanis over the age of 15 years use ATMs for cash withdrawals with about 50% of women using them. This may be due to cultural factors which makes ATM usage a more convenient form of banking than physically going to a bank branch. Younger people, those with secondary education, and those living in urban areas are more likely to use an ATM for cash withdrawal than older adults, those with only primary education, or those living in rural areas. ATM usage is almost equal (about 32%) for people with lower and higher income. However, as shown in Figure 35, bank

teller (or branch) is still the most widely used method of depositing and withdrawing cash, followed by ATMs. Bank agents and retail stores have lower usage than bank branches and ATMs.

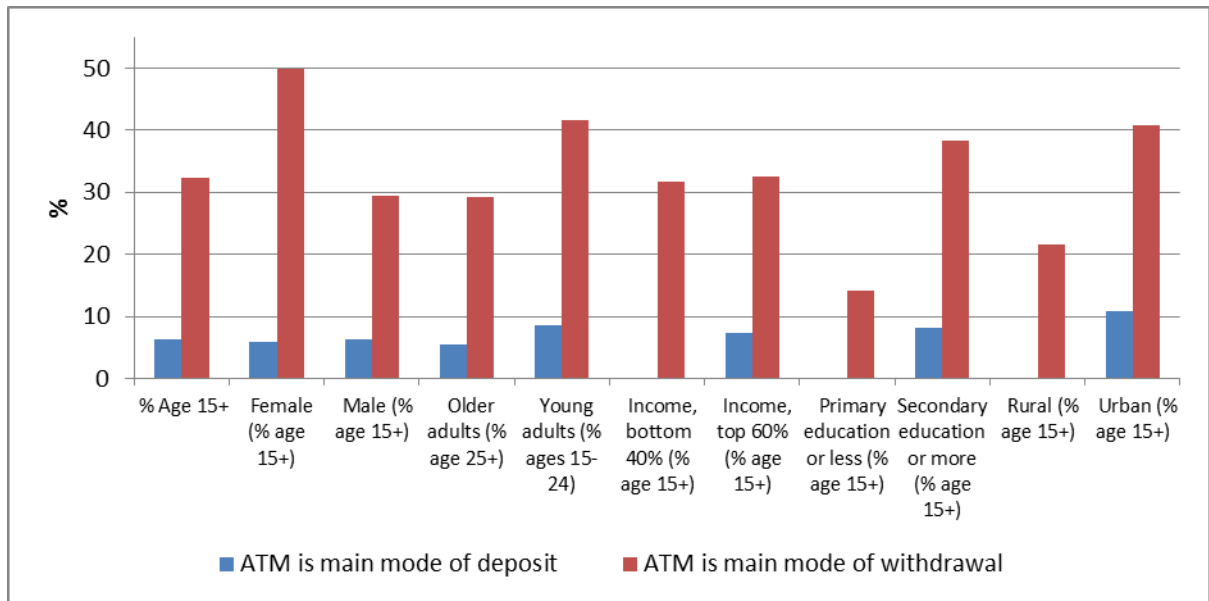


Figure 34: Use of ATMs (2011)

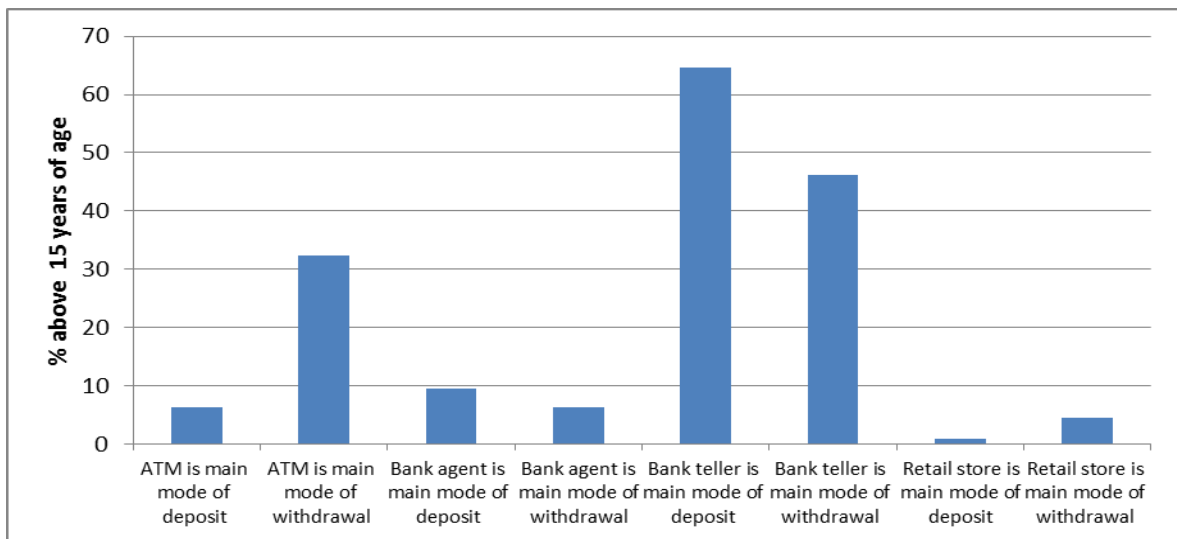


Figure 35: Channels usage for cash withdrawal and deposits (2011)

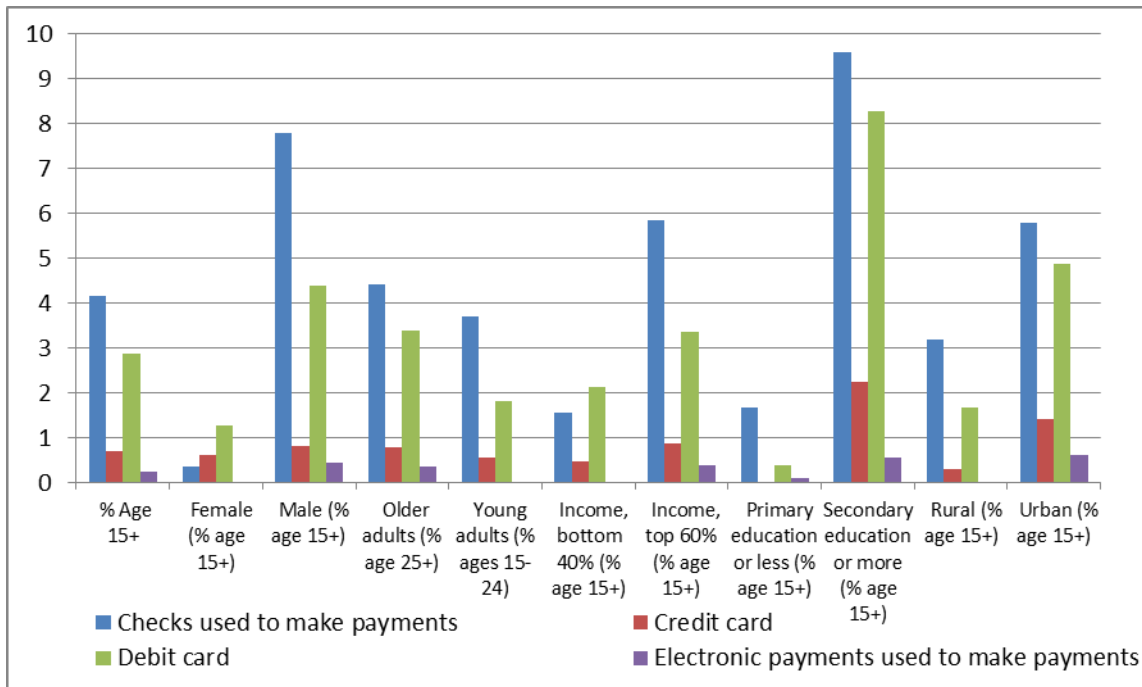


Figure 36: Modes of payment (2011)

Cheque is still the most preferred mode of payment across all segments as shown in Figure 36. However, the use of debit cards is also high, especially among those with secondary education, those living in urban areas, and males. Credit card usage is somewhat higher among people with secondary education and those living in urban areas. Electronic payment methods have almost negligible usage (less than 1% of adults) among urban dwellers, those with secondary education, males and those with higher income. Electronic payments are not frequently used by women, young adults, those with low income or living in rural areas.

Figure 37 show that 29% of Pakistanis over the age of 15 took a loan in the past year. The most likely people to borrow were those with low income (34%), followed by older adults (33%) and those with primary education (33%). Almost 31% of those living in rural areas took a loan, while equal numbers of men and women (29%) did so. As in true in other countries (Figure 4), family and friends are the main source of loans for all segments, followed by store credit. The number of people over the age of 15 years using store credit in Pakistan is 11.6%, which is higher than the South Asian Average (8%) and almost equal to high-income countries or low-income countries from Middle East and Central Asia.

In line with the world trend, the major reason for loans is for medical needs or emergencies. As illustrated in Figure 38, in Pakistan 17% of adults take loans for these reasons, followed by loans for weddings and funerals.

Figure 39 illustrates the savings pattern in Pakistan, which is similar to rest of the world although much smaller in scale. While 27% of the world’s adult population save for emergencies, in Pakistan only 4% save for this purpose. More people with secondary education, living in urban areas and between the ages of 15 to 24 years save than do other groups in Pakistan.

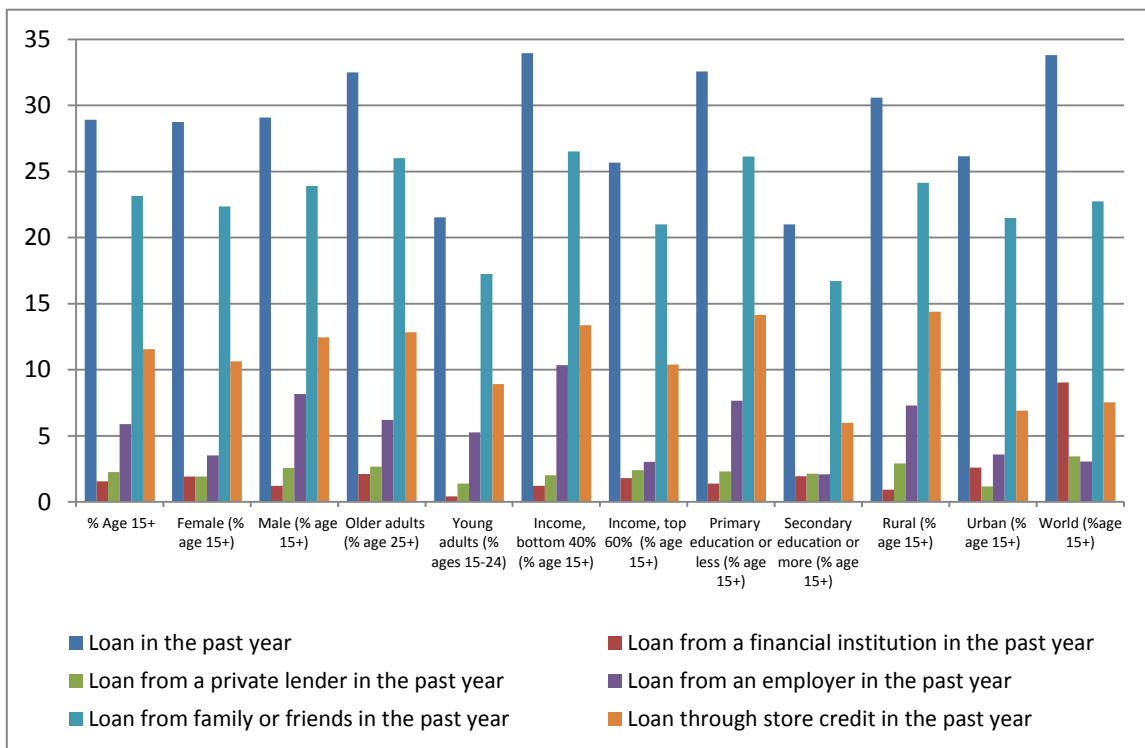


Figure 37: Loans and their sources

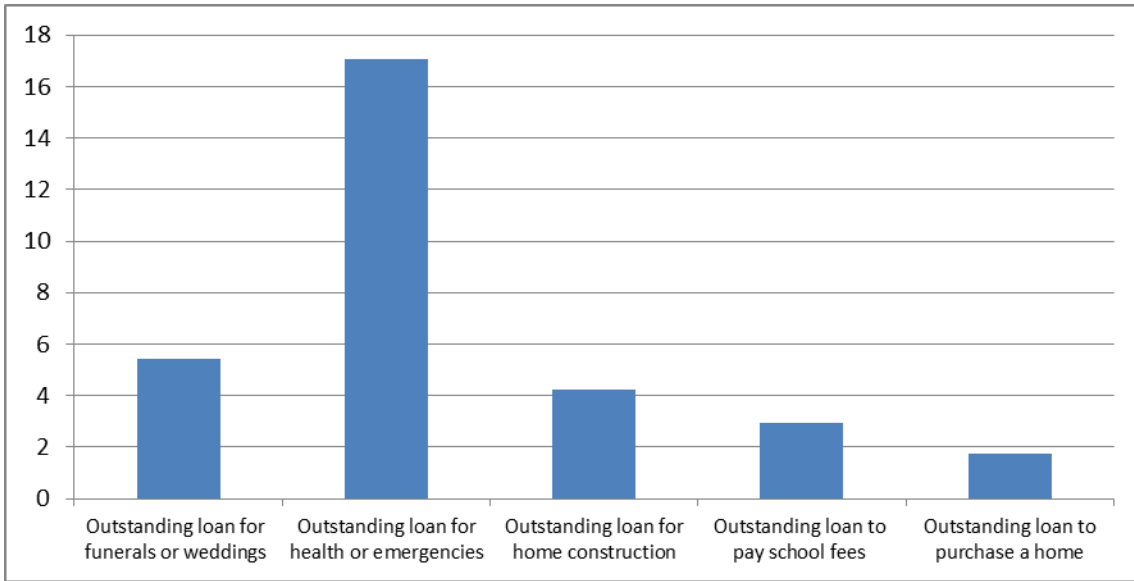


Figure 38: Purpose for borrowing

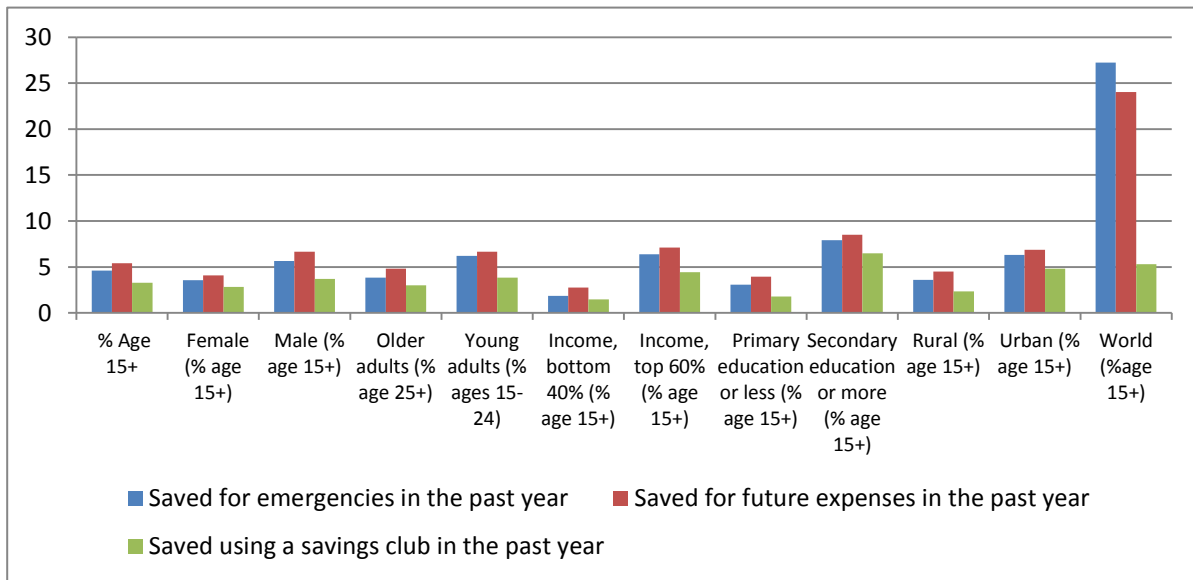


Figure 39: Pakistan's savings

In summary, we conclude the following:

- Pakistanis with higher income, living in urban areas and with more education are more likely to use formal financial services

- The primary purpose of a bank account is to receive wages or government payments, or conduct business transactions
- Most transactions using a bank account are those for cash withdrawals, and the preferred mode for doing so is bank branch followed by ATMs. Usage of ATMs among women is higher than any other group
- Check is the preferred mode of making payments, followed by debit cards. Those with more education or those living in urban areas use checks, credit and debit cards and electronic payments more than any other group
- Electronic payment modes are used very little, especially by those with low-income or in rural areas
- The proportion of adults who took a loan during the past year was similar to the world average. However the proportion of those who borrowed from a financial institution was much lower than the world
- While loans from friends and family are similar to the rest of the world, store credit is much higher in Pakistan than the world average
- Most loans are taken for the purpose of managing health or emergencies
- The proportion of adults saving (approximately 5%) is much less than the world average (approximately 25%)

3.8 Profile of Pakistani Consumers

Finscope²⁸ conducted a survey in Pakistan during 2008 that revealed some interesting findings pertinent to this thesis. All the analysis in this section will be based on the data from this source unless stated otherwise. The key findings are given below:

- 12% of the population is formally served, of which 11% are served by a bank and 1% by a non-bank like microfinance institution
- 32% are informally served (by money lenders, friends and family, committees²⁹ and shop keepers)
- 56% are financially excluded and are without access to either formal or informal financial services³⁰

²⁸ Details of Finscope's Pakistan survey can be found at http://www.finscope.co.za/new/pages/Initiatives/Countries/Pakistan.aspx?randomID=66718a13-06b0-4f5f-a568-252b0d6970e8&linkPath=3_1&IID=3_1_9

²⁹ A savings mechanism where some people may get together (and form an informal savings club) and contribute some money every month. A beneficiary is selected, usually randomly by a draw every month, who gets the total money for that month.

- 15% of the respondents who were formally served live in urban areas, whereas only 9% of them live in rural areas
- 57% of financially excluded live in rural areas and 53% live in urban areas.

For ordinary Pakistanis, the biggest concern is saving (or borrowing) for buying food and other essential household items, covering medical expenses, taking care of emergencies, and other household costs. Most Pakistanis (including those who have bank accounts) have different methods for saving, including committees, keeping money at home, or investing in buying cattle or livestock. Very few keep savings in banks or buy a government instrument like prize bonds or other national savings instruments.

The major sources of loans are shopkeepers, grocery stores and friends and family. Money lenders or “loan sharks” are used by only 3% of the people. Similarly, banks and microfinance institutions have very little role in lending. Hence it is not surprising that less than 9% of advances by Pakistani banks are given to personal account holders.

3.8.1 Perceptions about financial service providers

Generally people think that money is secure at commercial banks, post offices, and microfinance banks; however their requirements are more strict (such as for documentation), and their services are also more costly (for example, interest rates may be high). Few people think that their services are trustworthy, that their staff is helpful and understanding, or their hours of operations are convenient. People have more satisfaction with informal lenders, mainly due to lower service charges and reduced legal and documentation formality.

3.8.2 Reasons for financial exclusion in Pakistan

About 55% of those without an account say that they are unbanked because of low and irregular income. Some 43% said either they never thought about it or prefer dealing in cash. Some 31% said that they have access-related issues like lack of information or identity documents. Only 6% had mobility reasons for not having a bank account.

Persons with low education levels are less likely to have a bank account. Conversely, people with higher education are more likely to have a bank account. High cost also plays an important role in people being unbanked. Almost 50% of those who understand the concept of Islamic banking are not

³⁰ However in certain cases they may be using products like hawala or hundi, which are informal and unregulated means of transferring money from one country to the other

willing to pay more for it and choose to remain unbanked (almost 43% of Pakistanis regard themselves as religious).

A majority of the population views bank accounts as being used only for savings, borrowings or withdrawing cash. Some 81% think that savings is the prime reason for having a bank account. Further, of those who are unbanked, only 38% said that they would like to have a bank account, as compared to 62% who said that they were simply not interested in opening a bank account. Some 71% think that they can live easily without a bank account, which is understandable in an economy that works primarily on cash-based instruments.

Those who are unbanked and desire an account gave the following reasons for doing so:

- To borrow
- To keep money safe and withdraw it as and when required
- To save (for present and future needs)
- For business, employment purposes
- To earn income from deposits
- To pay utility bills
- For cheap and safe funds transfer
- To receive pensions or payments from government

Financial literacy is often given as a reason for people to be unbanked. However, in Pakistan financial literacy is also low among those who are banked. People usually have a poor understanding of terms like current account, bank charges or even cheque books. Thus, it is not surprising that there is a generally low understanding of more sophisticated products like credit and debit cards, exchange rates, SWIFT transfers and exchange rates, even lower among women and people in rural areas. Of those who are banked, 43% understand ATM cards (25% in rural and 62% in urban areas), 38% understand credit cards (19% rural and 57% urban areas), 30% understand debit cards (14% rural and 47% urban areas), 12% understand mobile phone banking (5% in rural and 19% in urban areas) and only 8% understand standing instructions (5% in rural and 12% in urban areas).

3.8.3 Use of technology for financial access

In Pakistan, cell phone usage is gaining rapid popularity with 60% of the population having access to cell phones and 44% using them. Cell phones are predominantly used for receiving and making calls. At the time of the survey (2008), SBP data also showed a negligible number of transactions using cell phones (Figure 30, reproduced below in Figure 40). During the past three years, there has been a

remarkable increase in the number of transactions (and amounts) on cell phones with an increase of almost 900 percent since 2008.

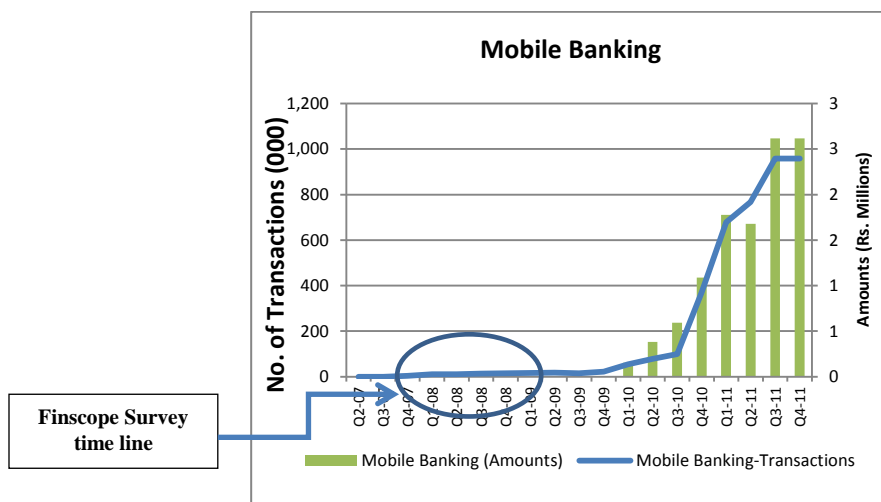


Figure 40: Mobile banking in 2008

This growth is in line with the perception expressed by about 8% of the respondents that “mobile banking will make banking more affordable to use”. Also at that time, only 11% thought that they were prepared to use technology for mobile banking.

While many people (9%) think that using technology (electronic bank transfers via ATM, internet or cell phone) is the fastest mode of money transfer, a larger number think that using a bank branch is not only the least risky (19%) but easiest (17%) as well. With regard to e-banking transfers, people were almost equally divided, albeit in smaller numbers, about this medium being the easiest (6%) or the hardest (7%) to use.

Finally, for any type of financial transaction and information, people thought that they would rather deal face-to-face with a person than with an electronic device, even if the device is quicker.

3.9 Analysis

Mainstream banks in Pakistan have the capacity and product knowledge to offer good financial products not only for borrowing or savings but for payment services as well. However they are too preoccupied with attracting customers from high-upper-medium income segments, and do not seem to be much interested in offering services to low-end, underserved markets. The government seems to have accepted this situation and is depending heavily on the microfinance sector to offer those services instead. Yet this sector is limited due to lack of management and organizational capacity.

Consumers in Pakistan don't have much choice of and apparently little reason for bank accounts. Traditionally a bank account is required for savings or borrowings. In recent years, upper-class salaried persons maintain accounts for the purpose of salary transfer, and have started using the associated benefits like credit card facility, debit cards for purchases or ATM cards for withdrawals. For the others³¹ who are not "rich enough", they see no use in maintaining a bank account and hence as a result they are also unable to use the allied financial products.

People who have problems with access or who have no apparent purpose for a bank account form a significant portion of the unbanked. But even those who cited low income as a reason could benefit from an account if the reason for the account was more than just savings or borrowings. The region of Azad Jammu and Kashmir (AJK) in the country is an example where a higher percentage of banked people are found. This may be because of the fact that the victims of 2005 earthquake in this region required a bank account for receiving public support funds. Similarly, the displacement of those affected by terrorism in 2008 and the flooding of 2010 showed that government can successfully use technology not only for income disbursements but also for preventing fraud. It is clear that when the desire is present, corporations and government can adopt technology to disburse payments (salaries, pensions, tax refunds, and other transfer payments) directly into bank accounts, and that people will use these accounts.

One limiting factor may be the undeveloped nature of the payments aggregating infrastructure. The Real Time Gross System (RTGS) introduced in 2008 is limited to large-value payments only. There is no clearing house for the clearing and settlement of small and medium value electronic payments in the country.

The review in Chapter 2 demonstrates two aspects of developments in banking. First, for general consumers, it was not the banks that initially developed products like credit cards—it was retailers who created this product. However, since offering credit-based products was not the core competency of the retailers they were restricted by limited market reach. Banks, because of their traditional role as financial intermediaries (and with the inherent business expertise attained over time) were able to offer these and similar products to a much larger market segment and with lower costs because of economies of scale. Thus we learn that banks are followers rather than leaders as far as consumer product innovations are concerned.

Second, the ability of banks to profitably offer their products on a large scale with low margins is only possible because of advances in technology. Banks have traditionally been early adopters of

³¹ Almost 92% of the income disbursements in Pakistan are in the form of cash (Finscope, 2009)

information technology and thus they were able to quickly achieve cost-savings. They were also able to collaborate over time and develop payments systems mechanisms to facilitate not only the transmission of payments but their aggregation and immediate settlement as well. Thus, cost-effective payments systems will inevitably require infrastructure at the level maintained by banks, rather than retailers.

The lack of interest of banks in Pakistan for consumers with low and irregular income means that the government looks towards developing new institutional frameworks like microfinance that could cater for the needs of people with low and irregular incomes. Commercial banks miss the point that people at the bottom of the pyramid constitute an entirely new market for them and they only need to adopt new thinking and new ways of offering their products in cost-effective manner to capture this market. However, the success of microfinance is limited and consequently there is a gap in payments services. This gap is thus being addressed by large telecommunication companies and other retailers. While the MFBs are trying to partner up with the large telecommunication companies, they face the risk of being gobbled up by these very companies (as happened with Tameer Microfinance Bank in Pakistan that was taken over by Telenor).

Chapter 4

The Research

4.1 Introduction

This chapter describes the problem of interest for this thesis, the methodology used to collect and analyze data, the actual data collected, and analyses of those data.

4.2 Problem of Interest

The issue of financial inclusion has mostly been examined by researchers from the point of view of consumers. It is generally assumed that those who are responsible for providing the means for financial access are always willing to do so. In this thesis we do not make that assumption, and so we test the willingness of people working in the banking industry in Pakistan to address the problem of financial inclusion. What is their estimate of the level of financial inclusion? What do they think are the causes of low financial inclusion? Are they knowledgeable about the facts of the problem and its causes, or do they accept “folk wisdom” causes? These are the kinds of questions we wish to investigate.

The literature review showed that low financial inclusion is correlated with demand-side factors such as low education (including low financial education) and low (or irregular) income. While people with no access to financial services are usually poor and less educated, the cause and effect between these conditions is not clear. Recent research has shown that giving people access to financial services can help pull them out of the vicious cycle of poverty (Chibba, 2009). In the absence of any solutions offered on the part of suppliers (bankers), the un-served population is likely to remain un-served and hence has fewer chances to escape the vicious cycle.

The discussion in the preceding chapters has also suggested that the problem may be less with the demand side than with the supply side. People with low or irregular income frequently use informal financial management instruments, such as borrowing from merchants. This shows that the demand for such services exists; what is required is that the supply side develop products and services that are not only cost-effective enough to be attractive for the target audience but also profitable for the suppliers. The history of banking in more developed countries shows that bankers have traditionally been less innovative when it comes to serving the bottom of the pyramid. Take for instance, the case

of credit cards: it was the retailers who first deployed this idea, and the bankers jumped onto the band wagon much later on. However, since credit and products relating to credit are the bailiwick of bankers, once they were on board they proved to be much more efficient in leveraging their economies of scales to make these products profitable.

Developing countries struggle to provide formal financial access to their low-income population. Pakistan is one such country. At the policy level, there is a huge emphasis on this issue, and a number of governments have adopted forward looking policies in this respect. However, most of the policies have the end goal of ensuring that people have access to a bank account, without considering how low-income people will use these accounts. It is mostly assumed that the bank account is used as a means of providing credit to people, probably for entrepreneurial use. As discussed in 0, more than 50% of micro-credit is used for consumption-related purposes. Moreover, it is frequently the case that people of low income and low education view bank credit with suspicion or even as an ethical threat. Thus, the delivery of credit through traditional bank accounts is probably not a good starting point for improving financial inclusion. We must identify a path of less resistance to formal financial services if we hope to grow them in an undeveloped region.

The main question to ask is: how do bankers' perceptions differ from policy intent? Is it the case that bankers rely on the "folk wisdom" of their trade about the causes and costs of financial exclusion? Thus, we are interested in the answers to the following questions, which in this thesis will be investigated for Pakistani bankers:

- What are bankers' perceptions of the state of financial inclusion in Pakistan?
- What are bankers' perceptions of the reason for financial exclusion in Pakistan? Do they attribute it to social conditions such as low education and low income, and thus believe there is little they can do about it? When presented with an array of possible cause for financial exclusion, how likely are they to attribute financial exclusion to commonly perceived causes like low education and income compared to less obvious causes?
- What are bankers' perceptions about the ability of banks to offer low-cost banking solutions to the un-served population of their country? Are bankers likely to think the (in)ability of banks to offer low-cost solutions is a factor in financial exclusion?
- What are bankers' perceptions about technology and its role in addressing the problem of financial exclusion?

- a. To what extent do bankers think that their customers value technology-enabled banking products?
- b. What improvements relating to technology do bankers think will improve the ability of their banks to offer low-cost, innovative solutions to low-income population?
- c. Which electronic services do bankers think are important in encouraging people to adopt banking services or in increasing financial inclusion?
- d. What impact do bankers think that country-wide technological projects (such as RTGS) will have on their internal and external organizations? To what extent do they believe such projects will improve financial inclusion?

4.3 Method

We investigated bankers' perceptions using an online survey. The survey was developed for this thesis and was reviewed and approved by the University of Waterloo Office of Research and Ethics. The survey was delivered electronically using the online tool (www.surveymzmo.com). The survey is reproduced in Appendix AA.

After conducting the survey, we then subjected the survey results to a statistical analysis to determine frequencies and proportions. Lastly, we drew conclusions from the statistical analysis.

4.3.1 Recruitment of participants

The following characteristics were used to identify and recruit survey participants:

- Employed in a commercial bank (including Islamic banks), microfinance institution or government regulatory agency (for example, the Central Bank). Some persons who are entrepreneurs in banking innovation or associated with international development agencies in Pakistan were also contacted and requested to participate
- Work in areas related to banking and having competence in one or more of these areas: retail banking, microfinance, payments processing, treasury, technology, compliance, new product development, operations, alternate delivery/ distribution channels like mobile and internet banking, branchless banking, risk management
- At the level of Vice President (VP) or above, or be known to be knowledgeable about the topic of financial inclusion

Participants were recruited by contacting known individuals in Pakistan's banking industry and asking these individuals to participate and/or suggest other participants. These references (recruiters) were knowledgeable people either within their organizations or within the industry. Approximately 230 members of the banking industry in Pakistan were identified as potential participants for the survey, and contacted by email with a link to the survey and all the details. In some cases telephonic follow ups were done by the researcher, in most other cases, the recruiters were requested to follow up with the respondents on researcher's behalf.

4.3.2 Response rate

The following points summarize the response rate.

- 209 participants clicked on the survey link from within the email
- 30 participants chose to exit the survey after reading the information
- 32 participants left the survey during or after Section 1 (demographic questions)
- 7 participants left the survey after Section 2 (Impact of RTGS)
- 4 participants left the survey after Section 3
- 6 participants left the survey during Section 4

The 79 participants who did not complete the survey were not used in further analysis. Of the 130 participants who reached the last page of the survey, 5 did not respond to any question, and so these 5 were also removed from the final analysis. Thus, 125 participants (hereinafter referred to as respondents) were left to be included in the final analysis, giving a response rate of almost 54%. Some of the 125 respondents did not respond to all the questions.

4.3.3 Demography of the respondents

Questions 1 to 3 determined certain aspects of the demography of respondents, without compromising their identity. Respondents were asked the type of institution that they belonged to, and their designations within their organizations. Respondents' type of institutions, their designations and area of expertise are given in Appendix K and shown in Figure 41

- 94 of the respondents classified themselves as working in commercial banks. This includes 4 respondents from Islamic banks³²
- 17 of the respondents classified themselves as working in microfinance institutions
- 10 of the respondents classified themselves as working in a government or regulatory authority

- 4 of the respondents classified themselves as working in other types of institutions³². One was an entrepreneur in banking field and two were working with payment switch-service providers

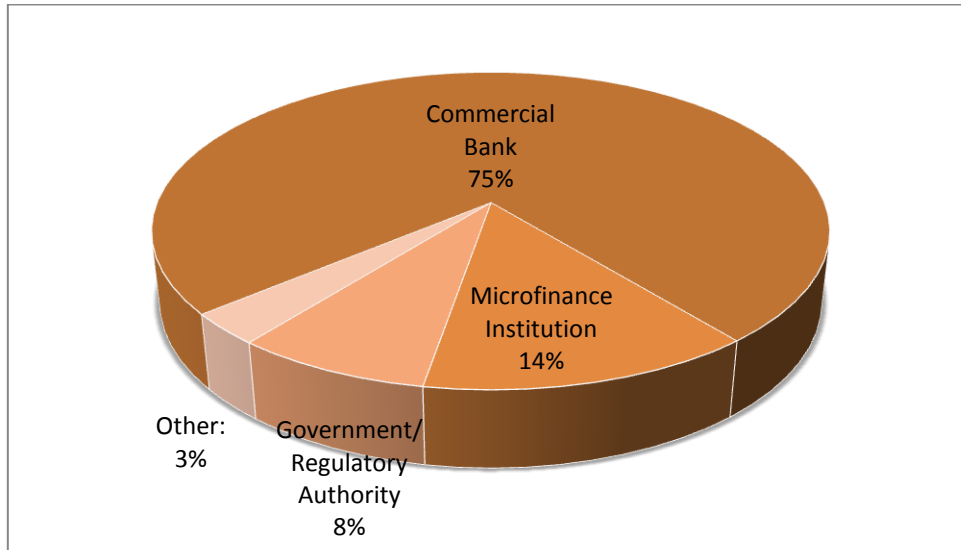


Figure 41: Distribution of respondents by type of institution

4.4 Respondents' Institutions

Questions 4 to 8 determined the perceptions of the respondents about the payment products offered and payment channels used by their institutions. They were presented with a mix of basic retail payments products and were asked to identify which delivery channels were used. Respondents were also asked to identify the type of payment cards that were offered by their organizations and the technology that was used in those cards. Finally, respondents were asked to rank their organization in terms of electronic banking as compared to their perception of the industry average.

4.4.1 Payments product offering and their delivery channels

In order to determine perceptions about electronic product offerings of respondents' institutions, respondents were asked to indicate whether their institution provided selected payment products, and if so, through which delivery channel. The payment products listed were:

- Cash withdrawal and deposits

³² Altogether, 8 respondents classified their organizations as "Others". Of these, 4 classified their institutions as "Others – Islamic Banks". For the sake of simplicity, these have been merged with commercial banks. Of the remaining 4, 3 works in payment switch companies and one is an entrepreneur.

- Cheque deposits
- Funds Transfer (within the bank and inter-bank)
- Bill Payments
- Direct Debits
- Standing orders.

The delivery channels listed were:

- In branch
- ATM
- Internet (web browser based) and
- Mobile.

Appendix L shows the number of respondents from banks, micro finance institutions, government and other types of institutions who responded on payments products and delivery channels (results of Question 4 from the survey). Table 6 and Table 7 summarize the information in Appendix L for all 125 respondents.

	Banks	MFIs	Govt	Others	Total	%
Cash withdrawal	92	17	6	3	118	94.4%
Cash deposit	91	17	6	2	116	92.8%
Utility bill payment	92	8	3	3	106	84.8%
Electronic funds transfer (Interbank)	80	4	5	3	92	73.6%
Electronic funds transfer (Inter-account)	91	11	6	2	110	88.0%
Standing orders for credit transfers	85	9	3	2	99	79.2%
Direct debits	82	11	6	2	101	80.8%
Cheque deposits	91	17	6	2	116	92.8%

Table 6: Products Offered by Type of Institution

	Banks	MFIs	Govt	Others	Total	%
Branches	92	17	6	3	118	94.4%
ATMs	91	3	3	3	100	80.0%
Internet Banking	74	0	3	3	80	64.0%
Mobile Banking	48	7	2	2	59	47.2%

Table 7: Delivery Channels Offered by Type of Institution

More than 84% of respondents reported cash withdrawal, cash deposits, electronic funds transfers (inter-account only) and cheque deposits as being offered by their institutions. Less than 81% of respondents reported electronic funds transfer (inter-bank), standing orders, and direct debits as being offered by their institutions.

About 95% of respondents reported “branch” as the dominant delivery channel. Automatic Teller Machine (ATM) was the second most reported channel at 80%. Internet banking was reported by 64% and mobile banking by 47% of the respondents.

Figure 42 and Figure 43 show that branches are still the dominant channel of service delivery for all types of institutions. It may also be noted that banks are far ahead of other institutions in the adoption of electronic delivery channels. Figure 43 show that microfinance institutions are lacking both when it comes to electronic products and electronic delivery channels. While the latter may be due to lack of technological capability of these institutions, the former may be an indication of the focus of these institutions on offering micro-credit, which mostly involves cash and cheque deposits and withdrawals in a paper-based economy like Pakistan.

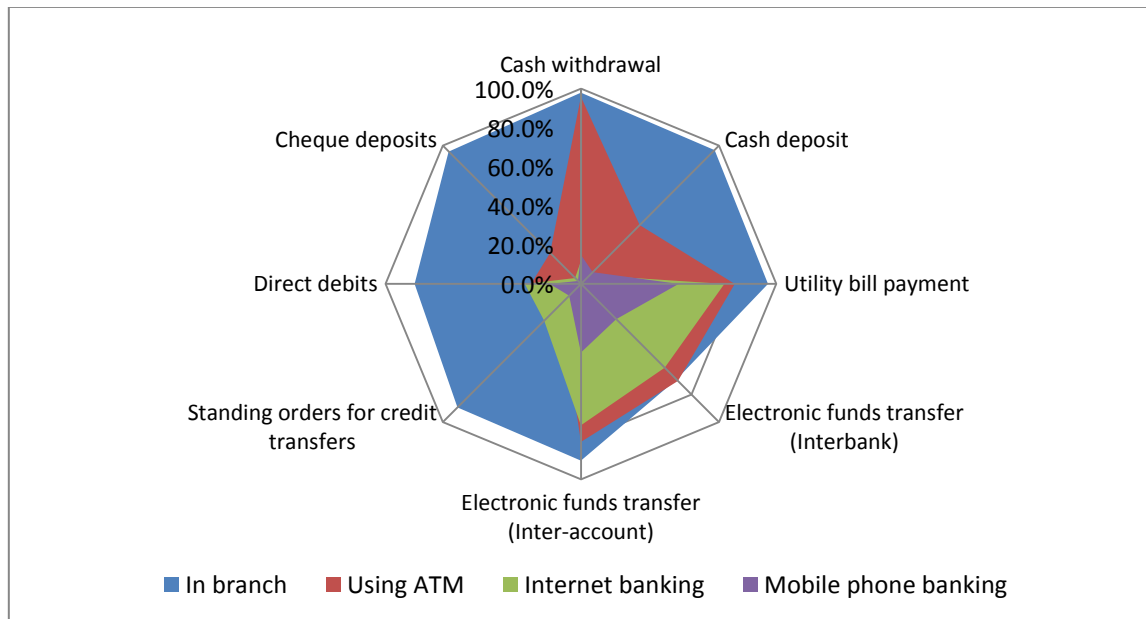


Figure 42: Products offered by delivery channels—Commercial Banks

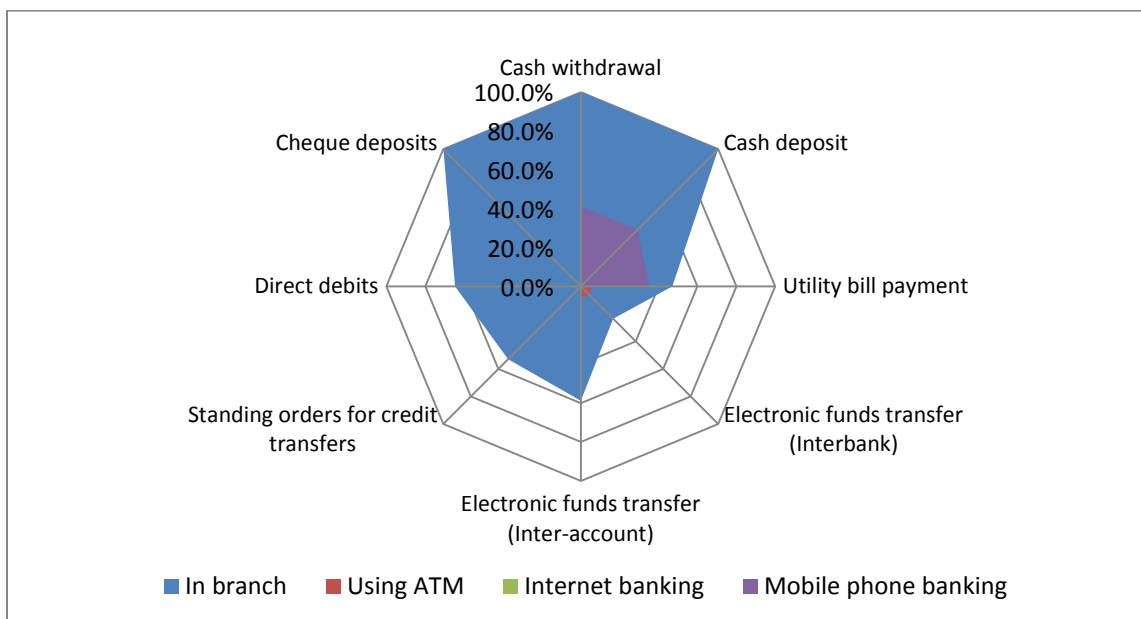


Figure 43: Products offered by delivery channels—Microfinance Institutions

These results show what is available in products and channels; what they do not show is the extent of the take-up of this availability. Although 64% of the respondents mentioned their institutions offering internet banking (Table 7), we should not conclude that 64% of the consumers in the country have access to internet banking. What we can infer is the preference and ability of the financial institutions to offer certain payment products using certain delivery channels. So for example, we can infer, albeit cautiously, that branches and ATMs are more likely to be offered by the financial institutions in the country as service delivery channels as compared to internet and mobile banks.

4.4.2 Card offerings

The literature review showed that cards (either credit or debit) have been one of the more important developments in the electronic payments products. Questions 5, 6 and 7 of the survey investigated the cards offered by respondents' institutions.

When asked: Does your institution offer a card (for example, ATM/Credit/Debit) to customers? 83% responded in affirmative (Appendix M(a)).

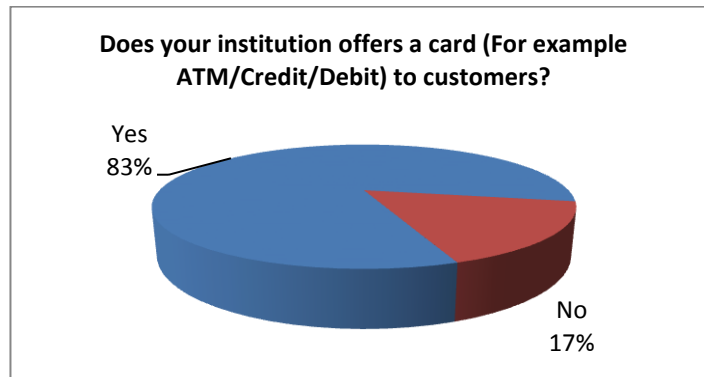


Figure 44: Does your institution offer a card?

All the respondents from commercial banks who chose to answer this question said that their institution offered a card (either debit or credit) to their customers (Figure 45). However, a significantly lower number of respondents from microfinance institutions (17.6%) reported offering this facility to their customers ($z = 4.22, p < 0.01$).

63% of the respondents reported their institutions issue a debit card that can also be used for cash withdrawals, as compared to 32% who reported issuing a credit card. 11 % reported issuing a debit card that could only be used for purchases and 29% reported issuing an ATM card that can only be used for cash withdrawals (Appendix M(b)).

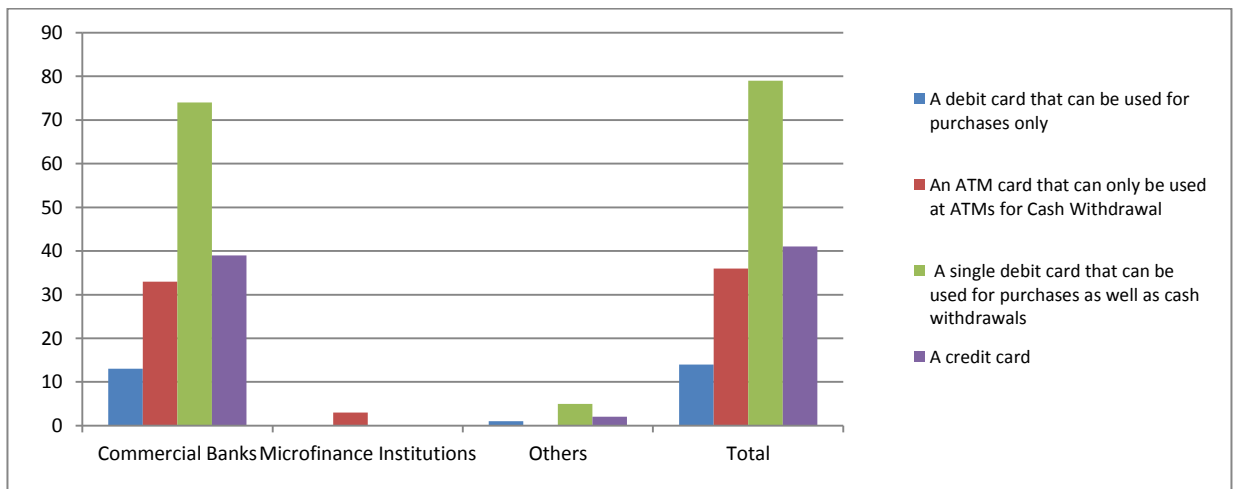


Figure 45: Type of cards issued by institutions

Respondents from commercial banks reported issuing all 4 types of cards. Only 3 respondents (18%) from microfinance institutions reported issuing a card that could be used for cash withdrawals only.

Respondents were asked to indicate the technologies used in the cards offered by their institutions. The technology choices were: stripe, chip and Near Field Communication (NFC). About 72% of respondents said stripe-based cards were offered by their institutions, while only 26% said chip-based cards were offered. Respondents from microfinance institutions reported that only stripe-based cards were offered by their institutions. Only one respondent reported offering Near Field Communication (NFC) based cards.

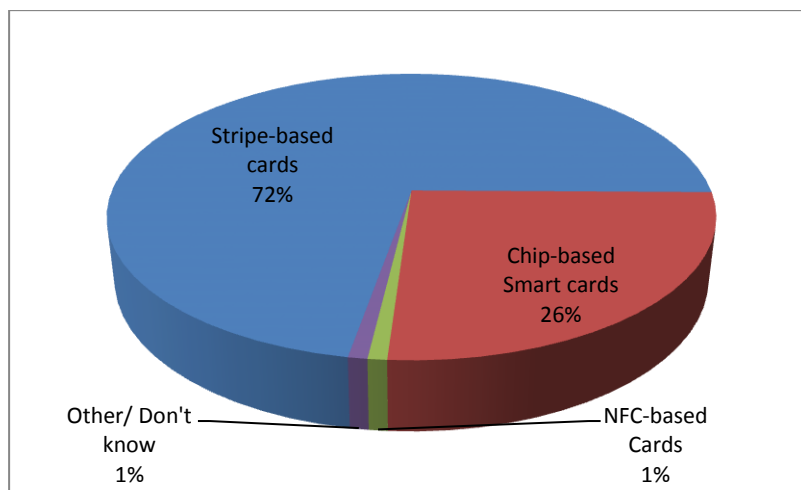


Figure 46: Card technology

In order to determine the prevalence of different card technologies within the industry in Pakistan, data was recompiled to determine the various combinations of technologies offered (see Appendix M(c)). From Table 8 and Figure 47, it can be seen that stripe-based cards are the most common. Only 10% of the respondents said that both stripe and chip were offered. Some 13% said that only chip-based cards were offered. Only one respondent mentioned offering all three types of cards. Two of the respondents who identified themselves as belonging to a government institution reported both stripe and chip as the technologies offered; two others reported offering either stripe or chip only.

Respondents' Institutions	Technologies used in Cards						Total
	Stripe Only	Chip Only	Stripe + chip	All three	Others	No Tech	
Commercial Bank	69%	16%	11%	1%	1%	2%	94
Microfinance Institution	17%	0%	0%	0%	0%	82%	17
Government/ Regulatory Authority	10%	10%	20%	0%	0%	60%	10
Other	25%	0%	25%	0%	0%	50%	4
Total (Number)	70	16	13	1	1	24	125
Percent of Total	56%	13%	10%	1%	1%	19%	

Table 8: Technologies used in cards by type of institutions

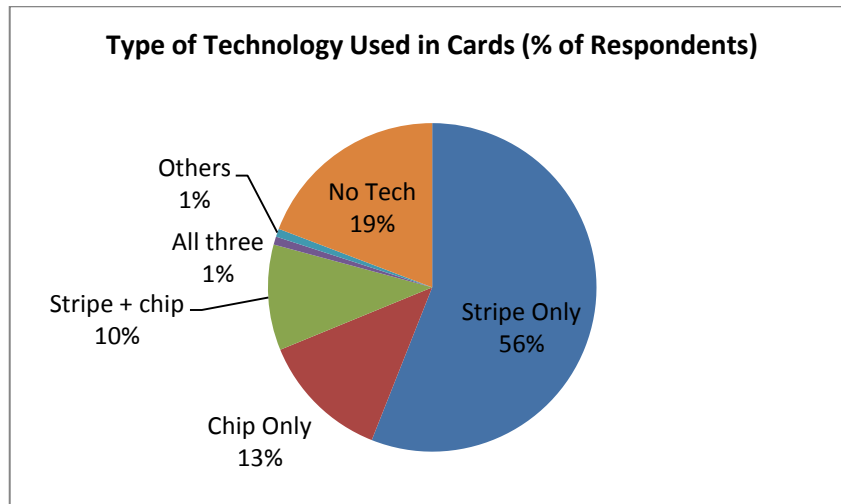


Figure 47: Technology used in cards

4.4.3 Respondents' perceptions about e-banking

Respondents were asked to rank their organization's electronic banking compared to rest of the banking industry using a Likert scale ranging from "my institution is the best" to "my institution almost doesn't offer any e-banking product" with "we are at the same level as industry average" in the middle (Appendix N).

As shown in Figure 48, only 19% of respondents thought their organizations were below average or offered no electronic services at all.

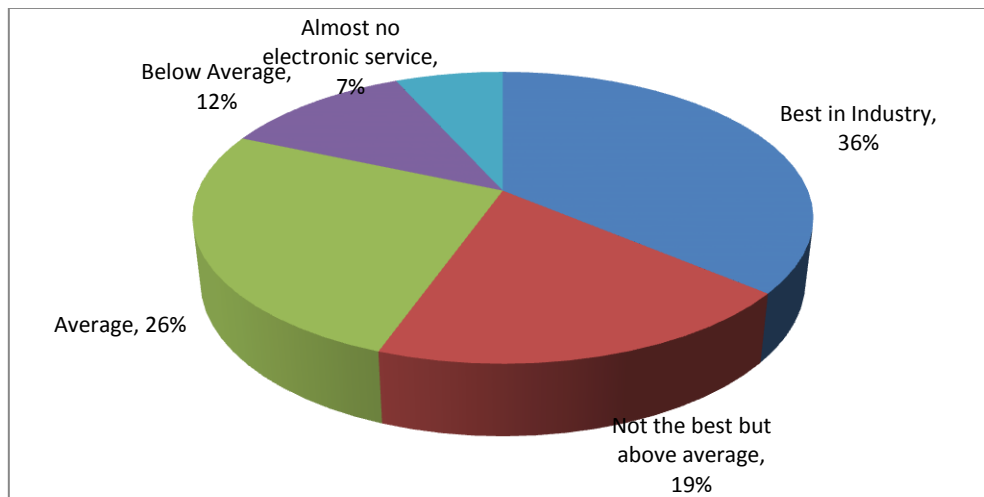


Figure 48: Perception about their organization's e-banking

Figure 49 shows that a significantly ($z=2.62, p < 0.01$) higher number of respondents from commercial banks (56 out of 93) thought that their organizations were above industry average, as compared to those from microfinance institutions (4 out of 16). Conversely, only 10 of the respondents from commercial banks thought that their organizations were below industry average whereas 10 out of 16 respondents from microfinance institutions thought that their organizations were below average.

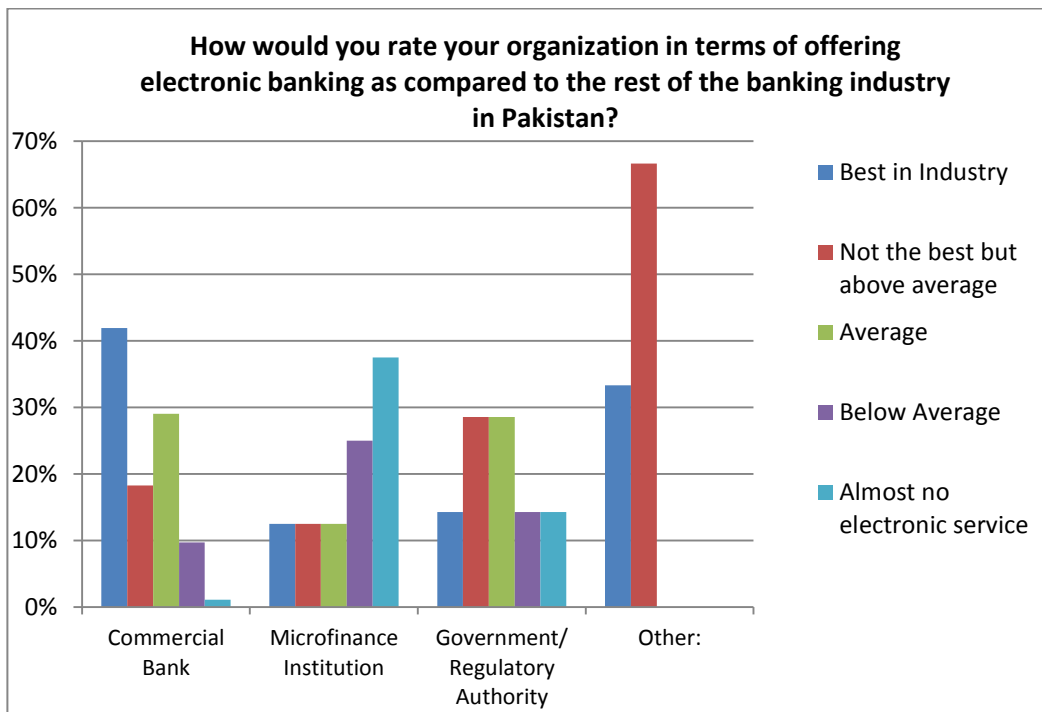


Figure 49: Organizational rating—within types of organizations

4.4.4 Discussion

The majority of the respondents from banks considered their organizations to be above industry average in electronic products. The results might have been a bit biased as most of the respondents work in areas relating to electronic banking and thought that their organizations are better than others in offering electronic products. The majority of the participants from microfinance institutions, by reporting that their organizations are below average, may have acknowledged that their organizations lack technological capabilities.

A shortcoming of this section of questions is that there is no defined industry average of electronic banking (at least none was defined in the questionnaire). So the responses have more to do with

perceived notions rather than those based on some empirical benchmark. But in the absence of empirical evidence that these perceptions are wrong, it is reasonable to infer that banks in Pakistan may be better equipped technologically to offer electronic payments products than are microfinance institutions.

Due to the overwhelming use of cash-based service delivery channels and product offerings, it may also be inferred that bankers likely perceive that cash-based payment products are more likely to be offered by their institutions using traditional channels as compared to electronic-based ones.

Card technology in Pakistan is still predominantly stripe-based. We may infer that efforts by the central bank to convert from stripe-based to more secure chip-based cards may have yielded partial results but the market (both banks and merchants) may still be favoring the less expensive stripe-based cards.

To summarize, from the information in this section, we may cautiously infer the following:

- Banks have better technology platforms than microfinance institutions, but there may be a need to develop payment systems in order to enable interoperability of banks' systems at retail level.
- Since the level of financial access in Pakistan is one of the lowest in the world, we may infer that the technology products being offered by banks still have a limited reach and may only serve their existing high end customers.

4.5 Perceptions of Real Time Gross Settlement System (RTGS)

The Real Time Gross Settlement (RTGS) system was launched in Pakistan on 1st July 2008. RTGS systems are usually considered to be enablers of new payment system technologies, and enabling organizations to offer new and innovative payment products. This section discusses the basic findings relating to respondents' perceptions about the RTGS system in Pakistan and the impact it had on their organizations.

4.5.1 Type of RTGS membership

Respondents were first asked (Question 9) about the perceived importance of the RTGS system in enabling their organizations in offering electronic payment products to customers. They were then asked about the type of their institution's RTGS membership.

Figure 50 shows that 60% of the respondents reported that their organizations are direct members whereas 25% didn't know the type of membership. Of the 25% who do not know their membership, 22 of the respondents (18%) were from commercial banks (Appendix O(a)). These respondents were mostly working in non-payment related areas of the bank.

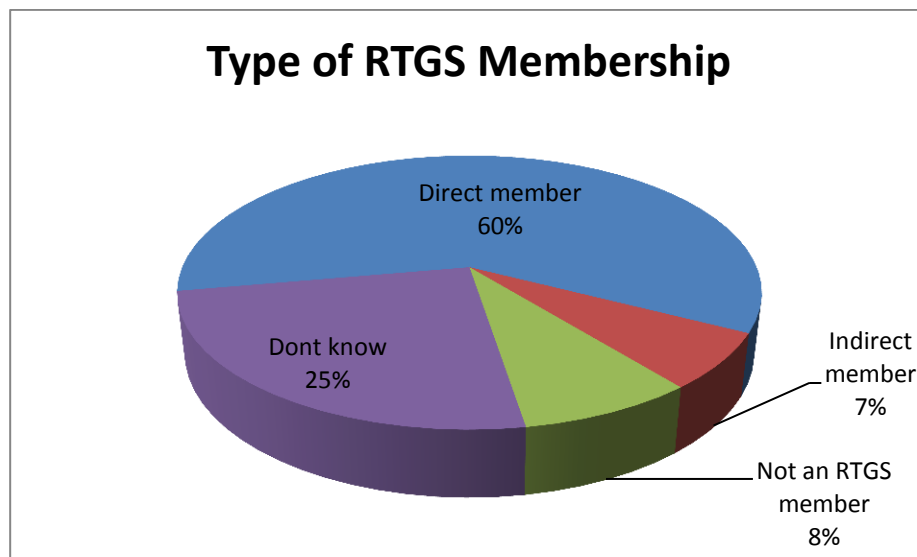


Figure 50: Type of RTGS membership of Respondents' Institutions

4.5.2 Importance of RTGS in enabling electronic products

Figure 51 show that RTGS is viewed as slightly more important by commercial bankers compared to those who work in microfinance. This is probably due to the limited RTGS membership of microfinance institutions; commercial banks are required to be members of the system. Almost 61% of commercial bankers think that RTGS has been an important enabler for them, more than the 41% of microfinance workers. Overall, 56% of all respondents perceive RTGS to be extremely important and another 24% perceive it to be somewhat important in enabling their organizations to offer electronic payment products to general consumers.

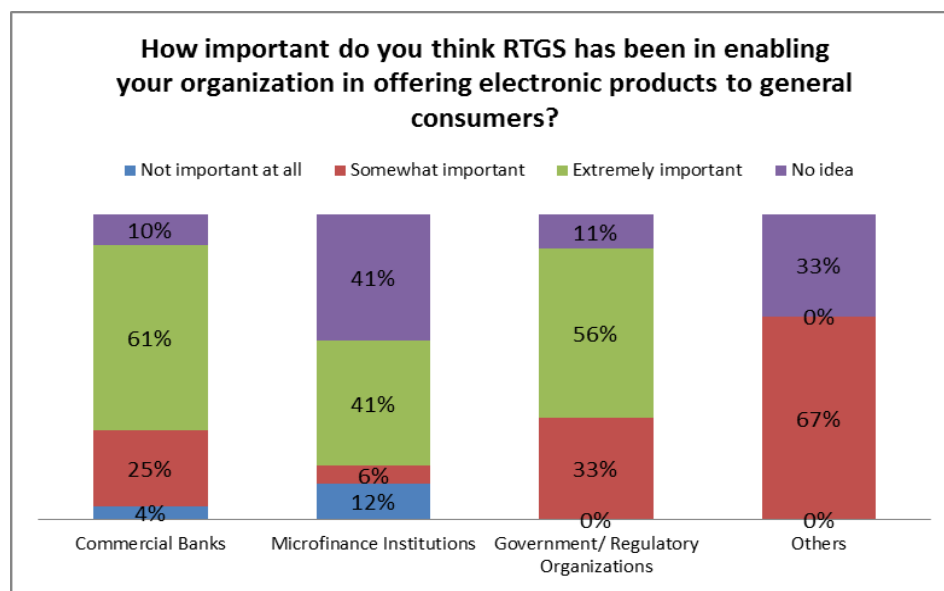


Figure 51: Perceptions about RTGS's role

Appendix O(c) shows that the perception of the importance of RTGS is dependent on the type of membership (Chi-square (9, N=120) = 37.85, $p < 0.01$). Figure 52 shows that 68% of the respondents from direct member institutions thought that RTGS has been extremely important and another 25% thought that it is somewhat important in improving organizational product offering capability. Although 47% of those who did not know their membership were also unaware of the importance of this system for their organization, 37% of them still perceived RTGS to be very important.

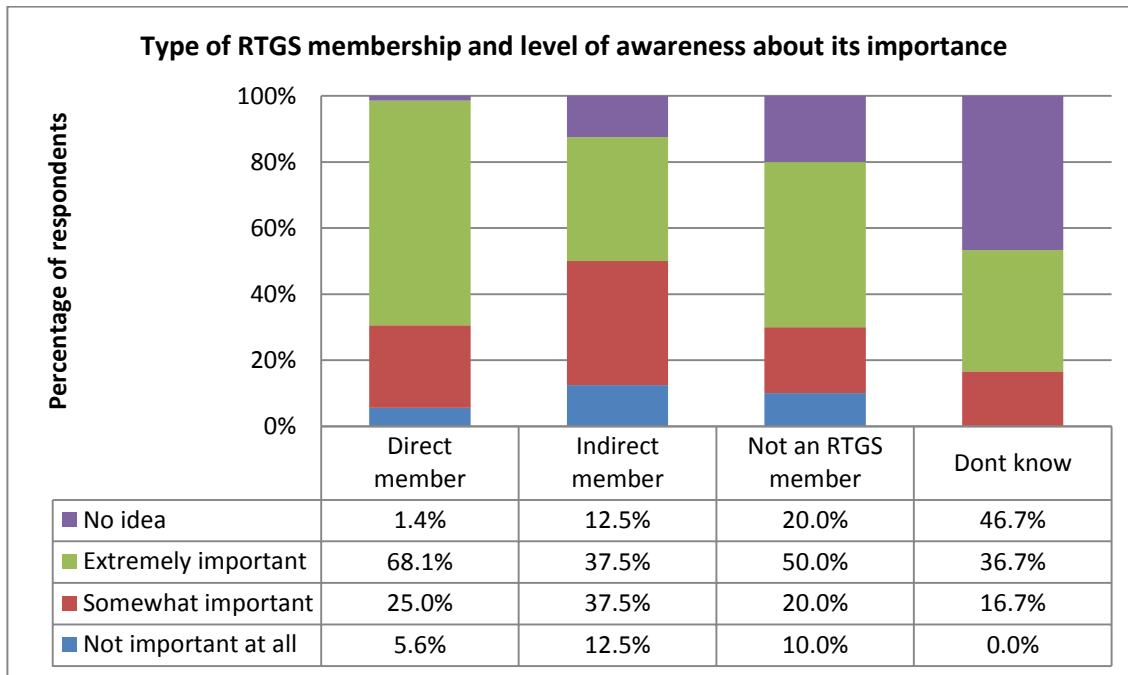


Figure 52: Type of RTGS membership and its level of importance

It is worth pointing out that those who are not RTGS members actually are more likely to think RTGS is extremely important than all other groups except direct members. This suggests that not being an RTGS member has noticeable consequences.

4.5.3 Perceptions about the organizational impact of RTGS

As discussed in the preceding chapters, the RTGS system is likely to have a strong impact on financial organizations and the way they organize themselves around it. To determine the extent of respondents' perceptions about impact of RTGS on their organizations' technology, they were presented with the following impacts:

- Upgrading of banking software
- Upgrading of hardware (PCs/Servers) and telecommunications infrastructure
- Increased trainings of existing employees
- Increased hiring of new employees
- Increased awareness among management and staff about payment systems

The extent of agreement was expressed on a Likert scale indicating “No or minimum impact”, “some impact”, “medium impact”, “considerably high impact” and “maximum impact”.

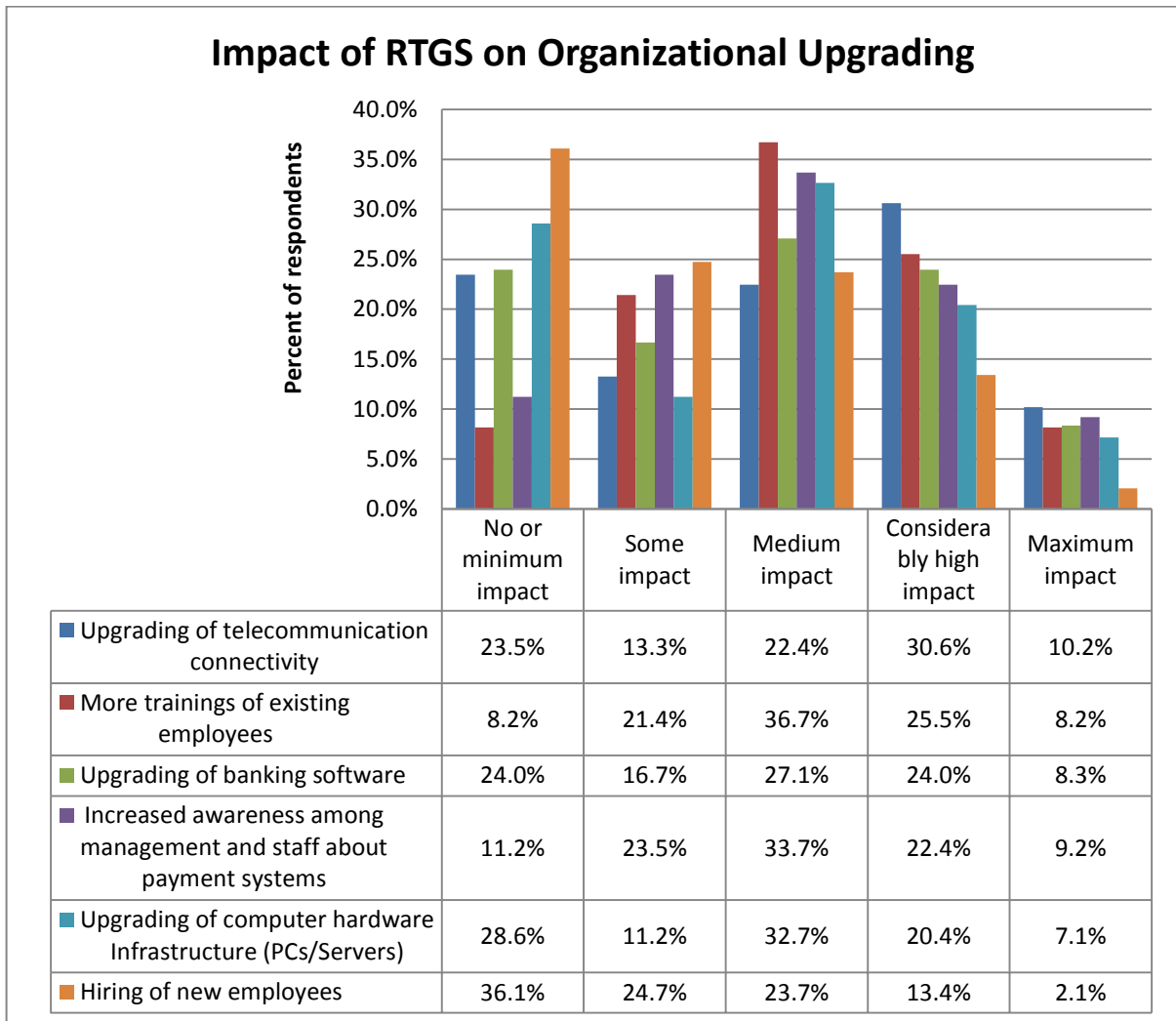


Figure 53: Impact of RTGS on organizational upgrading

Figure 53 shows respondents' perceptions about the impact of RTGS on the selected factors relating to organizational upgrading. High impact was perceived on the upgrading of telecommunication connectivity, probably because of the ability of Pakistan's RTGS system to receive and settle payments in real time. Respondents also perceived more impact on the upgrading of banking software and training of employees, and less impact was perceived on the hiring of new employees.

Table 9 shows the overall weighted scores for each factor (calculated by assigning the values 1,2,..,5 for no or minimum impact, some impact,..,maximum impact respectively). The table suggests that in the perception of the respondents, RTGS had the highest impact on trainings of

existing employees, increasing awareness about payment systems and upgrading of telecommunication connectivity whereas hiring of new employees was least impacted.

Factor	No or minimum impact	Some impact	Medium impact	Considerably high impact	Max impact	Total Score
Assigned Score	1	2	3	4	5	
More trainings of existing employees	8	21	36	25	8	298
Increased awareness among management and staff about payment systems	11	23	33	22	9	289
Upgrading of telecommunication connectivity	23	13	22	30	10	285
Upgrading of banking software	23	16	26	23	8	265
Upgrading of computer hardware Infrastructure (PCs/Servers)	28	11	32	20	7	261
Hiring of new employees	35	24	23	13	2	214

Table 9: Weighted scores for measuring impact of RTGS on organizational upgrading

To see whether respondents from organizations who were direct members of RTGS system perceived more impact on these factors as compared to those who were not from direct member organizations, a cross tabulation of the number of respondents for each factor was performed with the type of respondents' reported membership type. Appendix P(a) to Appendix P(f) shows this cross tabulation. To perform a simple chi square test, two categories of RTGS memberships (direct members and indirect and non-members) were cross tabulated with those who reported maximum or considerable impact or average or less impact. The results (Table 10) show that the type of membership does not make a significant difference in perception of impact.

Factor	(N, df)	Chi Square	p-value
Upgrading of banking software	(79, 1)	0.054	0.817
Upgrading of computer hardware	(81, 1)	0.001	0.975
Upgrading of telecommunication connectivity	(81, 1)	1.239	0.266
More trainings of existing employees	(81, 1)	0.974	0.324
Hiring of new employees	(80, 1)	0.222	0.638
Increased awareness among management and staff about payment systems	(81, 1)	0.743	0.388

Table 10: Chi Squares for type of RTGS membership and its impact on organizations

4.5.4 Impact of RTGS on organizational ability to offer electronic payments products

This question was intended to determine the perceptions of respondents about the extent of the impact of RTGS on the ability of their organizations to offer some of the suggested electronic payments products or achieving some customer oriented objectives, including:

- Providing online electronic funds transfer services and online bill payment facilities to customers
- Enabling them to make bulk payments (like salaries)
- Improving foreign remittances in the country
- Improving customer relationships
- Lowering transaction costs by improving process efficiencies
- Reducing risk and providing financial services in the remote regions and to poorer population of the country

The extent of agreement was expressed on a Likert scale indicating “no or minimum impact”, “some impact”, “medium impact”, “considerably high impact” and “maximum impact”. Detailed results are given in Appendix Q(a) to Appendix Q(h).

Figure 54 shows that more than 40% of respondents perceived that RTGS had a considerable impact on organizational capability to offer online electronic funds transfer facility and to lower transaction cost by improving process efficiencies and reducing risk. About 20% of respondents perceived that RTGS had a considerable impact on providing online bill payment facilities or providing financial services to poorer populations of the country.

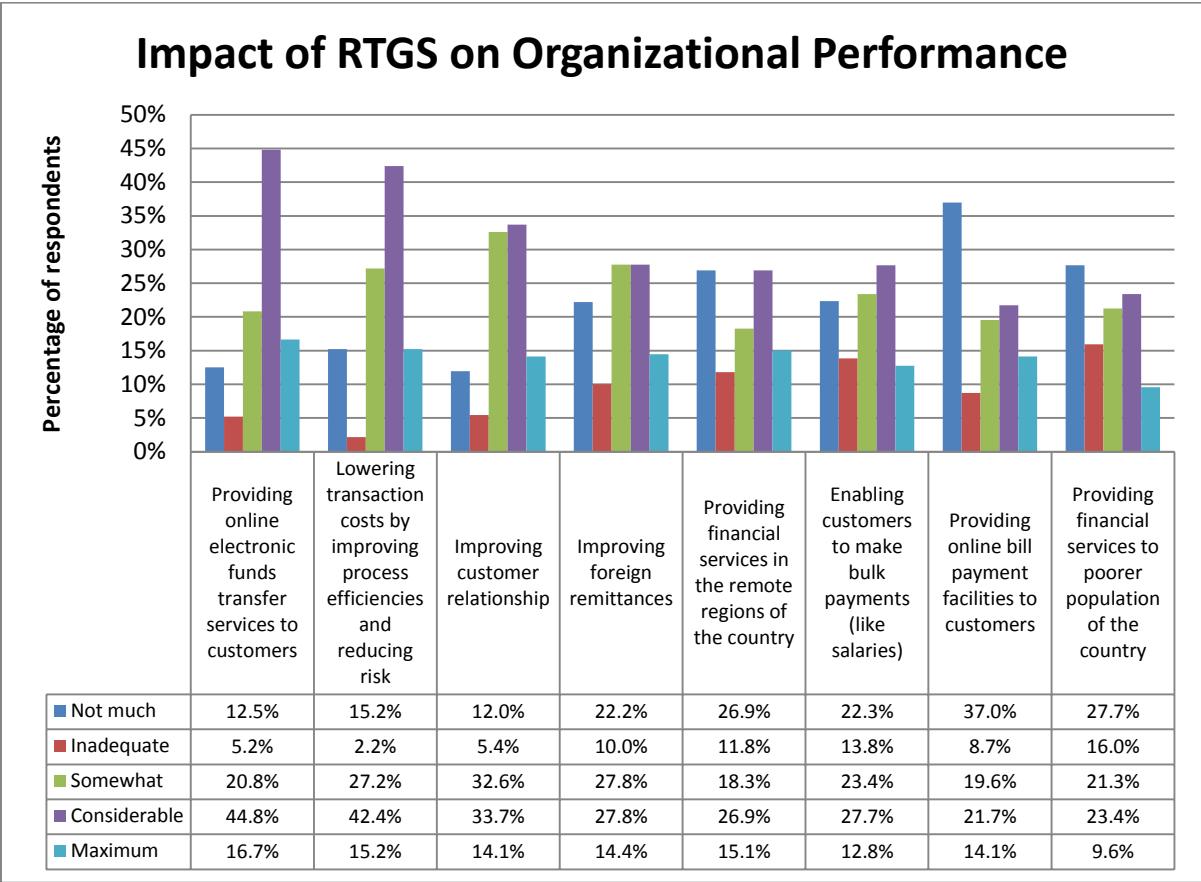


Figure 54: Extent of RTGS impact on organization's electronic products offering capability

Table 11 shows the overall weighted scores for each factor, calculated by assigning the values 1,2,...,5 for no or minimum impact, some impact,...,maximum impact respectively. The table also confirms that in terms of impact, offering electronic funds transfer services, reducing process efficiencies and thus lowering costs and improving customer relationships score high. However, what we cannot determine is whether these benefits are passed on to lower income consumers or are confined to high income (or more specifically corporate) customers. The fact that “providing financial services to poorer population of the country” received the lowest score is likely to confirm the latter argument.

Factor	Not much	Inadequate	Somewhat	Considerable	Maximum	Overall Score
	1	2	3	4	5	
Providing online electronic funds transfer services to customers	12	5	20	43	16	334
Lowering transaction costs by improving process efficiencies and reducing risk	14	2	25	39	14	319
Improving customer relationship	11	5	30	31	13	300
Improving foreign remittances	20	9	25	25	13	278
Enabling customers to make bulk payments (like salaries)	21	13	22	26	12	277
Providing financial services in the remote regions of the country	25	11	17	25	14	268
Providing financial services to poorer population of the country	26	15	20	22	9	249
Providing online bill payment facilities to customers	34	8	18	20	13	249

Table 11: Weighted scores for measuring impact of RTGS on organizational product offering

Appendix Q (a-h) cross tabulates the extent of impact reported by the respondents with the type of RTGS membership that their organizations have.

Table 12 shows that the extent of impact of RTGS on organizations' electronic product offering (or performance in this area) is not dependent on the type of RTGS membership of an organization.

Factor	(N, df)	Chi-square	p-value
Providing online electronic funds transfer services to customers	79, 1	0.271	0.603
Lowering transaction costs by improving process efficiencies and reducing risk	76, 1	1.010	0.315
Improving customer relationship	78, 1	0.613	0.434
Improving foreign remittances	75, 1	0.668	0.414
Enabling customers to make bulk payments (like salaries)	73, 1	0.001	0.973
Providing financial services in the remote regions of the country	77, 1	1.063	0.302
Providing financial services to poorer population of the country	76, 1	0.005	0.945
Providing online bill payment facilities to customers	75, 1	0.044	0.834

Table 12: Chi Squares for type of RTGS membership and electronic product offering

4.5.5 Discussion

This section of the survey questionnaire was aimed at identifying the perceptions that the respondents have towards systemically important payment infrastructure—the RTGS. A considerable number of

respondents perceived RTGS to be extremely important in enabling their organizations in offering electronic payment product to general consumers. This perception was significantly dependent on the type of RTGS membership that their organizations have. Hence it is not surprising that a higher proportion of respondents from banks thought that RTGS is extremely important as compared to those from microfinance institutions.

However, later on when these respondents were presented with certain factors related to the performance of their organizations, the impact of RTGS was considerably higher on products such as electronic funds transfer, and also for achieving process efficiencies and reducing cost as well as improving customer relationships. Where the impact was perceived to be low was in such services as enabling customers to make bulk payments (like salaries) or bill payments, and in offering financial services to remote regions and more poor population of the country.

Similarly, the implementation of RTGS resulted in a perception of required upgraded telecommunication connectivity, increased employee training and increased awareness about payment systems. The extent of spread of these perceptions is not clear. It is quite possible that the extent of their perceptions may be limited to the respondents own areas of work and not to the entire enterprise. Further, perceived impact on impacts was not dependent on the type of RTGS membership that the respondents' organizations had (unlike the perceptions of RTGS's importance, which did differ based on type of RTGS membership)

This shows that while respondents perceive RTGS to be an important enabler for offering electronic products, the central bank (as owner and operator of the system) and the financial institutions still need to reap the full benefits from the system; benefits, not only for the banks and their large customers, but also for the general public as well. However, it should be kept in mind that the RTGS system was only recently implemented and it may take more time for the banks and other financial institutions to understand the full benefits of the facility.

4.6 Respondents' Perceptions about Value Propositions

The objective of this section was to determine what the respondents think about their “value proposition” for their customers, and what they believe are their customers’ needs for electronic banking.

4.6.1 Perceived importance of the value proposition for customers

We wished to determine the respondents’ perceptions of their customers' requirements for electronic payment products. Respondents were therefore asked: when opening an account, in your opinion, which of the following factors related to electronic banking is valued by an individual customer. The following factors were presented (respondents could check all that they believed were important):

- ATM card for cash withdrawal
- Debit card for purchases
- Credit card with no annual Charges
- Internet banking facility
- Mobile phone banking facility
- Size of your bank's ATM network
- Interoperability with the ATM networks of other banks
- Size of the merchant network for purchases using debit or credit cards
- Online bill payment/ funds transfer facility

Two additional “Other” fields were provided so that the respondents could also offer their own ideas to the researcher. The data are summarized in Appendix R and in Figure 56.

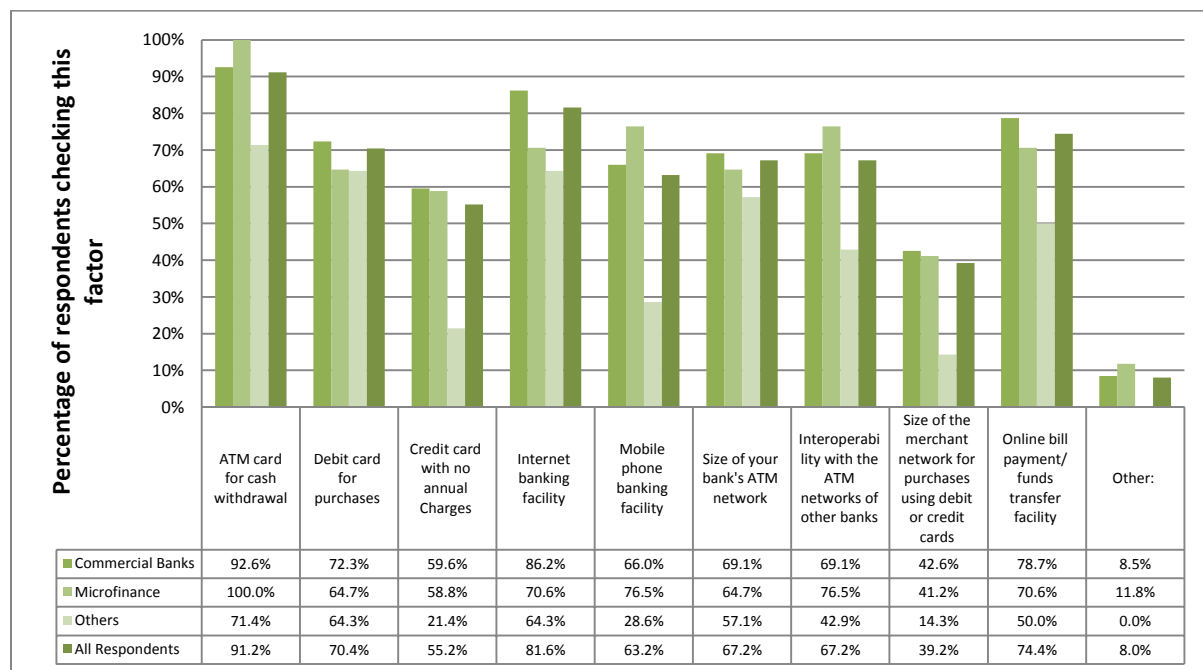


Figure 55: Respondents' choice of customers' value proposition

Among the choices presented, ATM card was the most preferred choice across all institution types, followed by internet banking; online bill payment and funds transfer facility; and a debit card for purchases. Even if measured from the perspective of suppliers (bankers), Figure 55 shows considerable demand by consumers for various types of electronic payments products.

Respondents were asked to rank their choices from 1 onwards according to their perceived importance, where 1 is the most important factor. Data summary for the rankings is given in Appendix R(b).

To interpret these rankings and determine the most preferred value proposition, re-coded rankings and a “rank score” for each statement were calculated using the procedure described in Section 4.3. Figure 56 shows the re-coded rankings for each of the factors or customer value proposition as derived using the procedure in Step 1 from Section 4.3.

Cronbach’s alpha for the 9 items with re-coded rankings was 0.702, showing sufficient reliability of the scale. It can be seen that ATM card for cash withdrawals, size of own ATM network and interoperability with other ATMs were the factors that were perceived by the respondents as relatively more important for their customers. Size of the merchant network and mobile phone banking facility were among those perceived as having least value.

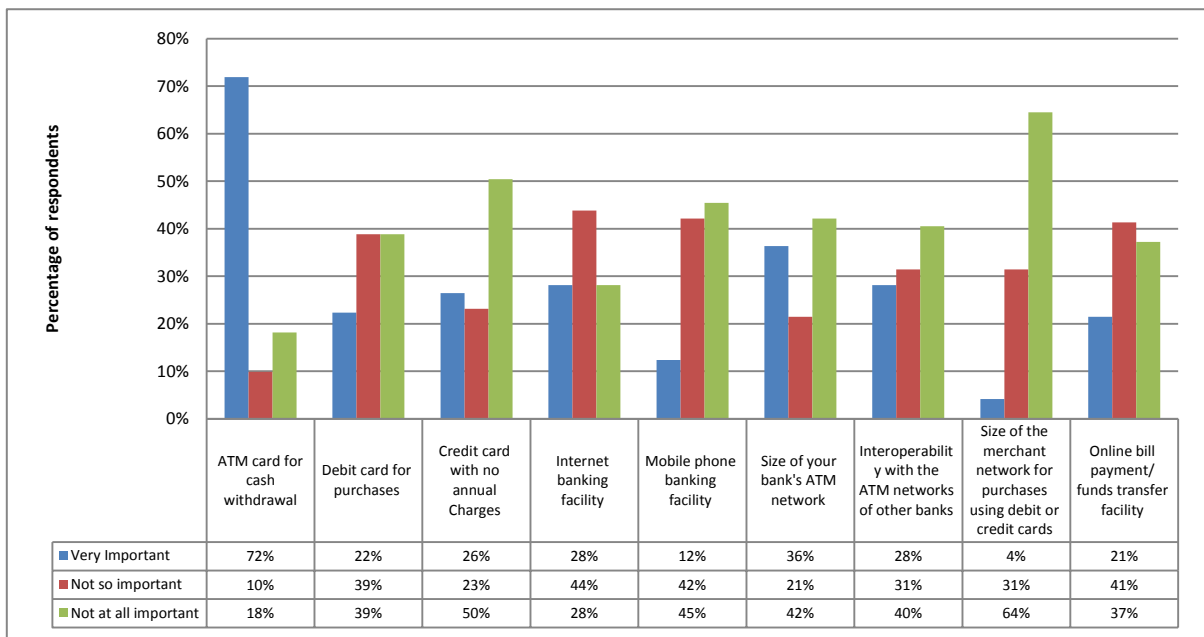


Figure 56: Customer value proposition—re-coded rankings

Figure 57 shows the calculated weighted “rank scores” (using the procedure described in Section 4.3) for each of the customer value proposition statements related to electronic banking. The scores show that while an ATM card is the highest perceived value proposition for the respondents, internet banking is the second-highest perceived value proposition. The perception of ATM as of high value is not surprising because of the (currently) cash-dominated economy of Pakistan.

The high perceived demand for internet banking is also surprising as the number of internet transactions in 2011 was much less than ATM transactions (see Figure 21 and Table 4). Another important point to note is that debit cards are perceived as delivering more value than the size of the merchant network (which presumably is where those debit cards would be used).

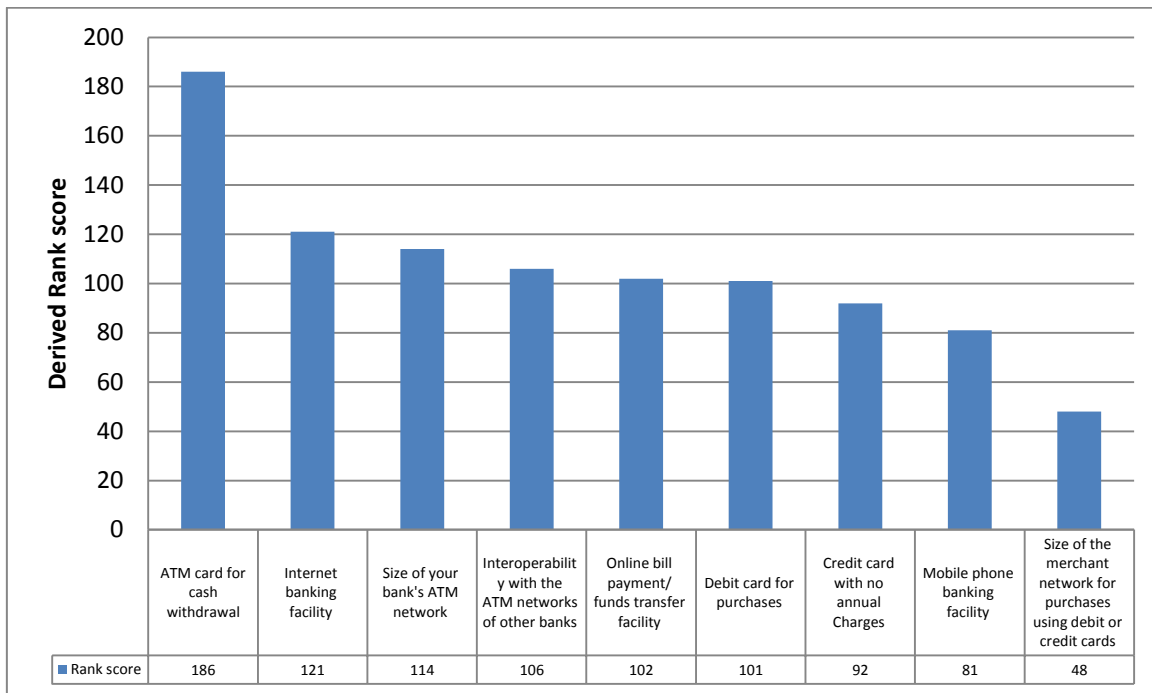


Figure 57: Rank scores for customer value proposition

To determine the factorability of the items used, the following criteria were used (please refer to SPSS output in Appendix R(c):

- (i) It was observed that 5 out of the 9 items correlated at least 0.3 with at least one other item, suggesting reasonable factorability
- (ii) The Cronbach's alpha for the 9 items with re-coded rankings was 0.702 (based on standardized items it was 0.71) which shows that the items have fairly low uniqueness and may be significantly inter-related (Cortina, 1993)
- (iii) The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is 0.591 which is greater than the commonly recommended value of 0.5 and thus allows us to proceed with the factor analysis (Field, 2000). However, Bartlett's Test of Sphericity is significant (Chi-square (36) = 205.908, $p < 0.01$)

- (iv) All items on the diagonals of anti-image correlation matrix are over the recommended value of 0.5
- (v) The communalities for all the items were above 0.5 further confirming that each item shared some common variance with other items.

The initial eigenvalues indicated that the first four factors explained 31%, 14%, 12% and 12% of the variance which accounted for 68% of the cumulative variance. The solutions for four factors were examined using varimax and oblimin rotations of the factor loading matrix. The four factor solution with varimax rotation, which explained 68% of the variance, was preferred because of no difference in the explanation of variance between the 4 factor varimax and oblimin solutions. No item was eliminated as none of the primary factor loading was less than 0.6 (Appendix R(c)).

Component	Label (sum of ranked scores)	Items (ranked scores ³³)	Variance explained	Cronbach alpha
1	Banking with convenience (409)	ATM Card (186) Internet Banking (121) Online bill payment (102)	20%	0.645
2	Electronic banking (230)	Debit Cards (101) Mobile Banking (81) Size of POS network (48)	18%	0.543
3	Easy access to cash (218)	Size of ATM (114) Interoperability of ATM (104)	17%	0.560
4	Credit Cards (92)	Credit Cards (92)	13%	-

Table 13: Labels for the four factor loadings

Labels for the identified components are proposed in Table 13. It is interesting to note that item “credit cards” exist as a factor itself thus indicating the presence of perception that credit-based instruments are separate from the payment instruments as far as bankers’ perceptions of consumers are concerned. Cronbach’s alpha value for the identified Component 1 is moderate and for Component 2 and 3 the values are below moderate. Hence we cannot conclude that the identified items fully represent the identified components, and that there might be other items (not used in the analysis) that may contribute even more to the dimensions identified.

³³ From Figure 57: Rank scores for customer value proposition

4.6.2 Discussion

In this section, selected statements were presented to the respondents, reflecting the value-added services related to an account. The respondents were asked to identify which services had more value by ranking them. Different techniques were used to identify which value proposition statements were perceived as more important.

The analysis revealed that the most valued service was the ATM card, followed by some other electronic offerings like internet banking, online bill payment and funds transfer facilities, credit and debit cards.

The principal component analysis identified 4 dimensions of bankers' perceptions about their customers' perceived value proposition relating to electronic banking from the 9 items that were ranked. These four dimensions were labeled as "banking with convenience", "electronic banking", "easy access to cash" and "credit cards". By using the rank scores computed earlier, it was observed that banking with convenience was twice as likely to be perceived as important as electronic banking or easy access to cash. Credit cards were identified as a distinct dimension that was least in importance.

The dimensions identified in this section appear consistent with our earlier observation that most of the electronic banking in the country revolves around cash in the form of ATM withdrawals. Further, the business model is built around the perception that only people who have money need banks, and the perception that they need it more for convenience than for value-added electronic services.

4.7 Perceptions about FI and the Impact of Technology

In this part of the survey, questions were asked with the aim of determining the perceptions of respondents regarding financial inclusion and the impact of banking and payments technology on financial inclusion. More specifically, the questions were directed at determining respondents' perceptions about:

- The Formal Financial Inclusion (FFI) rate in Pakistan
- Possible reasons for low FFI
- The ability or inability of banks to offer services to low-income people of Pakistan
- Proposed improvements in technology and their impact on financial inclusion

The results of this part of the survey are discussed below.

4.7.1 Perceptions about FFI

The objective of this section of the questionnaire was to investigate respondents' perceptions about formal financial inclusion in Pakistan.

Respondents were asked: "Formal financial inclusion" refers to the number of people who have a bank account and access to formal banking services. In your opinion, in which category can Pakistan be classified as far as "formal financial inclusion" rate is concerned?" 120 out of 125 respondents answered this question (Appendix S(a)).

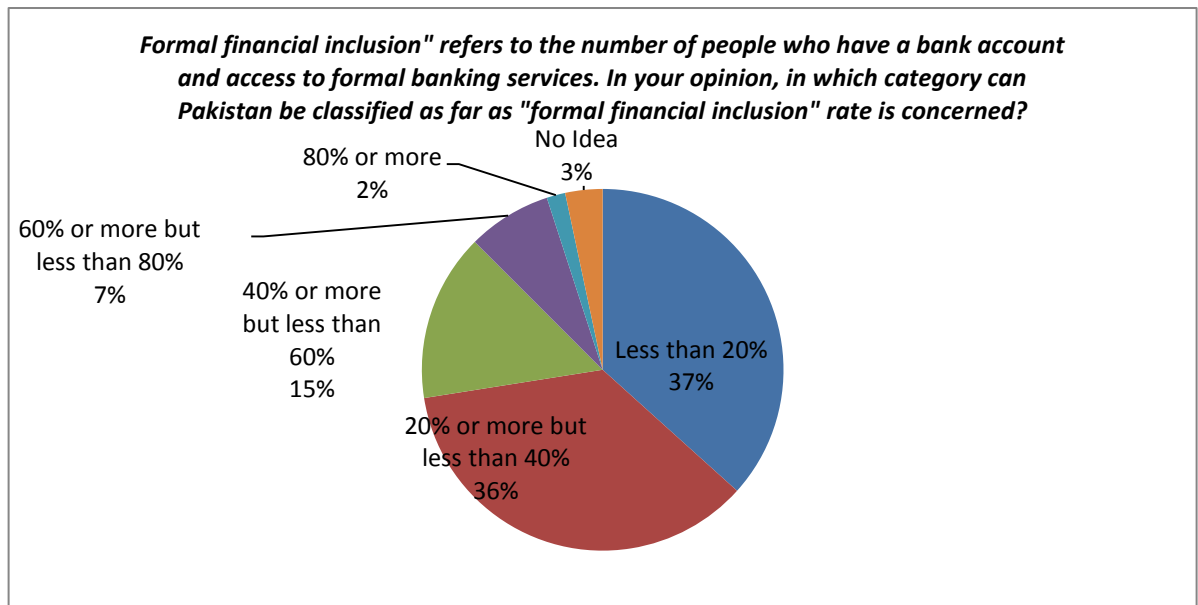


Figure 58: Perceptions about FFI

Appendix S(b) shows the distribution of respondents according to their institution type. Respondents from microfinance institutions were significantly ($z=2.34$, $p<0.01$) better able to estimate the correct level of financial inclusion rate as compared to those from commercial banks. Only 1 respondent out of 9 from government/regulatory institutions was able to correctly identify the rate of financial inclusion.

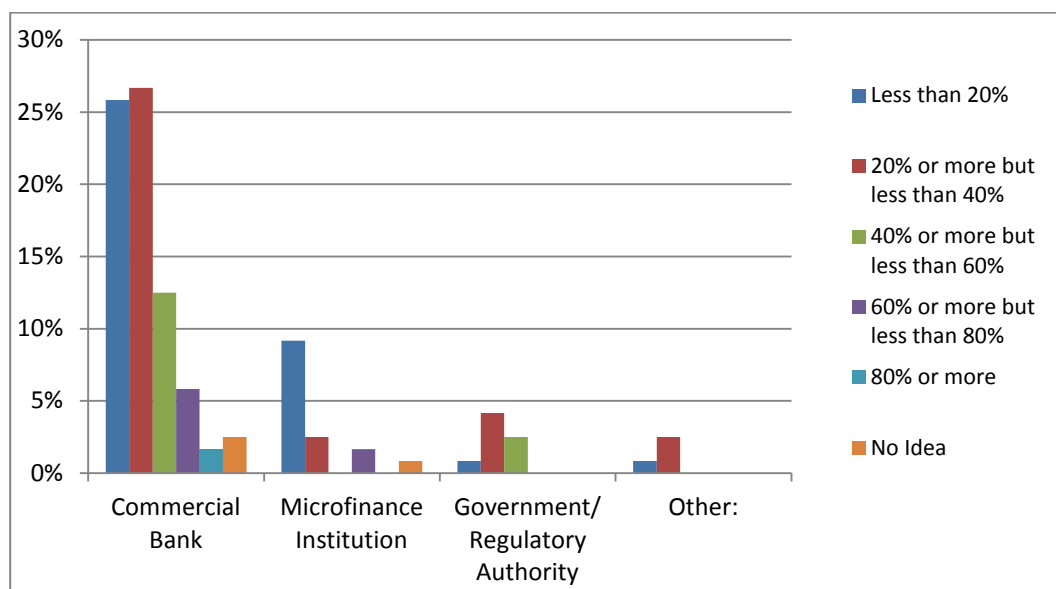


Figure 59: Perception about the true FFI—Institutional distribution

Do the above observations suggest that there is little awareness about the low levels of financial inclusion in the country? This is a strong inference that would require substantial proof. As discussed in Chapter 1, one of the major problems with measuring financial inclusion is its definition: shall we only consider people who have a bank account, or also those who use it? The survey question explicitly defined FFI as the number of people who have a bank account *and* who have access to formal banking services, but the respondents may not have given both conditions equal weight. The results do suggest that respondents perceive much higher FFI than what is usually accepted by the academics and government policy makers (12%). Until further evidence is collected, we should infer that it would be useful to create more awareness about the academically accepted FFI among the professionals working in the banking industry.

4.7.2 Perceptions about possible reasons for low FI

The objective of Questions 16 and 17 was to determine the perceptions of respondents about the possible factors in low access to financial services in Pakistan. In Question 16, respondents were presented with the following 6 factors:

- Not much use of a bank account for ordinary citizens especially those with low income
- High cost of banking
- Complex (Know Your Customer) KYC requirements
- Banks/financial institutions are not interested in offering their services to low-income persons
- Low education levels in remote regions make them unviable for offering financial services
- Lack of good technology and payments infrastructure in the country

Respondents were also given two blank “other” fields to record any other factor which they might consider important.

The above list of factors was based on the literature review. It was hypothesized that the respondents would give more importance to factors such as low education and low income compared to lack of good technology and payments infrastructure or the high cost of banking.

In Question 17, respondents were asked to rank the factors they chose in Question 16 in order of importance. Frequency distribution of responses of the selected factors (in Question 16) is given in Appendix T(a). Figure 60 graphically represents this data and shows that, on the whole, respondents from all types of institutions perceived that low education, banks not interested in offering services to low-income people, and not much use of a bank account for citizens with low income were the most important factors.

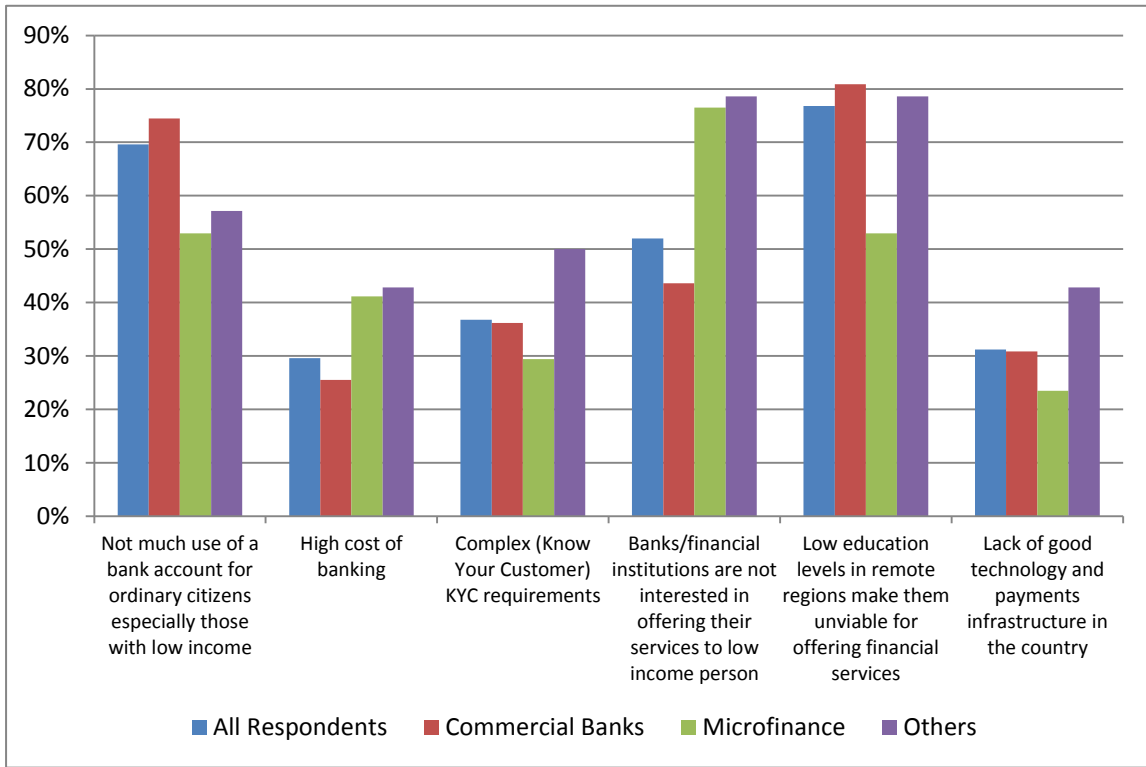


Figure 60: Selected Reasons for Low FFI

Appendix T(b) presents the cross tabulation between the reasons selected and respondents level of awareness about financial inclusion rate in the country (Question 15). As shown in Figure 61, across almost all groups, low education was considered the principal factor in low FI rate, followed by “not much use of a bank account for ordinary citizens especially those with low income”, and “banks are not interested in offering their services to low-income people”. Lack of good technology and payments infrastructure were considered less important factors.

In Question 17, respondents were asked to rank the factors in order of importance. The frequency distribution of these raw rankings is given in Appendix T(c).

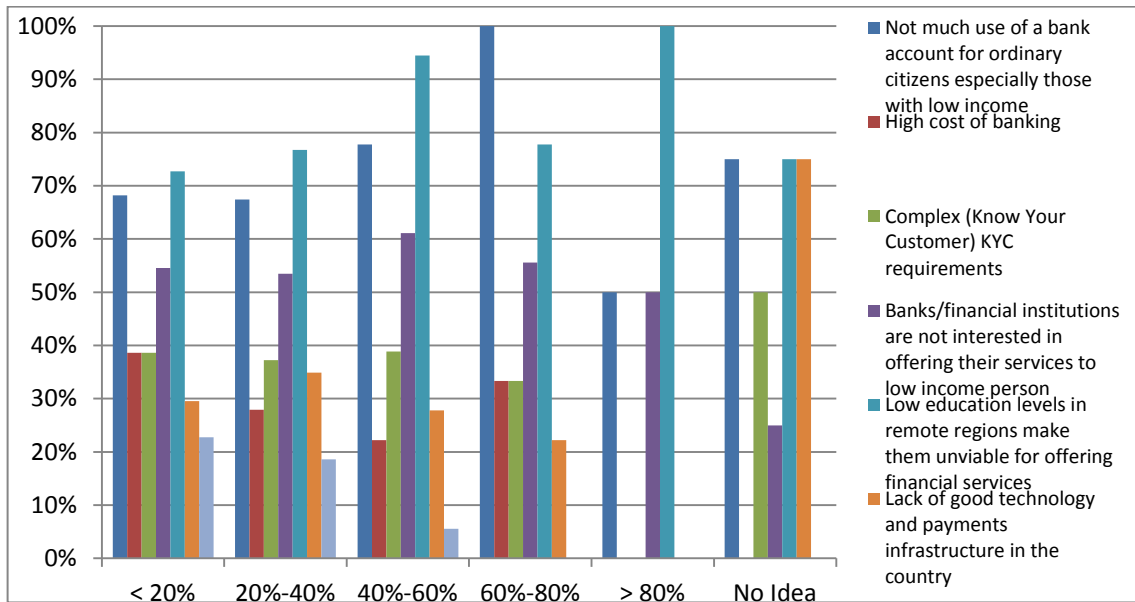


Figure 61: Respondents' Perceptions About Factors in low FFI

To interpret these rankings and determine the most preferred value proposition a “rank score” for this question was calculated as discussed earlier in Section 4.3. The re-coded rankings for all respondents are shown in Appendix T(d).

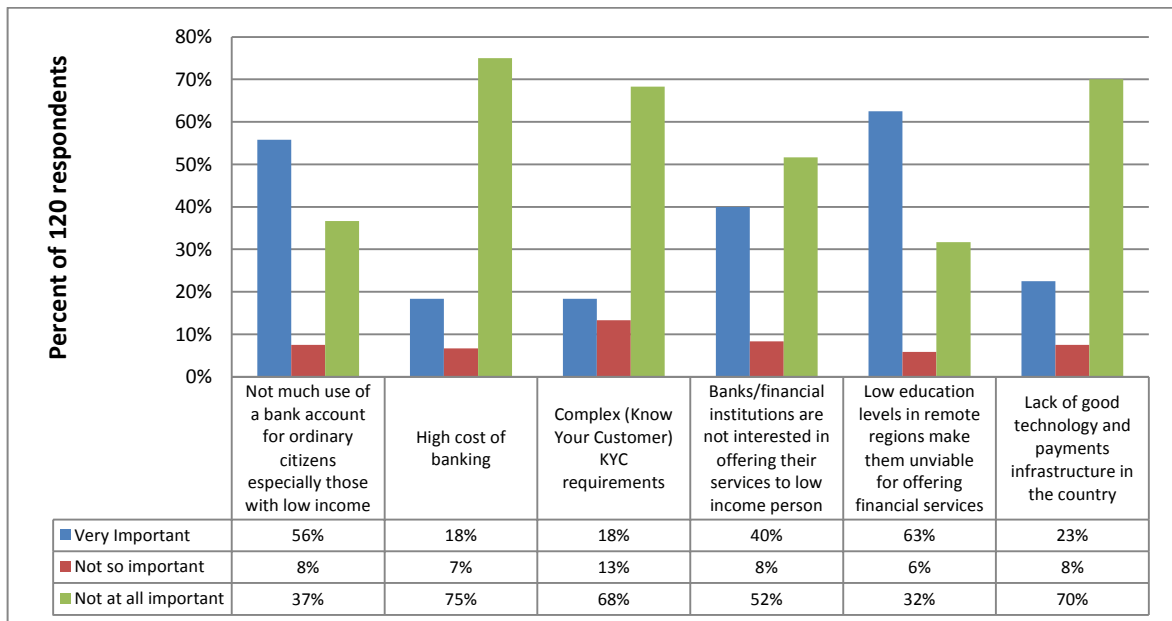


Figure 62: Re-coded ranking of factors in low FFI

Figure 63 shows that according to the respondents “low education levels in remote regions” is the most important reason followed by “not much use of a bank account for low-income citizens” and “banks and financial institutions are not interested in offering them services”. The scores computed on the basis of this ranking, shown in Figure 63, demonstrate this observation.

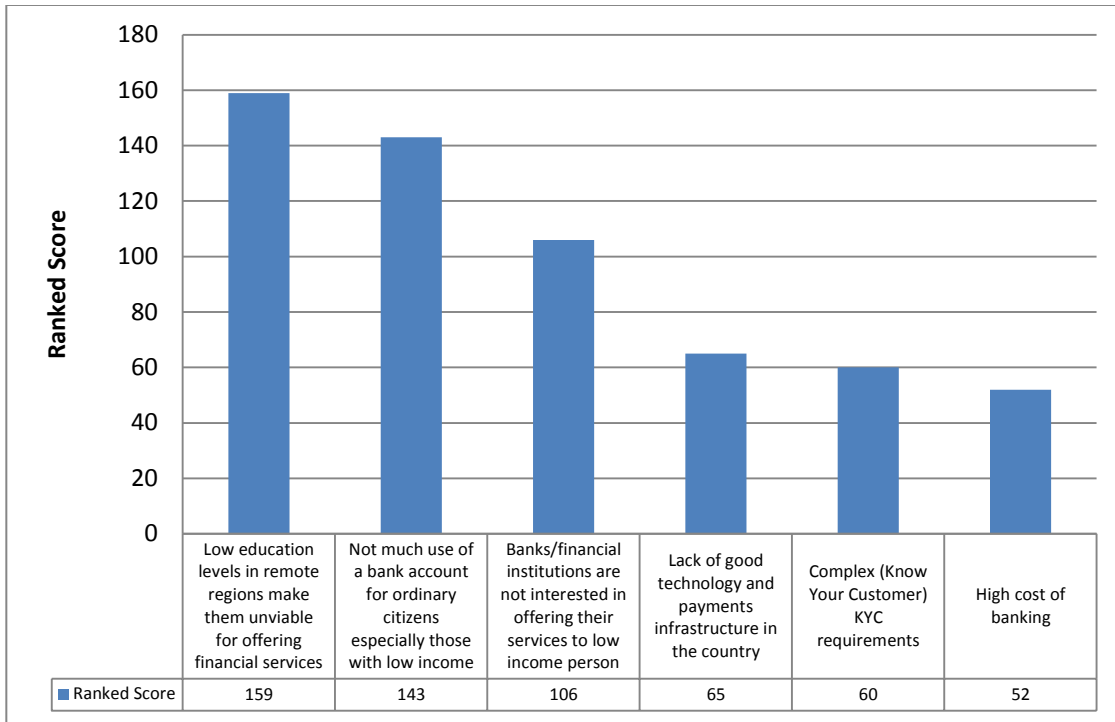


Figure 63: Ranked scores for factors in low FFI

To determine the factorability of the items used, several well-recognised criteria were used (please refer to SPSS output in Appendix T(f)):

- (i) The correlation matrix shows that only one item “low education...” has a correlation of 0.445 with “Not much use of a bank account...”; all others have low correlations
- (ii) Cronbach’s alpha for the 6 items with re-coded rankings was 0.399 which shows that the items have high uniqueness and may not be inter-related (Cortina, 1993)
- (iii) The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is 0.509 which is just over the commonly recommended value of 0.5 (values over 0.5 usually allows us to proceed with the factor analysis). However, Bartlett’s Test of Sphericity is significant (Chi-square (15) = 44.271, $p < 0.01$)

- (iv) The diagonals of anti-image correlation matrix are over 0.475 with 4 items over the recommended 0.5 value
- (v) The communalities for the two factors “complex KYC...” and “lack of technology...” were below the recommended value of 0.4.

The factorability criteria meant that principal component analysis was not used to identify the underlying factors relating to bankers’ perception of reasons for low financial inclusion. Instead, 2-factor Multidimensional Scaling (MDS) was deployed to broadly identify the underlying factors. The re-coded rankings for the 6 items were analyzed with the PROXSCAL algorithm in SPSS.

The normalized raw stress was 0.00132 (Table 14) indicating a good fit. The two dimensions are shown in Figure 64. It can be seen that in the perception of respondents, “low education levels in remote regions make them unviable for offering financial services” and “Not much use of a bank account for ordinary citizens especially those with low income” are items that are closer. Another point to note is that “Banks/financial institutions are not interested in offering their services to low-income persons” is also another distinctly important factor in the perception of the respondents. On the other dimension, “High cost of banking”, “complex (Know Your Customer) KYC requirements” and “lack of good technology and payments infrastructure in the country” are grouped together closely.

Stress and Fit Measures	
Normalized Raw Stress	.00132
Stress-I	.03639 ^a
Stress-II	.07744 ^a
S-Stress	.00038 ^b
Dispersion Accounted For (D.A.F.)	.99868
Tucker's Coefficient of Congruence	.99934

PROXSCAL minimizes Normalized Raw Stress.

a. Optimal scaling factor = 1.001.

b. Optimal scaling factor = 1.001.

Table 14: Stress and Fit Measures for MDS of Reasons for Low FFI

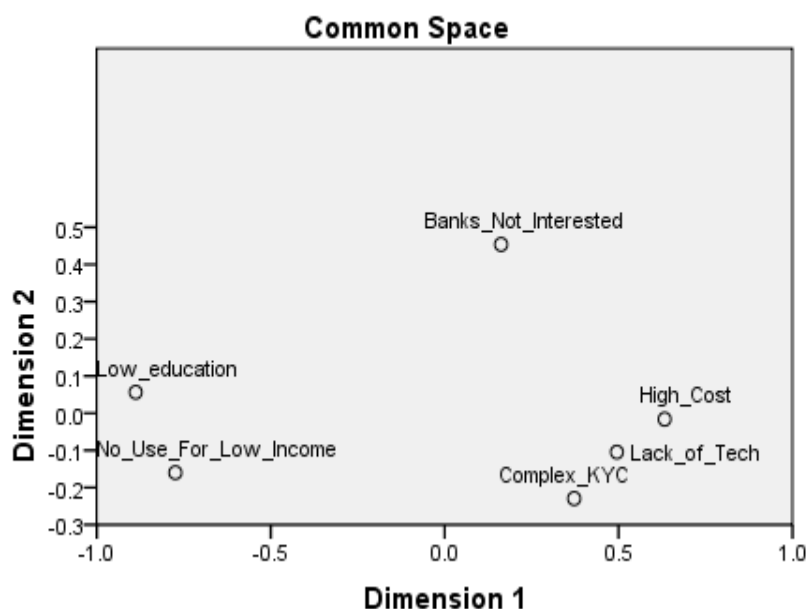


Figure 64: MDS plot for the two dimensions relating to 6 factors in low FFI

To see if there was any difference between perceptions regarding the reasons for low FFI, the re-coded rankings were cross tabulated with the distribution of different levels of financial inclusion as shown in Appendix T(e) and in Table 15.

Reason	In your opinion, in which category can Pakistan be classified as far as formal financial inclusion rate is concerned?					
	< 20%			20% - 40%		
	Very Imp.	Not so Imp.	Not at all Imp.	Very Imp.	Not so Imp.	Not at all Imp.
<i>Not much use of a bank account for ordinary citizens especially those with low income</i>	21%	3%	13%	18%	2%	17%
<i>High cost of banking</i>	11%	3%	23%	4%	3%	29%
<i>Complex (Know Your Customer) KYC requirements</i>	7%	7%	23%	5%	3%	28%
<i>Banks/financial institutions are not interested in offering their services to low-income person</i>	17%	3%	18%	11%	3%	22%
<i>Low education levels in remote regions make them unviable for offering financial services</i>	23%	3%	12%	21%	2%	13%
<i>Lack of good technology and payments infrastructure in the country</i>	9%	2%	26%	8%	3%	25%

Respondents base: 120

Reason	In your opinion, in which category can Pakistan be classified as far as formal financial inclusion rate is concerned?					
	40% - 60%			60% - 80%		
	Very Imp.	Not so Imp.	Not at all Imp.	Very Imp.	Not so Imp.	Not at all Imp.
<i>Not much use of a bank account for ordinary citizens especially those with low income</i>	8%	2%	6%	7%	1%	0%
<i>High cost of banking</i>	3%	1%	12%	1%	1%	6%
<i>Complex (Know Your Customer) KYC requirements</i>	4%	2%	9%	1%	2%	5%
<i>Banks/financial institutions are not interested in offering their services to low-income person</i>	8%	2%	6%	3%	1%	3%
<i>Low education levels in remote regions make them unviable for offering financial services</i>	9%	2%	4%	6%	0%	2%
<i>Lack of good technology and payments infrastructure in the country</i>	2%	3%	11%	1%	1%	6%

Respondents base: 120

Reason	In your opinion, in which category can Pakistan be classified as far as formal financial inclusion rate is concerned?								
	> 80%			No Idea			All Respondents		
	Very Imp.	Not so Imp.	Not at all Imp.	Very Imp.	Not so Imp.	Not at all Imp.	Very Imp.	Not so Imp.	Not at all Imp.
<i>Not much use of a bank account for ordinary citizens especially those with low income</i>	1%	0%	1%	3%	0%	1%	56%	8%	37%
<i>High cost of banking</i>	0%	0%	2%	0%	0%	3%	18%	7%	75%
<i>Complex (Know Your Customer) KYC requirements</i>	0%	0%	2%	2%	0%	2%	18%	13%	68%
<i>Banks/financial institutions are not interested in offering their services to low-income person</i>	1%	0%	1%	1%	0%	3%	40%	8%	52%
<i>Low education levels in remote regions make them unviable for offering financial services</i>	2%	0%	0%	3%	0%	1%	63%	6%	32%
<i>Lack of good technology and payments infrastructure in the country</i>	0%	0%	2%	3%	0%	1%	23%	8%	70%

Respondents base: 120

Table 15: Perception of Reasons for Low FFI—by Respondents' Level of FI Awareness

It can be observed that there is not much difference between the re-coded rankings of almost all the groups. As far as very important rank is concerned, all the groups are in agreement about the top three

reasons discussed earlier (“low education...”, “not much use of a bank account” and “banks are not interested...”). Those who reported FFI to be less than 20% perceive “high cost of banking...” and “lack of technology...” as the next very important reasons as opposed to those who reported FFI to be between 20% and 40% who perceive “lack of technology...” as more important than “high cost of banking..” and “complex KYC requirements...”. The majority across almost all groups perceive “lack of technology...”, “high cost of banking..” and “complex KYC requirements...” as unimportant factors.

The following can be inferred from the data and findings discussed above regarding the perceptions of bankers relating to possible factors in low FFI:

- Low education and low income are two items that are perceived by respondents as the most important reasons for low financial inclusion
- Respondents think that banks and financial institutions are themselves not interested in offering services to low-income people. The reason for this perception cannot be identified from the data but it may be that the business model of banks in Pakistan makes low-income people less attractive as prospective customers. The factors “High cost of banking”, “complex (Know Your Customer) KYC requirements” and “lack of good technology and payments infrastructure in the country” rank low in the perception of the respondents, except for those whose perception of FFI is the same as the generally accepted value
- These perceptions are shared almost uniformly across groups with varying level of awareness about the financial inclusion problem. This may be because of:
 - The low awareness among bankers of the role that technology has played in the evolution of banking and its adoption by masses
 - The inherent belief among bankers that banking, somehow, is a privilege of the educated and high income groups

4.7.3 Should every person in Pakistan have access to a bank account?

When the respondents were asked in Question 18, “do you think every person in Pakistan, regardless of their income levels or where they live should have access to a bank account?”, 104 of 125 respondents (83%) said “yes”, 17 (14%) said “no” and 4 (3%) didn’t answer (Appendix U(a)).

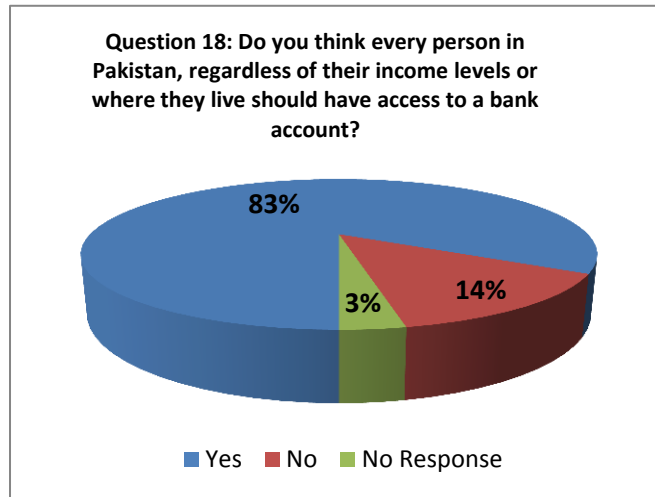


Figure 65: Should every person have access to a bank account?

Appendix U(b) and Figure 66 shows a cross tabulation between respondents' level of awareness about financial inclusion and their opinion about whether every individual should have access to a bank account. It is interesting to note that the more accurate a respondent's perception about the actual FI rate, the more likely were they to answer "yes" to the question.

We should be careful not to infer too much from these results due to the fact that the question is ambiguous and that the use of "should" could be interpreted as a right, a desirable goal, or just a technical constraint.

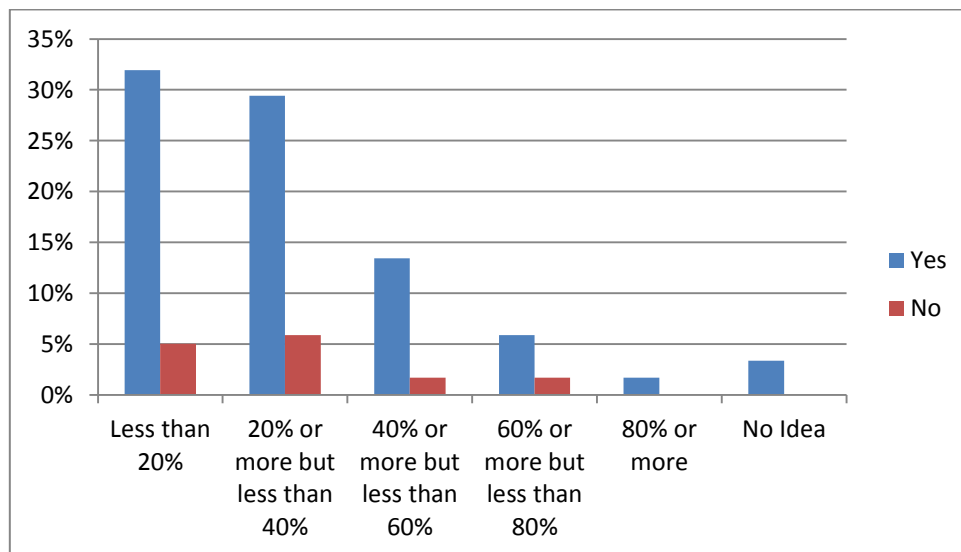


Figure 66: Should everyone have access to a bank account—by level of FI awareness

4.7.4 Are commercial banks responsible for low access rates?

In Question 19, respondents were asked: “According to some studies, the number of people in Pakistan having access to a bank account is extremely low. To what extent do you agree with the statement that commercial banks are primarily responsible for this low access?”

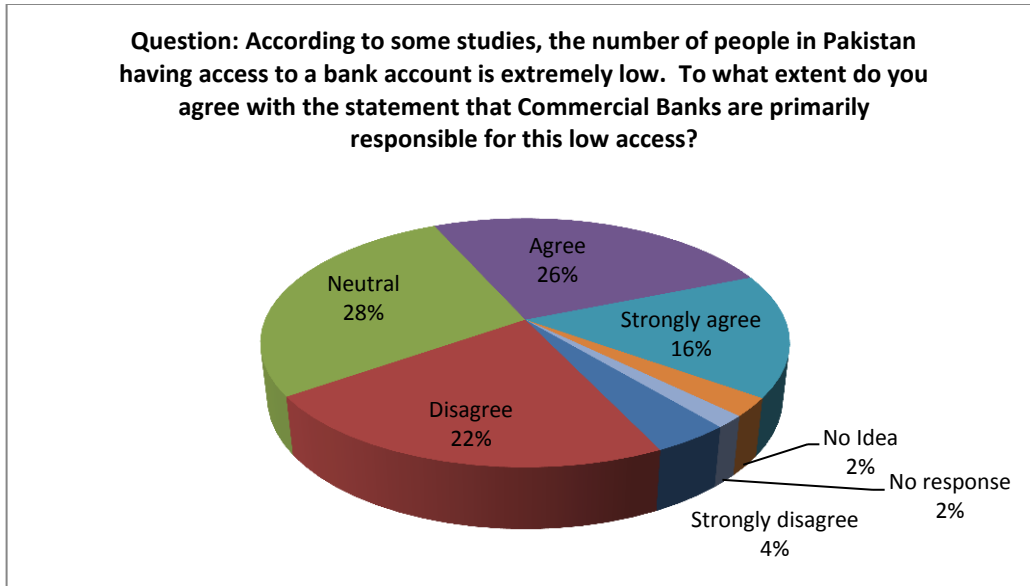


Figure 67: Are commercial banks responsible for low access?

Distribution of all responses and according to their institutions is given in Appendix V. It can be observed from Figure 67 that there is no large difference between those who agreed, disagreed or remained neutral. However, 42% chose to explicitly express their agreement with the statement where as 26% explicitly chose to disagree. Hence of the 85 respondents who explicitly chose to either agree (or strongly agree) or disagree (or strongly disagree), 61% agreed and 39% disagreed which is a significant difference ($z=2.91$, $p<0.01$).

Figure 68 shows the distribution of respondents who agreed or disagreed with the statement according to the type of their institutions. Out of 92 respondents from commercial banks, 65 chose to express an explicit opinion (agree or disagree), there was no significant difference between those who either agreed or strongly agreed (52%) versus those who either disagreed or strongly disagreed (47%). Overall of the 123 respondents, who answered this question, 35 chose to remain neutral and another 3 had no idea. Out of the remaining 85 (who explicitly expressed an opinion), 35 out of 65 respondents from commercial banks (54%) agreed with the statement as compared to 18 out of 20 respondents from other institutions (90%). The proportion of respondents from other institutions who either

agreed or strongly agreed was significantly higher ($z=2.92$, $p<0.01$) than those from commercial banks.

While it is reasonable to infer that respondents from commercial banks will argue in favor of their institutions, it is interesting to note that 28% of the respondents who either disagreed or strongly disagreed with the statement that commercial banks are responsible for the low access rate were from the commercial banks. So even within the respondents from commercial banks, there is a fairly strong perception that commercial banks might not have done enough to bring more people into the folds of formal financial services.

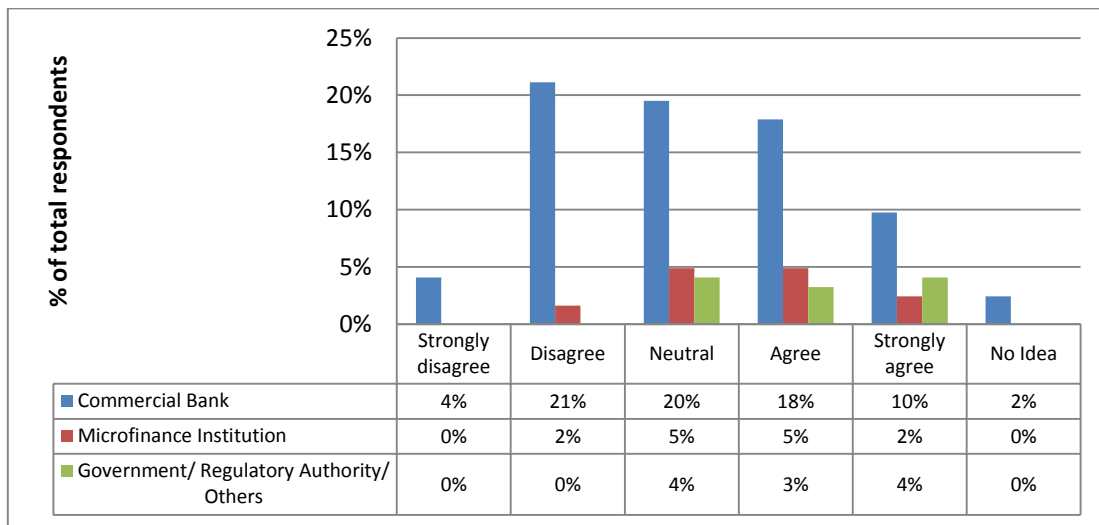


Figure 68: Distribution of respondents' perception according to the type of their institution

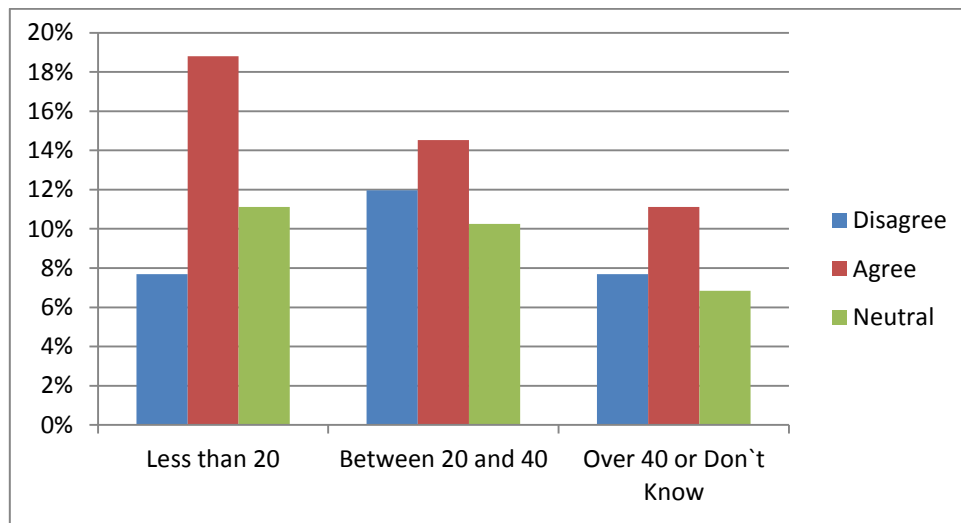


Figure 69: Distribution of respondents' perception according to their level of FI awareness

Data in Appendix V(c) and Figure 69 shows that there is no significant difference between the agreement levels of those who correctly or incorrectly predicted the financial inclusion rate in the country. As shown in Figure 69, 71% of the respondents who correctly predicted the FI rate and explicitly gave an opinion (agree or disagree) either agreed or strongly agreed with the statement that commercial banks are responsible for the low access rate as opposed to 70% of those who perceived the FI rate to be higher than 20%, explicitly gave an opinion (agree or disagree) and either agreed or strongly agreed with the statement that commercial banks are responsible for the low access rate. The difference in the agreement of the groups was not significant.

4.7.5 Why have financial institutions been unable to offer services to people with low income?

Respondents were asked to identify which of the following reasons (variable names in parentheses are those used in the SPSS analysis) explain why banks and other financial institutions have been unable to offer financial services to the low-income population.

- High poverty makes it financially infeasible for the banks/financial institutions to offer their services to remote regions (High_Poverty)
- The clearing and settlement infrastructure for electronic banking in the country is not developed enough to allow banks to utilize technology efficiently and effectively (ClearingSettlement)
- Banks have been unable to collaborate and offer low-cost services to their customers (Unable_Collaborate)
- Banks have not been able to utilize modern technology for low-cost product offerings (Utilize_tech)
- The rules and regulations of electronic retail payment systems are an obstacle to expanding the electronic payment services (Rules)
- Low education levels in remote regions make them unviable for offering financial services (Low_Education)
- Banks/financial institutions are unable to offer low-cost basic banking services because they don't have good IT infrastructure available (ITInfrastructure)
- Banks have been reluctant to invest in information technology for the purpose of providing low-cost financial services to low-income customers (InvestmentTech)
- Know Your Customer (KYC) requirements are a hindrance for banks (KYC)

- Other

In Question 20 (item selection), respondents were asked to select the reasons that they think are important, and then in question 21 (item ranking), they were asked to rank the reasons that they selected in Question 20.

Data for the responses for Question 20 are given in Appendix W(a) and Appendix W(b). Appendix W(a) cross-classifies the item selection according to the types of institutions to which the respondents belong. Appendix W(b) cross classifies the item selection according to the level of respondents’ awareness about FI. The following two charts illustrate the distribution.

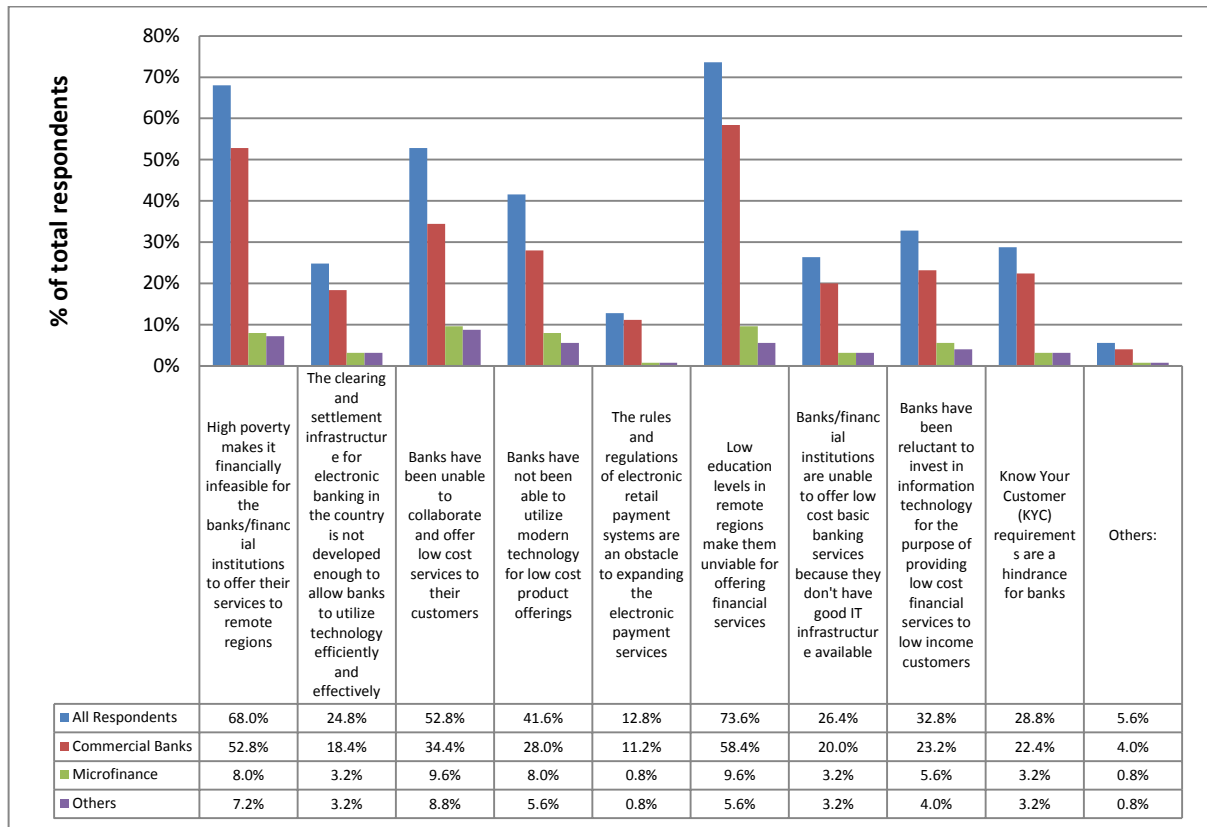


Figure 70: Reasons for lack of services—by type of institution

From visual inspection of Figure 70, it can be observed that “low education levels in remote regions make them unviable for offering financial services ...”, “high poverty makes it financially infeasible for the banks...” and “banks have been unable to collaborate...” were the reasons perceived as most important. This pattern of selection was similar for respondents from commercial banks but differed slightly for respondents from microfinance institutions who selected “banks have been unable to collaborate...” as the second most important choice (followed by low education...”). Respondents

from all other types of institutions selected “banks have been unable to collaborate...” more frequently than any other type of respondent. Factors relating to technology and payment systems were selected least often by respondents from all types of institutions.

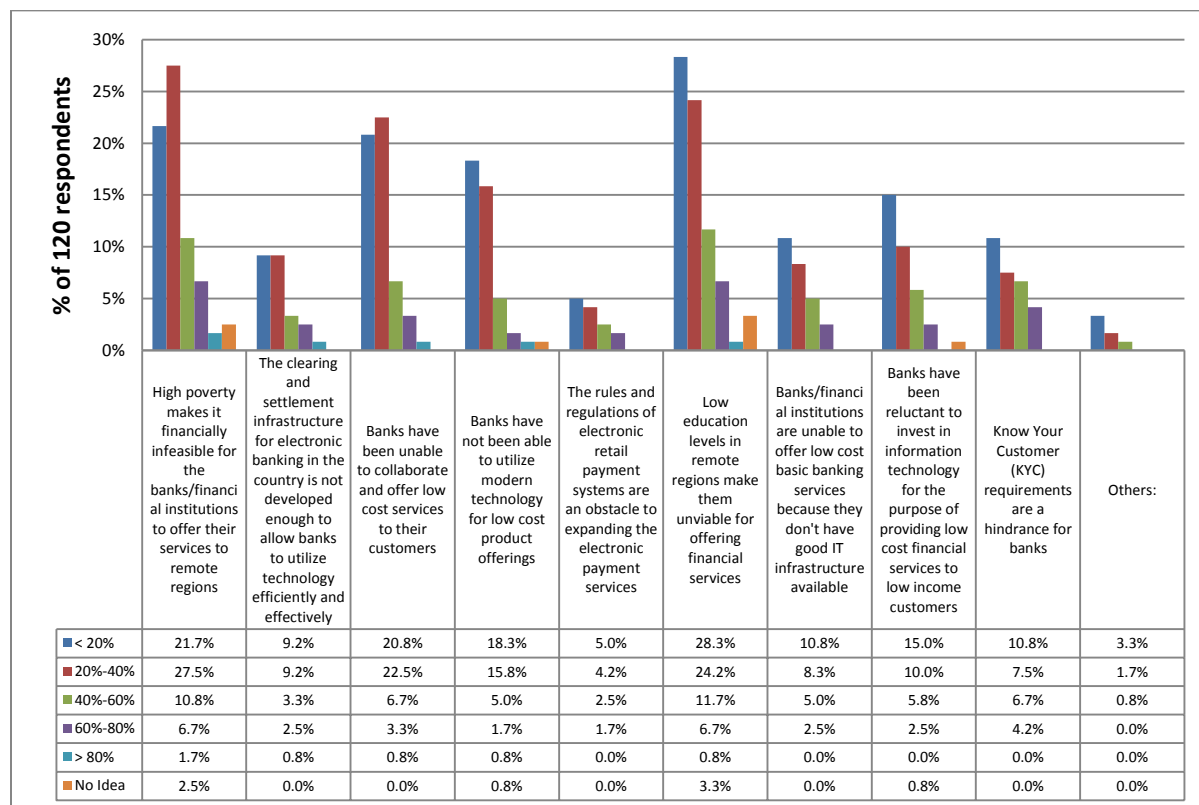


Figure 71: Reasons for lack of services—by respondents' level of awareness of FI

The same pattern of item selection was observed across all the groups with differing perceptions about the financial inclusion rate in the country (Figure 71).

In Question 21, respondents were asked to rank their selected reasons in order of importance with most important reason ranked at number 1, second at number 2 and so on. Not all respondents who selected a reason ranked that reason. Frequency distribution of the rankings is given in Appendix W(c).

In order to interpret these rankings and determine the most preferred reasons, re-coded rankings and a “rank score” for each statement were calculated using the procedure described in Appendix BB. Figure 72 shows the re-coded rankings for each of the factors or customer value proposition as derived using the procedure in step 1 from Appendix BB4.3. Figure 73 shows the Ranked scores for

perceived reasons for inability to offer low-cost services as derived using the procedure in step 2 from Appendix BB.

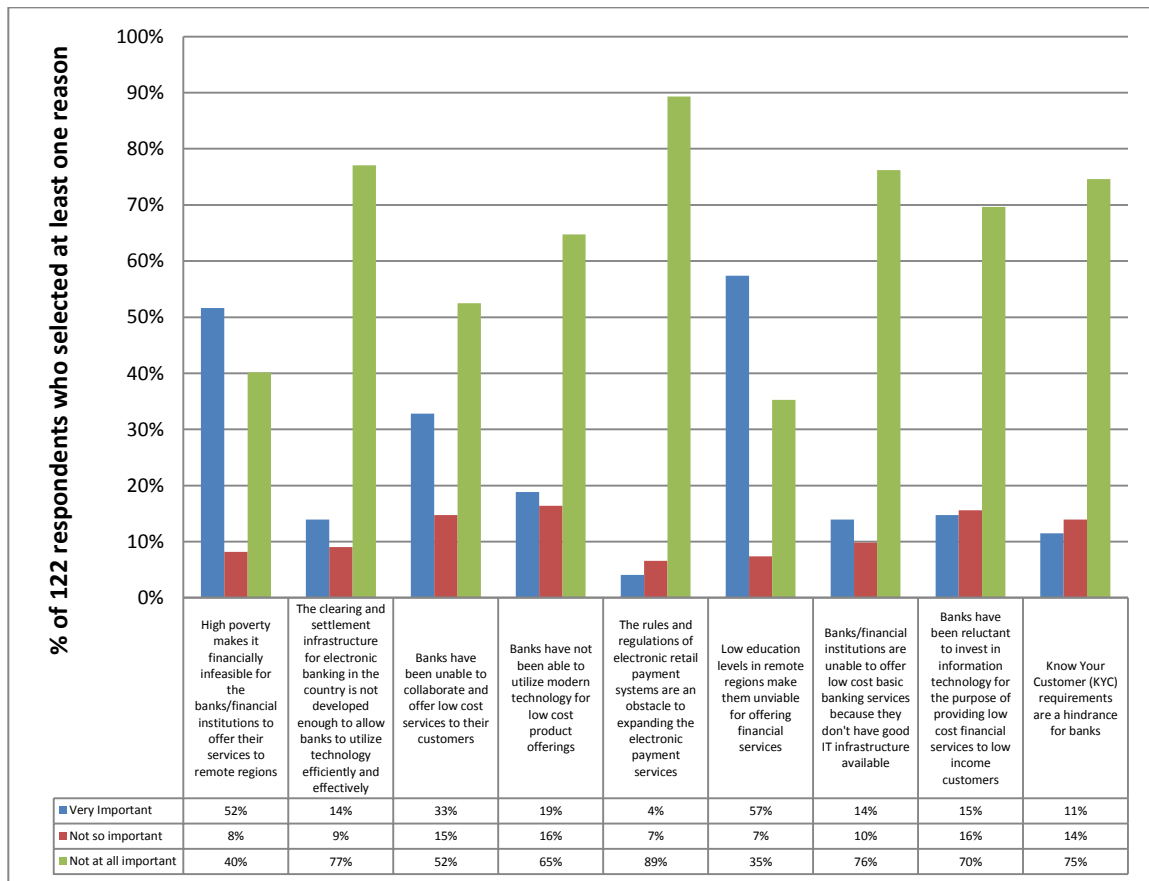


Figure 72: Re-coded rankings for perceived reasons for inability to offer low-cost services

From Figure 72 and Figure 73, it can be observed that the top ranked reasons are:

- High poverty makes it financially infeasible for the banks/financial institutions to offer their services to remote regions
- Low education levels in remote regions make them unviable for offering financial services
- Banks have been unable to collaborate and offer low-cost services to their customers
- The clearing and settlement infrastructure for electronic banking in the country is not developed enough to allow banks to utilize technology efficiently and effectively.

The lowest ranked reasons include:

- Banks have not been able to utilize modern technology for low-cost product offerings

- Banks have been reluctant to invest in information technology for the purpose of providing low-cost financial services to low-income customers
- Know Your Customer (KYC) requirements are a hindrance for banks
- The rules and regulations of electronic retail payment systems are an obstacle to expanding the electronic payment services.

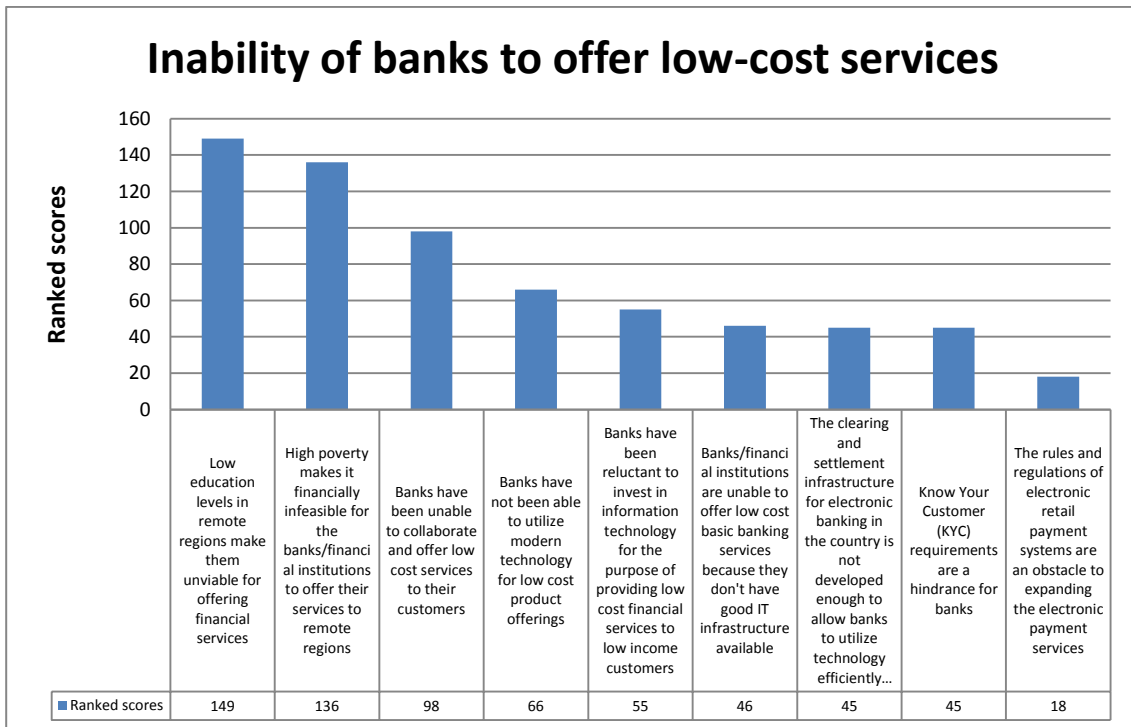


Figure 73: Ranked scores for perceived reasons for inability to offer low-cost services

To determine the factorability of the items used, the following criteria were used (please refer to SPSS output in Appendix W(e)):

- (i) It was observed that 5 out of the 9 items correlated at least 0.3 with at least one other item suggesting reasonable factorability
- (ii) Cronbach's alpha for the 9 items with re-coded rankings was 0.546 (based on standardized items it was 0.572) which is a little less than the generally accepted value of 0.6 and shows that the items have fairly low uniqueness and may be inter-related (Cortina, 1993)
- (iii) The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is 0.571 which is greater than the commonly recommended value of 0.5 and thus allows us to proceed with the factor

analysis (Field, 2000). However, Bartlett's Test of Sphericity is significant (Chi-square (36) = 135.604, $p < 0.01$)

- (iv) All but one items on the diagonals of anti-image correlation matrix are over the recommended value of 0.5
- (v) The communalities for all but two items are above 0.5 confirming that 7 of the remaining items shared some common variance with each other

Different combination of items and factors were examined using varimax and oblimin rotations of the factor loading matrix. The initial eigenvalues indicated that the first three factors explained 21%, 17% and 16% of the variance which accounted for 55% of the cumulative variance. The fourth eigenvalue was less than 1 but accounted for about 10.5% variance. However, the 7 item-three factor solution with varimax rotation which explained 64% of the variance was preferred because of the ease of explanation of the underlying factors, and improved Cronbach's alpha values for the scales. The 2 items that were removed were "clearing and settlement..." and "investment in technology", both having the least communalities in the initial solution.

The three factors are identified from the rotated component matrix shown in Appendix W(e) are labeled in Table 16. It can be observed that the three dimensions of perception identified from this analysis pertain to the management capability of the banks, general perceptions about low education and high poverty, and a distant component relating to rules and regulations. It can also be observed that the reasons relating to the non-development of clearing and settlement infrastructure and reluctance in the investment in technology by banks do not significantly add to the variance being explained.

Component	Label (sum of ranked scores)	Items (ranked scores ³⁴)	Variance explained	Cronbach alpha
1	Management capability (210)	Unable_to_collaborate (98) Unable_to_Utilize_Tech (66) Lack_of_IT_infrastructure (46)	26%	0.634
2	Poverty and education (285)	High_poverty (136) Low_Education (149)	21%	0.575
3	Rules (63)	Rules (18) KYC (45)	17%	0.404

Table 16: Labels for the 3 factors covering 7 reasons

³⁴ From Figure 73: Ranked scores for perceived reasons for inability to offer low-cost services

To further examine the perceptual distance between the items, 2 factor Multidimensional Scaling (MDS) was deployed. The re-coded rankings for the 9 items were analyzed using the PROXSCAL algorithm in SPSS. The normalized raw stress was 0.00178 (Table 17) indicating a good fit. The two dimensions are shown in Figure 74.

Stress and Fit Measures	
Normalized Raw Stress	.00178
Stress-I	.04214 ^a
Stress-II	.08056 ^a
S-Stress	.00182 ^b
Dispersion Accounted For (D.A.F.)	.99822
Tucker's Coefficient of Congruence	.99911

PROXSCAL minimizes Normalized Raw Stress.
a. Optimal scaling factor = 1.002.
b. Optimal scaling factor = 1.001.

Table 17: Stress and fit measures for the 9 reasons

It can be seen that “low education...” and “high poverty...” are closer to each other but farthest from the other items. Although the principal component analysis above had grouped “unable to collaborate...” with “effective utilization of technology...” and “lack of IT infrastructure...”, the distance between the first and the rest is larger. Finally, the MDS analysis shows that all the remaining variables are closer to each other and rank low on both the dimensions.

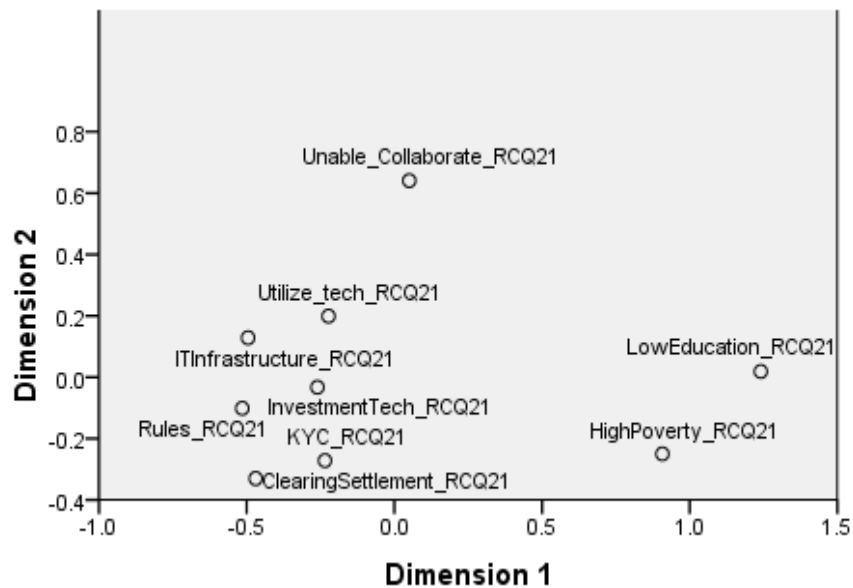


Figure 74: MDS 2D plot for the 9 reasons

One of the problems with this question is its language that suggests that banks and financial institutions have been unable to offer low-cost services. In Question 19, only 36% of the respondents either agreed or agreed strongly that banks are responsible for this low access where as 33% either disagreed or strongly disagreed, with another 28% remaining neutral. In Appendix W(d) the re-coded rankings for reasons for the inability of banks to offer low-cost services have been cross tabulated with the number of respondents who either agreed, disagreed or remained neutral when asked if they think that banks are responsible for low FI (in question 19). Rank scores were than calculated for the figures in Appendix W(d) using the method described in Section 4.3 and shown graphically in Figure 75.

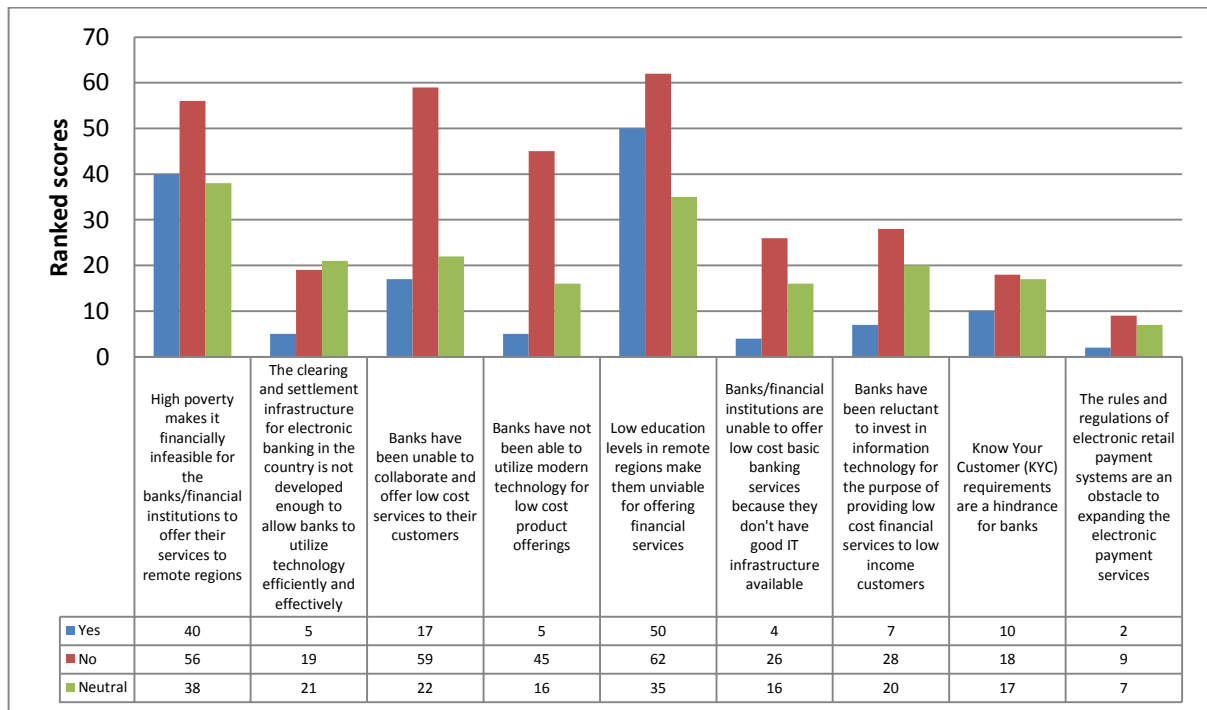


Figure 75: Ranked scores by category of respondents from question 19

To summarize:

- Respondents who think that banks are responsible for low FI, also gave high ranking to “high poverty” and “low education levels” and lower rankings to “unable to collaborate” and other reasons
- Respondents who think that banks are not responsible for low FI gave high rankings to “low education levels”, “unable to collaborate”, “high poverty” and “banks not able to utilize

modern technology” but relatively lower rankings to other reasons. This shows that while they think that banks are not responsible they also think that banks can do better by improving these factors

- Respondents who remained neutral perceive that “low education levels” and “high poverty” are the major reasons that banks have been unable to offer low-cost services

We can, therefore, safely infer that regardless of the respondents’ institution type and level of awareness about financial inclusion levels in the country, they consider “low education” and “high poverty” as the two major reasons why banks have been unable to offer low-cost financial services to the people. However, they also perceive that banks have been unable to collaborate or effectively use technology for offering low-cost services. The same perception was observed regardless of whether the respondents think that banks are responsible for low FI rates in the country.

It may be observed that the items that received high rankings by the respondents are either socio-economic in nature (like high poverty or low education) or general management concepts like “banks have been unable to collaborate or utilize new technologies for offering low-cost services”. However, respondents gave lower ranking individually to reasons like “banks have been reluctant to invest in information technology”, “banks don’t have good IT infrastructure” and “the clearing and settlement infrastructure is not developed enough in the country”—although the grouping “Management Capability” was the dominant one. As discussed in Chapter 2, reasons that received lower rankings might in fact enable banks to utilize new technologies or collaborate with each other to offer low-cost services, as has happened in most of the developed countries.

4.7.6 Perception of banks’ utilization of IT to provide low-cost services

In Question 22, respondents were asked to indicate the extent of their agreement with the following statement: "Banks have not been able to fully utilize modern information technology to provide banking services to low-income population and remote regions of the country" on a Likert scale with values Strongly agree, Agree, Neutral, Disagree, and Strongly disagree. The results are shown in Figure 76.

Of the 122 respondents who answered this question, 26 remained neutral and the remaining 96 explicitly either agreed or disagreed. The proportion of respondents who agreed (67 out of 96) was significantly large as compared to those who disagreed ($z=5.48$, $p<0.01$).

Table 18 classifies the responses for this question with the re-coded ranking for the reason “Banks have not been able to utilize modern technology for low-cost product offerings” in Question 21. The

calculated rank scores shows that those who agreed or strongly agreed gave higher ranking to the reason in Question 21. 32 out of 122 respondents (26%) actually thought that this reason was not as important as others.

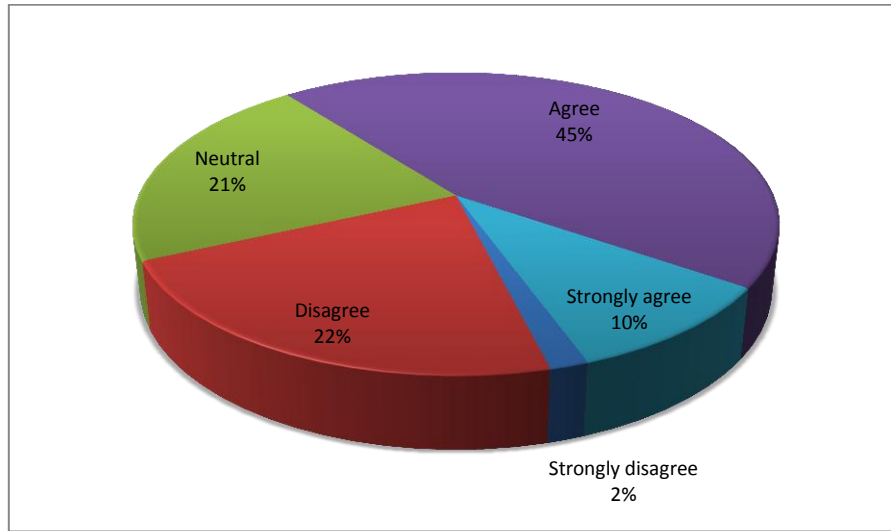


Figure 76: Extent of agreement that banks have not fully utilized technology

To what extent do you agree with the statement that Banks have not been able to fully utilize modern information technology to provide banking services to low-income population and remote regions of the country?	Banks have not been able to utilize modern technology for low-cost product offerings			Total	Ranked Score
	Not at all important	Somewhat important	Very important		
Strongly disagree	1	0	1	2	2
Disagree	24	1	2	27	5
Neutral	21	4	0	25	4
Agree	28	14	13	55	40
Strongly agree	4	1	7	12	15
Total	78	20	23	121	

Table 18: Ranking of technology utilization

Table 19 shows the correlation between the responses for this question and the re-coded rankings for the reasons for banks' inability to offer low-cost services. Respondents who agreed that banks have not been able to utilize technology also ranked reasons related to collaboration or technology highly.

	To what extent do you agree with the statement that Banks have not been able to fully utilize modern information technology		
	Pearson Correlation	Sig. (1-tailed)	N
High_poverty	-.092	.157	121
ClearingSettlement	-.043	.320	121
Unable_Collaborate	.309**	.000	121
Utilize_tech	.366**	.000	121
LowEducation	-.177*	.026	121
ITInfrastructure	.302**	.000	121
InvestmentTech	.237**	.004	121
KYC	-.146	.055	121
Rules	-.073	.212	121

Table 19: Correlation of responses between Question 21 and 22

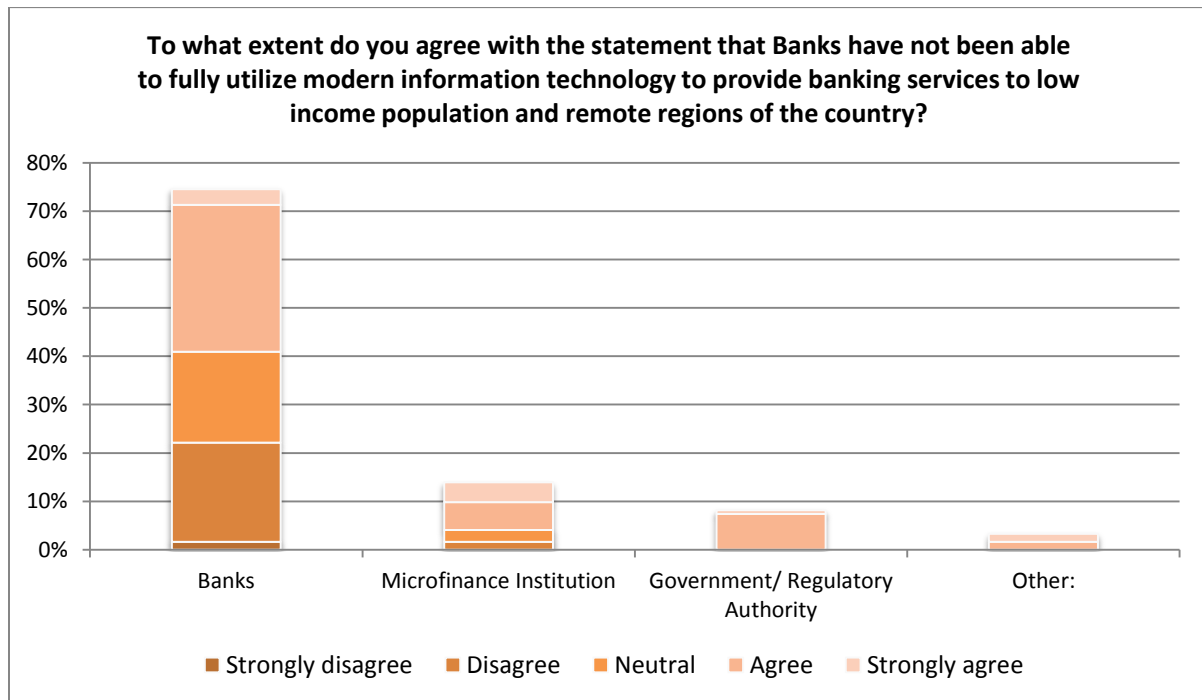


Figure 77: Extent of agreement by type of institution

Figure 77 shows the distribution of the perception regarding the utilization of technology among the respondents from different types of financial institutions. All the respondents from government and other institutions expressed their agreement with the statement. Almost 40% of the respondents from commercial banks disagreed that banks have not been able to fully utilize modern IT to provide low-cost services to low-income population and regions of the country.

Overall, more than half of the respondents agreed that banks have not been able to fully utilize IT for providing cost effective services to low-income people and remote regions of the country. A strong correlation exists between this opinion and the reasons that were selected in Question 21, indicating that respondents do perceive the importance of technology for offering low-cost and easily accessible services.

4.7.7 Perception of the impact of technology on adoption of financial services

In Question 23, respondents were asked which of the following electronic services would result in more people adopting formal banking services in the country. They were asked to express the extent of impact on a scale of “7 stars” with 7 indicating maximum impact. The following electronic services were suggested:

- Providing online electronic funds transfer services using internet based banking
- Providing online electronic funds transfer services using mobile phone based banking
- Providing online bill payment facilities
- Online transferring of government payments (salaries/pensions/support payments etc) to bank accounts
- Expanding ATM network of your bank in all parts of the country
- Expanding Point of Sale (POS) network in all parts of the country
- Incorporating enhanced security features in Credit/Debit/ATM Cards (eg. Chip-based Smart Cards)
- Reducing cheque clearing cycle time
- Providing a Debit/ATM card with every account to the customers.

The detailed data for the extent of agreement is presented in Appendix X(a). For illustration purposes, in Appendix X(b), the scale was reduced from a scale of 7 units to three units as follows:

- Low Impact: Scales 1 to 3
- Medium Impact: 4

- High Impact: 5 to 7

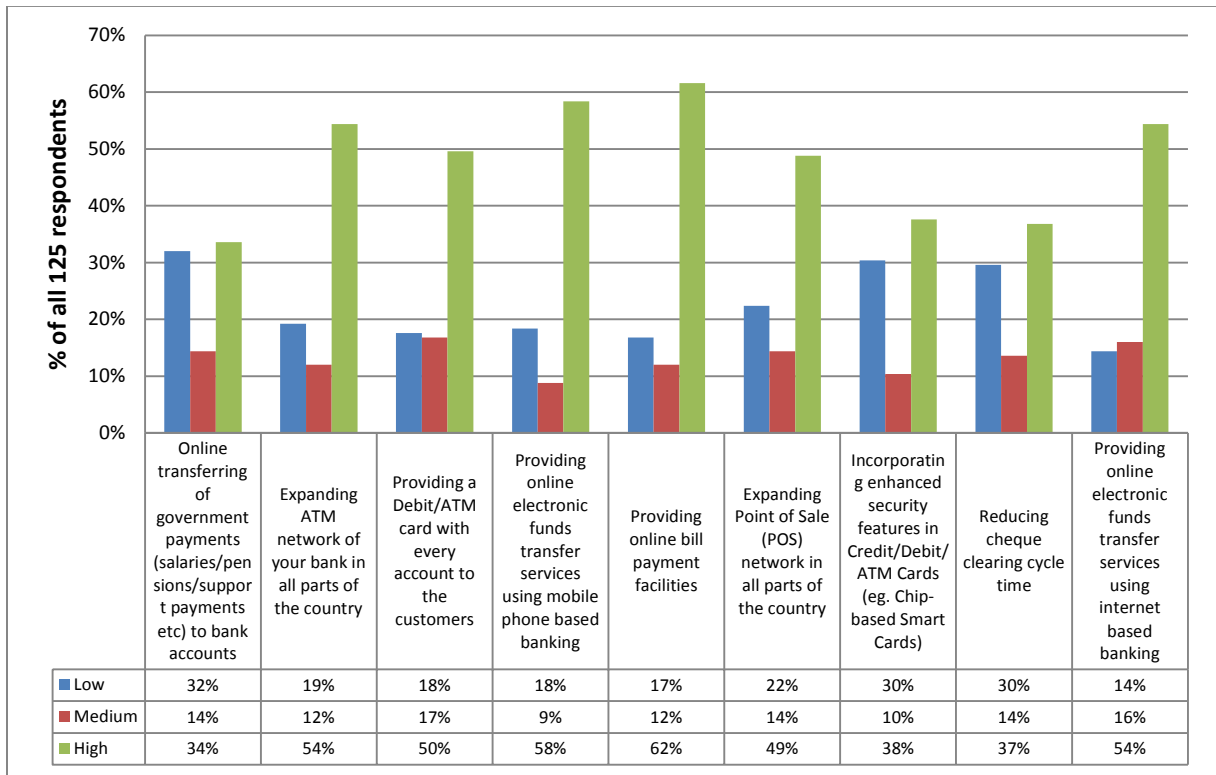


Figure 78: Perceived impact of some proposed electronic services

The total and mean rating along with the standard deviation are shown in Table 20. Not all respondents chose to rate every item. On average, respondents agreed more with “expanding ATM network”, “online transferring of government payments” and “providing a debit or ATM card with every account”. However, from Figure 78 it can be seen that “online bill payment facility”, “online electronic funds transfer using mobile phones/ internet banking” and “expanding POS network” were also perceived as high impact services by some respondents.

Suggested Electronic Services	N	Sum	Mean	Std. Deviation
Expanding ATM network of your bank in all parts of the country	113	599	5.30	1.782
Online transferring of government payments (salaries/pensions/support payments etc.) to bank accounts	107	563	5.26	1.865
Providing a Debit/ATM card with every account to the customers	106	553	5.22	1.821
Providing online electronic funds transfer services using mobile phone based banking	107	539	5.04	1.853
Providing online bill payment facilities	105	510	4.86	1.873
Expanding Point of Sale (POS) network in all parts of the country	107	516	4.82	1.912
Incorporating enhanced security features in Credit/Debit/ATM Cards (eg Chip-based Smart Cards)	98	424	4.33	1.98331
Reducing cheque clearing cycle time	100	426	4.26	2.003
Providing online electronic funds transfer services using internet based banking	100	426	4.26	1.998
Valid N (listwise)	85			

Table 20: Basic statistics for the extent of impact of selected electronic payment services

In order to conduct a principal component analysis (PCA), we decided to use the original scale that was used in the question (1-7) because there would be fewer missing values. Overall cases were considered valid for this analysis.

To determine the factorability of the items used, the following criteria were used (please refer to the SPSS output in Appendix X(c) :

- (i) It was observed that all 9 items correlated at least 0.3 with at least one other item, suggesting high factorability
- (ii) Cronbach's alpha for the 9 items was 0.864 which is much higher than the generally accepted value of 0.6 and shows that the items have low uniqueness and are inter-related (Cortina, 1993)
- (iii) The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is 0.807 which is greater than the commonly recommended value of 0.5 (Field, 2000). Also, Bartlett's Test of Sphericity is significant (Chi-square (36) = 338.553, $p < 0.01$)
- (iv) All items on the diagonals of anti-image correlation matrix are over 0.75 which much higher than the recommended value of 0.5
- (v) The communalities for all the items are above 0.6 confirming that all of the items shared some common variance with each other.

Different combination of items and factors were examined using varimax rotation of the factor loading matrix. The initial eigenvalues indicated that with all the items, the first four factors explained 49%, 15%, 8% and 8% of the variance which accounted for 80% of the cumulative variance.

However, the 9-item/four-factor solution with varimax rotation (which explained 80% of the

variance) was preferred because of the ease of explanation of the underlying factors and improved Cronbach's alpha values for the scales.

The 4 components identified from Appendix X(c) are labeled in Table 21 by the author. It can be observed that the perceived dimensions relate to the improvements in the features of payment instruments (like cards and cheque), expanding ATM and POS network, enabling people to make and receive payments of small value (micro payments) and offering convenience of internet banking and online bill payments facility.

The improvements that are perceived as important may not lead to the adoption of banking by low-income people and are more likely to attract new customers or make existing customers use banking more. This may be due to the fact that the question didn't specifically mention "low-income people" or "those from remote regions". However, 20% of the variance is explained by component 2 (enabling micro payments) which indicates that a considerable number of bankers to think that mobile banking or government payments are likely to result in more people (probably from low-income segments) adopting banking.

Interestingly, the bankers gave considerable importance to expansion of the POS network. The analysis in Chapter 3 showed that while the ATM network is expanding, the POS network is in fact shrinking.

Component	Label (sum of ratings)	Items (sum of ratings ³⁵)	Variance explained	Cronbach alpha
1	Improvements in the features of payment instruments (1403)	Enhanced security features in cards (424) Reduced cheque clearing time (426) Offering an ATM/debit card with every account (553)	27%	0.810
2	Enabling micro payments (1102)	EFT using mobile phones (539) Online government payments (563)	20%	0.663
3	Convenience (936)	EFT using internet (426) Online bills payment facility (510)	17%	0.822
4	Network size (1115)	Expand ATM network (599) Expand POS network (516)	16%	0.783

Table 21: Labels, variance explained and reliability measures for the 4 identified components

To further examine the perceptual distance between the items, 2 factor Multidimensional Scaling (MDS) was deployed. The original rankings for the 9 items were analyzed using the PROXSCAL algorithm in SPSS.

³⁵ From Table 20: Basic statistics for the extent of impact of selected electronic payment services

The normalized raw stress was 0.00925 (Table 22) indicating a good fit. The two dimensions are shown in Figure 79. If Dimension 1 can be classified as “Improvement in access to banking services” and Dimension 2 can be classified as “improvement in product features”, it can be seen that “expanding the ATM network” and “enabling online government payments” are perceived as important items on both dimensions. “ATM/debit card with every account” and “Electronic funds transfer using mobile phone banking” are important on Dimensions 1 and 2 respectively. “EFT using internet” is perceived to be very low on both the dimensions.

Stress and Fit Measures	
Normalized Raw Stress	.00925
Stress-I	.09617 ^a
Stress-II	.26482 ^a
S-Stress	.01139 ^b
Dispersion Accounted For (D.A.F.)	.99075
Tucker's Coefficient of Congruence	.99536

PROXSCAL minimizes Normalized Raw Stress.

a. Optimal scaling factor = 1.009.

b. Optimal scaling factor = 1.002.

Table 22: Stress and fit measures for the 9 electronic services

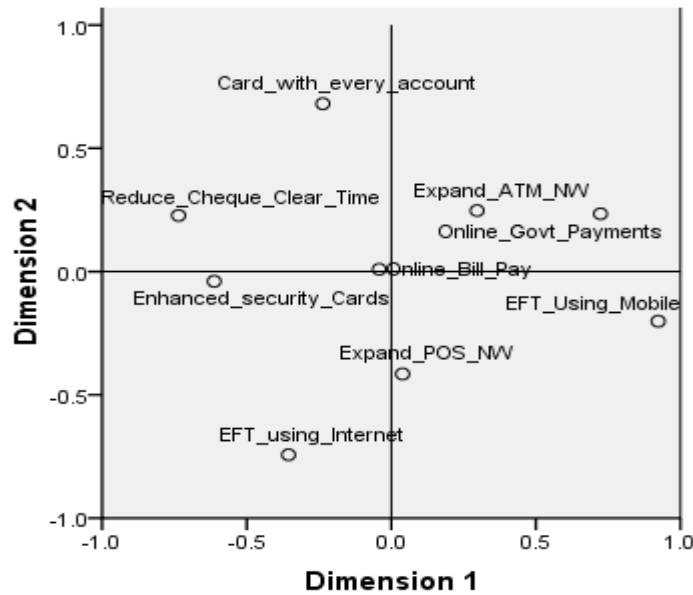


Figure 79: 2-Factor MDS plot for the 9 electronic services

To summarize, of all the proposed electronic services, respondents gave more importance to those that were related to ATMs. This may be due to the cash-dominated economy of Pakistan and the cash-dispensing functions of ATM machines. However, respondents also agreed that mobile banking

and online transfer of government payments may result in more people adopting formal banking services.

Relatively less importance was given to online bill payments, internet banking and expansion in the POS network. This may be due to the perceptions related to low education and high poverty that were identified in the previous questions.

4.7.8 Impact of technological improvements on FI

In Question 24, the respondents were asked to select some of the proposed "improvements relating to technology in banks and financial institutions" that may play an important role in enabling the banks to launch initiatives for increasing the number of people who have a bank account in Pakistan. These improvements were:

- Banks/ financial institutions improving their IT infrastructure (connectivity and back office software)
- Banks/ financial institutions introducing Alternative Delivery Channels (ADCs) like internet and mobile phone banking
- Banks improving their ATM and Point of Sale (POS) networks
- Banks/financial institutions partnering up with agents to offer agent based banking services
- Banks and financial institutions adopting international standards for account number formats
- Banks and financial institutions adopting international standards for payment formats

Two "others" open fields were also provided to encourage the respondents to provide their own suggestions.

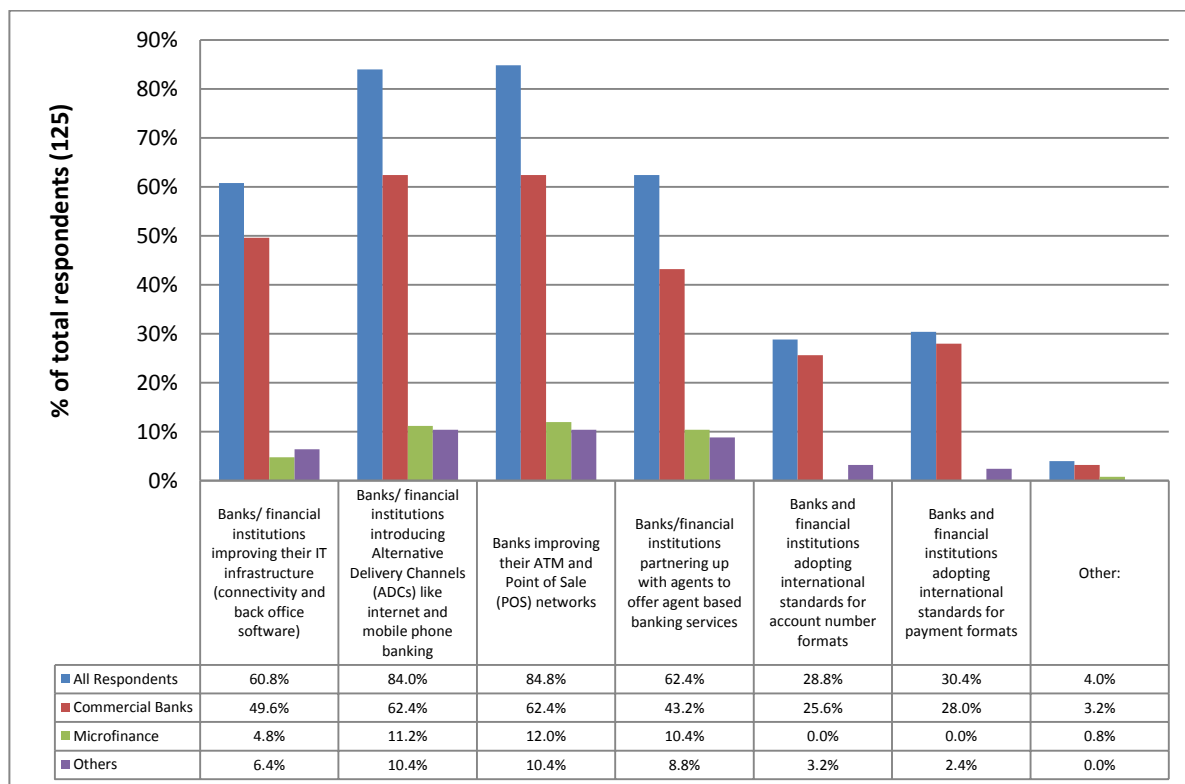


Figure 80: Respondents' choice of proposed technology improvements on FI

Detailed results for the selections are presented in Appendix Y(a) and in Figure 80, which shows that a majority of respondents chose “banks improving their ATM and Point of Sale networks” and “Banks/financial institutions introducing alternate delivery channels like internet and mobile phone banking”. “Banks/financial institutions partnering up with agents to offer agent based banking services” and “banks/financial institutions improving their IT infrastructure...” emerged as the third and fourth most preferred choice. “Adoption of international standards for account number and payment messages” received fewer votes (and none from respondents from microfinance institutions).

In Question 25, respondents were asked to rank the factors they selected in Question 24 in order of importance (1 being most important, 2 less important and so on). Of the 120 respondents who responded to Question 24, only 101 provided a ranking. The data on these raw rankings are provided in Appendix Y(b) and shown in Figure 81.

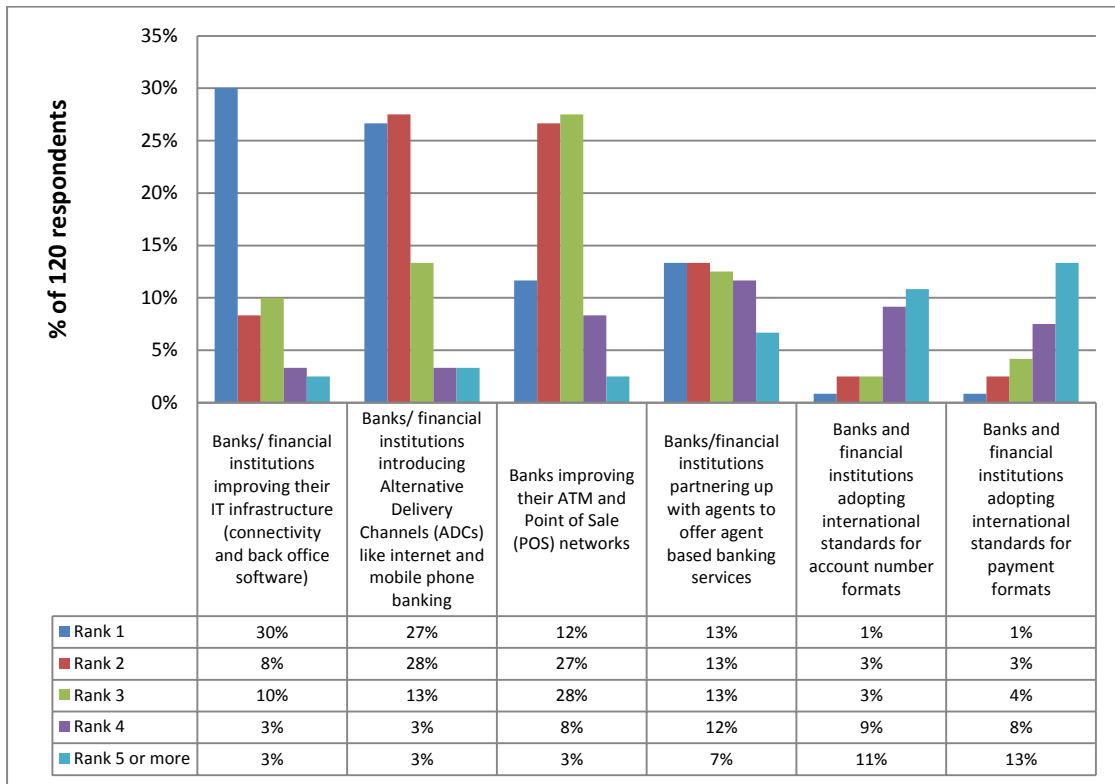


Figure 81: Ranking of choices from Question 24

To interpret these rankings and determine the most preferred technological improvement on FI, re-coded rankings and a “rank score” for each statement (item) were calculated using the procedure described in Section 4.3. Figure 82 shows the re-coded rankings for each of the factors or customer value proposition as derived using the procedure in Step 1 from 4.3.

Cronbach’s alpha for the 9 items with re-coded rankings was 0.615 (0.630 based on standardized items) showing sufficient reliability of the scale. It can be seen that “introducing alternate delivery channels” and “improving ATM and POS network” were perceived by the respondents as important for improving financial inclusion. Although a considerable number of respondents perceived “improvement of IT infrastructure” and “partnering up with agents” as very important, an almost equal number perceived these items as not important at all. Standardization of account numbers and messaging formats was mostly perceived to be unimportant. The computed rank scores in Figure 83 display the above observations.

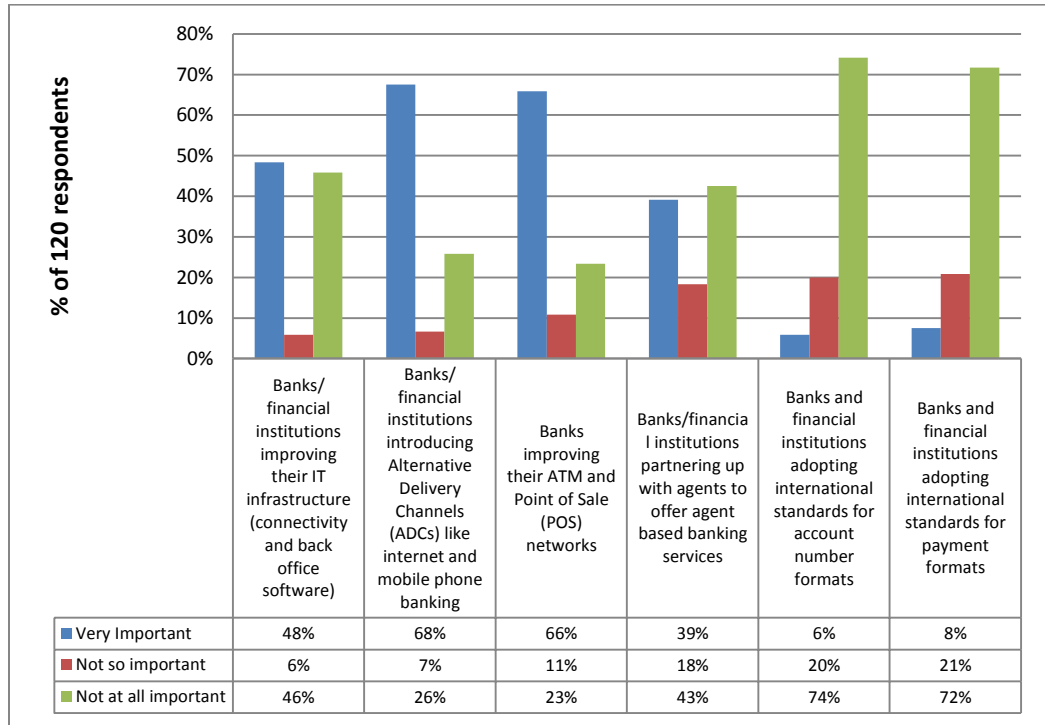


Figure 82: Re-coded rankings for the data in Question 25

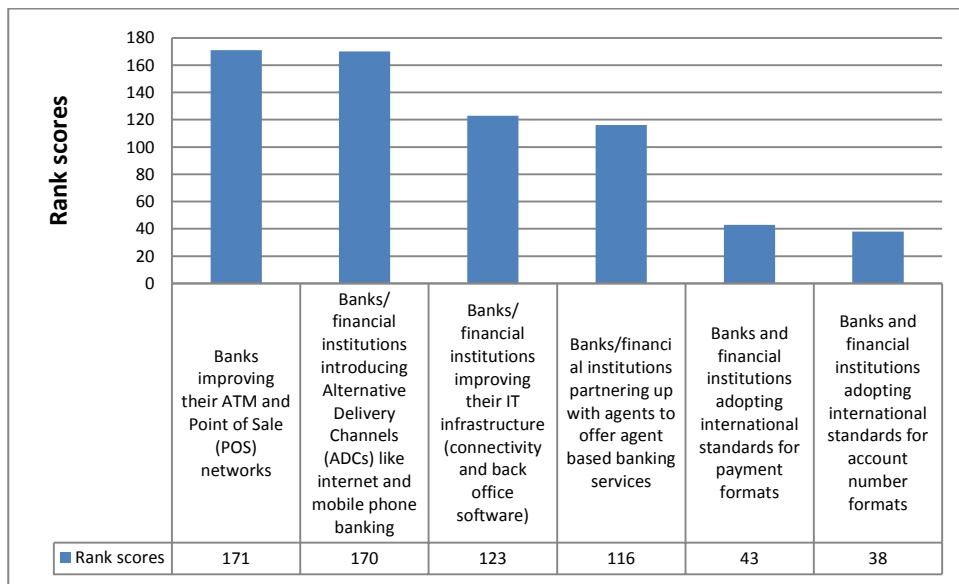


Figure 83: Rank scores for perceived importance of technological improvements

To determine the factorability of the items used, the following criteria were used (please refer to the SPSS output in Appendix Y(c):

- (i) It was observed that 5 out of the 6 items correlated at least 0.3 with at least one other item suggesting reasonable factorability
- (ii) The Cronbach's alpha for the 6 items with re-coded rankings was 0.615 (based on standardized items it was 0.630) which is a over the generally accepted value of 0.6 and shows that the items have fairly low uniqueness and may be inter-related (Cortina, 1993)
- (iii) The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is 0.620 which is greater than the commonly recommended value of 0.5 and thus allows us to proceed with the factor analysis (Field, 2000). However, Bartlett's Test of Sphericity is significant (Chi-square (15) = 143.536, $p < 0.01$)
- (iv) All items on the diagonals of anti-image correlation matrix are over the recommended value of 0.5
- (v) The communalities for all but one item are above 0.5 confirming that 5 of the remaining items shared some common variance with each other

Different combination of items and factors were examined using varimax rotations of the factor loading matrix. The initial eigenvalues indicated that the first three factors explained 36%, 26% and 14% of the variance which accounted for 76% of the cumulative variance. However, the 6 item—2 factor solution with varimax rotation which explained 62% of the variance was preferred because of the ease of explanation of the underlying factors and improved Cronbach's alpha values for the scales.

Component	Label (sum of ranked scores)	Items (ranked scores ³⁶)	Variance explained	Cronbach alpha
1	Improving interoperability (204)	Banks/ financial institutions improving their IT infrastructure (123) Banks and financial institutions adopting international standards for account number (38) Adopting international standards for payment messages (43)	33%	0.652
2	Promoting alternate delivery channels (457)	Introducing Alternative Delivery Channels (ADCs) like internet and mobile phone banking (170) Banks improving their ATM and Point of Sale (POS) networks (171) Banks/financial institutions partnering up with agents to offer agent based banking services (116)	29%	0.625

Table 23: Labels for the 2 factors with six items—Question 25

³⁶ From Figure 73: Ranked scores for perceived reasons for inability to offer low-cost services

The two underlying dimensions from the six proposed improvements relating to banking and payments technology were identified using the rotated component matrix (Appendix Y(c)) and are presented in Table 23. The identified dimensions (or factors) are labeled as “promoting alternate delivery channels” and “improving interoperability”. While improving interoperability explained about 33% of the variance in respondents’ rankings, the total rank score computed for “promoting alternate delivery channels” is more than twice as large. We can therefore, cautiously infer that respondents perceive “promoting alternate delivery channels” more than twice as effective in improving financial inclusion as compared to “improving interoperability”.

To further examine the perceptual distance between the items, 2 factor Multidimensional Scaling (MDS) was deployed. The re-coded rankings for the 6 items were analyzed using the PROXSCAL algorithm in SPSS. The normalized raw stress was 0.00006 (Table 24) indicating a good fit. The two dimensions are shown in Figure 84.

Stress and Fit Measures	
Normalized Raw Stress	.00006
Stress-I	.00753 ^a
Stress-II	.02152 ^a
S-Stress	.00005 ^b
Dispersion Accounted For (D.A.F.)	.99994
Tucker's Coefficient of Congruence	.99997

PROXSCAL minimizes Normalized Raw Stress.

a. Optimal scaling factor = 1.000; b. Optimal scaling factor = 1.000.

Table 24: Stress and fit measures for the multidimensional scaling of the 6 factors

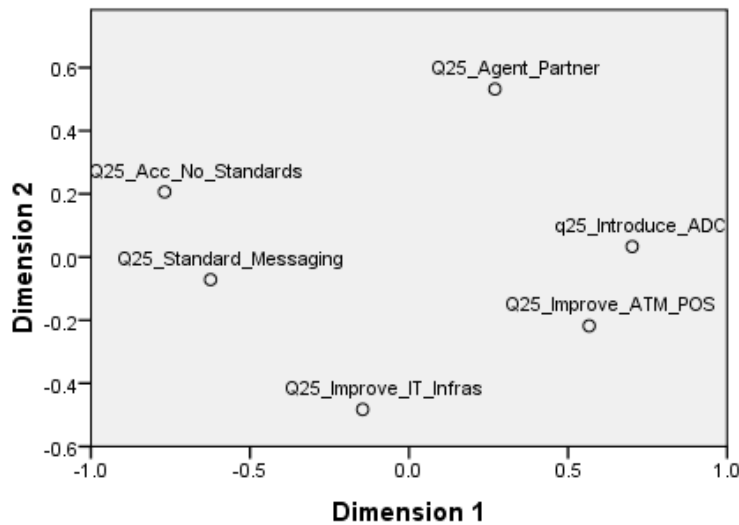


Figure 84: 2 Factor MDS plot for the re-coded rankings of the 6 factors

From Figure 84, it can be seen that the respondents perceive technological improvements relating to alternate delivery channels more important (along dimension 1). However, if Dimension 2 is interpreted as “improving systems’ interoperability” then introducing standards is considered more important than improving the IT infrastructure. When both dimensions are considered, then “partnering up with agents is perceived by the respondents as the most important “technological improvement” for promoting financial inclusion in the country.

4.7.9 Identification of projects that would result in improved FI

In Question 26, respondents were asked to indicate projects relating to payment systems development in the country that they thought would play an important role in enabling banks to improve financial inclusion. The suggested projects were:

- Improvement and upgrading of existing RTGS system
- Developing an electronic clearing house for same day clearing and settlement of electronic payments
- Development of a secure country-wide telecommunication network dedicated for financial transactions only
- Implementation of cheque truncation facility
- Standardization of bank account numbers on international format
- Development of a national payment infrastructure for improving interoperability of financial systems
- Enabling electronic disbursements of government payments
- Other: (two open ended fields for providing suggestions other than the above)

This was a multiple choice question. Respondents’ choices distributed according to their institution type and the type of RTGS membership are shown in Appendix Z(a) and Appendix Z(b) respectively and shown in Figure 85.

From Figure 85, it can be seen that majority of the respondents, regardless of their institution type, voted in favour of “developing a secure country-wide telecommunication network dedicated for financial transactions only” and “developing an electronic clearing house for same day clearing and settlement of electronic payments”. Fewer voted in favour of standardizing bank account numbers or implementation of a cheque truncation facility.

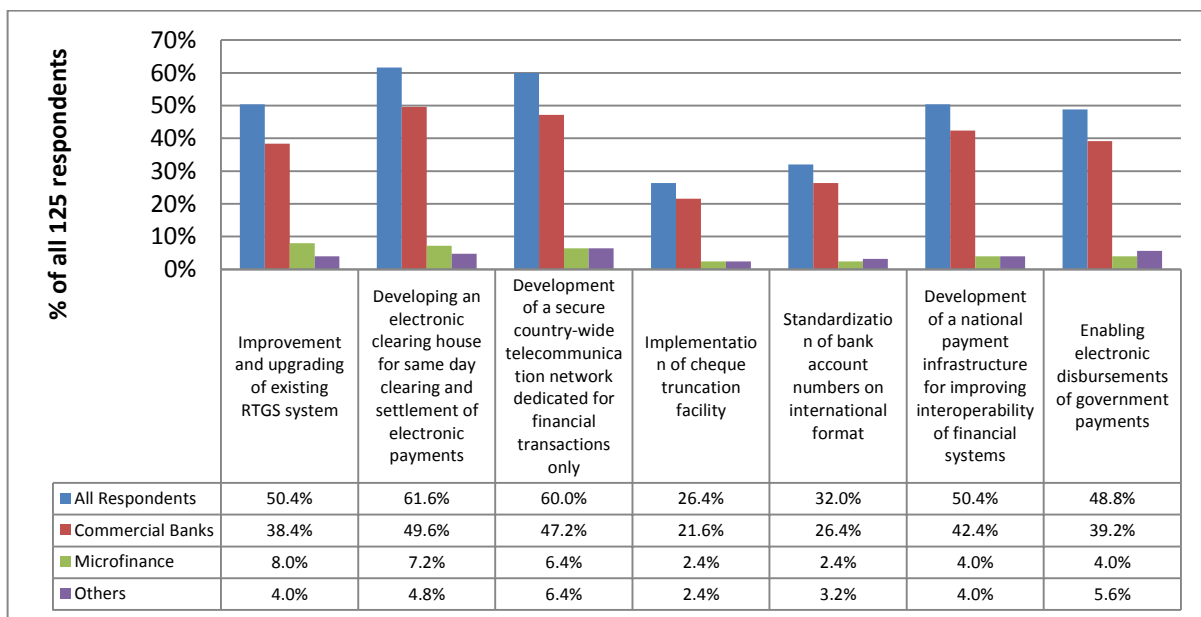
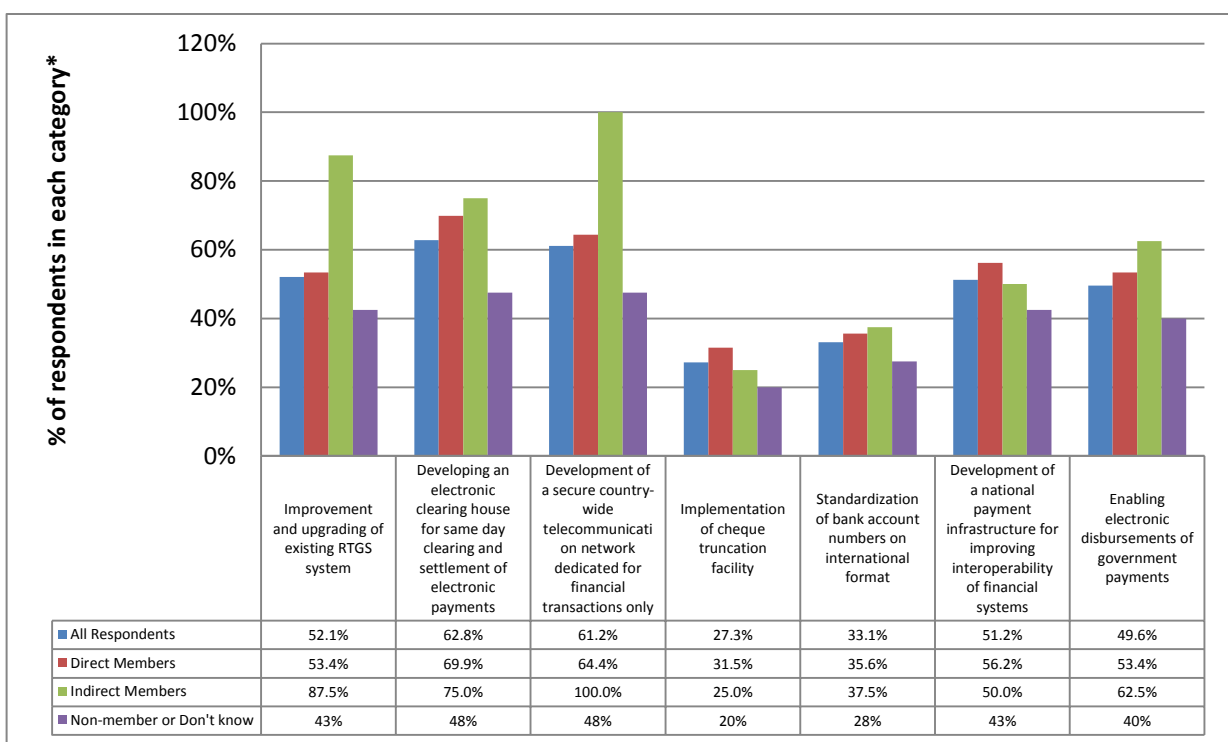


Figure 85: Respondents' choice of payment systems projects—by type of institutions



*Base: Number of respondents from direct and indirect member institutions are 73 and 8; 10 don't belong to a member institution and 30 don't know about the type of RTGS

Figure 86: Respondents' choice of payment systems projects—by type of RTGS membership

As discussed earlier, the Real Time Gross Settlement (RTGS) system was launched in 2008. RTGS is considered the most important payment system in a country. Assuming that the respondents from direct member institutions have more exposure to the benefits (or issues) that a new system may bring with it, we cross tabulated the choices in this question with respondents' type of institution. The data in Appendix Z(b) are shown in Figure 86.

From this question, it seems that respondents perceive projects that are less visible (such as standardization of account numbers) as less important. However, we cannot say this with certainty because none of the respondents provided rankings for their choices. More importance given to projects like development of a secure telecommunication network and development of a same-day electronic clearing house, and lesser importance given to a cheque truncation project, seem to imply that respondents consider development of payment systems that promotes electronic payments more important than one that caters for the paper-based instruments.

4.7.10 Is mobile banking the answer?

Finally the respondents were asked about the extent to which they agree that “mobile banking initiatives will increase the rate of formal financial inclusion in Pakistan” on a Likert scale ranging from strongly agree, agree, neutral, disagree and strongly disagree. As shown in Figure 87, 49% strongly agreed and another 29% agreed with the statement. Those who agreed or strongly agreed were significantly higher ($z=8.8$, $p<0.01$) than those who did not.

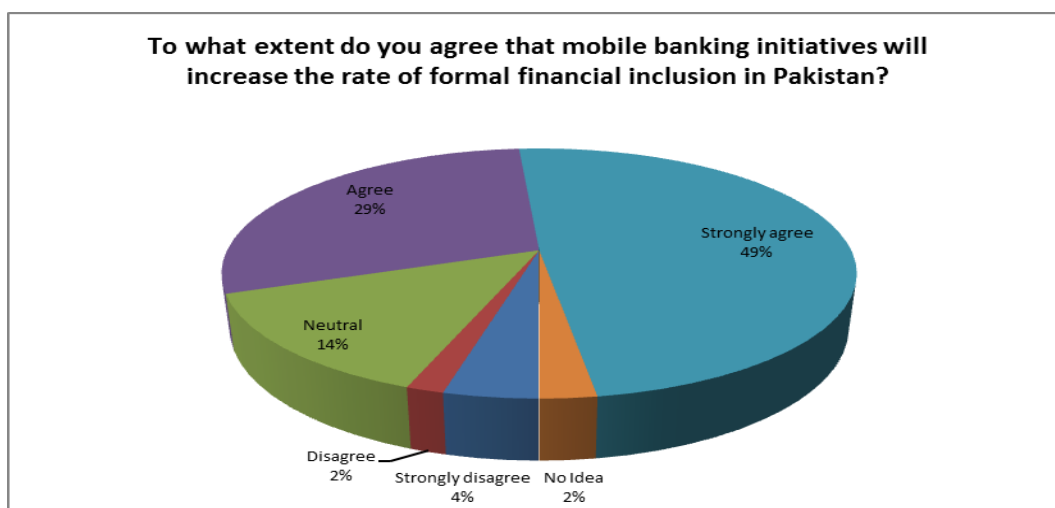


Figure 87: Distribution of respondents' opinion about mobile banking

Figure 88 also shows that almost similar pattern of agreement or disagreement exists among respondents from different types of institutions. Significantly higher number of respondents from commercial banks ($z=7.37$, $p<0.01$), microfinance institutions ($z=3.77$, $p<0.01$) and government and other types of organizations ($z=3.02$, $p<0.01$) agreed or strongly agreed with the statement.

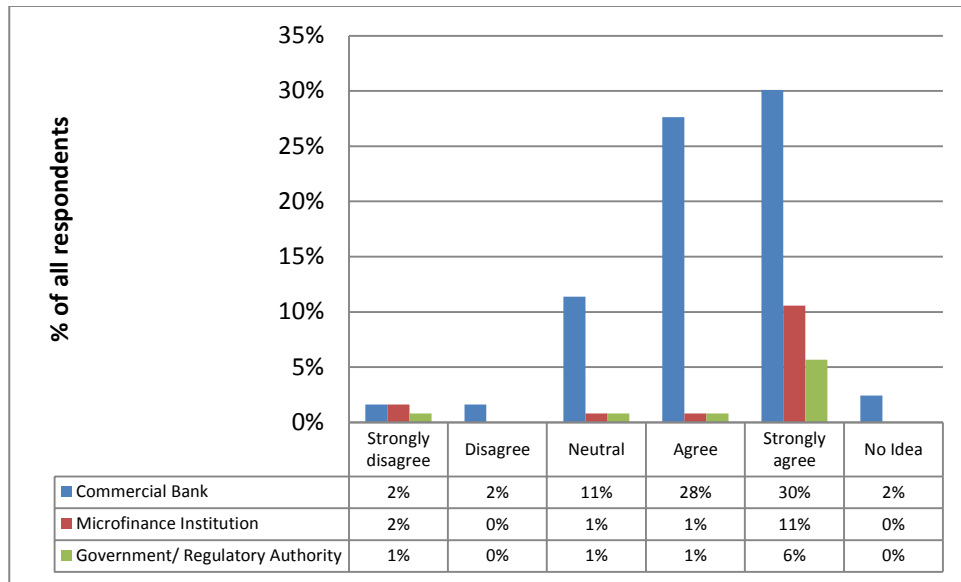


Figure 88: Opinion about mobile banking—by type of institution

4.8 Discussion

Let us summarize the results that were observed in the survey.

1. Only about one-third of the respondents correctly perceive the rate of FFI in the country, which is around 12% (less than 20%). Respondents from microfinance institutions seem to be more aware of this rate than bankers or government employees
2. A majority of respondents think that low education in remote regions makes them unviable for offering financial services, that there is not much use for a bank account and that the banks themselves are not interested in offering their services to the low-income population of the country. On the other hand, they think that payments infrastructure in the country or complex Know Your Customer (KYC) requirements or high cost of banking are not so important in keeping FFI low. This perception was similar across groups with differing levels of perceptions about FFI

3. A majority of respondents think that every person regardless of their income levels or where they live should have access to a bank account
4. Almost half of the respondents agreed that commercial banks are responsible for the low access rate in the country (another 28% remained neutral). This perception was overwhelmingly shared by respondents from institutions other than commercial banks
5. When asked why banks have been unable to offer financial services to the low-income population of the country, respondents ranked “low education levels” and “high poverty” in remote regions as the main reasons. They also think that banks have been unable to collaborate and offer low-cost services to their customers or effectively utilized technology. The 3 underlying dimensions that were identified from the suggested items were poverty and education, management capability and rules and regulations. This perception was also shared by different groups of respondents (by type of organizations or level of awareness about FFI)
6. Almost half of the respondents agree that banks have not been able to fully utilize IT to provide banking services to low-income population and remote regions of the country. Those who agreed with this statement also highlighted that banks have been unable to collaborate among themselves, utilize technology, make use of Information Technology infrastructure and invest in technology in this regard
7. A majority of respondents also perceive that expansion of ATM networks, online transferring of payments by the government, providing an ATM/debit card with every account, and using mobile banking for electronic funds transfer (EFT) will play an important role in promoting usage of banking services. Accordingly, they also perceive that improvements related to the expansion of ATM and POS networks, promoting alternate delivery channels like internet, mobile phone banking and partnering up with agents and improving banks’ IT infrastructure (connectivity and back office software) will enable the banks to launch initiatives for improving FFI

When presented with a choice of projects relating to the development of payment systems, most of the respondents voted in favour of development of a secure country-wide telecommunication network dedicated to financial transactions, developing an electronic clearing house for same-day settlements of electronic payments, and upgrading of the existing RTGS system. They also voted in considerable numbers for the development of a national payments infrastructure for improving interoperability of

financial systems and electronic disbursements of government payments. They did not vote highly for the standardization of bank accounts, even though this is an important factor in enabling interoperability.

Chapter 5

Summary and Recommendations

5.1 The Causes of Financial Exclusion

Financial inclusion, a set of measures of the degree to which a country's population has access to financial services is gaining popularity as a public policy objective around the world. The World Bank data show that financial inclusion and a high level of development go hand-in-hand—that the most developed countries have high levels of financial inclusion, and the least-developed countries have low levels of financial inclusion.

The level of financial inclusion is very low in many parts of the world; it is estimated that over 50% of world's adult population (up to 72% of adults in developing countries) don't have access to financial services. As there is a general consensus among policy makers and researchers that improving financial inclusion in less developed countries is likely to play an important role in improving the lives of their people, a number of studies have tried to determine the causes of this low rate of inclusion and how to correct it.

One problem with the concept of financial inclusion is that there is no widespread consensus on how best to measure it. Various measures are in use, including the number of bank accounts available and/or used, types of financial services available and/or used, number of financial transactions, number of payment mechanisms or devices installed, and so on. In this thesis we have used the composite measure of financial inclusion proposed by Patrick Honohan (Honohan, 2008) which we refer to as Honohan's FI, as the main indicator of financial inclusion. We also examined other indicators of financial inclusion available in The World Bank's databases on financial inclusion and economic development.

Low financial access may be explained by demand-side or supply-side factors. Demand-side explanations tend to include such factors as low education, low-income levels, low trust in financial service providers, lack of awareness about financial services, or cultural and religious restrictions. Supply-side explanations tend to include such factors as lack of service availability in regions with low-income, prejudice of banking staff to low-income groups, excessive levels of documentation

required to obtain a bank account, or lack of technical infrastructure that makes it difficult to provide cost-effective financial products and services to low-income groups.

Simple regression analysis shows a strong correlation between financial access rates and poverty and literacy rates, as well as with gross national income. Thus, at a first glance it appears that demand-side explanations are backed by empirical evidence. Yet regression analysis of certain supply-side indicators such as number of ATMs, Point of Sale terminals, internet users, telephone lines, and electricity and cell phone subscribers has even stronger correlation with financial access rates in different countries—suggesting that supply-side factors are key.

We pause here to reflect that correlation does not imply causation. We cannot conclude that because the number of POSs is closely correlated with financial inclusion that therefore simply increasing the number of POSs will improve financial inclusion, and even less can we infer that increasing the number of POSs will increase gross national income. Financial inclusion goes hand-in-hand with development; and financial inclusion goes hand-in-hand with more POSs; but empirical evidence also shows that just increasing the number of POSs may lead to neither improvement in financial inclusion nor improvements in GNI (see Figure 26). Thus there must be other factors at work.

Not surprisingly, this subtle interaction between financial inclusion and its possible factors is not well understood by participants on either the supply-side or the demand-side. Low-income people who are avid users of informal financial services may avoid formal financial services because they perceive them to be complex, formal, and not useful. Bankers who could be avid providers of formal financial services perceive low-income people to be risky and poorly educated and not ‘in need’ of financial services. Some bankers have the perception that only people with money can or should bank, or that credit is primarily used for entrepreneurial purposes. Yet evidence suggests that most people with low-income (and hence little collateral) require credit to meet their consumption needs. Data from The World Bank shows that low-income groups need to borrow as much (proportionately), if not more, than people with higher income. Much of the time low-income groups borrow to meet medical or other domestic emergencies; in the absence of formal financial services, they borrow more from friends and family or stores (store credit). Bankers in developing countries often don’t service these needs, even putting in place contracts that forbid “consumption related borrowing”. The situation is the reverse in developed countries, where formal financial institutions are more willing to offer credit for consumption purposes.

Both the demand-side and the supply-side can end up victim to their simplistic theories of what the other group needs and wants. These theories can even reinforce each other, developing a kind of circular self-fulfilling prophecy. For example, if a banker perceives that low-income people have a lack of awareness of financial services (that is, the banker thinks there is a demand-side problem), then that banker may choose not to offer services in low-income areas; potential consumers then observe that there are few services available (thus they believe there is a supply-side problem) and so they do not bother to inform themselves about financial services, thus completing the unwanted feedback loop. Other factors may have a small individual impact but combine for a large overall tendency. For example, bankers are subject to strict regulatory oversight, which makes them conservative and less likely to take risks with low income groups and low-margin products; at the same time, low-income groups are suspicious of the formality required for banking services and perceive that this formality is due to bankers' prejudice against them. The result is to reinforce a low level of financial inclusion.

What becomes apparent is that it is not so much the simplistic factors that lead to financial exclusion, but rather the *perception* that these simplistic factors cause financial exclusion that leads to exclusionary behaviour. Both the supply-side and the demand-side appear to be in the grip of untested and unvalidated perceptions, and unjustified inferences from those perceptions based on confusing correlation with causation.

5.2 The Importance of Technology

Banking has flourished at retail levels when there has been innovative thinking, an organizational will to attract more customers at retail levels, and the adoption of technology. The literature shows that banks were early adopters of information technology, and in the developed world banks were able to achieve economies of scale quickly. The adoption of technology had a positive impact on banks' own back office processing capabilities, messaging capability and finally payments processing capabilities, all enabling banks to process transactions efficiently and collaborate among themselves while at the same time competing for customers by lowering costs and offering convenience. Banking itself has evolved with information technology, since an indirect impact of technology adoption (and innovation) was that banks were able to reach more customers and offer them a larger portfolio of services, not just those for borrowing and saving.

Banks were not always the leaders in payments innovation as far as ordinary consumers were concerned. Retail stores have long offered store credit, “Christmas Clubs”, layaways, and other credit-based services, and they were the first to offer credit cards. Banks joined in once they realized the market potential. Banks proved to be better at using technology to address a large market in payments services and to achieve economies of scale once they were committed to success. Evidence from banks in the Euro area has shown that retail payment transaction technology leads to enhanced bank performance (Hasan, 2009). The same study also confirmed that banks perform better in countries with more developed retail payment services. Payment equipment like ATMs and POS, and a higher usage of electronic payment instruments, seems to stimulate the banking business.

Payments processing capability improved drastically through the adoption of information technology. Not only was the time required for processing large volumes of payments reduced, a whole new area of electronic payment instruments emerged to replace paper-based instruments. With the spread of computers and the internet, banks are now not only able to offer their services to their customers in their homes but are themselves better able to collaborate with other businesses to offer integrated services.

The economics of payment systems technology shows that there are important critical mass effects. Credit cards are not useful unless they are widely accepted, and they are not widely accepted unless they are widely used; thus, many early credit card initiatives suffered large start-up costs as they tried to build the necessary critical mass. Critical mass systems are not likely to succeed if left solely to market forces, and hence some form of large-scale investment will be needed.

Banks traditionally have better management capability and technological prowess when it comes to designing new financial products or deploying and using IT for this purpose. However, banks may not be willing to engage in the large-scale investment needed for critical mass. In developing countries where the level of financial access is low, some banks are collaborating with mobile phone network operators to offer electronic banking services to customers using their cell phone. This approach is gaining popularity and may have led to a small improvement in financial inclusion. In other cases, banks may assist microfinance institutions, who have expertise of working on the ground and interacting with the people who may not feel easy dealing with a bank officer. Similarly, small retailers in developing countries may know their regular customers better than the banks. A critical mass can be achieved by a collaboration of banks and other service providers, but this collaboration needs to be backed by technology in the shape of backend payments processing. Without an

electronic payments clearing house and the adoption of standards in payment messages and account number formats, these kinds of collaboration initiatives face the risk of being throttled when volume increases.

Backend payment systems are not likely to emerge naturally if bankers have misperceptions about the nature and cause of financial exclusion. If bankers see the problem as principally a demand-side problem, then they are likely to avoid this type of investment. Moreover, if bankers perceive that financial inclusion is a demand-driven problem, then they would tend to pay more attention to the customer-facing components of the system (such as POS terminals and ATM machines) than backend technology (such as networks and protocols).

5.3 The Case of Pakistan

We studied financial inclusion and the possible applications of technology to address financial inclusion in Pakistan. Pakistan was chosen for this study because of its extremely low financial inclusion, its resilient banking sector, and large population with low-income and education levels.

Pakistan's financial inclusion is about 12%. Pakistan's gross national income per capita is close to that of Senegal and its literacy rate is similar to that of Morocco, while both of those countries have financial inclusion of around 40%. Pakistan's gross national income is similar to that of its neighbours; countries like Bangladesh, India and Sri Lanka have much higher financial inclusion (at 32%, 48% and 59% respectively). While Pakistan lags behind many countries of the world as far as basic socio-economic and infrastructure indicators are concerned, it made substantial progress in the area of telecommunications during 2002-2010. Today there are around 60 mobile phone subscribers per 100 people. Therefore, Pakistan is a particularly interesting study in having low financial inclusion relative to comparable countries.

Pakistan's banking sector is considered to be strong, resilient and very profitable, and its regulatory and supervisory framework is considered to be of international standard. Pakistan has a separate regulatory framework for microfinance institutions. Despite having a large number of banks with many branches, banking in Pakistan is mostly limited to urban centres with high income. Most of banks' income comes from interest-based products (particularly investing in government securities) with deposits and advances mostly concentrated in high income and high population density areas. We can conclude that banks in Pakistan have little interest in targeting low-income markets as they can easily earn money by lending to government.

Pakistan's economy is largely cash-based and so paper-based instruments (currency notes and cheques) are widely used. There has been considerable growth in the usage of electronic banking in recent years. Within the electronic channels, usage of ATM and Real Time Online Branches (RTOB) is increasing. However, the cost of using an ATM in Pakistan is still higher than in the rest of the world. The number of POS terminals has significantly declined during the last few years as banks are finding it more viable to invest in ATM machines compared to the more costly smart card terminals. The decline in POS may hurt electronic banking initiatives in the long run, since POS tends to encourage the use of debit cards, electronic statements and other products that constitute electronic banking.

Due to the extensive penetration of mobile phones, mobile phone banking is becoming popular in Pakistan. Microfinance banks have taken initiatives to use and promote this channel. Agent-based branchless banking initiatives are also being rapidly undertaken both by microfinance and commercial banks. The central bank played an important role in the promotion of branchless banking with its timely issue of needed regulations and other strong signals of support for this new channel. However, the central bank realizes that the microfinance sector has limitations, particularly in its management and technological capacities. If electronic banking initiatives are tied to microfinance, they may be limited because of the lack of payments clearing and settlement infrastructure.

The perceptions of the demand-side in Pakistan are found in The World Bank data and a Finscope survey of 10,000 Pakistani consumers. The results confirm that only 12% of Pakistani adults are served by formal financial institutions. Equal proportions of those excluded live in urban and rural areas. Those who are educated and have high income are more likely to be served formally. Those people who do not participate formally generally save or borrow using informal means. Borrowing is done through friends, families and grocery stores; saving is done through committees and investment in cattle and livestock. Informal borrowing may be easier and cheaper whereas investment in livestock may sometime prove to be extremely risky, especially in case of floods, disease, or other calamity. The main reasons for borrowing are to meet emergencies relating to health and education.

Data from The World Bank's Financial Inclusion Database show that about 10% of people in Pakistan over the age of 15 have a bank account. People with high income, living in urban areas and with high school education are more likely to have a bank account than those who don't. The usage of accounts is lower in rural areas, with the account mostly being used for receiving wages; 5.3% of Pakistanis receive wages in accounts, while over 90% receive wages in cash. The World Bank data

show that usage of electronic channels like ATMs, POS, and credit and debit cards is negligible. People also think that bank staff is not friendly, their service is not good or trustworthy, and their location and hours of operation are inconvenient. They also think that they don't have enough (or regular) income, adequate documentation, or even a reason to have a bank account. The high cost of banking is another reason cited for avoiding the formal banking sector. The survey found that level of financial literacy is also very low among the respondents, whether they were financially included or excluded.

Finscope and The World Bank data give us a good view of the perceptions of the demand-side in Pakistan; what is missing is the perception of the supply-side. We hypothesized that bankers in Pakistan have the perception that financial inclusion in Pakistan is low due to demand-side factors, principally low-income and low education and that they have relatively low awareness of the role of (backend) payments technology in promoting financial inclusion. We then conducted a survey of bankers in order to explore our hypotheses.

5.4 New Learning from the Survey Results

To determine the perceptions of the supply-side we conducted an online survey with professionals working in the financial services industry, including banks, microfinance and government institutions. 125 surveys were selected for analysis based on the completeness of responses. These 125 responses were received from 94 respondents who work in commercial banks, 17 in microfinance institutions, 10 in government institutions (such as the central bank) and 4 in other types of institutions.

Following are the findings from the survey:

The supply-side perceives low FI to be due to demand-side factors such as low education and income

- Respondents indicated that low financial inclusion is caused by low education levels (63%), non-interest of banks and financial institutions in offering services to low-income persons and not much use of a bank account for ordinary citizens especially those with low-income (56%). 50% believe that high poverty makes it infeasible to offer bank accounts and 57% believe financial services are unviable for those of low education
- When asked to rank the factors in low FI, low education, low-income and non-interest of banks received considerably higher rankings compared to lack of good technology and

payments infrastructure in the country, complex know your customer (KYC) requirements or high cost of banking

- The MDS plot showed three groups of factors: low education and low-income as the first group, banks not interested as the second group and high cost of banking, complex KYC and lack of technology as the third group, with considerable distance between the groups
- Respondents think banking with convenience is the most important need—thus focusing on those who already bank

The supply-side does not accurately perceive the level of financial inclusion in Pakistan

- 63% of respondents believe FI in Pakistan is greater than 20%. One quarter of respondents think FI is over 40%
- 83% of respondents think everyone should have access to a bank account
- Microfinance providers were more accurate than bankers in estimating the level of FI
- Respondents from government institutions were least accurate in estimating the level of FI

The supply-side understands the importance of backend payments technology, but does not perceive an immediate connection between such technology and financial inclusion

- 80% of respondents perceive RTGS to be either extremely important or somewhat important in general for providing financial services overall
- 40% of respondents perceive RTGS as enabling electronic funds transfer
- When asked to rank reasons for low FI, factors deemed not at all important included “less developed clearing and payments infrastructure” and “unavailability of IT infrastructure”
- Respondents perceive less visible projects (such as standardization of account numbers) as less important in improving FI, regardless of their importance for improving the technological infrastructure and interoperability of backend systems
- Lack of collaboration between banks ranks only third in the list reasons why banks do not offer low-cost services

In addition, the following perceptions were indicated by the results of the survey.

The supply-side perceives that better use of technology can improve FI

- When asked to what extent they agree with the statement that banks and financial institutions have not been able to use technology effectively for offering low-cost services to low-income people and remote regions of the country, more than 50% agreed or strongly agreed while only 24% disagreed or strongly disagreed
- Those who agreed that technology has not been effectively used also highly ranked factors related to technology and IT utilization (unable to collaborate, utilization of technology, lack of IT infrastructure and investment in technology) as impacting FI
- When asked about the perceived impact of certain electronic services on FI, most of the proposed services (providing online bill payment facility, electronic funds transfer (EFT) facility using mobile phones, expanding ATM network, providing EFT using internet, providing a debit card and expanding the POS network) were perceived as having high impact
- 55% of respondents agree that banks have not fully utilized technology to provide services
- 78% of respondents perceive that mobile banking initiatives are likely to play an important role in the improvement of FI (significantly more than those who did not)
- A principal component analysis of factors contributing to low FI identified as the second most important category “Managerial—management capability” (inability of banks to collaborate, to utilize technology and lack of IT infrastructure)
- Respondents perceived that improvements in banks’ ATM and POS network and introduction of alternate delivery channels like internet and mobile phone banking are most likely to play an important role in enabling them to launch FI initiatives. Nearly equal importance was given to improvements in IT infrastructure of banks, and partnering with agents to offer agent-based banking services
- A principal component analysis of the rankings of possible improvements identified two underlying dimensions: the most important was improving interoperability (improving IT infrastructure, adoption of standard formats for account numbers and payment messages); the

second was alternate delivery channels (offering internet and mobile banking, partnering up with agents and expanding ATM and POS networks)

- Given a selection of major projects to improve FI, a majority of the respondents, regardless of their institution type, voted in favour of “developing a secure country-wide telecommunication network dedicated for financial transactions only” and “developing an electronic clearing house for same day clearing and settlement of electronic payments”

The supply-side perceives the economy is and will continue to be cash-based

- The dominant delivery channel for financial services was identified as the bank branch (95%), followed by ATM (80%)
- 63% of institutions offer debit cards for cash withdrawals, 29% ATM withdrawals, and only 32% credit
- Electronic banking products are offered only on a limited scale
- The most important value proposition identified for customers is ATMs
- Banking with convenience and easy access to cash are perceived as twice as important as electronic banking
- Investment in ATMs is increasing and investment in POSs is declining
- Respondents suggested that the most important improvement would be expanding ATM networks and providing ATM cards with every account

The supply-side perceives that it is not interested in offering services to the unbanked

- 40% of respondents think banks are not interested in offering their services to the unbanked
- 42% of respondents think commercial banks are primarily responsible for low FI
- When asked whether lack of interest among commercial banks is responsible for the low FI rate in the country, a significantly higher number of respondents agreed with the statement than disagreed with it

Supply-side respondents who more accurately perceive the rate of FI give different weight to explanations for and methods to increase FI

- When indicating the reason for low FI, those with less accurate perception of FI chose low-income more frequently, whereas those with more accurate perception of FI chose “banks/financial institutions are not interested...” more frequently
- Those who correctly perceive the FI rate to be less than 20% perceive lack of technology and high cost of banking as more important than complex know your customer requirements
- Microfinance institutions perceive the high cost of banking and lack of technology as below only low education as explanations for low FI
- A significantly higher proportion of respondents who correctly perceive the FI rate also perceived that banks are responsible for the low FI rate than did respondents from banks
- Respondents from microfinance institutions perceived the inability of banks to collaborate as the second most important reason for the low FI rate

5.5 Summary

Improving financial inclusion helps improve people’s lives. There is a general perception that socio-economic factors like education and poverty are correlated with FI. Improvement in infrastructure is also positively correlated with improved FI. Studies from some developing countries also demonstrate that innovative use of information and telecommunication technology can help achieve sustainable levels of financial inclusion.

Historically banks have been able to provide financial services to consumers at low cost by using information technology innovatively. Use of information technology in banking and payments systems has enabled banks to collaborate effectively and thus offer services that are feasible for the masses.

Survey respondents working in commercial banks as well as those working in government institutions in Pakistan perceive that FI is much higher than its actual rate of 12%. Respondents from microfinance institutions have a much more accurate perception of the actual level of FI.

Survey respondents perceive low education and low-income levels as the main reasons for financial exclusion. Lack of technology and inadequate payment systems as reasons for low FI was not perceived as important as socio-economic factors. However, respondents do perceive that the ineffective use of information technology and the inability to collaborate on the supply side is a factor in low FI.

Bankers perceive that more people will adopt financial services if certain technology-enabled financial services are introduced in Pakistan, and if alternate service delivery channels are adopted by banks. While they perceive that introducing clearing and settlement systems for retail level electronic transactions or improving the financial telecommunication infrastructure in the country will improve convenience for their customers, the perceived impact of these projects on cost reduction is not clear.

Finally, while the respondents do perceive “visible” technological improvements to be important, they do not perceive this importance for less-visible projects, such as the introduction of standards within the financial industry.

5.6 Policy Recommendations

Financial inclusion may be accelerated through innovative uses of technology. However, the special critical mass properties of payment systems and bank technology introduce inertia that inhibits investment in this area. This inertia combined with misperceptions about FI on the supply-side can prove to be resistant to policy actions taken by the authorities to improve FI. Pakistan’s case demonstrates this resistance: successive governments and the central bank proactively introduced regulations and policies to improve FI, but the results are not very encouraging. Therefore, we recommend a multi-pronged effort:

1. Foster collaboration between banks and other service providers

Banks in Pakistan have better management capability, while microfinance institutions, cell providers, and retailers have better ground-level knowledge of the low-income population. These service providers should collaborate to offer a better range of services to their customers. A collaborative enterprise would more easily offer consumption-based services, while still benefiting from the management heft and security provided by banks. Pakistan already has a success story on a limited scale, where collaboration between microfinance institutions and mobile network operators gave successful results.

2. Introduce electronic government services

Consumers, especially those with low-income, will bank if they are encouraged to do so. The government would do well to offer more of its financial services online, like receiving taxes, making salary and transfer payments and electronic bill payments, online car registration fees etc. It was observed that when the government used electronic channels to make transfer payments to those affected by terrorism and natural disasters in 2005 and 2008, these channels were successful and as a

result the number of people having a bank account actually went up in those areas. Hence G2P (Government to People) payments can also play a very important role in improving the financial access rates in the country.

When governments provide the lead, then commercial companies will eventually follow. A current example is the transition in the US from government-funded low-earth orbit space flight to commercial companies such as SpaceX.

3. Invest in backend payments technology

Investment in retail payments and telecommunication infrastructure is like investing in railroads: investing in logistics enables large scale activity at the consumer level. While this thesis did not investigate the specific cost structures of different electronic services, we believe that introduction of efficient payments processing systems (such as an electronic clearing house) will help banks collaborate better, introduce large-scale efficiencies and bring down costs for merchants. Such investments will also enable the economy to transition more quickly from cash-based to electronic-based transactions, and enable service providers (including the government) to collaborate better and rapidly deploy their products and services. Integration of retail payment systems with the existing RTGS system will also help systems' participants offer their benefits to a wider population of consumers.

Investment in backend payments technology should not be limited to spending on hardware; just as important are the standards and protocols that promote collaboration and interconnectedness. Government "investment" in such standards may consist of encouragement to industry to use these standards, or statements by the government that favourable regulations and accommodations will be given to projects that incorporate these standards. Governments should also carefully evaluate their actions and avoid mandatory requirements, such as insisting that banks switch from stripe to chip-based cards; this requirement almost certainly led to dramatic reductions in POSs and POS-usage in Pakistan.

4. Improve bankers' perceptions of FI and its causes

The State Bank of Pakistan has already launched a Nationwide Financial Literacy Programme (NFLP) in January 2012 with the objective of imparting awareness and understanding of basic financial concepts to low-income and unbanked population. However, we feel that bankers' misperceptions about the level of FI and the causes of FI are themselves a major contributor to the

low level of FI in Pakistan. In addition, while bankers generally perceive the importance of backend technology, they do not perceive the importance of this technology for addressing FI. We therefore recommend that the central bank work on improving bankers' perceptions of:

- (i) The actual low levels of FI in Pakistan
- (ii) The importance of FI in improving people's lives
- (iii) The importance of banking and backend payments systems in improving FI

5.7 Future Work

We found that the literature on the role of technology on financial inclusion is sparse. Much of the research on financial inclusion has been done by international development agencies rather than academic researchers, and most of this research is done from a demand-side perspective, focusing on socio-economic aspects such as income and education. This thesis demonstrates that important insights can be gained by studying the supply-side and the technical infrastructure aspects. Further work should be done on the supply-side and the impact of technical infrastructure improvements. For example, the kind of survey used in this study could be repeated in other developing countries.

The current study has limitations that could be addressed in future research. The differences noted in the perception of microfinance participants compared to bankers did not always reach statistical significance, possibly because the number of microfinance participants was substantially smaller than the number of bankers. A future study could remedy this by increasing the number of microfinance participants. Similarly, the number of government participants was small, and this could be addressed by a wider survey. The survey questions could be tuned to provide more specific results, or results that are more susceptible to statistical analysis.

Another area of investigation could be to empirically determine the historical impact of technological adoption on banking at mass or retail level. We conducted a literature review on this aspect, but the study was subjective and based on some specific cases of financial product innovation (like credit cards).

Appendix A

Composite Measures of Access to Financial Services³⁷

Country	Code	Estimated Measure	Data Used*
Albania	ALB	34	b
Algeria	DZA	31	
Angola	AGO	25	
Antigua & Barbuda	ATG	48	
Argentina	ARG	28	b
Armenia	ARM	9	s
Austria	AUT	96	s
Azerbaijan	AZE	17	
Bahamas, The	BHS	53	
Bangladesh	BGD	32	
Barbados	BRB	56	
Belarus	BLR	16	
Belgium	BEL	97	s
Belize	BLZ	46	
Benin	BEN	32	
Bermuda	BMU	48	
Bhutan	BTN	16	
Bolivia	BOL	30	
Bosnia & Herzeg.	BIH	17	
Botswana	BWA	47	s
Brazil	BRA	43	s
Bulgaria	BGR	56	s
Burkina Faso	BFA	26	
Burundi	BDI	17	
Cambodia	KHM	20	
Cameroon	CMR	24	
Canada	CAN	96	s
Cape Verde	CPV	40	
Cent African Rep.	CAF	19	
Chile	CHL	60	
China	CHN	42	s
Colombia	COL	41	s
Comoros	COM	20	
Congo, Rep.	COG	27	
Costa Rica	CRI	29	
Cote d'Ivoire	CIV	25	s
Croatia	HRV	42	
Cuba	CUB	45	

³⁷ P. Honohan, 2008

Country	Code	Estimated Measure	Data Used*
Cyprus	CYP	85	s
Czech Republic	CZE	85	s
Denmark	DNK	99	s
Dominica	DMA	66	
Dominican Rep.	DOM	29	
Ecuador	ECU	35	s
Egypt	EGY	41	
El Salvador	SLV	26	
Eritrea	ERI	12	
Estonia	EST	86	s
Ethiopia	ETH	14	
Fiji	FJI	39	b
Finland	FIN	99	s
France	FRA	96	s
Gabon	GAB	39	
Gambia	GMB	21	
Georgia	GEO	15	
Germany	DEU	97	s
Ghana	GHA	16	
Greece	GRC	83	
Grenada	GRD	37	
Guatemala	GTM	32	
Guinea	GIN	15	
Guyana	GUY	20	s
Haiti	HTI	15	
Honduras	HND	25	b
Hong Kong**	HKG	38	
Hungary	HUN	66	s
India	IND	48	s
Indonesia	IDN	40	
Iran, Isl. Rep.	IRN	31	
Iraq	IRQ	17	
Ireland	IRL	88	s
Italy	ITA	75	s
Jamaica	JAM	59	s
Jordan	JOR	37	b
Kazakhstan	KAZ	48	
Kenya	KEN	10	s
Korea, Rep.	KOR	63	
Kyrgyz Republic	KGZ	1	s
Latvia	LVA	64	s
Lebanon**	LBN	79	b
Lesotho	LSO	17	s
Liberia	LBR	11	
Libya	LBY	27	
Lithuania	LTU	70	s
Luxembourg	LUX	99	s
Macao, China**	MAC	14	
Macedonia, FYR	MKD	20	

Country	Code	Estimated Measure	Data Used*
Madagascar	MDG	21	
Malawi	MWI	21	
Malaysia	MYS	60	b
Mali	MLI	22	
Malta	MLT	90	s
Mauritania	MRT	16	
Mauritius	MUS	54	b
Mexico	MEX	25	s
Moldova	MDA	13	
Mongolia	MNG	25	
Morocco	MAR	39	
Mozambique	MOZ	12	
Myanmar	MMR	19	
Namibia	NAM	28	s
Nepal	NPL	20	
Netherlands	NLD	100	
Nicaragua	NIC	5	s
Niger	NER	31	
Nigeria	NGA	15	
Norway	NOR	84	b
Oman	OMN	33	
Pakistan	PAK	12	b
Panama	PAN	46	
Papua New Guinea	PNG	8	b
Paraguay	PRY	30	
Peru	PER	26	
Philippines	PHL	26	
Poland	POL	66	s
Portugal	PRT	84	s
Romania	ROM	23	s
Russian Federation	RUS	69	
Rwanda	RWA	23	
Samoa	WSM	19	
Sao Tome & Principe	STP	15	
Saudi Arabia	SAU	62	b
Senegal	SEN	27	
Seychelles	SYC	41	
Sierra Leone	SLE	13	
Singapore	SGP	98	b
Slovak Republic	SVK	83	
Slovenia	SVN	97	
Solomon Islands	SLB	15	
South Africa	ZAF	46	s
Spain	ESP	95	s
Sri Lanka	LKA	59	
St. Kitts and Nevis	KNA	49	
St. Lucia	LCA	40	
St. Vincent & Gren.	VCT	45	
Sudan	SDN	15	

Country	Code	Estimated Measure	Data Used*
Suriname	SUR	32	
Swaziland	SWZ	35	s
Sweden	SWE	99	s
Switzerland	CHE	88	b
Syrian A.R.	SYR	17	
Tajikistan	TJK	16	
Tanzania	TZA	5	s
Thailand	THA	59	
Timor Leste	TMP	13	
Togo	TGO	28	
Trinidad & Tobago	TTO	53	
Tunisia	TUN	42	
Turkey	TUR	49	b
Uganda	UGA	20	
Ukraine	UKR	24	
United Kingdom	GBR	91	s
United States	USA	91	s
Uruguay	URY	42	
Uzbekistan	UZB	16	
Venezuela	VEN	28	b
Vietnam	VNM	29	
West Bank & Gaza	WBG	14	
Yemen, Rep.	YEM	14	
Yugoslavia, FR	YUG	21	
Zambia	ZMB	15	
Zimbabwe	ZWE	34	b

* 's' means household survey data used; 'b' means fitted data using bank deposit numbers and not World's Savings Banks Institute (WSBI) numbers – for details, please refer to (Honohan P. , 2008)

** Data considered less reliable – for details, please refer to (Honohan P. , 2008)

Appendix B Pakistan—Selected Indicators

Indicators	2010	2009	2008	2007	2006
Selected Social Indicators					
Population, total	173,593,000	170,494,367	167,442,258	164,445,596	161,513,324
Population ages 15-64 (% of total)	60.33	59.84	59.37	58.89	58.38
Population ages 0-14 (% of total)	35.37	35.89	36.40	36.92	37.47
Population ages 65 and above (% of total)	4.30	4.27	4.23	4.19	4.14
Population growth (annual %)	1.80	1.81	1.81	1.80	1.79
Population density (people per sq. km of land area)	225.2	221.2	217.2	213.3	209.5
Population, female (% of total)	49.2	49.1	49.1	49.1	49.0
Poverty gap at \$1.25 a day (PPP) (%)			3.49		4.06
Poverty gap at \$2 a day (PPP) (%)			17.94		18.78
Poverty headcount ratio at \$1.25 a day (PPP) (% of population)			21.04		22.58
Poverty headcount ratio at \$2 a day (PPP) (% of population)			60.19		60.98
Literacy rate, adult female (% of females ages 15 and above)			40		40
Literacy rate, adult male (% of males ages 15 and above)			69		68
Literacy rate, adult total (% of people ages 15 and above)			56		54
Selected Economic Indicators					
Consumer price index (2005 = 100)	180.78	158.74	139.68	116.12	107.92
GDP (current US\$)	176,869,569,654	161,819,031,346	163,891,692,022	143,171,182,643	127,500,000,000
GDP per capita (current US\$)	1018.88	949.12	978.80	870.63	789.41
GDP per capita growth (annual %)	2.29	1.74	-0.22	3.80	4.29
GDP growth (annual %)	4.14	3.60	1.60	5.68	6.18
GNI (current US\$)	183,619,923,187	166,222,906,609	167,234,488,595	145,773,303,994	130,007,131,515
GNI per capita, PPP (current international \$)	2790	2680	2570	2510	2360

Indicators	2010	2009	2008	2007	2006
Gross domestic savings (current US\$)	17,958,922,848	17,282,769,573	18,058,807,414	22,059,668,597	18,043,348,893
Health expenditure, public (% of government expenditure)	3.63	3.33	3.09	3.11	3.29
Health expenditure, public (% of GDP)		0.86	0.85	0.79	0.82
Health expenditure, private (% of GDP)		1.76	1.78	1.85	1.92
Depositors with commercial banks (per 1,000 adults)	249.47	207.29	201.85	202.97	188.67
Selected Infrastructure Indicators					
Fixed broadband Internet subscribers (per 100 people)	0.31	0.18	0.09	0.03	0.02
Internet users (per 100 people)	16.78	16.59	15.77	10.11	7.08
Mobile cellular subscriptions (per 100 people)	57.14	55.33	52.57	38.22	21.36
Point-of-sale terminals (per 100,000 adults)		47.1			
Automated teller machines (ATMs) (per 100,000 adults)	4.40	3.94	3.38	2.73	1.89
Access to electricity (% of population)		62.40			
Telephone Lines (per 100 people)	2	2.1	2.6	2.9	3.2

Created from: World Bank, World Development Indicators and Global Development Finance

Data query available at: databank.worldbank.org/Data/Country_Comparison_on_Selected_Indicator/ID/a4ef85c

Appendix C

Selected Social Indicators for Selected Countries with Population over 2 Million

Country Name	Country Code	Population (2010)	Population density* - 2010	Poverty gap at \$1.25 a day** - 2008	Poverty gap at \$2 a day** - 2008	Literacy rate, adult total*** - 2008	GNI per capita (constant 2000 US\$)- 2008	Automated teller machines (ATMs) **** - 2009	Point-of-sale terminals **** - 2009	Internet users ***** - 2009	Mobile cellular subscriptions ***** - 2009	Telephone lines ***** - 2009	Access to electricity (% of population) -2009
China	CHN	1,338,300,000	143.48	3.24	10.06		2,039.93			28.98	56.12	23.56	99.4
India	IND	1,224,615,000	411.89				677.54			5.12	43.48	3.07	66.3
United States	USA	309,349,000	33.82				38,619.45	173.75	2,156.46	71.21	89.42	49.86	
Indonesia	IDN	239,870,000	132.41	4.73	17.67	92.2	993.39	14.27	119.91	8.70	67.08	14.30	64.5
Brazil	BRA	194,946,000	23.04	3.43	5.3	90.0	4,370.36	115.38	1,471.05	39.22	90.02	21.47	98.3
Pakistan	PAK	173,593,000	225.19	3.49	17.94	55.5	654.37	3.94	47.06	16.59	55.33	2.07	62.4
Nigeria	NGA	158,423,000	173.94							28.43	48.24	0.96	50.6
Bangladesh	BGD	148,692,000	1,142.29				550.48	1.15		3.10	35.66	1.04	41
Russian Federation	RUS	141,750,000	8.66	0	0.01		2,965.38	76.58	275.41	29.25	162.50	31.99	
Mexico	MEX	113,423,000	58.35	0.34	1.29	92.9	6,229.50	44.00		26.34	74.26	17.41	
Philippines	PHL	93,261,000	312.78			95.4	1,315.00	13.91		9.00	82.43	7.40	89.7
Vietnam	VNM	86,928,000	280.35	3.75	13.53		634.15	15.01		26.82	114.18	20.26	97.6
Ethiopia	ETH	82,950,000	82.95			29.8	192.63	0.10		0.54	4.99	1.13	17
Germany	DEU	81,777,000	234.58				25,943.70	116.80	799.49	79.49	128.20	58.00	
Egypt, Arab Rep.	EGY	81,121,000	81.49	0.38	2.84		1,873.77			24.28	69.44	12.94	99.6
Iran, Islamic Rep.	IRN	73,973,000	45.42			85.0		23.41	1,353.14	11.07	71.86	35.28	98.4
Turkey	TUR	72,752,000	94.53	0	0.74		5,228.13	43.74	3,045.97	36.40	87.38	23.01	

Country Name	Country Code	Population (2010)	Population density* - 2010	Poverty gap at \$1.25 a day** - 2008	Poverty gap at \$2 a day** - 2008	Literacy rate, adult total*** - 2008	GNI per capita (constant 2000 US\$)- 2008	Automated teller machines (ATMs) **** - 2009	Point-of-sale terminals **** - 2009	Internet users ***** - 2009	Mobile cellular subscriptions ***** - 2009	Telephone lines ***** - 2009	Access to electricity (% of population) -2009
Thailand	THA	69,122,000	135.30	0.04	0.81		2,523.78	74.36		20.10	95.99	10.49	99.3
France	FRA	64,895,000	118.50				23,843.71	107.49	2,152.78	69.25	92.34	54.85	
United Kingdom	GBR	62,232,000	257.23				29,740.79	64.58	2,176.87	83.35	129.84	55.29	
Italy	ITA	60,483,000	205.63				19,688.77	105.04	2,385.52	48.88	146.24	36.02	
South Africa	ZAF	49,991,000	41.16				3,668.35	52.64		10.09	94.15	8.76	75
Korea, Rep.	KOR	48,875,000	503.35				15,569.79	250.29		80.29	98.35	55.21	
Myanmar	MMR	47,963,000	73.39							0.22	1.05	1.16	13
Colombia	COL	46,295,000	41.73	5.77	9.64	93.4	3,008.78			30.00	92.35	16.37	93.6
Spain	ESP	46,071,000	92.36			97.6	15,809.29	153.63	3,523.04	62.03	111.27	44.08	
Ukraine	UKR	45,871,000	79.18	0.02	0.04		1,149.76	73.04	292.60	32.91	119.30	28.29	
Tanzania	TZA	44,841,000	50.62				426.62	3.30	10.75	10.00	40.14	0.40	13.9
Sudan	SDN	43,552,000	18.33				464.79				36.11	0.87	35.9
Kenya	KEN	40,513,000	71.18				454.95	7.27		10.04	49.07	1.68	16.1
Argentina	ARG	40,412,000	14.77	1.02	1.65		9,708.51	36.91		34.00	131.00	24.38	97.2
Poland	POL	38,184,000	125.52	0.04	0.08		6,109.93	48.95	253.22	59.12	117.44	22.26	
Algeria	DZA	35,468,000	14.89					5.57	8.37	11.23	93.65	7.37	99.3
Canada	CAN	34,126,000	3.75				25,741.15	215.14	2,201.64	80.17	70.60	52.25	
Uganda	UGA	33,424,000	167.28				350.19	3.20	3.03	9.78	28.99	0.72	9
Iraq	IRQ	32,031,000	73.75					1.09		1.05	63.43	3.57	86
Morocco	MAR	31,951,000	71.59			55.1	1,705.64		45.87	41.30	80.01	11.12	97
Nepal	NPL	29,959,000	208.99							1.97	19.02	2.76	43.6
Peru	PER	29,076,000	22.72	1.76	5		2,754.98	21.88	39.81	31.40	85.87	10.98	85.7
Venezuela, RB	VEN	28,834,000	32.69				6,009.77			31.35	99.08	24.19	99

Country Name	Country Code	Population (2010)	Population density* - 2010	Poverty gap at \$1.25 a day** - 2008	Poverty gap at \$2 a day** - 2008	Literacy rate, adult total*** - 2008	GNI per capita (constant 2000 US\$)- 2008	Automated teller machines (ATMs) **** - 2009	Point-of-sale terminals **** - 2009	Internet users ***** - 2009	Mobile cellular subscriptions ***** - 2009	Telephone lines ***** - 2009	Access to electricity (% of population) -2009
Malaysia	MYS	28,401,000	86.44				4,899.46	46.38	941.08	55.90	107.85	16.19	99.4
Uzbekistan	UZB	28,228,000	66.36					1.85		16.67	59.13	6.69	
Saudi Arabia	SAU	27,448,000	12.77					57.97		38.00	167.35	15.56	99
Ghana	GHA	24,392,000	107.20						4.16	5.44	63.42	1.12	60.5
Yemen, Rep.	YEM	24,053,000	45.56				537.17	2.75	16.96	9.96	35.63	4.27	39.6
Mozambique	MOZ	23,390,000	29.74	25.13	42.86		339.50	4.79	34.48	2.68	26.12	0.36	11.7
Romania	ROM	21,438,000	93.18	0.23	0.55		2,831.81	53.28	460.31	36.70	118.15	22.02	
Sri Lanka	LKA	20,860,000	332.64			90.6	1,151.67			8.78	78.89	16.62	76.6
Madagascar	MDG	20,714,000	35.62			64.5		1.39	1.85	1.63	31.23	0.93	19
Syrian Arab Republic	SYR	20,447,000	111.35				1,418.71	6.84		17.31	50.01	19.32	92.7
Cote d'Ivoire	CIV	19,738,000	62.07	7.5	17.79		551.68			2.30	68.14	1.46	47.3
Cameroon	CMR	19,599,000	41.46				698.41	1.40		3.84	41.74	2.27	48.7
Angola	AGO	19,082,000	15.31					9.77	24.64	6.00	43.70	1.63	26.2
Chile	CHL	17,113,688	23.02			98.6	5,681.63	57.64	450.13	38.80	97.02	21.02	98.5
Netherlands	NLD	16,616,000	492.62				26,772.42	62.58	2,285.55	89.79	121.89	43.89	
Burkina Faso	BFA	16,468,000	60.19							1.13	23.92	0.95	14.6
Kazakhstan	KAZ	16,323,000	6.05	0.03	0.16		1,981.29	57.44	173.24	17.91	106.03	23.96	
Niger	NER	15,512,000	12.25	12.42	30.83					0.76	17.36	0.51	
Mali	MLI	15,370,000	12.60							1.92	29.92	0.57	
Malawi	MWI	14,901,000	158.05						1.95	1.07	16.44	0.77	9
Ecuador	ECU	14,465,000	58.24	3.06	5.48		1,659.47			24.60	92.85	14.12	92.2

Country Name	Country Code	Population (2010)	Population density* - 2010	Poverty gap at \$1.25 a day** - 2008	Poverty gap at \$2 a day** - 2008	Literacy rate, adult total*** - 2008	GNI per capita (constant 2000 US\$)- 2008	Automated teller machines (ATMs) **** - 2009	Point-of-sale terminals **** - 2009	Internet users ***** - 2009	Mobile cellular subscriptions ***** - 2009	Telephone lines ***** - 2009	Access to electricity (% of population) -2009
Guatemala	GTM	14,389,000	134.28				1,848.84		485.83	9.30	123.33	10.07	80.5
Cambodia	KHM	14,139,000	80.10	4.87	17.41	77.6	508.23	4.11	35.55	0.53	44.84	0.39	24
Zambia	ZMB	12,927,000	17.39						11.18	6.31	34.63	0.71	18.8
Zimbabwe	ZWE	12,571,000	32.50				252.89			11.36	31.99	3.09	41.5
Senegal	SEN	12,434,000	64.58				555.34			14.50	57.00	2.30	42
Greece	GRC	11,316,000	87.79				14,172.24	78.24	3,826.58	42.56	117.84	46.51	
Cuba	CUB	11,258,000	105.77				4,274.79			14.33	5.52	9.94	97
Belgium	BEL	10,896,000	359.84				25,431.60	86.37	1,086.15	69.12	109.07	42.94	
Portugal	PRT	10,638,000	116.30				11,521.68	192.57	2,547.99	46.61	139.70	40.85	
Rwanda	RWA	10,624,000	430.64					0.81	1.03	7.70	23.56	0.32	
Tunisia	TUN	10,549,000	67.90			77.6	2,856.90	17.82	171.85	33.83	93.84	12.25	99.5
Czech Republic	CZE	10,520,000	136.18				7,242.44	39.64	651.08	64.14	135.96	24.09	
Hungary	HUN	10,000,000	110.46				5,569.56	55.62	584.69	61.68	117.66	30.62	
Haiti	HTI	9,993,000	362.59							8.10	36.98	1.08	38.5
Guinea	GIN	9,982,000	40.62				374.36			0.94	35.74	0.23	
Bolivia	BOL	9,929,000	9.17	8.64	13.05	90.7	1,140.66		32.52	14.30	66.14	8.23	77.5
Dominican Republic	DOM	9,927,000	205.44	0.82	3.07		3,589.04			27.72	88.09	9.85	95.9
Belarus	BLR	9,490,000	46.79	0.1	0.12		2,470.28	32.78	164.90	27.80	101.88	41.90	
Sweden	SWE	9,378,000	22.85				33,955.19			91.12	112.28	55.28	
Azerbaijan	AZE	9,054,000	109.59	0.14	0.57		1,744.00	25.45	112.10	27.77	86.70	15.66	
Benin	BEN	8,850,000	80.00							2.24	58.52	1.48	24.8
Austria	AUT	8,390,000	101.78				27,240.48	48.16	4,889.60	73.49	136.68	38.89	
Burundi	BDI	8,382,000	326.40						-	1.90	10.26	0.39	

Country Name	Country Code	Population (2010)	Population density* - 2010	Poverty gap at \$1.25 a day** - 2008	Poverty gap at \$2 a day** - 2008	Literacy rate, adult total*** - 2008	GNI per capita (constant 2000 US\$)- 2008	Automated teller machines (ATMs) **** - 2009	Point-of-sale terminals **** - 2009	Internet users ***** - 2009	Mobile cellular subscriptions ***** - 2009	Telephone lines ***** - 2009	Access to electricity (% of population) -2009
Switzerland	CHE	7,826,000	195.65				35,722.57	95.15	2,003.94	80.01	120.39	59.97	
Honduras	HND	7,600,000	67.92	11.75	17.47		1,392.07			9.80	112.63	9.62	70.3
Bulgaria	BGR	7,534,000	69.40				2,524.73	79.96	682.57	44.75	137.83	29.08	
Hong Kong SAR, China	HKG	7,068,000	6,783.11				36,259.72			69.24	179.86	61.07	
Tajikistan	TJK	6,879,000	49.15				254.41		1.65	10.07	72.24	5.12	
Papua New Guinea	PNG	6,858,000	15.14					5.25		1.61	21.15	1.36	
Paraguay	PRY	6,454,000	16.24	2.12	4.8		1,503.44			18.90	88.60	6.11	96.7
Libya	LBY	6,355,000	3.61					3.61		10.80	152.24	16.98	99.8
El Salvador	SLV	6,193,000	298.89	1.85	4.78	84.0	2,583.44		249.59	12.11	122.82	17.84	86.4
Jordan	JOR	6,047,000	68.11	0.01	0.25		2,584.85			26.49	101.68	8.47	99.9
Togo	TGO	6,028,000	110.83							5.10	37.06	3.03	20
Sierra Leone	SLE	5,867,000	81.92					0.43		0.26	20.21	0.57	
Nicaragua	NIC	5,789,000	48.11				913.45			7.30	56.12	4.47	72.1
Denmark	DNK	5,547,000	130.73				32,821.10	65.15	2,022.78	86.87	123.73	50.23	
Kyrgyz Republic	KGZ	5,448,000	28.40	1.51	5.92		363.97	8.38			83.35	9.26	
Slovak Republic	SVK	5,430,000	112.91	0.12	0.12		8,384.72	50.38	611.30	75.63	101.46	22.51	
Finland	FIN	5,364,000	17.65				28,940.32	91.72	65.78	82.53	144.23	26.78	
Eritrea	ERI	5,254,000	52.02								2.77	0.95	32
Singapore	SGP	5,077,000	7,252.86				28,759.44	51.50	1,886.56	68.42	138.04	38.71	100
Norway	NOR	4,889,000	16.00				41,160.95	57.60	2,827.43	92.18	110.99	36.67	
Costa Rica	CRI	4,659,000	91.25	1.47	2.3		5,076.25		-	34.33	42.48	32.67	99.3
Ireland	IRL	4,475,000	64.96				26,375.70	96.18		66.67	105.51	47.81	

Country Name	Country Code	Population (2010)	Population density* - 2010	Poverty gap at \$1.25 a day** - 2008	Poverty gap at \$2 a day** - 2008	Literacy rate, adult total*** - 2008	GNI per capita (constant 2000 US\$)- 2008	Automated teller machines (ATMs) **** - 2009	Point-of-sale terminals **** - 2009	Internet users ***** - 2009	Mobile cellular subscriptions ***** - 2009	Telephone lines ***** - 2009	Access to electricity (% of population) -2009
Georgia	GEO	4,452,000	77.89	4.57	11.73			38.53	168.56	19.90	64.32	14.06	
Croatia	HRV	4,418,000	78.95	0.09	0.09		6,554.01	95.73	2,121.25	56.04	136.26	41.98	
Central African Republic	CAF	4,401,000	7.06	31.26	46.78					1.80	15.74	0.08	
Lebanon	LBN	4,227,000	413.20				5,974.86	38.25	1,292.92	23.68	56.95	19.15	99.9
West Bank and Gaza	WBG	4,152,000	689.70			94.1		13.68		31.33	44.52	9.11	
Congo, Rep.	COG	4,043,000	11.84					1.23		4.50	55.08	0.24	37.1
Liberia	LBR	3,994,000	41.47							0.51	28.29	0.06	
Bosnia and Herzegovina	BIH	3,760,000	73.73				2,311.61	42.54	501.64	37.74	86.45	26.51	
Moldova	MDA	3,562,000	123.99	0.26	1.44		652.97	237.07		37.39	78.10	31.94	
Panama	PAN	3,517,000	47.31				5,292.80		426.52	39.08	175.24	15.49	88.1
Mauritania	MRT	3,460,000	3.36	6.79	17.66		621.47			2.28	64.61	2.20	
Uruguay	URY	3,357,000	19.18	0.05	0.37	98.2	7,964.54	30.38	275.09	41.96	122.92	28.50	98.3
Lithuania	LTU	3,287,000	52.45	0.09	0.16		5,823.79	54.30	1,412.90	59.79	148.57	22.38	
Albania	ALB	3,205,000	116.97	0.19	0.85	95.9	1,832.74	30.72	122.72	41.20	130.35	11.37	
Armenia	ARM	3,092,000	108.57	0.25	2.27		1,582.37	28.57	94.15	15.30	71.04	19.45	
Oman	OMN	2,783,000	8.99			86.6				51.50	146.40	10.93	98
Mongolia	MNG	2,756,000	1.77						448.42	12.60	82.94	6.97	67
Jamaica	JAM	2,702,000	249.49					24.88	673.75	24.62	109.66	11.22	92
Namibia	NAM	2,283,000	2.77				2,584.94	29.47	216.58	5.87	54.28	6.63	34
Latvia	LVA	2,239,000	36.01	0.1	0.15		5,994.58	67.87		68.70	102.16	24.91	
Lesotho	LSO	2,171,000	71.51				615.20	6.49		3.72	30.76	1.86	16
Macedonia,	MKD	2,060,000	81.68	0.04	0.7		2,185.05	49.67	1,296.86	51.77	94.48	21.26	

Country Name	Country Code	Population (2010)	Population density* - 2010	Poverty gap at \$1.25 a day** - 2008	Poverty gap at \$2 a day** - 2008	Literacy rate, adult total*** - 2008	GNI per capita (constant 2000 US\$)- 2008	Automated teller machines (ATMs) **** - 2009	Point-of-sale terminals **** - 2009	Internet users ***** - 2009	Mobile cellular subscriptions ***** - 2009	Telephone lines ***** - 2009	Access to electricity (% of population) -2009
FYR													
Slovenia	SVN	2,049,000	101.74				13,449.81	101.45	1,924.56	63.51	102.98	46.04	
Botswana	BWA	2,007,000	3.54				4,042.65			6.15	94.58	6.93	45.4

*people per sq. km of land area

**Purchasing Power Parity - PPP (%)

*** % of people ages 15 and above

**** per 100,000 adults

***** per 100 people

Multiple regressions of the six predictor infrastructure variables were performed using the stepwise method and the following results were obtained. For the model: $R^2 = 0.737$; Adjusted $R^2 = 0.708$; $F_{2,18} = 25.207$ ($P < .00005$). Significant variables are shown below.

Predictor Variables	B	Std B	Beta	t
Point of sales terminals per 100,000 adults	0.021	0.006	0.531	3.654 (P < .01)
Mobile cellular subscription per 100 people	0.315	0.103	0.442	3.044 (P < .01)

Other variables were not a significant predictor in this model.

Appendix D

RTGS – Statistics for Selected³⁸ Countries

Country Name	Honohan's FI	Population (2010)	Year Present RTGS system Implemented ³⁹	RTGS Volume (2009)	RTGS Value (2009)
Kyrgyz Republic	1	5,448,000	2008	109,000	9,733
Tanzania	5	44,841,000	2004	283,332	51,673
Armenia	9	3,092,000	1997	2,613,649	105,094
Kenya	10	40,513,000	2005	390,734	192,566
Pakistan	12	173,593,000	2008	258,365	808,710
Moldova	13	3,562,000	2006	626,400	68,712
Zambia	15	12,927,000	2004	148,147	41,281
Georgia	15	4,452,000	2001	5,756,658	20,309
Ghana	16	24,392,000	2002	199,814	162,864
Iraq	17	32,031,000	2006	13,000	97
Azerbaijan	17	9,054,000	2001	393,000	90,644
Bosnia & Herzeg.	17	3,760,000	2001	629,669	37,136
Lesotho	17	2,171,000	2006	16,605	2,795
Uganda	20	33,424,000	2005	294,117	34,873
Macedonia, FYR	20	2,060,000	2001	4,718,965	31,584
Madagascar	21	20,714,000	2009	24,197	2,718
Malawi	21	14,901,000	2002	144,949	27,334
Romania	23	21,438,000	2005	2,521,876	1,677,767
Ukraine	24	45,871,000	1994	311,222,000	791,669
Mexico	25	113,423,000	2005	62,213,271	9,509,478
Angola	25	19,082,000	2005	117,314	273,385
Mongolia	25	2,756,000	2005	280,349	5,849
Philippines	26	93,261,000	2002	749,591	3,953,088
Peru	26	29,076,000	2000	337,000	373,737
Argentina	28	40,412,000	1997	1,299,575	877,043
Namibia	28	2,283,000	2002	40,515	53,529
Dominican Rep.	29	9,927,000	2008	147,956	341,472
Costa Rica	29	4,659,000	1997	1,077,001	62,746
Bolivia	30	9,929,000	-	29,422	13,686
Iran	31	73,973,000	2006	4,663,588	429,166
Guatemala	32	14,389,000	2006	45,230	52,309
Oman	33	2,783,000	2005	301,000	174,554
Zimbabwe	34	12,571,000	2002	678,321	6,700
Albania	34	3,205,000	2004	55,701	49,679
Jordan	37	6,047,000	2002	312,800	371,831
Morocco	39	31,951,000	2006	124,400	314,133
Indonesia	40	239,870,000	2000	11,200,000	4,127,840
Egypt	41	81,121,000	2009	1,200,000	2,615,179
Colombia	41	46,295,000	1998	2,010,000	3,693,700
China	42	1,338,300,000	2005	248,000,000	117,684,239
Croatia	42	4,418,000	1999	291,085	576,475
Uruguay	42	3,357,000	2004	118,443	36,352
Brazil	43	194,946,000	2002	10,500,000	70,620,191
South Africa	46	49,991,000	1998	2,844,028	8,831,344

³⁸ Countries from appendix 1 with population over 2 million and for whom the data was available at in World Bank's Global Payment Systems Survey at <http://go.worldbank.org/5MYOUCYBR0>

³⁹ For some countries this may be the year when their legacy RTGS system was replaced with the existing one

Country Name	Honohan's FI	Population (2010)	Year Present RTGS system Implemented ³⁹	RTGS Volume (2009)	RTGS Value (2009)
Botswana	47	2,007,000	2006	63,777	271
India	48	1,224,615,000	2004	33,240,000	8,150,634
Kazakhstan	48	16,323,000	2000	9,990,600	1,064,453
Turkey	49	72,752,000	1992	129,450,000	15,290,719
Bulgaria	56	7,534,000	2003	993,375	496,671
Thailand	59	69,122,000	1995	2,067,121	14,397,947
Sri Lanka	59	20,860,000	2003	232,567	288,443
Jamaica	59	2,702,000	2009	97,430	84,192
Malaysia	60	28,401,000	1999	3,001,700	10,571,391
Chile	60	17,113,688	2004	283,908	2,824,746
Saudi Arabia	62	27,448,000	1997	32,830,000	16,329,067
Korea, Rep.	63	48,875,000	1994	2,752,000	36,020,088
Latvia	64	2,239,000	2000	200,200	331,322
Poland	66	38,184,000	1996	1,811,899	13,521,637
Hungary	66	10,000,000	1999	980,752	4,645,257
Russian Federation	69	141,750,000	2007	63,000	3,359
Lithuania	70	3,287,000	2007	302,000	132,848
Italy	75	60,483,000	2008	8,658,900	44,788,911
Greece	83	11,316,000	2008	1,457,164	10,368,399
Slovak Republic	83	5,430,000	2009	155,000	1,222,660
Portugal	84	10,638,000	2008	1,520,000	7,942,700
Norway	84	4,889,000	2009	265,233	7,474,158
Czech Republic	85	10,520,000	1992	450,000,000	6,924,409
Switzerland	88	7,826,000	1987	381,650,000	52,222,886
Ireland	88	4,475,000	2008	1,234,879	10,769,010
United States	91	309,349,000	1918	124,731,244	631,127,108
United Kingdom	91	62,232,000	1996	31,926,000	100,662,192
Spain	95	46,071,000	2008	9,356,793	136,161,874
France	96	64,895,000	2008	7,618,586	130,246,391
Canada	96	34,126,000	1999	5,607,000,000	33,852,052
Austria	96	8,390,000	2007	1,374,968	12,925,775
Germany	97	81,777,000	2007	44,698,117	237,967,049
Belgium	97	10,896,000	2008	2,180,243	37,545,668
Slovenia	97	2,049,000	2007	784,788	794,060
Singapore	98	5,077,000	1998	3,630,000	9,380,448
Sweden	99	9,378,000	1990	2,581,871	22,807,176
Denmark	99	5,547,000	2001	750,000	13,104,971
Finland	99	5,364,000	2008	714,932	14,385,213
Netherlands	100	16,616,000	2008	9,385,778	88,467,858

Appendix E

Retail Payments Infrastructure of Selected Countries⁴⁰

Country Name	Honohan's FI	Total number of debit cards	Total number of credit cards	Total Number of ATM Networks	Total Number of POS Networks
Albania	34	543,141	22,793	NA*	NA*
Angola	25	553,241	47,882	1	1
Argentina	28	17,192,200	19,805,400	2	2
Armenia	9	509,996	69,435	1	1
Austria	96	7,900,000	1,200,000	1	1
Azerbaijan	17	3,845,000	129,000	3	3
Belgium	97	14,992,192	4,266,292	1	1
Bolivia	30	1,169,653	70,734	NA*	NA*
Bosnia & Herzeg.	17	NA*	1,754,221	NA*	NA*
Botswana	47	684,000	135,000	5	43
Brazil	43	221,474,217	152,289,526	22	8
Bulgaria	56	6,631,214	1,050,566	NA*	NA*
Cambodia	20	453,471	10,576	NA*	NA*
Canada	96	22,300,000	73,806,000	4	6
Chile	60	8,107,727	4,343,727	1	1
China	42	1,880,000,000	186,000,000	1	1
Colombia	41	14,830,000	7,200,000	12	3
Costa Rica	29	4,364,900	1,141,756	17	12
Croatia	42	6,489,163	2,044,621	NA*	NA*
Czech Republic	85	7,811,609	1,536,682	NA*	NA*
Denmark	99	5,499,396	1,387,157	NA*	NA*
Dominican Rep.	29	3,803,535	1,834,059	1	2
Ecuador	35	NA*	800,000	2	4
Egypt	41	7,535,590	2,359,600	3	2
El Salvador	26	1,252,192	751,116	10	6
Eritrea	12	#N/A	#N/A	#N/A	#N/A
Ethiopia	14	118,897	NA*	3	1
Finland	99	6,169,000	3,407,000	2	2
France	96	70,771,195	34,506,340	10	11
Georgia	15	3,488,896	470,484	14	5
Germany	97	101,708,800	24,092,500	NA*	NA*
Ghana	16	NA*	NA*	NA*	NA*
Greece	83	9,152,765	6,007,392	20	12
Hong Kong*	38	NA*	14,497,000	2	9
Hungary	66	7,266,081	1,522,883	NA*	NA*
India	48	181,971,000	18,283,000	NA*	NA*
Indonesia	40	44,530,000	12,260,000	5	5
Iran	31	67,632,996	424,498	1	1
Iraq	17	NA*	NA*	7	4
Ireland	88	3,107,008	2,333,000	3	3
Italy	75	35,471,000	33,643,000	3	3
Jamaica	59	1,699,515	187,611	1	1
Jordan	37	2,486,000	266,000	NA*	NA*
Kazakhstan	48	6,913,000	702,100	14	14

⁴⁰ From the World Bank, 2011

Country Name	Honohan's FI	Total number of debit cards	Total number of credit cards	Total Number of ATM Networks	Total Number of POS Networks
Korea, Rep.	63	116,394	106,989,000	NA*	NA*
Kyrgyz Republic	1	167,870	NA*	7	7
Latvia	64	2,000,000	430,300	7	4
Lebanon*	79	1,069,771	350,396	3	4
Libya	27	10,095	-	1	1
Lithuania	70	3,720,000	576,000	5	1
Macedonia, FYR	20	1,021,370	188,612	7	8
Madagascar	21	253,689	405	4	4
Malawi	21	212,337	NA*	6	3
Malaysia	60	30,300,000	10,800,000	2	4
Mexico	25	60,828,410	22,096,949	1	1
Moldova	13	722,553	23,062	NA*	NA*
Morocco	39	NA*	6,300,000	1	1
Mozambique	12	1,336,098	54,964	NA*	NA*
Namibia	28	213,549	50,545	NA*	NA*
Nepal	20	1,021,903	NA*	3	5
Netherlands	100	24,390,942	5,808,238	1	1
Norway	84	11,789,000	5,506,000	1	1
Oman	33	2,098,148	162,033	3	2
Pakistan	12	7,555,016	1,631,818	2	5
Peru	26	10,081,000	6,793,000	8	3
Philippines	26	NA*	NA*	3	NA*
Poland	66	21,981,105	10,858,416	28	5
Portugal	84	16,700,000	9,900,000	2	4
Romania	23	10,642,463	2,248,892	2	2
Russian Federation	69	115,390,000	8,600,000	19	31
Rwanda	23	453	27,065	2	1
Saudi Arabia	62	13,700,000	NA*	17	10
Sierra Leone	13	43,000	NA*	NA*	NA*
Singapore	98	NA*	6,703,000	2	6
Slovak Republic	83	4,042,618	1,056,703	1	1
Slovenia	97	2,611,307	1,461,416	2	3
South Africa	46	NA*	NA*	1	1
Spain	95	30,744,621	43,773,586	3	3
Sri Lanka	59	5,699,000	840,500	NA*	NA*
Sudan	15	433,176	NA*	1	1
Sweden	99	NA*	4,030,000	1	1
Switzerland	88	7,901,000	4,700,800	2	NA*
Tanzania	5	427,350	407,306	2	2
Thailand	59	30,703,339	13,489,422	1	NA*
Turkey	49	64,661,947	44,392,614	NA*	NA*
Uganda	20	1,226,790	1,870	14	3
Ukraine	24	23,916,015	5,188,143	NA*	NA*
United Kingdom	91	79,270,000	58,064,000	1	2
United States	91	278,800,000	1,107,600,000	17	12
Uruguay	42	1,225,680	1,957,130	2	2
West Bank and Gaza	14	285,228	29,082	17	1
Yemen, Rep.	14	442,290	4,474	NA*	NA*
Zambia	15	879,199	NA*	2	2
Zimbabwe	34	1,011,402	6,486	2	2

*NA – Not available from source data

Appendix F

List of Countries with an Automated Clearing House⁴¹

Country Name	Country Code	Honohan's FI	Can the ACH process Direct debit or Direct Credits
Kyrgyz Republic	KGZ	1	No
Tanzania	TZA	5	No
Kenya	KEN	10	No
Mozambique	MOZ	12	No
Moldova	MDA	13	No
Zambia	ZMB	15	No
Sudan	SDN	15	No
Nigeria	NGA	15	No
Bosnia & Herzeg.	BIH	17	No
Iraq	IRQ	17	No
Macedonia, FYR	MKD	20	No
Uganda	UGA	20	No
Madagascar	MDG	21	No
Romania	ROM	23	No
Mongolia	MNG	25	No
Honduras	HND	25	No
Angola	AGO	25	Yes
Mexico	MEX	25	No
El Salvador	SLV	26	Yes
Peru	PER	26	No
Libya	LBY	27	No
Namibia	NAM	28	No
Venezuela	VEN	28	No
Argentina	ARG	28	No
Costa Rica	CRI	29	No
Dominican Rep.	DOM	29	No
Bolivia	BOL	30	No
Guatemala	GTM	32	No
Oman	OMN	33	No
Albania	ALB	34	No
Ecuador	ECU	35	No
Morocco	MAR	39	No
Indonesia	IDN	40	No
Uruguay	URY	42	Yes
Croatia	HRV	42	No
China	CHN	42	No
Brazil	BRA	43	No
South Africa	ZAF	46	No
Botswana	BWA	47	No
Kazakhstan	KAZ	48	No
India	IND	48	No

⁴¹ World Bank, 2011

Country Name	Country Code	Honohan's FI	Can the ACH process Direct debit or Direct Credits
Turkey	TUR	49	Yes
Bulgaria	BGR	56	No
Jamaica	JAM	59	No
Sri Lanka	LKA	59	No
Thailand	THA	59	No
Chile	CHL	60	Yes
Malaysia	MYS	60	No
Saudi Arabia	SAU	62	Yes
Korea, Rep.	KOR	63	No
Latvia	LVA	64	No
Hungary	HUN	66	No
Poland	POL	66	No
Lithuania	LTU	70	No
Italy	ITA	75	No
Slovak Republic	SVK	83	No
Greece	GRC	83	No
Norway	NOR	84	No
Portugal	PRT	84	No
United States	USA	91	No
Spain	ESP	95	No
Austria	AUT	96	No
Canada	CAN	96	Yes
France	FRA	96	No
Slovenia	SVN	97	No
Belgium	BEL	97	No
Germany	DEU	97	No
Singapore	SGP	98	No
Denmark	DNK	99	No
Sweden	SWE	99	No
Netherlands	NLD	100	No

Appendix G

Type of card brands dominating the local market

Country Name	Honohan's FI	Type of brand (local or International) that dominates the marketplace for payment cards
Kyrgyz Republic	1	International
Tanzania	5	Local
Armenia	9	Local
Mozambique	12	International
Pakistan	12	International
Moldova	13	International
Ethiopia	14	International
West Bank and Gaza	14	International
Yemen, Rep.	14	Local
Georgia	15	International
Nigeria	15	Local
Sudan	15	Local
Zambia	15	International
Ghana	16	Both
Mauritania	16	Local
Azerbaijan	17	International
Bosnia & Herzeg.	17	International
Iraq	17	Both
Lesotho	17	International
Cambodia	20	International
Macedonia, FYR	20	International
Nepal	20	Local
Uganda	20	International
Madagascar	21	Local
Malawi	21	Local
Romania	23	International
Rwanda	23	International
Ukraine	24	International
Angola	25	Local
Honduras	25	International
Mexico	25	International
Mongolia	25	International
El Salvador	26	International
Peru	26	International
Philippines	26	International
Libya	27	Local
Argentina	28	International
Namibia	28	International
Venezuela	28	International

Country Name	Honohan's FI	Type of brand (local or International) that dominates the marketplace for payment cards
Costa Rica	29	International
Dominican Rep.	29	International
Bolivia	30	International
Iran	31	Local
Guatemala	32	International
Oman	33	International
Albania	34	International
Zimbabwe	34	Local
Ecuador	35	International
Jordan	37	International
Hong Kong*	38	Both
Morocco	39	International
Indonesia	40	International
Colombia	41	International
Egypt	41	International
China	42	Local
Croatia	42	International
Uruguay	42	Both
Brazil	43	International
South Africa	46	International
Botswana	47	International
India	48	International
Kazakhstan	48	International
Turkey	49	International
Bulgaria	56	International
Jamaica	59	International
Sri Lanka	59	International
Thailand	59	International
Chile	60	Both
Malaysia	60	International
Saudi Arabia	62	Local
Korea, Rep.	63	Local
Latvia	64	International
Hungary	66	International
Poland	66	International
Russian Federation	69	International
Lithuania	70	International
Italy	75	Local
Lebanon*	79	International
Greece	83	International
Slovak Republic	83	International
Norway	84	Local
Portugal	84	International
Czech Republic	85	International
Switzerland	88	Both
United Kingdom	91	International

Country Name	Honohan's FI	Type of brand (local or International) that dominates the marketplace for payment cards
United States	91	International
Spain	95	Local
Austria	96	International
Canada	96	Both
France	96	Local
Belgium	97	Local
Germany	97	Local
Slovenia	97	Local
Singapore	98	Both
Denmark	99	Local
Finland	99	International
Sweden	99	International
Netherlands	100	Local

Appendix H

Scheduled Banks operating in Pakistan⁴²

Sr. No.	Bank Name	Total Branches	Website
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A. Public Sector Commercial Banks

1	First Women Bank Ltd.	39	www.fwbl.com.pk
2	National Bank of Pakistan	1,269	www.nbp.com.pk
3	Sindh Bank Ltd.	9	www.sindhbankltd.com
4	The Bank of Khyber	51	www.bok.com.pk
5	The Bank of Punjab	273	www.bop.com.pk
Subtotal:		1,641	

B. Local Private Banks

1	Allied Bank Ltd.	809	www.abl.com.pk
2	Al Baraka Bank (Pakistan)Ltd.	87	www.albaraka.com.pk
3	Askari Bank Ltd.	218	www.askaribank.com.pk
4	Bank Al-Falah Ltd.	360	www.bankalfalah.com
5	Bank Al-Habib Ltd.	284	www.bankalhabib.com
6	BankIslami Pakistan Ltd.	70	www.bankislami.com.pk
7	Dawood Islamic Bank Ltd.	42	www.burjbankltd.com
8	Dubai Islamic Bank Pakistan Ltd	64	www.dibpak.com
9	Faysal Bank Ltd.	242	www.faysalbank.com.pk
10	Habib Bank Ltd.	1462	www.habibbankltd.com
11	Habib Metropolitan Bank Ltd	135	www.hmb.com.pk
12	JS Bank Ltd.	48	www.jsbl.com
13	KASB Bank Ltd.	70	www.kasbbank.com
14	MCB Bank Ltd.	1135	www.mcb.com.pk
15	Meezan Bank Ltd.	226	www.meezanbank.com
16	mybank Ltd.	80	www.mybankltd.com
17	NIB Bank Ltd.	179	www.nibpk.com
18	Samba Bank Ltd.	28	www.samba.com.pk
19	Silkbank Ltd.	85	www.silkbank.com.pk
20	Soneri Bank Ltd.	184	www.soneri.com

⁴² As of June 30, 2011 (State Bank of Pakistan, 2011)

21	Standard Chartered Bank (Pakistan) Ltd.	143	www.standardchartered.com.pk
22	Summit Bank Ltd.	76	www.summitbank.com.pk
23	United Bank Ltd.	1127	www.ubl.com.pk
Sub total:		7,154	

C. Foreign Banks

1	Barclays Bank PLC	15	www.barclays.pk
2	Citibank N.A	16	www.citibank.com.pk
3	Deutsche Bank AG	3	www.db.com
4	HSBC Bank Middle East Ltd.	11	www.hsbc.com.pk
5	Oman International Bank S.A.O.G	3	www.oiboman.com
6	The Bank of Tokyo-Mitsubishi UFJ, Ltd.	1	www.btm.co.jp
Sub total:		49	

D. Specialised Banks

1	Industrial Development Bank of Pakistan	14	www.idbp.com.pk
2	Punjab Provincial Cooperative Bank Ltd.	159	http://ppcbl.punjab.gov.pk
3	SME Bank Ltd.	13	www.smebank.org
4	Zarai Traqiati Bank Ltd.	360	www.ztbl.com.pk
Sub total:		546	

Appendix I Selected World Bank Financial Inclusion Index Indicators for Pakistan⁴³

	% Age 15+	Female (% age 15+)	Male (% age 15+)	Older adults (% age 25+)	Young adults (% ages 15-24)	Income, bottom 40% (% age 15+)	Income, top 60% (% age 15+)	Primary education or less (% age 15+)	Secondary education or more (% age 15+)	Rural (% age 15+)	Urban (% age 15+)
Account at a formal financial institution	10.31	2.95	17.28	11.45	7.95	4.09	14.30	3.75	24.46	7.22	15.38
Account used for business purposes	2.88	0.25	5.37	3.17	2.27	0.59	4.35	1.00	6.93	1.93	4.44
Account used to receive government payments	2.05	0.85	3.18	2.32	1.48	0.55	3.01	0.40	5.60	1.99	2.14
Account used to receive remittances	0.99	0.62	1.35	1.14	0.70	0.54	1.29	0.74	1.54	0.54	1.74
Account used to receive wages	5.30	1.13	9.26	5.89	4.09	1.94	7.46	1.73	13.01	3.74	7.87
Account used to send remittances	0.80	-	1.56	0.72	0.96	-	1.32	0.64	1.14	1.00	0.47
ATM is main mode of deposit	6.27	5.87	6.34	5.49	8.69	-	7.39	-	8.28	-	10.90
ATM is main mode of withdrawal	32.35	49.83	29.52	29.23	41.61	31.66	32.48	14.23	38.34	21.56	40.69
Bank agent is main mode of deposit	9.61	9.33	9.66	9.46	10.09	-	11.33	6.56	10.59	11.68	8.08
Bank agent is main mode of withdrawal	6.34	2.35	6.98	5.07	10.09	-	7.50	3.71	7.21	12.44	1.63
Bank teller is main mode of deposit	64.71	49.40	67.12	62.15	72.54	76.50	62.60	67.62	63.78	59.28	68.72
Bank teller is main mode of withdrawal	46.21	33.70	48.24	45.51	48.30	54.15	44.75	62.13	40.95	41.68	49.71

⁴³ The World Bank, 2011

	% Age 15+	Female (% age 15+)	Male (% age 15+)	Older adults (% age 25+)	Young adults (% ages 15-24)	Income, bottom 40% (% age 15+)	Income, top 60% (% age 15+)	Primary education or less (% age 15+)	Secondary education or more (% age 15+)	Rural (% age 15+)	Urban (% age 15+)
Retail store is main mode of deposit	0.91	-	1.05	1.21	-	3.79	0.39	2.37	0.44	2.14	-
Retail store is main mode of withdrawal	4.63	-	5.38	6.20	-	9.65	3.71	2.37	5.38	4.79	4.51
Checks used to make payments	4.17	0.34	7.79	4.40	3.69	1.55	5.85	1.66	9.57	3.18	5.80
Credit card	0.71	0.61	0.81	0.79	0.54	0.45	0.87	-	2.24	0.28	1.41
Debit card	2.87	1.27	4.39	3.38	1.82	2.12	3.36	0.38	8.26	1.66	4.87
Electronic payments used to make payments	0.23	-	0.45	0.34	-	-	0.38	0.08	0.55	-	0.61
Loan from a financial institution in the past year	1.57	1.94	1.22	2.12	0.43	1.21	1.80	1.40	1.94	0.94	2.61
Loan from a private lender in the past year	2.26	1.92	2.59	2.68	1.40	2.03	2.41	2.31	2.15	2.92	1.18
Loan from an employer in the past year	5.90	3.51	8.16	6.21	5.26	10.35	3.04	7.66	2.10	7.30	3.60
Loan from family or friends in the past year	23.15	22.35	23.91	26.01	17.24	26.51	20.99	26.13	16.72	24.16	21.49
Loan in the past year	28.91	28.73	29.08	32.50	21.53	33.95	25.67	32.58	21.00	30.58	26.16
Loan through store credit in the past year	11.56	10.64	12.44	12.84	8.93	13.38	10.39	14.15	5.98	14.40	6.90
Mobile phone used to pay bills	1.50	0.48	2.47	0.76	3.03	0.17	2.35	0.30	4.09	2.00	0.67
Mobile phone used to receive money	1.50	0.07	2.85	0.81	2.92	1.26	1.65	0.86	2.87	1.62	1.30
Mobile phone used to send money	1.36	-	2.65	0.60	2.92	0.97	1.61	0.57	3.06	1.30	1.46
Outstanding loan for funerals or											

	% Age 15+	Female (% age 15+)	Male (% age 15+)	Older adults (% age 25+)	Young adults (% ages 15-24)	Income, bottom 40% (% age 15+)	Income, top 60% (% age 15+)	Primary education or less (% age 15+)	Secondary education or more (% age 15+)	Rural (% age 15+)	Urban (% age 15+)
weddings	5.45	3.89	6.94	4.78	6.84	5.07	5.70	5.88	4.53	5.99	4.56
Outstanding loan for health or emergencies	17.08	16.68	17.46	18.74	13.66	19.61	15.45	19.41	12.06	18.92	14.05
Outstanding loan for home construction	4.23	2.62	5.76	4.46	3.77	3.36	4.79	4.67	3.28	5.12	2.77
Outstanding loan to pay school fees	2.96	3.26	2.68	3.40	2.05	2.16	3.47	2.49	3.98	2.91	3.04
Outstanding loan to purchase a home	1.75	1.34	2.14	2.32	0.57	1.36	2.00	1.58	2.12	1.33	2.44
Personally paid for health insurance	0.52	0.26	0.77	0.64	0.27	-	0.86	0.27	1.06	0.64	0.33
Purchased agriculture insurance	2.62	3.82	2.01	2.93	1.84	3.27	1.45	2.33	5.22	2.66	2.43
Saved any money in the past year	7.48	6.72	8.20	6.73	9.03	4.61	9.33	5.73	11.25	6.86	8.51
Saved at a financial institution in the past year	1.44	0.67	2.17	0.77	2.82	0.45	2.07	0.98	2.44	1.76	0.91
Saved for emergencies in the past year	4.62	3.55	5.64	3.85	6.22	1.87	6.39	3.10	7.92	3.60	6.32
Saved for future expenses in the past year	5.41	4.09	6.66	4.80	6.65	2.75	7.11	3.96	8.52	4.52	6.86
Saved using a savings club in the past year	3.27	2.82	3.70	3.00	3.84	1.46	4.44	1.78	6.49	2.33	4.82

Appendix J

Selected Indicators from Global Financial Inclusion Database⁴⁴

Region	Account at a formal financial institution (% age 15+)	Account used for business purposes, male (% age 15+)	Account used to receive government payments (% age 15+)	Account used to receive remittances (% age 15+)	Account used to receive wages (% age 15+)	Account used to send remittances (% age 15+)
East Asia & Pacific (developing only)	55	4	6	9	17	7
Europe & Central Asia (developing only)	45	8	11	5	27	3
High income	89	27	42	13	50	18
High income: Non-OECD	74	13	21	10	35	13
High income: OECD	91	28	43	13	51	19
Latin America & Caribbean (developing only)	39	7	10	4	20	3
Low & middle income	41	6	6	6	14	4
Low-income	24	7	2	5	6	3
Lower middle income	28	6	4	4	9	3
Middle East & North Africa (developing only)	18	7	3	3	6	2
Middle income	43	6	6	6	15	5
South Asia	33	6	3	2	7	2
Sub-Saharan Africa (developing only)	24	7	6	9	10	6
Upper middle income	57	5	9	8	21	6
World	50	10	13	7	21	7

⁴⁴ The World Bank, 2011

Region	ATM is main mode of deposit (% with an account, age 15+)	ATM is main mode of withdrawal (% with an account, age 15+)	Bank agent is main mode of deposit (% with an account, age 15+)	Bank agent is main mode of withdrawal (% with an account, age 15+)	Bank teller is main mode of deposit, female (% with an account, age 15+)	Bank teller is main mode of withdrawal, male (% with an account, age 15+)	Branches, commercial banks (per 100,000 adults)
East Asia & Pacific (developing only)	14	39	3	1	77	55	7
Europe & Central Asia (developing only)	22	67	2	1	29	19	18
High income	26	69	3	1	53	21	24
High income: nonOECD	38	78	4	1	50	16	22
High income: OECD	25	68	3	1	53	22	26
Latin America & Caribbean (developing only)	19	56	1	1	58	29	
Low & middle income	11	37	3	2	72	53	8
Low-income	4	23	9	5	80	62	
Lower middle income	5	31	4	3	78	58	6
Middle East & North Africa (developing only)	6	38	4	1	64	51	11
Middle income	11	39	3	2	72	52	12
South Asia	2	18	5	4	82	70	8
Sub-Saharan Africa (developing only)	7	42	3	2	85	48	3
Upper middle income	18	46	1	1	66	47	17
World	14	43	3	2	69	47	14

Region	Checks used to make payments (% age 15+)	Credit card (% age 15+)	Debit card (% age 15+)	Electronic payments used to make payments (% age 15+)
East Asia & Pacific (developing only)	2	7	35	6
Europe & Central Asia (developing only)	4	16	36	8
High income	33	50	61	55
High income: nonOECD	11	36	47	29
High income: OECD	35	51	62	57
Latin America & Caribbean (developing only)	4	18	29	10
Low & middle income	4	7	23	5
Low-income	5	2	7	2
Lower middle income	5	2	10	2
Middle East & North Africa (developing only)	4	2	9	2
Middle income	4	7	25	5
South Asia	7	2	7	2
Sub-Saharan Africa (developing only)	3	3	15	4
Upper middle income	3	12	39	8
World	9	15	30	14

Region	Mobile phone used to pay bills (% age 15+)	Mobile phone used to receive money (% age 15+)	Mobile phone used to send money (% age 15+)	Retail store is main mode of deposit (% with an account, age 15+)	Retail store is main mode of withdrawal (% with an account, age 15+)
East Asia & Pacific (developing only)	1	1	1	0	0
Europe & Central Asia (developing only)	3	3	3	1	2
High income				1	4
High income: nonOECD				1	1
High income: OECD				1	4
Latin America & Caribbean (developing only)	2	2	1	2	4
Low & middle income	2	3	2	1	2
Low-income	3	9	7	2	1
Lower middle income	2	4	2	2	2
Middle East & North Africa (developing only)	1	2	1	1	1
Middle income	2	2	2	1	2
South Asia	2	2	1	2	2
Sub-Saharan Africa (developing only)	3	15	11	3	3
Upper middle income	2	1	1	0	1
World	2	3	2	1	2

Region	Loan in the past year (% age 15+)	Loan in the past year, income, bottom 40% (% age 15+)	Loan in the past year, income, top 60% (% age 15+)	Saved any money in the past year (% age 15+)	Saved at a financial institution in the past year (% age 15+)
East Asia & Pacific (developing only)	34	37	32	40	28
Europe & Central Asia (developing only)	40	38	41	20	7
High income	31	29	33	58	45
High income: nonOECD	31	30	32	48	34
High income: OECD	31	29	33	59	45
Latin America & Caribbean (developing only)	25	20	29	26	10
Low & middle income	34	36	33	31	17
Low-income	44	44	44	30	11
Lower middle income	37	39	34	28	11
Middle East & North Africa (developing only)	42	44	38	20	5
Middle income	33	35	32	31	18
South Asia	32	37	27	21	11
Sub-Saharan Africa (developing only)	47	44	49	40	14
Upper middle income	30	31	30	34	24
World	34	35	33	36	22

Region	Loan from a financial institution in the past year (% age 15+)	Loan from a private lender in the past year (% age 15+)	Loan from an employer in the past year (% age 15+)	Loan from family or friends in the past year (% age 15+)	Loan through store credit in the past year (% age 15+)
East Asia & Pacific (developing only)	9	2	2	27	4
Europe & Central Asia (developing only)	8	1	3	28	12
High income	14	2	1	12	11
High income: nonOECD	8	5	4	16	12
High income: OECD	14	2	1	12	11
Latin America & Caribbean (developing only)	8	2	3	14	5
Low & middle income	8	4	3	25	7
Low-income	11	7	3	30	8
Lower middle income	7	5	5	27	8
Middle East & North Africa (developing only)	5	5	4	31	11
Middle income	8	3	3	25	6
South Asia	9	6	5	20	8
Sub-Saharan Africa (developing only)	5	5	4	40	8
Upper middle income	8	2	2	23	5
World	9	3	3	23	8

Region	Outstanding loan for funerals or weddings (% age 15+)	Outstanding loan for health or emergencies (% age 15+)	Outstanding loan for home construction (% age 15+)	Outstanding loan to pay school fees (% age 15+)	Outstanding loan to purchase a home (% age 15+)
East Asia & Pacific (developing only)	2	10	5	6	4
Europe & Central Asia (developing only)	1	4	5	2	2
High income					24
High income: nonOECD					15
High income: OECD					25
Latin America & Caribbean (developing only)	2	8	4	5	2
Low & middle income	3	11	5	5	3
Low-income	5	16	6	7	2
Lower middle income	4	15	5	7	2
Middle East & North Africa (developing only)	6	16	8	6	4
Middle income	3	11	5	5	3
South Asia	4	14	4	5	2
Sub-Saharan Africa (developing only)	5	15	4	9	2
Upper middle income	1	7	5	4	4
World	3	11	5	5	7

Region	Saved for emergencies in the past year (% age 15+)	Saved for future expenses in the past year (% age 15+)	Saved using a savings club in the past year (% age 15+)
East Asia & Pacific (developing only)	30	28	4
Europe & Central Asia (developing only)	14	13	1
High income	44	37	5
High income: nonOECD	40	37	5
High income: OECD	44	37	5
Latin America & Caribbean (developing only)	19	13	4
Low & middle income	23	21	5
Low-income	23	20	8
Lower middle income	22	20	7
Middle East & North Africa (developing only)	16	14	4
Middle income	23	21	5
South Asia	17	16	3
Sub-Saharan Africa (developing only)	31	26	19
Upper middle income	25	22	3
World	27	24	5

Appendix K Respondents' Profile

Appendix K(a): Type of Respondents' Institutions

Type of Organization	Number	Percent
Commercial Bank	94	75%
Microfinance Institution	17	14%
Government/ Regulatory Authority	10	8%
Other	4	3%
Total:	125	100%

Break down of "Others":

Electronic Funds Transfer switch

Entrepreneur

*Islamic Bank**

*Islamic Banking**

*Scheduled Commercial Bank and a Development Financial Institution for the socio-economic empowerment of women**

Switch Services

** Although these types were classified as "others" by the respondents, they were merged with Commercial banks for the purpose of this study only*

Appendix K(b): Organizational Designations of Respondents

(This is a list of designations as provided by the respondents. Duplicates have been removed)

<i>Additional Director</i>	<i>Head of Marketing & CASA Business</i>
<i>APC Processor</i>	<i>Head of Regulatory Compliance</i>
<i>Area Incharge Credit/ Sr. Credit Analyst</i>	<i>Head of Regulatory Risk, IT Compliance & Compliance Management</i>
<i>Assistant Director</i>	<i>Head Product Development</i>
<i>Assistant General Manager</i>	<i>Head Risk Management & Compliance</i>
<i>Assistant General Manager & Head of Returns & Reconciliation Division</i>	<i>Head Syndication</i>
<i>Assistant Manager</i>	<i>Joint Director</i>
<i>Assistant Manager Credits</i>	<i>Manager</i>
<i>Assistant Vice Presedent</i>	<i>Manager Admin, Budgeting, Branch Expansion & Expense Settlement</i>
<i>Asst. Manager Country Operations</i>	<i>Manager Compliance</i>
<i>Business Analyst</i>	<i>Manager Credit Processing</i>
<i>Business Manager Branch Planning & Licensing</i>	<i>Manager Finance</i>
<i>Business Manager Wealth Management</i>	<i>Manager HR</i>
<i>Chief Executive Officer (CEO)</i>	<i>Manager Insurance</i>
<i>Chief Dealer</i>	<i>Manager IT Compliance</i>
<i>Chief Financial Officer</i>	<i>Manager Liability Sales</i>
<i>Chief Information Officer</i>	<i>Manager Operations & Credit</i>
<i>Chief Manager</i>	<i>Manager Product Development (Branchless Banking)</i>
<i>Company Secretary</i>	<i>MCAP</i>
<i>Deputy Director</i>	<i>MG 6</i>
<i>Deputy General Manager</i>	<i>In charge ATM Operations</i>
<i>Deputy Head branch operation</i>	<i>Product Manager</i>
<i>Deputy Head of Risk Management Division</i>	<i>Product Manager- Alternate Delivery Channels & Remittances</i>
<i>Divisional Head</i>	<i>Project Manager ATM</i>
<i>Deputy Head Compliance</i>	<i>REGIONAL HEAD COMMERCIAL & RETAIL BANKING</i>
<i>Executive Vice President (EVP)</i>	<i>Senior Chief Manager</i>
<i>EVP / Division Head</i>	<i>Senior Credit Analyst</i>
<i>EVP & Head of Operations</i>	<i>Senior Executive Vice President (SEVP)</i>
<i>EVP, Head Products & Technology</i>	<i>Senior Joint Director</i>
<i>Financial Controller</i>	<i>Senior Manager</i>
<i>Founder, CEO</i>	<i>Senior Manager Remote & Proximity Banking</i>
<i>Group Head (Operations & Technology)</i>	<i>Senior Vice President</i>
<i>Group Head Payment Services</i>	<i>Senior Vice President / Head of Internal Audit</i>
<i>Head - Branchless Banking</i>	<i>Senior Vice President /Head of AML/CDD Division</i>
<i>Head Branch Banking</i>	<i>Senior Vice President & Head Treasury Operations</i>
<i>Head Branchless and e Banking</i>	<i>SWIFT Administrator</i>
<i>Head Compliance Wholesale Banking</i>	<i>Team member</i>
<i>Head Internal Audit</i>	<i>Technology Support Officer</i>
<i>Head of Audit</i>	<i>In Charge APC RTC Department HO Karachi</i>
<i>Head of Business</i>	<i>Unit Head</i>
<i>Head of Business Development</i>	<i>Vice President (VP)</i>
<i>Head of Compliance - Consumer Bank</i>	<i>Vice President - Head of ADC & E-business</i>
<i>Head of Internal Controls, Policy and Regulatory Affairs</i>	
<i>Head of IT</i>	

Appendix K(c): Area of Expertise of Respondents

Area of Expertise	No.	% of Total Respondents (125)
<i>Retail operations</i>	35	28.00%
<i>Payment systems policy</i>	21	16.80%
<i>Payment systems clearing and back office settlement</i>	25	20.00%
<i>Information technology-software</i>	26	20.80%
<i>Information technology - hardware</i>	13	10.40%
<i>Treasury</i>	17	13.60%
<i>Government payments and receipts</i>	17	13.60%
<i>Loans & leasing</i>	23	18.40%
<i>Insurance</i>	6	4.80%
<i>Capital market</i>	11	8.80%
Other*:	56	44.80%

*Breakup of “Other” Category and its distribution (numbers in parenthesis indicate the number of respondents who reported the same area of expertise)

<i>ADCs, Cash Management</i>	<i>Deposit Mobilizing</i>
<i>Alternate Delivery Channels</i>	<i>Finance</i>
<i>Alternate Delivery Channels Solutions</i>	<i>Finance & Accounts</i>
<i>AML/CFT Compliance</i>	<i>Finance and Accounts</i>
<i>Appraisal of Credit Proposal</i>	<i>Financial Institutions</i>
<i>Approving Commercial, SME & Corporate loans</i>	<i>Financial Planning/Budgeting & Accounts</i>
<i>Audit</i>	<i>Financial Reporting, Taxation, MIS & Special Projects</i>
<i>Back Office Operations</i>	<i>Human Resources</i>
<i>Bank Examination / Internal Audit</i>	<i>Internal Audit (2)</i>
<i>Branches Department</i>	<i>Islamic Banking</i>
<i>Branchless and Alternate Delivery Channels</i>	<i>Management</i>
<i>branchless banking</i>	<i>Marketing & Development (2)</i>
<i>Branchless Banking</i>	<i>Marketing & Wealth Management</i>
<i>Budget & Planning - Finance</i>	<i>Networks/Call centre</i>
<i>Business</i>	<i>Operations</i>
<i>Centralized Reporting Point for Regulatory Reporting (SBP), Reconciliation & Settlement (ATM/ ADC, Online transactions)</i>	<i>Overseas Operations</i>
<i>Centralized Credit Operations</i>	<i>Payment system products</i>
<i>Compliance (2)</i>	<i>Priority Banking and Banca Takaful Business</i>
<i>Compliance & Internal Auditing</i>	<i>Processing of Commercial and Corporate loan proposals</i>
<i>Compliance and AML</i>	<i>Product Management & Innovation</i>
<i>Compliance of corporate banking, treasury, Transaction Banking, Corporate Finance, Trade services, Cash Management etc</i>	<i>products & marketing</i>
<i>Compliance, risk management and regulatory insights</i>	<i>regulation</i>
<i>Corporate Governance</i>	<i>Regulatory Compliance</i>
	<i>Regulatory Issues</i>
	<i>Risk Management</i>
	<i>Systems & Business Process Re-Engineering</i>
	<i>Trade Finance (2)</i>

* Two respondents didn't mention any area but checked "Others"

Appendix L

Electronic Payments Products Offering and Channels Used

Payment Product	In Branch				Using ATMs			
	Banks	MFIs	Others	Total	Banks	MFIs	Others	Total
Cash withdrawal	92	17	9	117	90	3	6	99
Cash deposit	91	17	8	116	40	1	2	43
Utility bill payment	90	8	6	104	74	1	6	81
Electronic funds transfer (Interbank)	65	4	7	76	66	1	5	72
Electronic funds transfer (to accounts within your bank)	85	10	8	103	76	1	5	82
Standing orders for credit transfers	84	9	5	98	14	0	1	15
Direct debits	80	11	8	99	24	0	1	25
Cheque deposits	90	17	8	115	21	0	1	22

Payment Product	Internet based				Mobile Phone			
	Banks	MFIs	Others	Total	Banks	MFIs	Others	Total
Cash withdrawal	11	0	3	14	14	7	1	22
Cash deposit	6	0	0	6	8	7	0	15
Utility bill payment	69	0	6	75	47	6	4	57
Electronic funds transfer (Interbank)	57	0	4	61	24	0	2	26
Electronic funds transfer (to accounts within your bank)	68	0	5	73	33	5	0	38
Standing orders for credit transfers	25	0	2	27	8	0	0	8
Direct debits	27	0	3	30	15	1	0	16
Cheque deposits	4	0	0	4	2	0	0	2

Appendix M Card Offering

Appendix M (a): Does your institution offer a card (For example ATM/ Credit/Debit) to customers?

Response	Commercial Bank	Microfinance Institution	Government/ Regulatory Authority	Other	Total
Yes	92	3	4	2	101
No	0	14	5	1	20
Total	92	17	9	3	121

Appendix M(b): What type of Card is issued to a customer?

	Commercial Banks	Microfinance Institutions	Others	Total	Total (%)
A debit card that can be used for purchases only	13	0	1	14	11.2%
An ATM card that can only be used at ATMs for Cash Withdrawal	33	3	0	36	28.8%
A single debit card that can be used for purchases as well as cash withdrawals	74	0	5	79	63.2%
A credit card	39	0	2	41	32.8%

Appendix M(c): Technology used in cards

	Technologies used in Cards						Total
	Stripe Only	Chip Only	Stripe + chip	All three	Others	No Tech	
Commercial Bank	65	15	10	1	1	2	94
Microfinance Institution	3	0	0	0	0	14	17
Government/ Regulatory Authority	1	1	2	0	0	6	10
Other	1	0	1	0	0	2	4
Total	70	16	13	1	1	24	125

Appendix N
Organization's Rating—electronic banking offerings

Type of Institution	How would you rate your organization in terms of offering electronic banking as compared to the rest of the banking industry in Pakistan?					Total
	Best in Industry	Not the best but above average	Average	Below Average	Almost no electronic service	
Commercial Bank	39	17	27	9	1	93
Microfinance Institution	2	2	2	4	6	16
Government/Regulatory Authority	1	2	2	1	1	7
Other	1	2	0	0	0	3
Total	43	23	31	14	8	119

Appendix O

Importance of RTGS System

Appendix O(a): Type of RTGS membership

The type of financial institution that you are employed in	Specify the type of RTGS membership your organization has?				Total
	Direct member	Indirect member	Not an RTGS member	Don't know	
Commercial Bank	64	5	1	22	92
Microfinance Institution	2	1	8	6	17
Government/ Regulatory Authority	6	2	0	1	9
Other	1	0	1	1	3
Total	73	8	10	30	121

Appendix O(b): Importance of RTGS in improving organizational product offering capability

	How important do you think RTGS has been in enabling your organization in offering electronic products to general consumers?				Total
	Not important at all	Somewhat important	Extremely important	No idea	
Respondents from Commercial Bank	4	23	56	9	92
% Within all commercial bank respondents	4.3%	25.0%	60.9%	9.8%	100.0%
Column %	66.7%	79.3%	82.4%	50.0%	76.0%
% of Total Respondents	3.3%	19.0%	46.3%	7.4%	76.0%
Respondents from Microfinance Institution	2	1	7	7	17
% Within all Microfinance respondents	11.8%	5.9%	41.2%	41.2%	100.0%
Column %	33.3%	3.4%	10.3%	38.9%	14.0%
% of Total Respondents	1.7%	.8%	5.8%	5.8%	14.0%
Respondents from Government/ Regulatory Authority	0	3	5	1	9
% Within all Government respondents	.0%	33.3%	55.6%	11.1%	100.0%
Column %	.0%	10.3%	7.4%	5.6%	7.4%
% of Total Respondents	.0%	2.5%	4.1%	.8%	7.4%
Respondents from Others:	0	2	0	1	3
% Within all Other respondents	.0%	66.7%	.0%	33.3%	100.0%
Column %	.0%	6.9%	.0%	5.6%	2.5%
% of Total Respondents	.0%	1.7%	.0%	.8%	2.5%
Total Count	6	29	68	18	121
% Within all Microfinance respondents	5.0%	24.0%	56.2%	14.9%	100.0%
Column %	100.0%	100.0%	100.0%	100.0%	100.0%
% of Total Respondents	5.0%	24.0%	56.2%	14.9%	100.0%

Appendix O (c): Importance of RTGS System by Type of Membership

How important do you think RTGS System has been in enabling your organization in offering electronic products to general consumers?	Specify the type of RTGS membership your organization has?				Total
	Direct member	Indirect member	Not an RTGS member	Don't know	
Not important at all	4	1	1	0	6
Somewhat important	18	3	2	5	28
Extremely important	49	3	5	11	68
No idea	1	1	2	14	18
Total	72	8	10	30	120

Appendix P

Impact of RTGS on Organizational Upgrading

Appendix P(a): Type of RTGS membership * Necessitated upgrading of banking software

Specify the type of RTGS membership your organization has?		Impact of RTGS - Necessitated upgrading of banking software					Total
		No or minimum impact	Some impact	Medium impact	Considerably high impact	Maximum impact	
Direct member	Count	17	13	15	17	2	64
	% within the type of RTGS membership (Row):	26.6%	20.3%	23.4%	26.6%	3.1%	100.0%
	% within Column	73.9%	81.3%	57.7%	73.9%	25.0%	66.7%
	% of Total Direct members	17.7%	13.5%	15.6%	17.7%	2.1%	66.7%
Indirect member	Count	1	1	4	1	0	7
	% within the type of RTGS membership (Row):	14.3%	14.3%	57.1%	14.3%	.0%	100.0%
	% within Column	4.3%	6.3%	15.4%	4.3%	.0%	7.3%
	% of Total indirect members	1.0%	1.0%	4.2%	1.0%	.0%	7.3%
Not an RTGS member	Count	3	0	2	0	3	8
	% within the type of RTGS membership (Row):	37.5%	.0%	25.0%	.0%	37.5%	100.0%
	% within Column	13.0%	.0%	7.7%	.0%	37.5%	8.3%
	% of Total Non-RTGS members	3.1%	.0%	2.1%	.0%	3.1%	8.3%
Don't know	Count	2	2	5	5	3	17
	% within the type of RTGS membership (Row):	11.8%	11.8%	29.4%	29.4%	17.6%	100.0%
	% within Column	8.7%	12.5%	19.2%	21.7%	37.5%	17.7%
	% of Total Don't knows	2.1%	2.1%	5.2%	5.2%	3.1%	17.7%
Total	Count	23	16	26	23	8	96
	% within the type of RTGS membership (Row):	24.0%	16.7%	27.1%	24.0%	8.3%	100.0%
	% within Column	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	24.0%	16.7%	27.1%	24.0%	8.3%	100.0%

Appendix P(b): Type of RTGS membership * Necessitated upgrading of computer hardware Infrastructure (PCs/Servers)

Specify the type of RTGS membership your organization has?		Impact of RTGS - Necessitated upgrading of computer hardware Infrastructure (PCs/Servers)					Total
		No or minimum impact	Some impact	Medium impact	Considerably high impact	Maximum impact	
Direct member	Count	23	6	20	14	2	65
	% within the type of RTGS membership (Row):	35.4%	9.2%	30.8%	21.5%	3.1%	100.0%
	% within Column	82.1%	54.5%	62.5%	70.0%	28.6%	66.3%
	% of Total Direct members	23.5%	6.1%	20.4%	14.3%	2.0%	66.3%
Indirect member	Count	1	1	4	1	0	7
	% within the type of RTGS membership (Row):	14.3%	14.3%	57.1%	14.3%	.0%	100.0%
	% within Column	3.6%	9.1%	12.5%	5.0%	.0%	7.1%
	% of Total indirect members	1.0%	1.0%	4.1%	1.0%	.0%	7.1%
Not an RTGS member	Count	2	3	1	0	3	9
	% within the type of RTGS membership (Row):	22.2%	33.3%	11.1%	.0%	33.3%	100.0%
	% within Column	7.1%	27.3%	3.1%	.0%	42.9%	9.2%
	% of Total Non-RTGS members	2.0%	3.1%	1.0%	.0%	3.1%	9.2%
Don't know	Count	2	1	7	5	2	17
	% within the type of RTGS membership (Row):	11.8%	5.9%	41.2%	29.4%	11.8%	100.0%
	% within Column	7.1%	9.1%	21.9%	25.0%	28.6%	17.3%
	% of Total Don't knows	2.0%	1.0%	7.1%	5.1%	2.0%	17.3%
Total	Count	28	11	32	20	7	98
	% within the type of RTGS membership (Row):	28.6%	11.2%	32.7%	20.4%	7.1%	100.0%
	% within Column	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	28.6%	11.2%	32.7%	20.4%	7.1%	100.0%

Appendix P(c): Type of RTGS membership * Necessitated upgrading of telecommunication connectivity

Specify the type of RTGS membership your organization has?		Impact of RTGS - Necessitated upgrading of telecommunication connectivity					Total
		No or minimum impact	Some impact	Medium impact	Considerably high impact	Maximum impact	
Direct member	Count	16	11	12	20	6	65
	% within the type of RTGS membership (Row):	24.6%	16.9%	18.5%	30.8%	9.2%	100.0%
	% within Column	69.6%	84.6%	54.5%	66.7%	60.0%	66.3%
	% of Total Direct members	16.3%	11.2%	12.2%	20.4%	6.1%	66.3%
Indirect member	Count	2	2	4	0	0	8
	% within the type of RTGS membership (Row):	25.0%	25.0%	50.0%	.0%	.0%	100.0%
	% within Column	8.7%	15.4%	18.2%	.0%	.0%	8.2%
	% of Total indirect members	2.0%	2.0%	4.1%	.0%	.0%	8.2%
Not an RTGS member	Count	2	0	2	3	1	8
	% within the type of RTGS membership (Row):	25.0%	.0%	25.0%	37.5%	12.5%	100.0%
	% within Column	8.7%	.0%	9.1%	10.0%	10.0%	8.2%
	% of Total Non-RTGS members	2.0%	.0%	2.0%	3.1%	1.0%	8.2%
Don't know	Count	3	0	4	7	3	17
	% within the type of RTGS membership (Row):	17.6%	.0%	23.5%	41.2%	17.6%	100.0%
	% within Column	13.0%	.0%	18.2%	23.3%	30.0%	17.3%
	% of Total Don't knows	3.1%	.0%	4.1%	7.1%	3.1%	17.3%
Total	Count	23	13	22	30	10	98
	% within the type of RTGS membership (Row):	23.5%	13.3%	22.4%	30.6%	10.2%	100.0%
	% within Column	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	23.5%	13.3%	22.4%	30.6%	10.2%	100.0%

Appendix P(d): Type of RTGS membership * Necessitated more training of existing employees

Specify the type of RTGS membership your organization has?		Impact of RTGS - Necessitated more trainings of existing employees					Total
		No or minimum impact	Some impact	Medium impact	Considerably high impact	Maximum impact	
Direct member	Count	5	15	25	13	7	65
	% within the type of RTGS membership (Row):	7.7%	23.1%	38.5%	20.0%	10.8%	100.0%
	% within Column	62.5%	71.4%	69.4%	52.0%	87.5%	66.3%
	% of Total Direct members	5.1%	15.3%	25.5%	13.3%	7.1%	66.3%
Indirect member	Count	1	1	3	2	0	7
	% within the type of RTGS membership (Row):	14.3%	14.3%	42.9%	28.6%	.0%	100.0%
	% within Column	12.5%	4.8%	8.3%	8.0%	.0%	7.1%
	% of Total indirect members	1.0%	1.0%	3.1%	2.0%	.0%	7.1%
Not an RTGS member	Count	2	1	1	4	1	9
	% within the type of RTGS membership (Row):	22.2%	11.1%	11.1%	44.4%	11.1%	100.0%
	% within Column	25.0%	4.8%	2.8%	16.0%	12.5%	9.2%
	% of Total Non-RTGS members	2.0%	1.0%	1.0%	4.1%	1.0%	9.2%
Dont know	Count	0	4	7	6	0	17
	% within the type of RTGS membership (Row):	.0%	23.5%	41.2%	35.3%	.0%	100.0%
	% within Column	.0%	19.0%	19.4%	24.0%	.0%	17.3%
	% of Total Don't knows	.0%	4.1%	7.1%	6.1%	.0%	17.3%
Total	Count	8	21	36	25	8	98
	% within the type of RTGS membership (Row):	8.2%	21.4%	36.7%	25.5%	8.2%	100.0%
	% within Column	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	8.2%	21.4%	36.7%	25.5%	8.2%	100.0%

Appendix P(e): Type of RTGS membership * Necessitated hiring of new employees

Specify the type of RTGS membership your organization has?		Impact of RTGS - Necessitated hiring of new employees					Total
		No or minimum impact	Some impact	Medium impact	Considerably high impact	Maximum impact	
Direct member	Count	28	14	11	10	2	65
	% within the type of RTGS membership (Row):	43.1%	21.5%	16.9%	15.4%	3.1%	100.0%
	% within Column	80.0%	58.3%	47.8%	76.9%	100.0%	67.0%
	% of Total Direct members	28.9%	14.4%	11.3%	10.3%	2.1%	67.0%
Indirect member	Count	2	0	4	1	0	7
	% within the type of RTGS membership (Row):	28.6%	.0%	57.1%	14.3%	.0%	100.0%
	% within Column	5.7%	.0%	17.4%	7.7%	.0%	7.2%
	% of Total indirect members	2.1%	.0%	4.1%	1.0%	.0%	7.2%
Not an RTGS member	Count	3	3	1	1	0	8
	% within the type of RTGS membership (Row):	37.5%	37.5%	12.5%	12.5%	.0%	100.0%
	% within Column	8.6%	12.5%	4.3%	7.7%	.0%	8.2%
	% of Total Non-RTGS members	3.1%	3.1%	1.0%	1.0%	.0%	8.2%
Dont know	Count	2	7	7	1	0	17
	% within the type of RTGS membership (Row):	11.8%	41.2%	41.2%	5.9%	.0%	100.0%
	% within Column	5.7%	29.2%	30.4%	7.7%	.0%	17.5%
	% of Total Don't knows	2.1%	7.2%	7.2%	1.0%	.0%	17.5%
Total	Count	35	24	23	13	2	97
	% within the type of RTGS membership (Row):	36.1%	24.7%	23.7%	13.4%	2.1%	100.0%
	% within Column	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	36.1%	24.7%	23.7%	13.4%	2.1%	100.0%

Appendix P(f): Type of RTGS membership Necessitated increased awareness among management and staff about payment systems

Specify the type of RTGS membership your organization has?		Impact of RTGS - Necessitated increased awareness among management and staff about payment systems					Total
		No or minimum impact	Some impact	Medium impact	Considerably high impact	Maximum impact	
Direct member	Count	8	16	20	15	6	65
	% within the type of RTGS membership (Row):	12.3%	24.6%	30.8%	23.1%	9.2%	100.0%
	% within Column	72.7%	69.6%	60.6%	68.2%	66.7%	66.3%
	% of Total Direct members	8.2%	16.3%	20.4%	15.3%	6.1%	66.3%
Indirect member	Count	1	3	2	1	0	7
	% within the type of RTGS membership (Row):	14.3%	42.9%	28.6%	14.3%	.0%	100.0%
	% within Column	9.1%	13.0%	6.1%	4.5%	.0%	7.1%
	% of Total indirect members	1.0%	3.1%	2.0%	1.0%	.0%	7.1%
Not an RTGS member	Count	1	1	1	3	3	9
	% within the type of RTGS membership (Row):	11.1%	11.1%	11.1%	33.3%	33.3%	100.0%
	% within Column	9.1%	4.3%	3.0%	13.6%	33.3%	9.2%
	% of Total Non-RTGS members	1.0%	1.0%	1.0%	3.1%	3.1%	9.2%
Don't know	Count	1	3	10	3	0	17
	% within the type of RTGS membership (Row):	5.9%	17.6%	58.8%	17.6%	.0%	100.0%
	% within Column	9.1%	13.0%	30.3%	13.6%	.0%	17.3%
	% of Total Don't knows	1.0%	3.1%	10.2%	3.1%	.0%	17.3%
Total	Count	11	23	33	22	9	98
	% within the type of RTGS membership (Row):	11.2%	23.5%	33.7%	22.4%	9.2%	100.0%
	% within Column	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	11.2%	23.5%	33.7%	22.4%	9.2%	100.0%

Appendix Q

Impact of RTGS on organizational ability to offer electronic products

Appendix Q(a): Type of RTGS membership * Impact of RTGS on providing online electronic funds transfer services to customers

Specify the type of RTGS membership your organization has?		Impact of RTGS - Providing online electronic funds transfer services to customers					Total
		Not much	Inadequate	Somewhat	Considerable	Maximum	
Direct member	Count	8	5	13	30	8	64
	% within the type of RTGS membership (Row):	12.5%	7.8%	20.3%	46.9%	12.5%	100.0%
	% within Column	66.7%	100.0%	65.0%	69.8%	50.0%	66.7%
	% of Total Direct members	8.3%	5.2%	13.5%	31.3%	8.3%	66.7%
Indirect member	Count	1	0	2	3	0	6
	% within the type of RTGS membership (Row):	16.7%	.0%	33.3%	50.0%	.0%	100.0%
	% within Column	8.3%	.0%	10.0%	7.0%	.0%	6.3%
	% of Total indirect members	1.0%	.0%	2.1%	3.1%	.0%	6.3%
Not an RTGS member	Count	1	0	1	2	5	9
	% within the type of RTGS membership (Row):	11.1%	.0%	11.1%	22.2%	55.6%	100.0%
	% within Column	8.3%	.0%	5.0%	4.7%	31.3%	9.4%
	% of Total Non-RTGS members	1.0%	.0%	1.0%	2.1%	5.2%	9.4%
Don't know	Count	2	0	4	8	3	17
	% within the type of RTGS membership (Row):	11.8%	.0%	23.5%	47.1%	17.6%	100.0%
	% within Column	16.7%	.0%	20.0%	18.6%	18.8%	17.7%
	% of Total Don't knows	2.1%	.0%	4.2%	8.3%	3.1%	17.7%
Total	Count	12	5	20	43	16	96
	% within the type of RTGS membership (Row):	12.5%	5.2%	20.8%	44.8%	16.7%	100.0%
	% within Column	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	12.5%	5.2%	20.8%	44.8%	16.7%	100.0%

Appendix Q(b): Type of RTGS membership * Impact of RTGS in providing online bill payment facilities to customers

Specify the type of RTGS membership your organization has?		Impact of RTGS - Providing online bill payment facilities to customers					Total
		Not much	Inadequate	Somewhat	Considerable	Maximum	
Direct member	Count	29	3	12	11	7	62
	% within the type of RTGS membership (Row):	46.8%	4.8%	19.4%	17.7%	11.3%	100.0%
	% within Column	85.3%	37.5%	66.7%	55.0%	53.8%	66.7%
	% of Total Direct members	31.2%	3.2%	12.9%	11.8%	7.5%	66.7%
Indirect member	Count	1	2	1	2	0	6
	% within the type of RTGS membership (Row):	16.7%	33.3%	16.7%	33.3%	.0%	100.0%
	% within Column	2.9%	25.0%	5.6%	10.0%	.0%	6.5%
	% of Total indirect members	1.1%	2.2%	1.1%	2.2%	.0%	6.5%
Not an RTGS member	Count	2	1	1	2	2	8
	% within the type of RTGS membership (Row):	25.0%	12.5%	12.5%	25.0%	25.0%	100.0%
	% within Column	5.9%	12.5%	5.6%	10.0%	15.4%	8.6%
	% of Total Non-RTGS members	2.2%	1.1%	1.1%	2.2%	2.2%	8.6%
Dont know	Count	2	2	4	5	4	17
	% within the type of RTGS membership (Row):	11.8%	11.8%	23.5%	29.4%	23.5%	100.0%
	% within Column	5.9%	25.0%	22.2%	25.0%	30.8%	18.3%
	% of Total Don't knows	2.2%	2.2%	4.3%	5.4%	4.3%	18.3%
Total	Count	34	8	18	20	13	93
	% within the type of RTGS membership (Row):	36.6%	8.6%	19.4%	21.5%	14.0%	100.0%
	% within Column	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	36.6%	8.6%	19.4%	21.5%	14.0%	100.0%

Appendix Q(c): Type of RTGS membership * Enabling customers to make bulk payments

Specify the type of RTGS membership your organization has?		Impact of RTGS - Enabling customers to make bulk payments					Total
		Not much	Inadequate	Somewhat	Considerable	Maximum	
Direct member	Count	16	8	11	22	6	63
	% within the type of RTGS membership (Row):	25.4%	12.7%	17.5%	34.9%	9.5%	100.0%
	% within Column	76.2%	61.5%	50.0%	84.6%	50.0%	67.0%
	% of Total Direct members	17.0%	8.5%	11.7%	23.4%	6.4%	67.0%
Indirect member	Count	1	2	2	1	1	7
	% within the type of RTGS membership (Row):	14.3%	28.6%	28.6%	14.3%	14.3%	100.0%
	% within Column	4.8%	15.4%	9.1%	3.8%	8.3%	7.4%
	% of Total indirect members	1.1%	2.1%	2.1%	1.1%	1.1%	7.4%
Not an RTGS member	Count	2	1	2	0	3	8
	% within the type of RTGS membership (Row):	25.0%	12.5%	25.0%	.0%	37.5%	100.0%
	% within Column	9.5%	7.7%	9.1%	.0%	25.0%	8.5%
	% of Total Non-RTGS members	2.1%	1.1%	2.1%	.0%	3.2%	8.5%
Dont know	Count	2	2	7	3	2	16
	% within the type of RTGS membership (Row):	12.5%	12.5%	43.8%	18.8%	12.5%	100.0%
	% within Column	9.5%	15.4%	31.8%	11.5%	16.7%	17.0%
	% of Total Don't knows	2.1%	2.1%	7.4%	3.2%	2.1%	17.0%
Total	Count	21	13	22	26	12	94
	% within the type of RTGS membership (Row):	22.3%	13.8%	23.4%	27.7%	12.8%	100.0%
	% within Column	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	22.3%	13.8%	23.4%	27.7%	12.8%	100.0%

Appendix Q(d): Type of RTGS membership * ability to improve foreign remittances

Specify the type of RTGS membership your organization has?		Impact of RTGS - Improving foreign remittances					Total
		Not much	Inadequate	Somewhat	Considerable	Maximum	
Direct member	Count	13	4	16	18	9	60
	% within the type of RTGS membership (Row):	21.7%	6.7%	26.7%	30.0%	15.0%	100.0%
	% within Column	65.0%	44.4%	64.0%	72.0%	69.2%	65.2%
	% of Total Direct members	14.1%	4.3%	17.4%	19.6%	9.8%	65.2%
Indirect member	Count	1	1	2	2	0	6
	% within the type of RTGS membership (Row):	16.7%	16.7%	33.3%	33.3%	.0%	100.0%
	% within Column	5.0%	11.1%	8.0%	8.0%	.0%	6.5%
	% of Total indirect members	1.1%	1.1%	2.2%	2.2%	.0%	6.5%
Not an RTGS member	Count	3	2	1	1	2	9
	% within the type of RTGS membership (Row):	33.3%	22.2%	11.1%	11.1%	22.2%	100.0%
	% within Column	15.0%	22.2%	4.0%	4.0%	15.4%	9.8%
	% of Total Non-RTGS members	3.3%	2.2%	1.1%	1.1%	2.2%	9.8%
Don't know	Count	3	2	6	4	2	17
	% within the type of RTGS membership (Row):	17.6%	11.8%	35.3%	23.5%	11.8%	100.0%
	% within Column	15.0%	22.2%	24.0%	16.0%	15.4%	18.5%
	% of Total Don't knows	3.3%	2.2%	6.5%	4.3%	2.2%	18.5%
Total	Count	20	9	25	25	13	92
	% within the type of RTGS membership (Row):	21.7%	9.8%	27.2%	27.2%	14.1%	100.0%
	% within Column	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	21.7%	9.8%	27.2%	27.2%	14.1%	100.0%

Appendix Q(e): Type of RTGS membership * ability to improve customer relationship

Specify the type of RTGS membership your organization has?		Impact of RTGS - Improving customer relationship					Total
		Not much	Inadequate	Somewhat	Considerable	Maximum	
Direct member	Count	7	3	22	20	8	60
	% within the type of RTGS membership (Row):	11.7%	5.0%	36.7%	33.3%	13.3%	100.0%
	% within Column	63.6%	60.0%	73.3%	64.5%	61.5%	66.7%
	% of Total Direct members	7.8%	3.3%	24.4%	22.2%	8.9%	66.7%
Indirect member	Count	1	0	2	2	0	5
	% within the type of RTGS membership (Row):	20.0%	.0%	40.0%	40.0%	.0%	100.0%
	% within Column	9.1%	.0%	6.7%	6.5%	.0%	5.6%
	% of Total indirect members	1.1%	.0%	2.2%	2.2%	.0%	5.6%
Not an RTGS member	Count	1	1	2	0	4	8
	% within the type of RTGS membership (Row):	12.5%	12.5%	25.0%	.0%	50.0%	100.0%
	% within Column	9.1%	20.0%	6.7%	.0%	30.8%	8.9%
	% of Total Non-RTGS members	1.1%	1.1%	2.2%	.0%	4.4%	8.9%
Don't know	Count	2	1	4	9	1	17
	% within the type of RTGS membership (Row):	11.8%	5.9%	23.5%	52.9%	5.9%	100.0%
	% within Column	18.2%	20.0%	13.3%	29.0%	7.7%	18.9%
	% of Total Don't knows	2.2%	1.1%	4.4%	10.0%	1.1%	18.9%
Total	Count	11	5	30	31	13	90
	% within the type of RTGS membership (Row):	12.2%	5.6%	33.3%	34.4%	14.4%	100.0%
	% within Column	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	12.2%	5.6%	33.3%	34.4%	14.4%	100.0%

Appendix Q(f): Type of RTGS membership * Lowering transaction costs by improving process efficiencies and reducing risk

Specify the type of RTGS membership your organization has?		Impact of RTGS - Lowering transaction costs by improving process efficiencies and reducing risk					Total
		Not much	Inadequate	Somewhat	Considerable	Maximum	
Direct member	Count	10	1	13	29	9	62
	% within the type of RTGS membership (Row):	16.1%	1.6%	21.0%	46.8%	14.5%	100.0%
	% within Column	71.4%	50.0%	52.0%	74.4%	64.3%	66.0%
	% of Total Direct members	10.6%	1.1%	13.8%	30.9%	9.6%	66.0%
Indirect member	Count	1	0	4	1	0	6
	% within the type of RTGS membership (Row):	16.7%	.0%	66.7%	16.7%	.0%	100.0%
	% within Column	7.1%	.0%	16.0%	2.6%	.0%	6.4%
	% of Total indirect members	1.1%	.0%	4.3%	1.1%	.0%	6.4%
Not an RTGS member	Count	1	0	2	2	4	9
	% within the type of RTGS membership (Row):	11.1%	.0%	22.2%	22.2%	44.4%	100.0%
	% within Column	7.1%	.0%	8.0%	5.1%	28.6%	9.6%
	% of Total Non-RTGS members	1.1%	.0%	2.1%	2.1%	4.3%	9.6%
Dont know	Count	2	1	6	7	1	17
	% within the type of RTGS membership (Row):	11.8%	5.9%	35.3%	41.2%	5.9%	100.0%
	% within Column	14.3%	50.0%	24.0%	17.9%	7.1%	18.1%
	% of Total Don't knows	2.1%	1.1%	6.4%	7.4%	1.1%	18.1%
Total	Count	14	2	25	39	14	94
	% within the type of RTGS membership (Row):	14.9%	2.1%	26.6%	41.5%	14.9%	100.0%
	% within Column	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	14.9%	2.1%	26.6%	41.5%	14.9%	100.0%

Appendix Q(g): Type of RTGS membership * Providing financial services in the remote regions of the country

Specify the type of RTGS membership your organization has?		Impact of RTGS - Providing financial services in the remote regions of the country					Total
		Not much	Inadequate	Somewhat	Considerable	Maximum	
Direct member	Count	16	9	11	17	8	61
	% within the type of RTGS membership (Row):	26.2%	14.8%	18.0%	27.9%	13.1%	100.0%
	% within Column	64.0%	81.8%	64.7%	68.0%	57.1%	66.3%
	% of Total Direct members	17.4%	9.8%	12.0%	18.5%	8.7%	66.3%
Indirect member	Count	1	0	3	1	1	6
	% within the type of RTGS membership (Row):	16.7%	.0%	50.0%	16.7%	16.7%	100.0%
	% within Column	4.0%	.0%	17.6%	4.0%	7.1%	6.5%
	% of Total indirect members	1.1%	.0%	3.3%	1.1%	1.1%	6.5%
Not an RTGS member	Count	4	1	0	1	3	9
	% within the type of RTGS membership (Row):	44.4%	11.1%	.0%	11.1%	33.3%	100.0%
	% within Column	16.0%	9.1%	.0%	4.0%	21.4%	9.8%
	% of Total Non-RTGS members	4.3%	1.1%	.0%	1.1%	3.3%	9.8%
Don't know	Count	4	1	3	6	2	16
	% within the type of RTGS membership (Row):	25.0%	6.3%	18.8%	37.5%	12.5%	100.0%
	% within Column	16.0%	9.1%	17.6%	24.0%	14.3%	17.4%
	% of Total Don't knows	4.3%	1.1%	3.3%	6.5%	2.2%	17.4%
Total	Count	25	11	17	25	14	92
	% within the type of RTGS membership (Row):	27.2%	12.0%	18.5%	27.2%	15.2%	100.0%
	% within Column	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	27.2%	12.0%	18.5%	27.2%	15.2%	100.0%

Appendix Q(h): Type of RTGS membership * Providing financial services to poorer population of the country

Specify the type of RTGS membership your organization has?		Impact of RTGS - Providing financial services to poorer population of the country					Total
		Not much	Inadequate	Some what	Considerable	Maximum	
Direct member	Count	18	10	13	14	6	61
	% within the type of RTGS membership (Row):	29.5%	16.4%	21.3%	23.0%	9.8%	100.0%
	% within Column	69.2%	66.7%	65.0%	63.6%	66.7%	66.3%
	% of Total Direct members	19.6%	10.9%	14.1%	15.2%	6.5%	66.3%
Indirect member	Count	1	1	2	2	0	6
	% within the type of RTGS membership (Row):	16.7%	16.7%	33.3%	33.3%	.0%	100.0%
	% within Column	3.8%	6.7%	10.0%	9.1%	.0%	6.5%
	% of Total indirect members	1.1%	1.1%	2.2%	2.2%	.0%	6.5%
Not an RTGS member	Count	3	1	1	1	2	8
	% within the type of RTGS membership (Row):	37.5%	12.5%	12.5%	12.5%	25.0%	100.0%
	% within Column	11.5%	6.7%	5.0%	4.5%	22.2%	8.7%
	% of Total Non-RTGS members	3.3%	1.1%	1.1%	1.1%	2.2%	8.7%
Don't know	Count	4	3	4	5	1	17
	% within the type of RTGS membership (Row):	23.5%	17.6%	23.5%	29.4%	5.9%	100.0%
	% within Column	15.4%	20.0%	20.0%	22.7%	11.1%	18.5%
	% of Total Don't knows	4.3%	3.3%	4.3%	5.4%	1.1%	18.5%
Total	Count	26	15	20	22	9	92
	% within the type of RTGS membership (Row):	28.3%	16.3%	21.7%	23.9%	9.8%	100.0%
	% within Column	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	28.3%	16.3%	21.7%	23.9%	9.8%	100.0%

Appendix R

Perceptions about Customers' Value Proposition (related to electronic banking)

Appendix R(a): Customer Value Proposition - Selections

Customer's Value Proposition	All Respondents		Commercial Banks		Microfinance		Others	
	Selected	%	Selected	%	Selected	%	Selected	%
ATM card for cash withdrawal	114	91.2%	87	92.6%	17	100.0%	10	71.4%
Debit card for purchases	88	70.4%	68	72.3%	11	64.7%	9	64.3%
Credit card with no annual Charges	69	55.2%	56	59.6%	10	58.8%	3	21.4%
Internet banking facility	102	81.6%	81	86.2%	12	70.6%	9	64.3%
Mobile phone banking facility	79	63.2%	62	66.0%	13	76.5%	4	28.6%
Size of your bank's ATM network	84	67.2%	65	69.1%	11	64.7%	8	57.1%
Interoperability with the ATM networks of other banks	84	67.2%	65	69.1%	13	76.5%	6	42.9%
Size of the merchant network for purchases using debit or credit cards	49	39.2%	40	42.6%	7	41.2%	2	14.3%
Online bill payment/ funds transfer facility	93	74.4%	74	78.7%	12	70.6%	7	50.0%
Other*:	10	8.0%	8	8.5%	2	11.8%	0	0.0%

*Other (breakup):	Type of Institution
<i>Access to funds transfer and ATM in remote areas or even relatively big towns and even in cities in certain areas like interior parts of all the four provinces</i>	<i>Bank</i>
<i>Safety & Security</i>	<i>Bank</i>
<i>E-statement</i>	<i>Bank</i>
<i>Phone Banking</i>	<i>Bank</i>
<i>Inter Bank Fund Transfer</i>	<i>Bank</i>
<i>Pay anyone</i>	<i>Bank</i>
<i>Mobile top up</i>	<i>Bank</i>
<i>Clearing Facility</i>	<i>MFI</i>
<i>Maximum free of charge facility</i>	<i>MFI</i>
<i>All branches are online</i>	<i>Bank</i>

Appendix R(b) Customer Value Propositions – Rankings

Customer's Value Proposition	Ranking (Number of respondents)									
	Rank 1st	Rank 2nd	Rank 3rd	Rank 4th	Rank 5th	Rank 6th	Rank 7th	Rank 8th	Rank 9th	Rank 10th
ATM card for cash withdrawal	61	20	6	6	1	2	1	1	1	
Debit card for purchases	7	13	7	11	13	10	6	2	4	1
Credit card with no annual Charges	2	14	16	4	5	2	10	3	4	
Internet banking facility	8	11	15	22	18	5	6	1	1	
Mobile phone banking facility	3	2	10	13	8	13	6	7	4	
Size of your bank's ATM network	16	15	13	9	10	3	3	1		
Interoperability with the ATM networks of other banks	2	17	15	10	7	11	3	7		
Size of the merchant network for purchases using debit or credit cards		1	4	5	3	8	12	5	5	
Online bill payment/ funds transfer facility	2	9	15	10	17	12	5	4	2	
Other	2	1				1		2		

Appendix R (c): SPSS Output for Factor Analysis of re-coded rankings for the proposed customer value propositions

Correlation Matrix for 9 Customer Value Proposition items									
	ATM Card	Debit Card	Credit Card	Internet Banking	Mobile Phone Banking	Size of ATM network	Interoperability of ATM	Size of POS network	Online Bill Payment
ATM Card	1.000	.231	.320	.324	.300	.248	.323	.078	.411
Debit Card	.231	1.000	.272	.317	.211	.059	.205	.380	.142
Credit Card	.320	.272	1.000	.183	.135	.236	-.019	.164	.019
Internet Banking	.324	.317	.183	1.000	.225	.125	.121	.214	.397
Mobile Phone Banking	.300	.211	.135	.225	1.000	-.086	.133	.295	.172
Size of ATM network	.248	.059	.236	.125	-.086	1.000	.390	.260	.198
Interoperability of ATM	.323	.205	-.019	.121	.133	.390	1.000	.337	.130
Size of POS network	.078	.380	.164	.214	.295	.260	.337	1.000	.244
Online Bill Payment	.411	.142	.019	.397	.172	.198	.130	.244	1.000

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.591
Bartlett's Test of Sphericity	Approx. Chi-Square	205.908
	df	36
	Sig.	.000

Anti-image Correlation Matrix									
	ATM Card	Debit Card	Credit Card	Internet Banking	Mobile Phone Banking	Size of ATM network	Interoperability of ATM	Size of POS network	Online Bill Payment
ATM Card	.571 ^a	-.087	-.321	-.089	-.256	-.084	-.319	.298	-.373
Debit Card	-.087	.701 ^a	-.190	-.209	.003	.148	-.107	-.289	.042
Credit Card	-.321	-.190	.465 ^a	-.067	-.036	-.254	.289	-.122	.225
Internet Banking	-.089	-.209	-.067	.779 ^a	-.090	-.021	.017	-.014	-.289
Mobile Phone Banking	-.256	.003	-.036	-.090	.609 ^a	.256	-.027	-.283	.012
Size of ATM network	-.084	.148	-.254	-.021	.256	.558 ^a	-.336	-.181	-.117
Interoperability of ATM	-.319	-.107	.289	.017	-.027	-.336	.536 ^a	-.259	.150
Size of POS network	.298	-.289	-.122	-.014	-.283	-.181	-.259	.569 ^a	-.222
Online Bill Payment	-.373	.042	.225	-.289	.012	-.117	.150	-.222	.577 ^a

a. Measures of Sampling Adequacy(MSA)

Communalities	
Items	Extraction
ATM Card	.664
Debit Card	.601
Credit Card	.882
Internet Banking	.537
Mobile Phone Banking	.557
Size of ATM network	.786
Interoperability of ATM	.700
Size of POS network	.715
Online Bill Payment	.711

Extraction Method: Principal Component Analysis.

Component	Total Variance Explained								
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.749	30.546	30.546	2.749	30.546	30.546	1.777	19.745	19.745
2	1.249	13.875	44.420	1.249	13.875	44.420	1.623	18.038	37.783
3	1.095	12.169	56.590	1.095	12.169	56.590	1.543	17.146	54.929
4	1.061	11.785	68.375	1.061	11.785	68.375	1.210	13.446	68.375
5	.860	9.557	77.933						
6	.709	7.877	85.810						
7	.569	6.325	92.135						
8	.404	4.493	96.628						
9	.304	3.372	100.000						

Extraction Method: Principal Component Analysis.

Items	Rotated Component Matrix ^a			
	Component			
	1	2	3	4
ATM Card	.716	.049	.216	.319
Debit Card	.103	.690	.070	.329
Credit Card	.096	.142	.045	.923
Internet Banking	.661	.282	-.024	.138
Mobile Phone Banking	.336	.637	-.194	-.034
Size of ATM network	.143	-.129	.820	.276
Interoperability of ATM	.126	.282	.761	-.161
Size of POS network	.018	.734	.419	-.019
Online Bill Payment	.811	.061	.153	-.162

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Appendix R (d): SPSS Output for Multidimensional Scaling (MDS) analysis of re-coded rankings

Proximities

	ATM Card	Debit Card	Credit Card	Internet Banking	Mobile Phone Banking	Size of ATM network	Interoperability of ATM	Size of POS network	Online Bill Payment
ATM Card	.								
Debit Card	13.077	.							
Credit Card	13.491	10.724	.						
Internet Banking	11.446	9.899	11.533	.					
Mobile Phone Banking	13.528	10.198	11.180	10.488	.				
Size of ATM network	13.038	12.530	11.916	11.958	13.153	.			
Interoperability of ATM	12.570	11.000	13.115	11.533	11.180	10.392	.		
Size of POS network	16.186	9.644	11.045	11.358	8.775	11.747	10.488	.	
Online Bill Payment	11.916	10.909	12.329	9.220	10.344	11.489	11.402	10.296	.

Stress and Fit Measures

Normalized Raw Stress	.01264
Stress-I	.11244 ^a
Stress-II	.26774 ^a
S-Stress	.04590 ^b
Dispersion Accounted For (D.A.F.)	.98736
Tucker's Coefficient of Congruence	.99366

PROXSCAL minimizes Normalized Raw Stress.

a. Optimal scaling factor = 1.013.

b. Optimal scaling factor = .984.

Appendix S

Perceptions about FFI in Pakistan

Appendix S(a): In which category can Pakistan be classified as far as formal financial inclusion rate is concerned?

FFI Rate is:	Frequency	Percent	Valid Percent
Less than 20%	44	35.2	36.7%
20% or more but less than 40%	43	34.4	35.8%
40% or more but less than 60%	18	14.4	15.0%
60% or more but less than 80%	9	7.2	7.5%
80% or more	2	1.6	1.7%
No Idea	4	3.2	3.3%
Total	120	96.0	100.0%
System	5	4.0	
	125	100.0	

Appendix S(b): Perception about FFI distributed by the type of financial institution

Type of Respondents' Institution	In which category can Pakistan be classified as far as formal financial inclusion rate is concerned?						Total
	Less than 20%	20% or more but less than 40%	40% or more but less than 60%	60% or more but less than 80%	80% or more	No Idea	
Commercial Bank	31	32	15	7	2	3	90
Microfinance Institution	11	3	0	2	0	1	17
Government/ Regulatory Authority	1	5	3	0	0	0	9
Other	1	3	0	0	0	0	4
Total	44	43	18	9	2	4	120

Appendix T

Perceptions about possible reasons for low FI

Appendix T(a): Respondents selection of reasons (Question 16)

Reasons	All Respondents		Commercial Banks		Microfinance		Others ⁴⁵	
	Selected	%	Selected	%	Selected	%	Selected	%
Not much use of a bank account for ordinary citizens especially those with low-income	87	69.6%	70	74.5%	9	52.9%	8	57.1%
High cost of banking	37	29.6%	24	25.5%	7	41.2%	6	42.9%
Complex (Know Your Customer) KYC requirements	46	36.8%	34	36.2%	5	29.4%	7	50.0%
Banks/financial institutions are not interested in offering their services to low-income person	65	52.0%	41	43.6%	13	76.5%	11	78.6%
Low education levels in remote regions make them unviable for offering financial services	96	76.8%	76	80.9%	9	52.9%	11	78.6%
Lack of good technology and payments infrastructure in the country	39	31.2%	29	30.9%	4	23.5%	6	42.9%
Others*:	19	15.2%	17	18.1%	2	11.8%	0	0.0%

*Others (Comments)	Type of Institution
<i>Social Custom & Religious beliefs</i>	Bank
<i>Income level is very low</i>	Bank
<i>Low-income customers are 'scared' of using a bank due to lack of knowledge</i>	Bank
<i>Due to interest based banking majority also considers it unlawful as per Shariah Laws and switching to Islamic Banking offering non-interst based option now</i>	Bank
<i>KYC has only minor impact but not as much</i>	Bank
<i>tax evasion</i>	Bank
<i>High cost of operations in remote areas</i>	Bank
<i>19% have voluntarily excluded themselves</i>	Bank
<i>Low trust in M/E-commerce</i>	Bank
<i>To avoid tax net</i>	Bank
<i>Black Money</i>	Bank
<i>Banks are not easily approachable by ordinary person</i>	Bank
<i>Benefits of banking account is not known</i>	Bank
<i>Lack of education level in individuals</i>	MFI

⁴⁵ Includes respondents from government and other institutions

*Others (Comments)	Type of Institution
<i>Financial literacy</i>	MFI
<i>Due to lack of education, people dont go in banks</i>	Bank
<i>people save money in their hands</i>	Bank
<i>Fear of being exposed to tax net</i>	Bank
<i>Banking in Rural Areas with Microfinancing Facilities</i>	Bank

Appendix T(b): Cross tabulation between FI rate awareness and factors

Reasons	In which category can Pakistan be classified as far as formal financial inclusion rate is concerned?					
	< 20%	20%-40%	40%-60%	60%-80%	> 80%	No Idea
Not much use of a bank account for ordinary citizens especially those with low-income	30	29	14	9	1	3
High cost of banking	17	12	4	3	0	0
Complex (Know Your Customer) KYC requirements	17	16	7	3	0	2
Banks/financial institutions are not interested in offering their services to low-income person	24	23	11	5	1	1
Low education levels in remote regions make them unviable for offering financial services	32	33	17	7	2	3
Lack of good technology and payments infrastructure in the country	13	15	5	2	0	3
Others:	10	8	1	0	0	0

Appendix T(c): Ranking of reasons for low formal financial inclusion

Reasons	Ranking ⁴⁶							Total
	1	2	3	4	5	6	7	
Not much use of a bank account for ordinary citizens especially those with low-income	35	24	8	5	2	2		76
High cost of banking	6	8	8	6	1	1		30
Complex (Know Your Customer) KYC requirements	5	7	10	8	8			38
Banks/financial institutions are not interested in offering their services to low-income person	14	16	18	7	1	2		58
Low education levels in remote regions make them unviable for offering financial services	36	28	12	6	0	1		83
Lack of good technology and payments infrastructure in the country	4	12	12	6	3			37
Others	5	3	3	2		1	1	15

Appendix T(d): Reasons for low FFI rate – re-coded rankings

Reason for Low FFI Rate	Very Important	Not so important	Not at all important
Not much use of a bank account for ordinary citizens especially those with low-income	67	9	44
High cost of banking	22	8	90
Complex (Know Your Customer) KYC requirements	22	16	82
Banks/financial institutions are not interested in offering their services to low-income person	48	10	62
Low education levels in remote regions make them unviable for offering financial services	75	7	38
Lack of good technology and payments infrastructure in the country	27	9	84

⁴⁶ 1 indicates most important, 2 less important and so on

Appendix T(e): Re-coded rankings for low FFI reasons distributed by FI rate awareness

Reason	In your opinion, in which category can Pakistan be classified as far as formal financial inclusion rate is concerned?					
	< 20%			20% - 40%		
	Very Important	Not so important	Not at all important	Very Important	Not so important	Not at all important
<i>Not much use of a bank account for ordinary citizens especially those with low-income</i>	25	4	15	21	2	20
<i>High cost of banking</i>	13	3	28	5	3	35
<i>Complex (Know Your Customer) KYC requirements</i>	8	8	28	6	4	33
<i>Banks/financial institutions are not interested in offering their services to low-income person</i>	20	3	21	13	4	26
<i>Low education levels in remote regions make them unviable for offering financial services</i>	27	3	14	25	2	16
<i>Lack of good technology and payments infrastructure in the country</i>	11	2	31	10	3	30

Reason	In your opinion, in which category can Pakistan be classified as far as formal financial inclusion rate is concerned?					
	40% - 60%			60% - 80%		
	Very Important	Not so important	Not at all important	Very Important	Not so important	Not at all important
<i>Not much use of a bank account for ordinary citizens especially those with low-income</i>	9	2	7	8	1	0
<i>High cost of banking</i>	3	1	14	1	1	7
<i>Complex (Know Your Customer) KYC requirements</i>	5	2	11	1	2	6
<i>Banks/financial institutions are not interested in offering their services to low-income person</i>	9	2	7	4	1	4
<i>Low education levels in remote regions make them unviable for offering financial services</i>	11	2	5	7	0	2
<i>Lack of good technology and payments infrastructure in the country</i>	2	3	13	1	1	7

Reason	In your opinion, in which category can Pakistan be classified as far as formal financial inclusion rate is concerned?					
	> 80%			No Idea		
	Very Important	Not so important	Not at all important	Very Important	Not so important	Not at all important
<i>Not much use of a bank account for ordinary citizens especially those with low-income</i>	1	0	1	3	0	1
<i>High cost of banking</i>	0	0	2	0	0	4
<i>Complex (Know Your Customer) KYC requirements</i>	0	0	2	2	0	2
<i>Banks/financial institutions are not interested in offering their services to low-income person</i>	1	0	1	1	0	3
<i>Low education levels in remote regions make them unviable for offering financial services</i>	2	0	0	3	0	1
<i>Lack of good technology and payments infrastructure in the country</i>	0	0	2	3	0	1

Appendix T(f): SPSS output for the Factor Analysis for reasons for low FFI

	Not much use of a bank account for ordinary citizens especially those with low-income	High cost of banking	Complex KYC	Banks Not interested in Offering to Low-income People	Low Education	Lack of Technology and Payment Systems
Not much use of a bank account for ordinary citizens especially those with low-income	1.000	-.060	.157	.025	.445	.004
High cost of banking	-.060	1.000	.130	.245	.031	.019
Complex KYC	.157	.130	1.000	.069	.084	.091
Banks not interested in Offering to Low-income People	.025	.245	.069	1.000	.046	.153
Low Education	.445	.031	.084	.046	1.000	.031
Lack of Technology and Payment Systems	.004	.019	.091	.153	.031	1.000

Correlation matrix for factors in low FFI

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.509
Bartlett's Test of Sphericity	Approx. Chi-Square	44.271
	df	15
	Sig.	.000

KMO and Bartlett's Test for factors in low FFI

Items	Extraction
Not much use of a bank account for ordinary citizens especially those with low-income	.726
High cost of banking	.482
Complex KYC	.268
Banks Not interested in Offering to Low-income People	.529
Low Education	.660
Lack of Technology and Payment Systems	.193

Communalities of the factors in low FFI

	Not much use of a bank account for ordinary citizens especially those with low-income	High cost of banking	Complex KYC	Banks Not interested in Offering to Low-income People	Low Education	Lack of Technology and Payment Systems
Not much use of a bank account for ordinary citizens especially those with low-income	.498	.105	-.147	-.025	-.442	.026
High cost of banking	.105	.475	-.131	-.241	-.057	.032
Complex KYC	-.147	-.131	.570	-.019	-.004	-.085
Banks Not interested in Offering to Low-income People	-.025	-.241	-.019	.526	-.019	-.150
Low Education	-.442	-.057	-.004	-.019	.512	-.028
Lack of Technology and Payment Systems	.026	.032	-.085	-.150	-.028	.506

Anti Image Correlation Matrix for reasons of low FFI

Appendix U

Do you think every person in Pakistan should have access to a bank account?

Appendix U(a): Do you think every person in Pakistan, regardless of their income levels or where they live should have access to a bank account?

	Frequency	Percent
Yes	104	83%
No	17	14%
No Response	4	3%
Total	125	100.0

Appendix U (b): Opinion about the universal right of access to a bank account cross tabulated with the level of respondents' awareness about financial inclusion in the country

In your opinion, in which category can Pakistan be classified as far as formal financial inclusion rate is concerned?	Do you think every person in Pakistan, regardless of their income levels or where they live should have access to a bank account?		Total
	Yes	No	
Less than 20%	38	6	44
20% or more but less than 40%	35	7	42
40% or more but less than 60%	16	2	18
60% or more but less than 80%	7	2	9
80% or more	2	0	2
No Idea	4	0	4
Total	102	17	119

Appendix V

Are banks responsible for low access rates in Pakistan?

Appendix V(a): According to some studies, the number of people in Pakistan having access to a bank account is extremely low. To what extent do you agree with the statement that Commercial Banks are primarily responsible for this low access?

	Frequency	Percent
Strongly disagree	5	4%
Disagree	28	22%
Neutral	35	28%
Agree	32	26%
Strongly agree	20	16%
No Idea	3	2%
No response	2	2%
Total	125	100%

Appendix V(b): The type of financial institution that you are employed in * To what extent do you agree with the statement that Commercial Banks are primarily responsible for this low access?

The type of financial institution that you are employed in	To what extent do you agree with the statement that Commercial Banks are primarily responsible for the low access to a bank account?						Total
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	No Idea	
Commercial Bank	5	26	24	22	12	3	92
Microfinance Institution	0	2	6	6	3	0	17
Government/ Regulatory Authority/ Others	0	0	5	4	5	0	14
Total	5	28	35	32	20	3	123

Appendix V(c): Level of FI Awareness Versus “To what extent do you agree with the statement that Commercial Banks are primarily responsible for this low access?”

Extent of Agreement: Banks have not been able to fully utilize modern information technology	Those who predicted that the FFI rate is:			Total
	Less than 20	Between 20 and 40	Over 40 or Don't Know	
Disagree or Strongly Disagree	11	6	11	28
Agree or Strongly Agree	27	28	11	66
Neutral	6	8	11	25
Total	44	42	33	119
Those who explicitly gave an opinion	38	34	22	94

Appendix W

Reasons for banks' inability to serve low-income population

Appendix W(a): Reasons that banks and other financial institutions have been unable to offer financial services to the low-income population of the country - by type of institution

Reasons	All	Banks	Microfinance	Others
High poverty makes it financially infeasible for the banks/financial institutions to offer their services to remote regions	85	66	10	9
The clearing and settlement infrastructure for electronic banking in the country is not developed enough to allow banks to utilize technology efficiently and effectively	31	23	4	4
Banks have been unable to collaborate and offer low-cost services to their customers	66	43	12	11
Banks have not been able to utilize modern technology for low-cost product offerings	52	35	10	7
The rules and regulations of electronic retail payment systems are an obstacle to expanding the electronic payment services	16	14	1	1
Low education levels in remote regions make them unviable for offering financial services	92	73	12	7
Banks/financial institutions are unable to offer low-cost basic banking services because they don't have good IT infrastructure available	33	25	4	4
Banks have been reluctant to invest in information technology for the purpose of providing low-cost financial services to low-income customers	41	29	7	5
Know Your Customer (KYC) requirements are a hindrance for banks	36	28	4	4
Others:	7	5	1	1

Other	Type of Institution
<i>An extremely large network of agents/channels is required to achieve economies of scale due to high fixed costs</i>	Banks
<i>Ans to Q18: not every person but atleast each household elder should have a bank account</i>	Banks
<i>Banks are not interested in providing banking services to the low-income population due to small ticket value</i>	MFI
<i>KYC is only a hindrance for mobile banking and it should be simplified as micor payments have as such no effect such as CFT or AML kinda phenomena. Threshold limits should be used instead of detailed KYC rules for Mobile/Branchless Banking regime</i>	Banks
<i>Main businessess are in urban areas and banks are not motivated to operate loss making branches for the purpose of Financial inclusiononly</i>	Government/ Regulatory
<i>Mainly potentially bankable customers are averse to unIslamic Banking</i>	Banks
<i>Energy/ power crisis is a major impediment in expansion of any industry</i>	Banks

Reasons	In which category can Pakistan be classified as far as formal financial inclusion rate is concerned?					
	< 20%	20%-40%	40%-60%	60%-80%	> 80%	No Idea
High poverty makes it financially infeasible for the banks/financial institutions to offer their services to remote regions	26	33	13	8	2	3
The clearing and settlement infrastructure for electronic banking in the country is not developed enough to allow banks to utilize technology efficiently and effectively	11	11	4	3	1	0
Banks have been unable to collaborate and offer low-cost services to their customers	25	27	8	4	1	0
Banks have not been able to utilize modern technology for low-cost product offerings	22	19	6	2	1	1
The rules and regulations of electronic retail payment systems are an obstacle to expanding the electronic payment services	6	5	3	2	0	0
Low education levels in remote regions make them unviable for offering financial services	34	29	14	8	1	4
Banks/financial institutions are unable to offer low-cost basic banking services because they don't have good IT infrastructure available	13	10	6	3	0	0
Banks have been reluctant to invest in information technology for the purpose of providing low-cost financial services to low-income customers	18	12	7	3	0	1
Know Your Customer (KYC) requirements are a hindrance for banks	13	9	8	5	0	0
Others:	4	2	1	0	0	0

Appendix W(c): Rankings of reasons due to which banks and other financial institutions have been unable to offer financial services to the low-income population of the country

Factor	Ranking (1 most important, 2 less important..)								Total
	1	2	3	4	5	6	7	8	
High poverty makes it financially infeasible for the banks/financial institutions to offer their services to remote regions	42	18	3	2	5	0	3	0	73
The clearing and settlement infrastructure for electronic banking in the country is not developed enough to allow banks to utilize technology efficiently and effectively	4	2	11	6	3	2	0	0	28
Banks have been unable to collaborate and offer low-cost services to their customers	9	10	21	11	3	2	1	0	57
Banks have not been able to utilize modern technology for low-cost product offerings	6	11	6	8	8	3	1	0	43
The rules and regulations of electronic retail payment systems are an obstacle to expanding the electronic payment services	1	3	1	4	0	2	0	2	13
Low education levels in remote regions make them unviable for offering financial services	27	32	11	1	1	5	1	0	78
Banks/financial institutions are unable to offer low-cost basic banking services because they don't have good IT infrastructure available	4	7	6	7	1	1	0	2	28
Banks have been reluctant to invest in information technology for the purpose of providing low-cost financial services to low-income customers	4	5	9	6	6	3	0	2	35
Know Your Customer (KYC) requirements are a hindrance for banks	4	5	5	6	6	2	3	0	31
Others:	2	0	4	0	0	0	0	0	6

Appendix W(d): “Do you think banks are responsible for low FI rates” (Q19) cross tabulated with re-coded ranking of reasons for inability (Q20-21)

Are Commercial Banks Responsible for low access?	Low education levels in remote regions make them unviable for offering financial services			High poverty makes it financially infeasible for the banks/financial institutions to offer their services to remote regions			Banks have been unable to collaborate and offer low-cost services to their customers		
	Not at all important	Not Very Important	Very important	Not at all important	Not Very Important	Very important	Not at all important	Not Very Important	Very important
Yes	13	0	20	30	1	2	23	3	7
No	21	6	25	40	5	7	18	9	25
Neutral	13	4	17	21	5	8	20	6	8
Yes	11%	0%	17%	25%	1%	2%	19%	3%	6%
No	18%	5%	21%	34%	4%	6%	15%	8%	21%
Neutral	11%	3%	14%	18%	4%	7%	17%	5%	7%

Are Commercial Banks Responsible for low access?	Banks have not been able to utilize modern technology for low-cost product offerings			Banks have been reluctant to invest in information technology for the purpose of providing low-cost financial services to low-income customers			Banks/financial institutions are unable to offer low-cost basic banking services because they don't have good IT infrastructure available		
	Not at all important	Not Very Important	Very important	Not at all important	Not Very Important	Very important	Not at all important	Not Very Important	Very important
Yes	29	3	1	8	0	25	31	0	2
No	24	11	17	18	6	28	34	10	8
Neutral	23	6	5	15	3	16	25	2	7
Yes	24%	3%	1%	7%	0%	21%	26%	0%	2%
No	20%	9%	14%	15%	5%	24%	29%	8%	7%
Neutral	19%	5%	4%	13%	3%	13%	21%	2%	6%

Are Commercial Banks Responsible for low access?	The clearing and settlement infrastructure for electronic banking in the country is not developed enough to allow banks to utilize technology efficiently and effectively			Know Your Customer (KYC) requirements are a hindrance for banks			The rules and regulations of electronic retail payment systems are an obstacle to expanding the electronic payment services		
	Not at all important	Not Very Important	Very important	Not at all important	Not Very Important	Very important	Not at all important	Not Very Important	Very important
Yes	28	3	2	27	2	4	32	0	1
No	33	10	9	37	12	3	45	5	2
Neutral	21	6	7	24	3	7	29	3	2
Yes	24%	3%	2%	23%	2%	3%	27%	0%	1%
No	28%	8%	8%	31%	10%	3%	38%	4%	2%
Neutral	18%	5%	6%	20%	3%	6%	24%	3%	2%

Appendix W(e): SPSS Output for Rankings of reasons due to which banks and other financial institutions have been unable to offer financial services to the low-income population of the country

	High_ Poverty	Clearing Settlement	Unable_ Collaborate	Utilize _tech	Low_ Education	ITInfras tructure	Investm ent Tech	KYC	Rules
High_Poverty	1.000	.082	-.002	.048	.404	-.063	.031	.150	.018
ClearingS ettlement	.082	1.000	.036	.169	.037	.160	.058	.158	.311
Unable_ Collaborate	-.002	.036	1.000	.425	-.016	.305	.121	-.002	.210
Utilize_tech	.048	.169	.425	1.000	-.018	.378	.271	.071	.006
LowEducation	.404	.037	-.016	-.018	1.000	-.027	-.002	.116	-.057
ITInfrastructure	-.063	.160	.305	.378	-.027	1.000	.330	.068	.206
InvestmentTech	.031	.058	.121	.271	-.002	.330	1.000	.175	.217
KYC	.150	.158	-.002	.071	.116	.068	.175	1.000	.274
Rules	.018	.311	.210	.006	-.057	.206	.217	.274	1.000

Correlation matrix for the 9 reasons

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.571
Bartlett's Test of Sphericity	Approx. Chi-Square	135.604
	df	36
	Sig.	.000

KMO and Bartlett's test for the 9 reasons

Anti-image Correlation Matrices									
	High_poverty	ClearingSe ttlement	Unable_Coll aborate	Utilize_tech	LowEduca tion	ITInfrastru cture	InvestmentTe ch	KYC	Rules
High_poverty	.524 ^a	-.053	.003	-.068	-.393	.102	-.025	-.092	-.015
ClearingSettlement	-.053	.531 ^a	.128	-.189	-.031	-.081	.092	-.053	-.305
Unable_Collaborate	.003	.128	.550 ^a	-.396	-.026	-.146	.077	.089	-.254
Utilize_tech	-.068	-.189	-.396	.547 ^a	.063	-.235	-.198	-.067	.242
LoeEducation	-.393	-.031	-.026	.063	.505 ^a	-.027	.002	-.088	.102
ITInfrastructure	.102	-.081	-.146	-.235	-.027	.724 ^a	-.233	.021	-.109
InvestmentTech	-.025	.092	.077	-.198	.002	-.233	.651 ^a	-.108	-.172
KYC	-.092	-.053	.089	-.067	-.088	.021	-.108	.636 ^a	-.240
Rules	-.015	-.305	-.254	.242	.102	-.109	-.172	-.240	.487 ^a

a. Measures of Sampling Adequacy(MSA)

Anti Image correlation matrix for the 9 reasons

Communalities		
	Initial	Extraction
High_poverty	1.000	.682
ClearingSettlement	1.000	.393
Unable_Collaborate	1.000	.515
Utilize_tech	1.000	.658
LowEducation	1.000	.679
ITInfrastructure	1.000	.542
InvestmentTech	1.000	.334
KYC	1.000	.480
Rules	1.000	.648

Extraction Method: Principal Component Analysis.

Communalities for the 9 reasons

Rotated Component Matrix^a			
	Component		
	1	2	3
High_poverty	.004	.822	.088
Unable_Collaborate	.763	-.018	.070
Utilize_tech	.813	.094	-.091
LoeEducation	-.020	.824	-.012
ITInfrastructure	.696	-.098	.188
KYC	-.018	.237	.755
Rules	.154	-.142	.818

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 4 iterations.

Rotated Component Matrix for 7 items and 9 reasons final solution

Appendix X

Proposed electronic services that may lead to adoption of formal banking services

Appendix X(a): Raw ratings of the suggested electronic services

Service	Missing	1	2	3	4	5	6	7	Total
Providing online electronic funds transfer services using internet based banking	25	11	8	21	18	11	8	23	125
Providing online electronic funds transfer services using mobile phone based banking	18	6	5	13	15	20	12	36	125
Providing online bill payment facilities	20	7	8	7	21	21	10	31	125
Online transferring of government payments (salaries/pensions/support payments etc) to bank accounts	18	3	10	10	11	15	15	43	125
Expanding ATM network of your bank in all parts of the country	12	3	9	9	15	11	26	40	125
Expanding Point of Sale (POS) network in all parts of the country	18	6	10	12	18	15	15	31	125
Incorporating enhanced security features in Credit/Debit/ATM Cards (eg Chip-based Smart Cards)	27	10	9	19	13	17	8	22	125
Reducing cheque clearing cycle time	25	13	8	16	17	15	11	20	125
Providing a Debit/ATM card with every account to the customers	19	5	5	8	20	15	12	41	125

**1 Indicates minimum impact and 7 indicates maximum impact*

Appendix X(b): Re-coded ratings from the data in Appendix X(a)

Service	Low Impact	Medium Impact	High Impact	Total
Providing online electronic funds transfer services using internet based banking	40	18	42	100
Providing online electronic funds transfer services using mobile phone based banking	24	15	68	107
Providing online bill payment facilities	22	21	62	105
Online transferring of government payments (salaries/pensions/support payments etc) to bank accounts	23	11	73	107
Expanding ATM network of your bank in all parts of the country	21	15	77	113
Expanding Point of Sale (POS) network in all parts of the country	28	18	61	107
Incorporating enhanced security features in Credit/Debit/ATM Cards (eg. Chip-based Smart Cards)	38	13	47	98
Reducing cheque clearing cycle time	37	17	46	100
Providing a Debit/ATM card with every account to the customers	18	20	68	106

Appendix X(c): SPSS Output for rankings for the extent of impact of selected electronic payment services

	EFT_usin g_Interne t	EFT_Usi ng_Mobil e	Online _Bill_P ay	Online_G ovt_Pay ments	Expand _ATM _NW	Expand _POS_ NW	Enhanced _security _Cards	Reduce_ Cheque_ Clear_Ti me	Card_wit h_every_ account
EFT_using_Internet	1.000	.253	.652	.344	.425	.522	.415	.402	.353
EFT_Using_Mobile	.253	1.000	.361	.463	.395	.370	.078	.089	.094
Online_Bill_Pay	.652	.361	1.000	.572	.528	.376	.504	.490	.387
Online_Govt_Payments	.344	.463	.572	1.000	.528	.378	.296	.358	.245
Expand_ATM_NW	.425	.395	.528	.528	1.000	.635	.514	.476	.424
Expand_POS_NW	.522	.370	.376	.378	.635	1.000	.507	.409	.335
Enhanced_security_Cards	.415	.078	.504	.296	.514	.507	1.000	.705	.468
Reduce_Cheque_Clear_Time	.402	.089	.490	.358	.476	.409	.705	1.000	.558
Card_with_every_account	.353	.094	.387	.245	.424	.335	.468	.558	1.000

Correlation table for impact of electronic services

KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.807
Bartlett's Test of Sphericity	Approx. Chi-Square
	df
	Sig.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy for the 9 items

	EFT_usin g_Interne t	EFT_Usi ng_Mobil e	Online _Bill_P ay	Online_G ovt_Pay ments	Expand_ ATM_N W	Expand _POS_ NW	Enhanced_s ecurity_Car ds	Reduce_Ch eque_Clear _Time	Card_with_ every_accou nt
EFT_using_Internet	.759 ^a	.046	-.541	.108	.091	-.393	.070	-.036	-.072
EFT_Using_Mobile	.046	.785 ^a	-.171	-.248	-.126	-.226	.172	.089	.037
Online_Bill_Pay	-.541	-.171	.763 ^a	-.348	-.152	.284	-.233	-.055	-.045
Online_Govt_Payments	.108	-.248	-.348	.831 ^a	-.211	-.058	.112	-.137	.051
Expand_ATM_NW	.091	-.126	-.152	-.211	.872 ^a	-.397	-.113	-.039	-.156
Expand_POS_NW	-.393	-.226	.284	-.058	-.397	.759 ^a	-.268	.013	.004
Enhanced_security_Cards	.070	.172	-.233	.112	-.113	-.268	.804 ^a	-.490	-.038
Reduce_Cheque_Clear_Time	-.036	.089	-.055	-.137	-.039	.013	-.490	.823 ^a	-.317
Card_with_every_account	-.072	.037	-.045	.051	-.156	.004	-.038	-.317	.894 ^a

Anti Image Correlation Matrix for the 9 items

Communalities	
	Extraction
EFT_using_Internet	.921
EFT_Using_Mobile	.764
Online_Bill_Pay	.869
Online_Govt_Payments	.796
Expand_ATM_NW	.753
Expand_POS_NW	.899
Enhanced_security_Cards	.744
Reduce_Cheque_Clear_Time	.788
Card_with_every_account	.621

Extraction Method: Principal Component Analysis.

Communalities for the 9 items (electronic services)

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.388	48.754	48.754	4.388	48.754	48.754	2.437	27.079	27.079
2	1.314	14.603	63.357	1.314	14.603	63.357	1.791	19.902	46.981
3	.744	8.268	71.624	.744	8.268	71.624	1.516	16.841	63.822
4	.709	7.883	79.507	.709	7.883	79.507	1.412	15.686	79.507
5	.578	6.418	85.925						
6	.452	5.018	90.943						
7	.349	3.874	94.816						
8	.272	3.020	97.836						
9	.195	2.164	100.000						

Extraction Method: Principal Component Analysis.

Total variance explained—9 items with 4 factors

Rotated Component Matrix^a				
	Component			
	1	2	3	4
EFT_using_Internet	.190	.096	.881	.317
EFT_Using_Mobile	-.142	.784	.080	.349
Online_Bill_Pay	.388	.468	.707	.007
Online_Govt_Payments	.281	.819	.216	.023
Expand_ATM_NW	.451	.469	.129	.559
Expand_POS_NW	.261	.190	.240	.859
Enhanced_security_Cards	.755	.012	.249	.334
Reduce_Cheque_Clear_Time	.847	.111	.202	.132
Card_with_every_account	.769	.100	.105	.093

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 8 iterations.

Rotated component matrix for PCA - 9 electronic services items

Appendix Y

Proposed Improvements for FI

Appendix Y(a): Number of respondents selecting the proposed items in question 24

Proposed Improvements	All Respondents	Commercial Banks	Microfinance	Others
Banks/ financial institutions improving their IT infrastructure (connectivity and back office software)	76	62	6	8
Banks/ financial institutions introducing Alternative Delivery Channels (ADCs) like internet and mobile phone banking	105	78	14	13
Banks improving their ATM and Point of Sale (POS) networks	106	78	15	13
Banks/financial institutions partnering up with agents to offer agent based banking services	78	54	13	11
Banks and financial institutions adopting international standards for account number formats	36	32	0	4
Banks and financial institutions adopting international standards for payment formats	38	35	0	3
Other*:	5	4	1	0

*Other	Type of Institution
<i>Awareness through media and government efforts to bring people into banking rather than being cash intensive</i>	Banks
<i>Documentation of economy</i>	Banks
<i>Ergonomics of transaction processing and interface with minimal cost</i>	MFI
<i>Relaxing KYC requirements for basic accounts</i>	Banks
<i>Encouragement of use of modern technology by banks</i>	Banks

Appendix Y(b): Respondents' ranking of the proposed items from Question 24

Factor	Ranking							Total
	1	2	3	4	5	6	7	
Banks/ financial institutions improving their IT infrastructure (connectivity and back office software)	36	10	12	4	2	1	0	65
Banks/ financial institutions introducing Alternative Delivery Channels (ADCs) like internet and mobile phone banking	32	33	16	4	2	2	0	89
Banks improving their ATM and Point of Sale (POS) networks	14	32	33	10	2	1	0	92
Banks/financial institutions partnering up with agents to offer agent based banking services	16	16	15	14	6	2	0	69
Banks and financial institutions adopting international standards for account number formats	1	3	3	11	7	6	0	31
Banks and financial institutions adopting international standards for payment formats	1	3	5	9	8	7	1	34
Other	1	1	1	0	1	0	0	4

Appendix Y(c): SPSS Output for Impact of Technological Improvements on Financial Inclusion

	Banks/ financial institutions improving their IT infrastructure (connectivity and back office software)	Introducing Alternative Delivery Channels (ADCs) like internet and mobile phone banking	Banks improving their ATM and Point of Sale (POS) networks	Banks/financial institutions partnering up with agents to offer agent based banking services	Banks and financial institutions adopting international standards for account number	adopting international standards for payment messages
Banks/ financial institutions improving their IT infrastructure (connectivity and back office software)	1.000	.244	.293	-.037	.343	.375
Introducing Alternative Delivery Channels (ADCs) like internet and mobile phone banking	.244	1.000	.507	.335	.086	.079
Banks improving their ATM and Point of Sale (POS) networks	.293	.507	1.000	.237	.083	.172
Banks/financial institutions partnering up with agents to offer agent based banking services	-.037	.335	.237	1.000	.036	-.053
Banks and financial institutions adopting international standards for account number	.343	.086	.083	.036	1.000	.618
adopting international standards for payment messages	.375	.079	.172	-.053	.618	1.000

Correlation table for the 6 items in question 25

KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.620
Bartlett's Test of Sphericity	Approx. Chi-Square
	143.536
	df
	15
	Sig.
	.000

KMO and Bartlett's test for the re-coded rankings in question 25

Communalities		
	Initial	Extraction
Banks/ financial institutions improving their IT infrastructure	1.000	.502

(connectivity and back office software)		
Introducing Alternative Delivery Channels (ADCs) like internet and mobile phone banking	1.000	.701
Banks improving their ATM and Point of Sale (POS) networks	1.000	.630
Banks/financial institutions partnering up with agents to offer agent based banking services	1.000	.449
Banks and financial institutions adopting international standards for account number	1.000	.686
Adopting international standards for payment messages	1.000	.743

Extraction Method: Principal Component Analysis.

Communalities for the re-coded rankings in question 25

	Banks/ financial institutions improving their IT infrastructure (connectivity and back office software)	Introducing Alternative Delivery Channels (ADCs) like internet and mobile phone banking	Banks improving their ATM and Point of Sale (POS) networks	Banks/financial institutions partnering up with agents to offer agent based banking services	Banks and financial institutions adopting international standards for account number	adopting international standards for payment messages
Banks/ financial institutions improving their IT infrastructure (connectivity and back office software)	.749 ^a	-.149	-.184	.140	-.170	-.177
Introducing Alternative Delivery Channels (ADCs) like internet and mobile phone banking	-.149	.619 ^a	-.420	-.267	-.022	.043
Banks improving their ATM and Point of Sale (POS) networks	-.184	-.420	.632 ^a	-.126	.099	-.132
Banks/financial institutions partnering up with agents to offer agent based banking services	.140	-.267	-.126	.576 ^a	-.105	.101
Banks and financial institutions adopting international standards for account number	-.170	-.022	.099	-.105	.578 ^a	-.571
Adopting international standards for	-.177	.043	-.132	.101	-.571	.592 ^a

payment
messages

^a Measures of sampling adequacy (MSA)

Anti Image Correlation matrix for the re-coded rankings of the 6 items in question 25

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.169	36.156	36.156	2.169	36.156	36.156	1.958	32.631	32.631
2	1.542	25.692	61.848	1.542	25.692	61.848	1.753	29.217	61.848
3	.869	14.488	76.336						
4	.578	9.640	85.976						
5	.485	8.084	94.060						
6	.356	5.940	100.000						

Total variance explained for the 6 items—Question 25

Rotated Component Matrix^a		
	Component	
	1	2
Banks/ financial institutions improving their IT infrastructure (connectivity and back office software)	.665	.244
Introducing Alternative Delivery Channels (ADCs) like internet and mobile phone banking	.126	.828
Banks improving their ATM and Point of Sale (POS) networks	.225	.761
Banks/financial institutions partnering up with agents to offer agent based banking services	-.145	.654
Banks and financial institutions adopting international standards for account number	.828	-.027
Adopting international standards for payment messages	.862	-.027

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Rotated component matrix for 6 items and 2 factors – Question 25

Appendix Z

Payment systems projects that will improve formal FI

Appendix Z(a): Number of respondents selecting proposed projects, by type of institution

Proposed Projects	All Respondents	Commercial Banks	Microfinance	Others
Improvement and upgrading of existing RTGS system	63	48	10	5
Developing an electronic clearing house for same day clearing and settlement of electronic payments	77	62	9	6
Development of a secure country-wide telecommunication network dedicated for financial transactions only	75	59	8	8
Implementation of cheque truncation facility	33	27	3	3
Standardization of bank account numbers on international format	40	33	3	4
Development of a national payment infrastructure for improving interoperability of financial systems	63	53	5	5
Enabling electronic disbursements of government payments	61	49	5	7
Other*:	6	3	1	2

*Other ⁴⁷	Type of Institution	Type of RTGS Membership
Enabling all existing and upcoming services across both Switches of Pakistan	Other	Direct
Faster & secure transaction processing is the key	MFI	Indirect
More electronic billers so that customer use ADC channels as a means to pay bills besides availing bank only services over ADC	Bank	Indirect
Payment Hub Setup with interoperability between banks and telcos	Bank	Direct
Interswitch UBP and IBFT enablement	Other	Direct

⁴⁷ One respondent who checked others option but didn't specify any comment or project

Appendix Z(b): Number of respondents selecting proposed projects, by type of RTGS Membership

Proposed Projects	All Respondents*	Type of RTGS Membership**			
		Direct Member	Indirect Member	Not a Member	Don't Know
Improvement and upgrading of existing RTGS system	63	39	7	5	12
Developing an electronic clearing house for same day clearing and settlement of electronic payments	76	51	6	5	14
Development of a secure country-wide telecommunication network dedicated for financial transactions only	74	47	8	3	16
Implementation of cheque truncation facility	33	23	2	2	6
Standardization of bank account numbers on international format	40	26	3	3	8
Development of a national payment infrastructure for improving interoperability of financial systems	62	41	4	3	14
Enabling electronic disbursements of government payments	60	39	5	3	13
Other	6	3	2	1	0

* Total respondents considered are 121 as 4 respondents didn't answer the question about their RTGS Membership

** Number of respondents from direct and indirect member institutions are 73 and 8; 10 don't belong to a member institution and 30 don't know about the type of RTGS membership

Appendix AA

The Survey Questionnaire

Addressing Formal Financial Inclusion by Improving Technology and Payments Infrastructure
(Survey conducted using www.surveygizmo.com)

Demography

1) The type of financial institution that you are employed in (please check one):

If the type of institution you are employed in is not in the list, you may add an appropriate type in Others.

Commercial Bank

Microfinance Institution

Government/ Regulatory Authority

Other: _____

2) What is your designation in your organization?

3) What is your area of expertise?

CHECK ALL THAT APPLY. You may also add an additional role in "Others" category.

Retail operations

Payment systems policy

Payment systems clearing and back office settlement

Information technology – software

Information technology – hardware

Treasury

Government payments and receipts

Loans & leasing

Insurance

Capital market

Other:

Electronic banking

Electronic Product Offering of Your Organization

4) Which of the following banking/payment services/products does your institution offer to its customers?

Check all that apply. If a product or service is offered multiple channels, then please mark all. For example, Cash withdrawal may be offered "In branch" and "Using ATMs" both, so both options should be checked.

	In branch	Using ATM	Internet banking	Mobile phone banking
Cash withdrawal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cash deposit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utility bill payment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electronic funds transfer (Interbank)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electronic funds transfer (to accounts within your bank only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Standing orders for credit transfers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Direct debits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cheque deposits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5) Does your institution offers a card (For example ATM/Credit/Debit) to customers?

Yes

No

6) What type of card is issued to the customer with an account?

Check all that apply.

A debit card that can be used for purchases only

An ATM card that can only be used at ATMs for Cash Withdrawal

A single debit card that can be used for purchases as well as cash withdrawals

A credit card

7) What type of technology is used in the cards issued by your bank?

Check all that apply.

Stripe-based cards

Chip-based Smart cards

NFC-based Cards

Other:

8) How would you rate your organization in terms of offering electronic banking as compared to the rest of the banking industry in Pakistan?

My organization is offering the best electronic products and services in the industry

My organization is not offering the best but is much better than the average industry offering

My organization is offering what is generally being offered by other banks

My organization is somewhat behind in electronic banking

My organization is offering almost no electronic banking service

Real Time Gross Settlement System (RTGS)

Impact of Real Time Gross Settlement (RTGS) System

9) The Real Time Gross Settlement System (RTGS) was launched in Pakistan in 2008. How important do you think this project has been in enabling your organization in offering electronic products to general consumers?

Not important at all

Somewhat important

Extremely important

No idea

10) Specify the type of RTGS membership your organization has?

Direct member

Indirect member

Not an RTGS member

Don't know

11) In your opinion, to what extent has RTGS implementation in Pakistan impacted the following factors at your organization?

	No or minimum impact	Some impact	Medium impact	Considerably high impact	Maximum impact
Necessitated upgrading of banking software	()	()	()	()	()
Necessitated upgrading of computer hardware Infrastructure (PCs/Servers)	()	()	()	()	()
Necessitated upgrading of telecommunication connectivity	()	()	()	()	()
Necessitated more training of existing employees	()	()	()	()	()
Necessitated hiring of new employees	()	()	()	()	()
Necessitated increased awareness among management and staff about payment systems	()	()	()	()	()

12) In your opinion, to what extent has RTGS implementation been instrumental in achieving the following objectives at your organization?

	Not much	In adequate	Some what	Considerable	Maximum
Providing online electronic funds transfer services to customers	()	()	()	()	()
Providing online bill payment facilities to customers	()	()	()	()	()
Enabling customers to make bulk payments (like salaries)	()	()	()	()	()
Improving foreign remittances	()	()	()	()	()
Improving customer relationship	()	()	()	()	()
Lowering transaction costs by improving process efficiencies and reducing risk	()	()	()	()	()
Providing financial services in the remote regions of the country	()	()	()	()	()
Providing financial services to poorer population of the country	()	()	()	()	()

Value Proposition for Customers

Electronic Service Delivery Channels for Customers

13) When opening an account, in your opinion, which of the following factors related to electronic banking are valued by an individual customer.

Please check all that apply. You may add one or two factors of your own in "Others" text box too.

- ATM card for cash withdrawal
- Debit card for purchases
- Credit card with no annual Charges
- Internet banking facility
- Mobile phone banking facility
- Size of your bank's ATM network
- Interoperability with the ATM networks of other banks
- Size of the merchant network for purchases using debit or credit cards
- Online bill payment/ funds transfer facility
- Other:
- Other:

14) Please rank the reasons that you selected in the previous question [question Number 13] according to their order of importance.

Please rank your preference by dragging and dropping the most-preferred reason at the top of the list, the next one at the second position and so on.

Formal Financial Inclusion

15) "Formal financial inclusion" refers to the number of people who have a bank account and access to formal banking services. In your opinion, in which category can Pakistan be classified as far as "formal financial inclusion" rate is concerned?

- 80% or more
- 60% or more but less than 80%
- 40% or more but less than 60%
- 20% or more but less than 40%
- Less than 20%
- No Idea

16) According to some studies, the number of people in Pakistan having access to a bank account is extremely low. In your opinion, what are the reasons for this low access rate?

Please check all that apply. You may add one or two factors of your own in "Others" text box too.

- Not much use of a bank account for ordinary citizens especially those with low-income
- High cost of banking
- Complex (Know Your Customer) KYC requirements
- Banks/financial institutions are not interested in offering their services to low-income persons
- Low education levels in remote regions make them unviable for offering financial services
- Lack of good technology and payments infrastructure in the country
- Other:
- Other:

17) Please rank the following factors (that you identified in the previous question [question number 16] according to their importance.

Please rank your preference by dragging and dropping the most-preferred reason at the top of the list, the next one at the second position and so on.

Reasons for Low Formal Financial Inclusion

18) Do you think every person in Pakistan, regardless of their income levels or where they live should have access to a bank account?

- Yes
- No

19) According to some studies, the number of people in Pakistan having access to a bank account is extremely low. To what extent do you agree with the statement that Commercial Banks are primarily responsible for this low access?

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- No Idea

20) In your opinion, which of the following are the most important reasons that banks and other financial institutions have been unable to offer financial services to the low-income population of the country?

Please check all that apply. You may add one or two factors of your own in "Others" text box too.

- High poverty makes it financially infeasible for the banks/financial institutions to offer their services to remote regions
- The clearing and settlement infrastructure for electronic banking in the country is not developed enough to allow banks to utilize technology efficiently and effectively
- Banks have been unable to collaborate and offer low-cost services to their customers
- Banks have not been able to utilize modern technology for low-cost product offerings
- The rules and regulations of electronic retail payment systems are an obstacle to expanding the electronic payment services
- Low education levels in remote regions make them unviable for offering financial services
- Banks/financial institutions are unable to offer low-cost basic banking services because they don't have good IT infrastructure available
- Banks have been reluctant to invest in information technology for the purpose of providing low-cost financial services to low-income customers
- Know Your Customer (KYC) requirements are a hindrance for banks
- Other:
- Other:

21) Please rank the reasons that you selected in the previous question [question number 20] according to their order of importance.

Please rank your preference by dragging and dropping the most-preferred reason at the top of the list, the next one at the second position and so on.

Improving Financial Access

22) To what extent do you agree with the statement that "Banks have not been able to fully utilize modern information technology to provide banking services to low-income population and remote regions of the country"?

- () Strongly disagree
- () Disagree
- () Neutral
- () Agree
- () Strongly agree

23) In your opinion, which of the following electronic services will result in more people adopting formal banking services in the country?

	Extent of Agreement
Providing online electronic funds transfer services using internet based banking	—
Providing online electronic funds transfer services using mobile phone based banking	—
Providing online bill payment facilities	—
Online transferring of government payments (salaries/pensions/support payments etc) to bank accounts	—
Expanding ATM network of your bank in all parts of the country	—
Expanding Point of Sale (POS) network in all parts of the country	—
Incorporating enhanced security features in Credit/Debit/ATM Cards (eg. Chip-based Smart Cards)	—
Reducing cheque clearing cycle time	—
Providing a Debit/ATM card with every account to the customers	—

24) Given below are some of the proposed "improvements relating to technology in banks and financial institutions" that may play an important role in enabling the banks to launch initiatives for increasing the number of people who have a bank account in Pakistan.

Please check all that are important in your opinion. You may add one or two improvements of your own in "Others" text box too.

- Banks/ financial institutions improving their IT infrastructure (connectivity and back office software)
- Banks/ financial institutions introducing Alternative Delivery Channels (ADCs) like internet and mobile phone banking
- Banks improving their ATM and Point of Sale (POS) networks
- Banks/financial institutions partnering up with agents to offer agent based banking services
- Banks and financial institutions adopting international standards for account number formats
- Banks and financial institutions adopting international standards for payment formats
- Other:
- Other:

25) Please rank the reasons that you selected in the previous question [question number 24] according to their order of importance.

Please rank your preference by dragging and dropping the most-preferred reason at the top of the list, the next one at the second position and so on.

26) In your opinion, which of the following proposed projects relating to payment systems development will play an important role in enabling banks to improve the number of people using formal financial services in the country?

Please check all those that apply. You may also add one or two suggestions in the "Others" text box too.

- Improvement and upgrading of existing RTGS system
- Developing an electronic clearing house for same day clearing and settlement of electronic payments
- Development of a secure country-wide telecommunication network dedicated for financial transactions only
- Implementation of cheque truncation facility
- Standardization of bank account numbers on international format
- Development of a national payment infrastructure for improving interoperability of financial systems
- Enabling electronic disbursements of government payments
- Other:
- Other:

27) Please rank the reasons that you selected in the previous question [question number 26] according to their order of importance.

Please rank your preference by dragging and dropping the most-preferred reason at the top of the list, the next one at the second position and so on.

28) To what extent do you agree that mobile banking initiatives by the bank will increase the rate of formal financial inclusion in Pakistan?

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
- No Idea

<<End of Survey>>

Appendix BB

Data Analysis Methodology

We restricted most of the analysis to first level: analyzing frequencies and testing proportions. However, a slightly more involved process was needed to evaluate answers that requested respondents to rank factors. For these questions, respondents were first presented with some items or factors and asked to select those that they thought were important. Then in a follow up question, the respondents were asked to rank their selections in order of their importance (1 being most important, 2 being less important and so on). This two-stage process was adopted to avoid making users rank a larger set of items. As a result, in most cases the number of items that were ranked by the respondents was less than the total number of items presented. This resulted in missing values that made a Principal Component Analysis (PCA) of the data from these rankings difficult. To address the issue of missing rankings and to interpret these rankings in a meaningful way, the rankings were re-coded using the following procedure:

Step 1- All the rankings for the value propositions were re-coded as follows:

- Only those cases where the respondents selected at least one item (statement) in the previous question were used for ranking. If a respondent didn't select even one item then that respondent was not included in the analysis.
- Respondents' rankings were re-coded as follows:
 - **Not at all important (0):** If an item wasn't ranked by a respondent, it was assigned 0
 - **Not so important (1):** If an item received a ranking of 4 or more by a respondent, it was assigned 1
 - **Very important (2):** If an item received a ranking of either 1, 2 or 3 by a respondent, it was assigned 2

In this way, we were able to replace missing ranks with a 0 which indicated that the item was not considered at all important by the respondents.

Step 2 – To simplify the rankings and their interpretations, weighted scores for each factor were calculated as follows:

- Weights were assigned to each category as follows:
 - A weight of 0 was assigned to “Not at all important” category

- A weight of 1 was assigned to “Not so important” category
- A weight of 2 was assigned to “Very important” category
- A weighted score (or rank score) was calculated for each item. These rank scores gave a general indication of the overall preference of the respondents.

First-level analysis of items was done using frequency distribution analysis of the re-coded rankings and the computed rank scores for all the items. For second-level analysis, Principal Component Analysis (PCA) and/or Multidimensional Scaling (MDS) were used. The objective was to identify the broader groups (or dimensions) of perceptions for a given problem and (where possible) the perceived distance between items.

The decision to use PCA was based on testing the assumptions of PCA and the reliability analysis of the re-coded ranks using Cronbach’s Alpha statistic. MDS was used in a manner similar to that used by (Libby, 1979) in identifying the perceptions of bankers.

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