An Exploration of Smartphone-Based Mobile Money Applications in Pakistan

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RESEARCH BRIEF – SMARTPHONE LEARNABILITY

Today, 38% of the world's population remains unbanked, meaning limited or no access to the benefits of having an account at a formal financial institution.[1] Without reliable access to financial services, the people who are unbanked do not have secure ways to make and receive payments, to save or to borrow money, or to manage risks. Research has linked an increase in reliable access to financial services with overcoming poverty, narrowing income inequalities, and enabling economic growth. It is not surprising, then, that the majority of people who remain unbanked live in resource constrained regions.

With the expansion of cellular technology and the ubiquity of mobile phones, even in resource constrained regions, many have conjectured that the adoption and use of mobile money applications (or mobile money wallets) could substitute many of the services currently provided by formal financial institutions. This research explores some of the impediments to the adoption and learnability of mobile money applications in the context of Pakistan.[2] The goal of the research was to identify how to increase initial learnability of smartphone-based mobile money applications, because trial, adoption, and uptake of mobile money applications is dependent on initial learnability. Initial learnability refers to a person's ability to understand a system for the first time and begin experimenting with it or using it.

The research comprised of a three-phase evaluation of 118 participants with no prior smartphone-based mobile wallet experience because initial learnability can only be tested with first time users. The main questions posed focused on the participants' understanding of mobile money applications, especially amongst those with no literacy or lower literacy. They asked:

1) How learnable are mobile money applications that are currently available in Pakistan?
2) When and why do people prefer mobile money applications over other conventional financial services?
3) What factors enable adoption and self-learning of mobile money applications?

In 2016 and 2017, this three-phase study evaluated issues of initial learnability of smartphone-based mobile money applications. Each phase of the study built on the previous phase. Participants for all

[1] Asli Demirguc-Kunt, Leora Klapper, Dorothe Singer, and Peter Van Oudheusden. 2015. The Global Findex Database 2014: Measuring Financial Inclusion around the World. *World Bank Policy Research Working Paper 7255*, Washington D.C., p 2.

[2] This research brief is based on the following paper: Samia Ibtasam, Hamid Mehmood, Lubna Razaq, Sarah Yu, and Richard Anderson. 2017. An Exploration of Smartphone based Mobile Money Applications in Pakistan. In *Proceedings of the Ninth International Conference on Information and Communication Technologies and Development (ICTD '17)*.

three phases were residents of urban or rural parts of the province of Punjab, Pakistan. The protocol began with participant interviews where information was collected pertaining to their demographics, employment, smartphone experience, current financial practices, banking experience (accounts, interaction with ATMs, etc.), and knowledge of over-the-counter (OTC) transactions, mobile banking, and mobile wallets. The interview was followed by a task based learnability evaluation of a mobile money application. After this exercise, participants provided feedback pertaining to the level of assistance they required during the exercise, specific issues they faced while performing the tasks, and suggestions for improvements. In addition, participants offered insight into their preferred learning methods. A session with each participant lasted 40-45 minutes, with some sessions conducted in the participant's homes and others at the research partner's (Akhuwat, the largest not-for-profit micro-finance institution in Pakistan) branch offices.

Phase one evaluated an existing mobile wallet called EasyPaisa, offered through Telenor, a cellular carrier. In phase two the researchers designed a mobile money application prototype using the toolkit developed by Karandaaz, a not-for-profit development finance company in Pakistan. Two variations of this mobile wallet prototype (with and without audio) addressed some of the design issues that made EasyPaisa difficult to use for low-literate participants. The third phase modified the audio application to focus on addressing issues faced by rural and low-literate participants.

The results indicate that people with lower literacy benefit from certain adjustments to the functionality of the smartphone-based mobile money applications. Most notably, parallel audio facilitates the use of mobile money wallets by people with lower literacy. While usability is a primary hurdle to overcome, interviews with participants also demonstrate that comprehension of digital financial services is necessary for the adoption of such technologies as mobile money wallets. Besides level of literacy, place of residence (urban or rural) and gender may have a significant impact on the trial, adoption, and uptake of smartphone-based mobile money applications.

In phase one, it became clear that users with higher literacy easily navigated through the application. Participants with previous smartphone experience performed better on the tasks for using the mobile money application. The researchers observed that participants struggled with the EasyPaisa application because of the number of hidden menus and the variety of input options available on each screen due to the tab-based design. In 2016, EasyPaisa was available in English language only, and this caused significant difficulties for many participants.

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The second phase presented participants with one of two applications to test. The Karandaaz application provided an option for an optional on-screen assistant and the Audio application offered a speaker icon to indicate the functionality of each button. The Karandaaz application assistant was available in English or Urdu, whereas the Audio application's audio prompts were in Urdu. The "text-free" user interface of GridImpact (Karandaaz prototype) addressed many of the issues experienced with EasyPaisa in phase one. The results of phase two demonstrated that audio help was particularly helpful for users with lower literacy. Some of the features were modeled after Over the Counter (OTC) transactions, such as the use of a secret code, but many participants who had experience with OTC transactions did not understand the relevance of the secret code. In many cases the agents created the secret code on behalf of the person making the transaction.

Phase three took the audio version from the second phase and modified it to address issues faced by participants with lower literacy. A speaker icon was added to each page, error messages were made available through audio, and the look of the buttons on the screen were transformed into 3-D icons. Overall, most participants with lower literacy utilized the audio functionality at some point. Participants with previous smartphone experience, regardless of literacy, asked for help less frequently. Overall, 87% of the participants across all three phases preferred some type of help.

Access to mobile money applications could transform financial transactions for people, especially those who have to travel long distances to access a bank or a mobile money agent. Adoption of these technologies could save time for people from rural areas as well as minimize the risks associated with mobile money agents, such as liquidity of funds and fraud. In addition, to assisting people from rural areas, the adoption of mobile money applications could build opportunities for increased independence of women to participate in financial transactions, since many women have access to smartphones during the day. Identifying how and when women have access to smartphones could help better address services directed to them and, in turn, extend financial inclusion. This study shows that that increased functionality of mobile money applications, especially the implementation of audio help, and resources about mobile money will potentially lead to increased trial, adoption, and uptake of smartphone-based mobile money applications.

By looking at how people use and understand mobile money applications this study creates a lens through which broader issues such as gender and its effect on the adoption of mobile money applications could be explored. For women who have access to smartphones, the possibility of completing financial transactions through mobile money applications is appealing, however, some

transactions would still require women to leave the home. Additional research could determine ways to overcome these barriers. More generally, this study found that many participants were unaware of the services provided by mobile money applications, even if they had previously utilized the services of mobile money through agents as OTC transactions. Removing the information gap about mobile money applications and offering no-cost support services (such as free-of-charge customer call centers) would facilitate the comfort of adoption of mobile money applications by many, especially those who are from resource constrained regions.