
Designing Digital Payments for Next Billion Users

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Abstract

This SIG proposes starting a discussion on the CHI platform about the issues pertinent to the design of digital payments and digitization of financial services. Although there has been a lot of discussion in HCI around domains such as health and education, the domain of financial HCI is still nascent. The purpose of this SIG is to engage researchers and the broader community at CHI in the discussion and debate around digital payments for the next billion users. We propose creating a live working document starting before the SIG which continues to develop during and after the SIG. This live document will enable to engage with a wider audience of researchers, and industry practitioners outlining processes, methods, and tools that HCI4D researchers have created to work with emergent users to develop ICT interventions.

Author Keywords

Financial Inclusion; Payments; Next Billion Users; Emergent Users; HCI4D; ICT4D; Digital Financial Services; Financial HCI;

Introduction

According to the Global Findex Report 2017, about 1.7 billion people remain unbanked globally. A majority of them are disadvantaged in terms of gender [2], education, and opportunity. In this regard, hope lies in the fact that in-

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creased adoption of smartphone users, improved digital infrastructure and supportive regulatory environment are fueling the rapid growth of financial technologies (fintechs) across the world. With more than 6 billion mobile phone subscriptions globally, there is an opportunity for financial inclusion through the provision of financial services over mobile phones.

It is reassuring to know that mobile phone-based money transactions are increasing and have a widespread financial and social impact. There has been a migration from cash payments and plastic-card payments to payments made over digital channels such as dematerialized cards held on digital wallets, in the cloud or new digital payment mechanisms. Driven by the widespread ownership of mobile phones and deep geographic penetration of Mobile Network Operators' (MNOs) agent network, mobile money has also enabled unbanked individuals and those living in remote locations to easily access electronic transactions and securely convert cash into electronic money. However, as we shall discuss, creating Digital Financial Services (DFS) and innovating for low-income groups still remains a challenge.

The problem

While there has been a lot of discussion on the opportunities offered by digital payments, we also need to acknowledge the challenges involved. There is a constant tension between what is available in terms of the design of digital-payment artifacts and what would constitute appropriate design for users who are disadvantaged in terms of income, education and exposure to technology (also called Emergent Users [3]) that could lead to the adoption of digital payments and other services by these users.

The other set of challenges arise from the unique contexts

of those who are financially excluded. The research literature provides detailed descriptions of their financial lives.

These users, often, deal and save in cash which gets spent. Then there are assets such as animals that die, and jewellery which may be lost or stolen. What's more, these forms of savings earn no interest and can actually lose value over time. The transaction is a messy affair—users often send money to family and those without a bank account have to rely on couriers or friends to carry cash, which is expensive, insecure, and slow. To borrow money in an emergency, they must usually turn to moneylenders who could charge notoriously high-interest rates.

These users rely heavily on informal sources of finance which might not have the requisite protection mechanisms in place or might have limited capacity hence the financial inclusion narrative has been focused on involving institutions. The notion of 'Digital Financial Services' has become popular in the industry owing to the commercial feasibility associated with digital mediums of service of which digital payments are the first step.

In this regard, approaches towards digitization have been suggested such as liquidity control mechanisms to replace riskier methods of 'locking' money in physical assets, such as live-stock or jewellery. However, many of these approaches have yet to be implemented and tested.

However, as discussed earlier, challenges of what constitutes an *appropriate design* will be of critical importance as shifting of unbanked segments from the informal analog interactions to formal digital service is attempted. These challenges include technology usage and its penetration in the users' lives, their life priorities (food on the table versus individual devices), the need for technological inclusion and digital literacy. A discussion around these issues will

help in an understanding of the other issues such as under-representation of the user-segment, and lack of fairness of the decision making algorithms. One needs to be aware that insufficient support in design of fintech services might make low literacy and low-income users more prone to take steps which might exacerbate problems of exclusion rather than financially including them.

Also, even when low income individuals exhibit disciplined savings through informal groups, without any digital financial histories, such behavior is hardly rewarded. People may also get cut off from potentially stabilizing and uplifting opportunities like building credit or getting a loan to start a business. In the absence of any protection against risks, it's harder to forecast common financial setbacks, such as serious illness, a poor harvest, or an economic downturn. All too often, financial exclusion makes the expenses of poverty difficult to overcome, leading to a vicious cycle of increasing impoverishment.

The community

Researchers across the globe have been working on digital money for financial inclusion. Researchers have analysed how Digital money systems could overcome the shortfalls of other payment mechanisms by making the act of payment fast and secure. This may have an impact on the adoption of such systems by Emergent Users for whom digital systems pose challenges, including that of usability [5]. In this regard, one may also look at the research by Balan et al. [1] and Lehdonvirta et al. [4] which focuses on the trade-off between usability and security. It is important to highlight that the challenges rise because of structural barriers such as lack of opportunities and resources, and discrimination and elimination. A good example of this is research by Ibtasam et al. [2] which focuses on gender barriers in the readiness for and the adoption of digital financial services.

The field of financial HCI is new and but there is a growing concern to tackle this challenge in the CHI community. This SIG will bring together researchers and practitioners from both academia and industry who are working in the financial HCI. Through SIG, we aim to bring together different people working on financial HCI to share their work and coherently formulate ways to overcome the challenges while designing for low-income individuals.

Research Questions

A few of the questions in front of us are :

- Have mobile phones brought financial digital inclusion? How has it impacted on the economic and social lives of women?
- How can the digital artefact be designed so that it reflects the end user's reality?
- How do we include our findings in the design space?
- In what ways can digital money / payments have a negative impact on low-income individuals? (this goes both ways!)
- How best to move inclusive financial design beyond digital payments: borrowing, saving, lending, investing, managing accounts, etc.
- How to design digital payments for fragmented infrastructures, heterogeneous devices, intermittent connectivity, functional and financial illiteracy?
- What are the different approaches towards digitization of financial interactions among social groups (referred to as informal finance by the industry) and collaborative finance as all interactions become increasingly digital?

- How do design at the intersection of finance with spaces such as health and religion?
- How to translate academic research to industry practice?

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Table 1: Topics of Discussion & Schedule

Time	Activity
15 min	Introductions of organisers and attendees, display of prototypes/artefacts on Digital Payments through active “move around the room” activities.
5 min	Introduction to live document and how to use it.
40 mins	<p>Panel discussion</p> <ul style="list-style-type: none"> – Impact of digital payments in different geographies – Understanding ground realities and different approaches used Failed solutions - what is working and what is not working Possible way forward Simultaneously updating the conversation in the 'live' document. 'Live' document would be projected on the screen and attendees can also edit/comment in the document.
20 mins	<p>Group reflection & sharing</p> <ul style="list-style-type: none"> – Common guidelines while designing digital payments for emergent users – Possible collaborations – Summary and concluding remarks