

Designing Financial Literacy and Saving Tools for the Unbanked and under-banked in Brazil

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Abstract. In this paper, we are interested in designing a novel approach to financial learning and saving for the unbanked and under-banked populations in emerging economies, more specifically in Brazil. Despite efforts by governments, non-profits and privately held banks, unbanked and under-banked populations remain prone to unfavorable financial habits and are ill equipped to utilize financial services. In proposing new modes of engagement with the topic of financial literacy and saving, we evaluate 1) social and behavioral aspects of financial lives of said populations 2) productive learning models 3) results from an ethnographic study, to finally demonstrate potential applications.

Keywords: Design for behavioral change, financial literacy, user experience design for financial products.

1 Introduction

In this paper, we are interested in designing a novel approach to financial learning and saving for the unbanked and under-banked populations in emerging economies, more specifically in Brazil.

By definition, unbanked customers have no checking, savings, credit, or insurance account with a traditional, regulated depository institution. Under-banked customers on the other hand, have one or more of these accounts, but conduct most of their financial transactions with alternative service providers, such as check-cashing services, salary accounts, payday lenders, and pawnshops - and still primarily use cash for most transactions. Estimates suggest that close to 2.5 billion people the world over remain un-served or underserved by formal or informal financial services [1]. While issues like accessibility, literacy and motivation are frequently recognized as the chief obstacles to mainstream banking for the rural poor, urban low-income groups grapple with deeper social and economic problems, especially in the context of Brazil.

Brazil has a unique position in this— the Brazilian Government has actively worked on bringing financial services to people's homes through an ambitious network of

banking correspondents. Approximately 2,200 of Brazil's 5,500 municipalities, representing 20 million people (more than 10% of the total population), had no bank branches and therefore no access to financial services in the year 2000. Within a span of ten years, an ambitious network of banking correspondents was able to reach all but 30 municipalities in Brazil [2]. Additionally, programs like the Bolsa Familia have played a monumental role in increasing the cash flow of families in need through Conditional Case Transfer Programs [3]. Despite the scale of effort in bringing said populations within mainstream banking, and this is of specific interest to the problem we pose, because of a culture of historically normalized credit and the valuation of goods over money due to inflation, the efforts of the government and the central bank have yielded limited results. Personal financial attitudes are not encouraging -in 2010, 53% of Brazilian households were spending more than they were earning. In 2012, the default rate on credit cards was 16% of the GDP, up from 6% in just a decade [4]. Some estimates suggest that the number of economically active unbanked and under-banked comprise 36% of the population [5].

In this paper, we present the process and results of a design research project aimed at producing new modes of financial literacy and developing applications and tools to assist the under-banked and the unbanked.

2 Methodology

The exploration of this topic was conducted in three distinct phases as presented in the following sections. A study of related works in the area of financial education, especially among under-banked and unbanked populations laid the groundwork for further engagement. Upon identifying and understanding key issues surrounding this topic, we led an ethnographic study in the city of Rio de Janeiro in Brazil. Finally, the insights gathered from these phases were used to inform design decisions and led to the creation of three functional prototypes demonstrating the conceptual and operational scope.

3 Related Works

3.1 Financial Behaviors among the Unbanked and under-banked

In their influential study, Dupas and Robinson [6] conducted field experiments among unbanked populations in Kenya to understand operational and behavioral barriers towards saving more. Using data from field experiments, Dupas and Robinson show that providing informal and simple saving technologies can substantially increase savings. For instance, simply offering a place to put away cash away from sight helped in inculcating a persistent saving habit. The act of putting an amount of cash away each month forced the user to keep a monthly mental account of their money, thereby influencing positive financial behavior and awareness. Additionally, earmarking savings had a tremendous impact on positive saving behavior. Users were able to

anticipate their monetary needs for the future and save towards them rather than saving for the sake of saving. In the long run, savings that were associated with a specific financial goal were much more likely to succeed than those without. The only drawback observed here was the loss of liquidity. Users wanted to be able to save towards specific financial goals without losing out on the liquidity of un-allotted cash.

Social saving mechanisms were especially popular and successful in maintaining long term saving habits. ROSCA or rotating savings and credit associations are widely found as a way of saving in under-banked and unbanked populations across the world. Typically, a ROSCA is run by trusted members of the community and relies on social pressure and commitment to make sure that every member saves in accordance to the scheme they are a part of.

Studies published by the Innovations for Poverty Action (IPA) [7] have shown that the desire to save more is as common for the unbanked or under-banked poor as it is for the banked individual. One of the reasons, and one that is especially important for the scope of this paper, is the fact that services for the unbanked or under-banked poor are most often not designed to align with their financial behaviors. For instance, maintaining liquidity while saving towards specific goals is a priority among said populations. In a simple experiment, members of the IPA created jigsaw puzzles with pictures of clients' savings goals, such as a student in school, a picture of a home, or a vehicle. Every time clients made a deposit, they received a piece of the jigsaw puzzle. The 1,200 people randomly assigned to receive the jigsaw puzzle pieces were 2.3 percentage points more likely to meet their commitment of making a deposit every month for one year than were the 879 participants who were randomly assigned to the control group. This two-percentage point difference may seem like a small number, but it shows that a strikingly cheap and easy intervention can have a significant effect on savings.

Similar experiments like sending reminders, emphasizing losses over gain, binding accounts where customers are unable to withdraw money until they reach their financial goal and compartmentalizing savings have gone a long way in influencing positive saving behaviors.

3.2 Financial Literacy Programs

Although financial behavior seems to be positively affected by financial literacy, the long-term effects of financial education on financial behavior are less certain. Lusardi and Mitchell [8] show that households with low levels of financial literacy tend not to plan for retirement. They also tend to borrow at higher interest rates [9], acquire fewer assets [10], and participate less in the formal financial system relative to their more financially literate counterparts [11]. In response to this evidence, financial literacy programs have been advanced as a low-cost intervention with the potential to improve household financial decision-making and ultimately increase savings and welfare on a large scale. Cole, Sampson and Zia [12], show however, via a survey and study in India and Indonesia that traditional financial literacy programs produce modest effects, increasing demand for mainstream banking only for those with existing albeit low levels of education or financial literacy.

3.3 Theoretical Framework

A key aspect of Papert's constructionist learning theory [13] is that of "learning by doing." Much like traditional educational models, financial literacy programs depend on instruction-based learning. The current approach towards financial literacy programs struggles with the same problem as traditional education models – knowledge is unidirectional and there is a spatio-temporal lag between the reception of knowledge and action. Papert challenged this model by proposing models where knowledge structures are produced as a result of active engagement. Borrowing from Papert, we are able to propose ways in which the user's engagement with financial literacy occurs in the plane of real financial action.

Considering that several problems in User Experience Design areas are likely to have little previous literature and existing theories to fall back upon, and context in which the experiences occur plays crucial role, Grounded Theory is a potent tool for generating new knowledge [14]. Grounded theory, though originally developed for application in social research, has gained wide acceptance in various other domains including consumer experience and information systems research [15]. This theory offers one the flexibility of relying on multiple, varied data points and extract theories that pertain to the phenomenon being observed. Since it is based on empirical data, theories and applications can always be traced back to the root of the hypothesis. In using this framework for designing a service for the unbanked and the under-banked, we have been able to draw from multiple sources of data to derive fundamental concepts. In this process, we have been able to use academic research, newspaper articles, interviews and ethnographic research. With each step of the process, new data is used to refine and inform the original theory until additional data do not impact fundamental theories. In this way, each concept is backed, or grounded in significant data.

4 Ethnographic Study

In an ethnographic study of Brazilian unbanked and under-banked populations, data were collected from ten unbanked and under-banked families in a favela in Rio de Janeiro, Brazil. Through audio interviews, we were able to gain insight into their financial lives, ambitions and pain points. The results showed that in addition to the culture of credit, a deep mistrust of banks and the banking system has led to negative associations with traditional financial instruments. Many families felt shunned by mainstream banks. Traditional bank offerings are not well suited to their needs and the priority for most was to be in complete control of their money. In this regard, Conta Salario or Salary Accounts have worked exceptionally well. A vast majority of the under-banked collects their monthly salaries through these accounts where they typically withdraw their entire salaries in cash. In this predominantly cash economy, people end up employing jars and 'under-the-mattress' saving solutions to be in better control of their money. Saving decisions and behaviors were focused on specific short-term financial goals.

Community plays a big role in the everyday lives of the unbanked and the under-banked. In this particular favela, ROSCA like informal saving institutions were common. People heavily relied on financial help from their peers in case of emergencies and social structures were built around a tacit agreement of stepping up to help one's neighbor in times of need. People are also known to trust their families and friends over more formal financial advice and strategies. None of the candidates in our study had ever considered approaching a bank to plan their financial life. Instead, they could relate easily to the experiences of those around them and preferred to follow their advice to a bank's.

To summarize, we learnt that the unbanked and the under-banked have a deep mistrust of banks. This is because said populations prefer to have complete control of their money; a behavior that can also be seen in their choice to operate only in cash. Saving decisions are motivated by short-term goals and the savings are typically kept under the mattress or in jars. Finally, financial decisions and exchange of knowledge is an activity that is highly centered within the community among one's peers. Not only is such financial knowledge valued over one offered by a bank or an institution, it is believed to be far more relevant and tailored to the seeker.

5 Results

The findings from our research and ethnographic study point to very specific problems in existing services for the unbanked and the under-banked. First and foremost, very few services are actually designed specifically for the unbanked and the under-banked. The barriers to mainstream banking for said populations range from simple things like a complicated account opening process, unclear information on banking practices and simply not having enough information. In the case of Brazil, these issues are compounded by a deep feeling of mistrust in banking institutions.

The design of the prototypes was informed primarily by the following findings:

1. Users need to be in control of their money- "Under-the-mattress" saving solutions are widespread among the unbanked and under-banked. Apart from more obvious benefits like maintaining liquidity of money and having access to cash at all times, there is a deeper behavioral aspect to this. These kinds of solutions make people feel like they are in control of their money. It is visible, accessible and there are no middlemen between them and their cash.
2. Recognize the power and influence of the community-When it comes to financial advice and planning, people from said populations are much more likely to follow their peers than seek information elsewhere.
3. Design productive learning environments - One of the directing principles, key to all three concepts, draws from the tenets of Papert's constructionism as a foundation for designing productive learning environments. The first "big idea" proposed by Papert is that of learning by doing as opposed to learning by being taught explicitly. He proposes that this way of learning is not only more engaging, but more productive and relevant to the individual's needs and goals. This is especially relevant to us since financial literacy is not productive when it is independent of finan-

cial action. Reducing or obliterating the distance between financial education and financial decision-making is one of the secondary goals of the project.

The complex arrangement of trust, motivation and cultural behaviors informed the design of the prototypes that place maximum trust and faith in the user, reinforcing ownership of money and financial futures, and thereby accountability.

6 Prototypes

Three high-fidelity prototypes were developed to showcase the conceptual and operational scope of the proposed solution.

- 1) *Luz - Luz* (Portuguese for “light”) was developed as a response to the habit of appropriating household objects to store cash. *Luz*, in this case a lamp, is a utilitarian everyday object with the added functionality of a personalized, interactive safe that handholds the user through the process of saving. The user is able to define short-term financial goals and receives timely and relevant financial guidance in order to reach their goals. For instance, *Luz* reminds the user when it’s time to make the next deposit on a financial goal. The user experience ensures maximum control over cash by keeping it in the house but is carefully designed to encourage reaching the saving goal, thus encouraging saving up for purchases rather than saving down or buying on credit. Using Dupas and Robinsons formulation, *Luz* both “hides” the cash while assuring the user of liquid cash if need be.

Luz was built as an exploration into intelligent everyday objects. By adding a layer of intelligence over traditional saving devices like a box, the experience is markedly different. The device is now able to guide the user through the process of saving without alienating the original experience completely. Currently the prototype does not address security concerns.

- 2) *Smart Saving Envelopes*- A significant number of the under-banked in Brazil are owners of *Conta Salario* or Salary Accounts. Every payday, owners of such accounts are known to withdraw their entire salary in cash. *Smart Saving Envelopes* were designed to reach users at this touch point by offering simple, color coded saving envelopes with achievable saving goals (in denominations of R\$100, 200 & 500). By using simple peel-off envelopes, the user is motivated to reach their saving goal by being reminded of the worth of their savings with each increment. The experience is supplemented with actionable saving tips sent via SMS on reaching notable milestones. The experience of saving with *Smart Saving Envelopes* is familiar in its use of the ubiquitous paper envelope as a saving device. By adding gamification to the process of saving and simple interactivity via SMS, *Smart Saving Envelopes* offer a clear vision and the steps in the process of reaching one’s saving goal.

This offers a low-cost, low-infrastructure solution that can be developed and applied easily by small-scale banks and financial institutions.

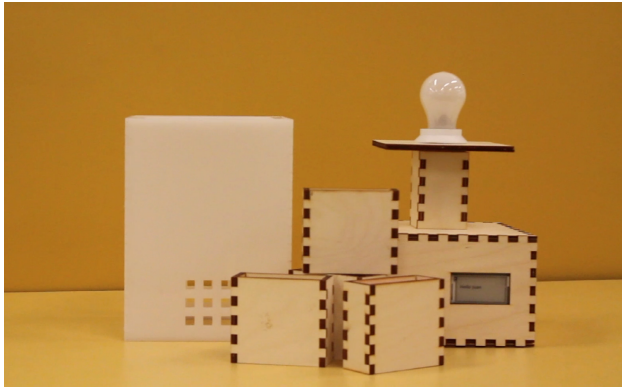


Fig. 1. Luz, front view. The modular structure of the device is designed to offer compartments for earmarked savings. The main parts of the device are 1) Saving compartments 2) E-ink display 3) Lamp bulb and facade.

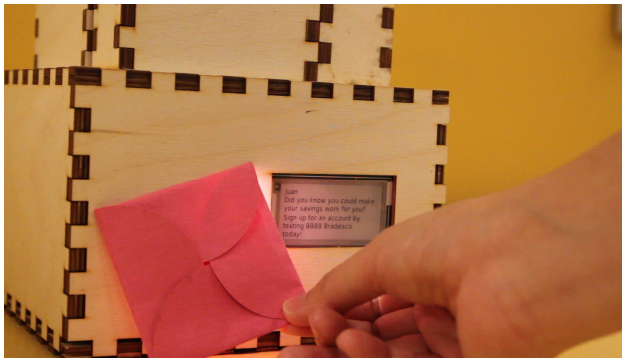


Fig. 2. Luz, scanning envelope. Users scan goal specific envelopes with a set amount each month. The display is updated to show progress on a saving goal. The display also shows reminders and information relevant to the user and their saving goals transmitted over wi-fi.

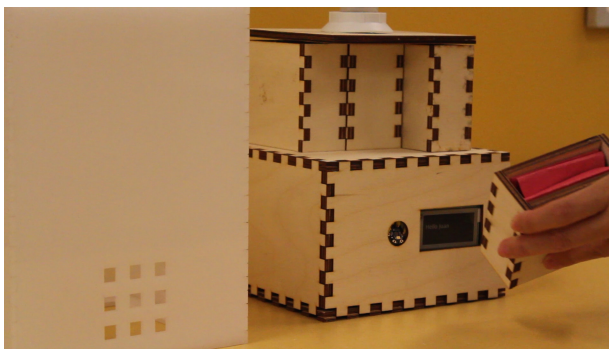


Fig. 3. Luz, Goal specific saving compartment. Luz offers four goal specific saving compartments.



Fig. 4. Luz, as a lamp. When not in use, Luz is used as a lamp.



Fig. 5. Smart saving envelopes come in denominations of R\$ 100, 250 and 500. With each saving increment, the user is shown the worth of their savings thereby encouraging them to save more.

- 3) *Realize- Realize* was conceived as an online space where users could learn about everyday finance from lived experiences of their peers and those around them. Supplemented with expert advice, *Realize* becomes a repository of crowd-sourced knowledge about everyday financial tips and advice. As a financial social network, *Realize* reverses the expert-novice relationship typical of financial literacy programs and relies on collective action to democratize financial knowledge. Additionally, it takes into account the need for a friendly space that offers relevant and credible financial advice. Users become part of communities that are like them and learn, and gain support from their peers.

Brazil is one of the fastest growing countries when it comes to social media. Our ethnographic study shows that most people in the favelas have an Internet connection and are active on social media. This is slated to grow in the future with social media companies investing heavily in Brazil. [15]

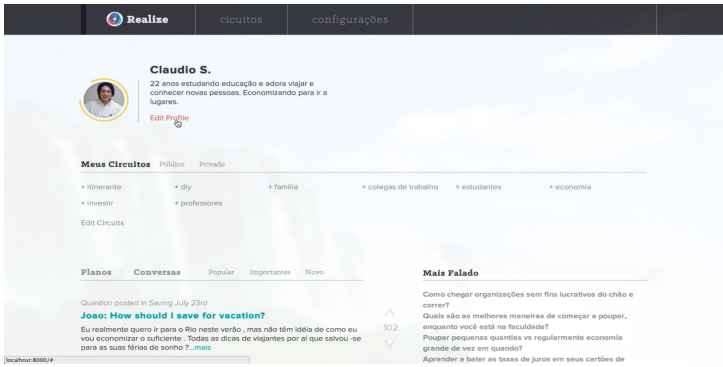


Fig. 6. Realize offers a safe and trustworthy place to ask financial questions most relevant to the user. Users can get advice from their peers as well as an experienced professional on the same platform.



Fig. 7. Users can be part of topic specific groups like “First time home-buyers” or “Saving for college”

7 Conclusion

This study has aimed to produce an understanding of the behavioral and social underpinnings of the financial lives of the unbanked and the under-banked. We have proposed novel and unprecedented solutions that aid said populations to acquire financial knowledge and directly act on that knowledge. All the proposed solutions have been driven by the single focus of making financial knowledge actionable. By embracing the principle of “learning by doing”, we hope to reduce the gap between financial knowledge and financial decision-making. In our future work, we aim to conduct a user test among the unbanked and under-banked populations of Brazil.

Delivering financial services to the unbanked and under-banked remains a globally relevant problem, affecting 2.5 billion people worldwide by some estimates. This study can be applied to other emerging economies and adapted to specific contexts.

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