Prayana: Intermediated Financial Management in Resource-Constrained Settings

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Abstract

We present a mobile phone-based application for loan management in a resource-constrained setting. In this setting, a social enterprise manages auto-rickshaw loans for drivers, taking charge of collections. The design was informed by an ethnographic study which revealed how loan management for this financially vulnerable population is a daily struggle, and loan payment is a collaborative achievement between collectors and drivers. However, drivers and collectors have limited resources to-hand for loan management. To address this, we designed Prayana, an intermediated financial management app.

Author Keywords

Ethnography; Design; Financial-Capability; Financial Inclusion; Agency; Resource-constrained setting.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous;

Introduction

Achieving financial inclusion involves making financial services accessible and affordable, and addressing the barriers restricting people from participating in the
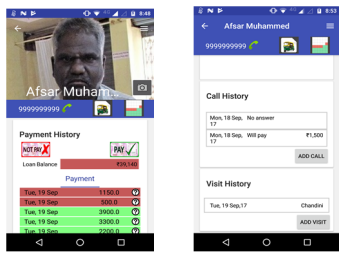
Drivers Screen

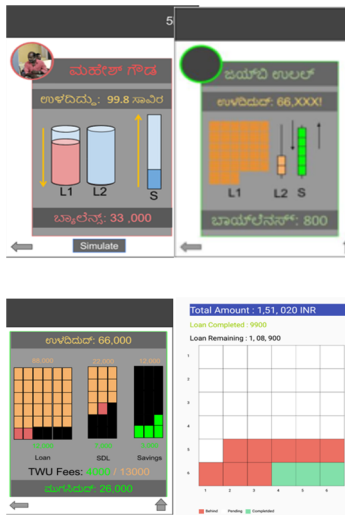Figure 2: Driver Home. Final design(left); after scrolling (right)

Figure 3: Loan buckets. Initial design(top-left); 1/6 alternatives (top-right); Second test (bottom-left); Final version (bottom-right)

financial sector [3]. Mainstream financial services are rarely designed with the needs of low income populations in mind and human intermediaries play a crucial role in bridging the gap between mainstream financial services and low-income communities. For example, micro-finance institutions (MFI) [1,2,7] provide financial services adapted for the poorest communities. Beyond MFI, intermediaries may also enable access to mainstream financial services (bank loans, savings, etc.) for excluded populations. Three Wheels United (TWU) [10] is one example: a social enterprise, which acts as an intermediary between auto-rickshaw drivers and mainstream banks, to enable drivers to take out loans to purchase their auto-rickshaws. TWU manages these loans, including collecting payments from drivers.

We conducted an ethnographic study of TWU [8,9], the findings of which informed the design of a novel financial management application, Prayana ('Journey' in Kannada), the subject of this demonstration. Whilst there are many financial management technologies available they are not typically designed for low income users in resource-constrained settings. Resources in this setting are constrained on many levels. Both TWU's employees and the auto-drivers have a range of technical, print, and financial literacies. Most drivers use feature phones without data and earn largely in cash. TWU operates on slim margins, with no in-house technical expertise, and consequently was using an ad-hoc mixture of paper and technology, built up over time, to manage their services. Whilst this enables the flexibility that is crucial for auto-rickshaw drivers to pay off their loans, it means that both drivers and collectors had limited information on loan status and progress. Furthermore, we found that loan payment is a

collaborative achievement between collectors and drivers. This led us to design an intermediated smartphone application to be used by collectors *with* drivers, overcoming the practical barrier of drivers' limited smartphone ownership, but with the additional advantage of supporting the *collaborative work* of loan payment.

Our initial motivation was to provide more resources for the drivers to help them better understand and manage their ongoing loan. From the literature, information, motivators and nudges seemed promising [4,5,6]. We adapted these techniques for users with a range of print, technical, and financial literacies. Once we had chosen to build an intermediated app rather than a solution solely for the drivers, this changed the dynamics of the design. Firstly, to ensure up-to-date accurate loan information was available online we had to largely reengineer TWU's back office processes (reported in [7]). Further, since we wanted the collectors to use the app with the drivers, it also had to be useful to them. We therefore engaged in design workshops with the collectors to include features which would ease their workflow, by helping them manage their set of drivers, record payments and reduce the data entry duplication of the paper-based processes.

In this demonstration, we show how the Prayana app is used by collectors with drivers with the aim of improving loan management and adherence. We built an integrated solution consisting of a web app, an assisted allocations system, and a mobile app to be used by the loan collectors with the drivers in the field. The complete system has streamlined existing processes, added to organizational knowledge and aims
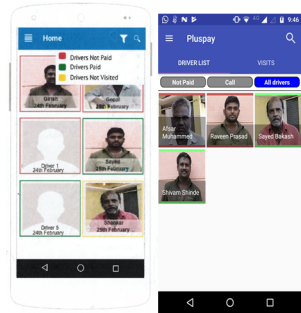
Collectors Screen

Figure 4: Collector Home. Initial version organized by visit (left); Final version organized by calls (right)
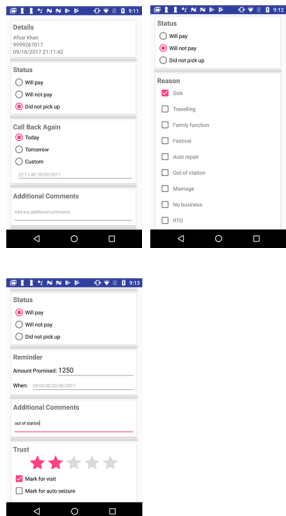

Figure 5: Call Feedback Screens

to help TWU back office staff, collectors and the auto-rickshaw drivers make more informed choices.

Re-engineering the Backend: LAMS

TWU's existing architecture was largely offline and not scalable. We re-engineered their backend to streamline various processes and semi-automate time-consuming tasks. The earlier infrastructure of TWU was a mix of open source banking software(Cyclos), SMS servers, a custom loan allocation application (Integra), Excel sheets and paper reports. A lot of information was captured but was stored in silos. Also, duplication and manual allocation of funds resulted in a significant bottleneck for getting accurate data at any given time.

Our intervention acts as an integrator of information from disparate sources. The web service acts as a wrapper on top of Cyclos to provide the additional features necessary for supporting cash collections, allocations and disbursement of money. The ingestion module collates the data from all disparate reports and makes it available for allocation.

Designing the Prayana Mobile Application

The core aims of the Prayana app is 1) to convey the complex loan information to drivers of varying literacy levels and 2) help collectors in their daily workflow.

Drivers' Screens

Prayana aims to build auto-rickshaw drivers' financial capability by enabling them to better understand what is happening with their loan and the impact of their payment practices on its long-term prognosis.

Driver home. Figure 2. This is the main shared screen and will always be accessed as part of the interaction as collectors must open it to take payments. It provides
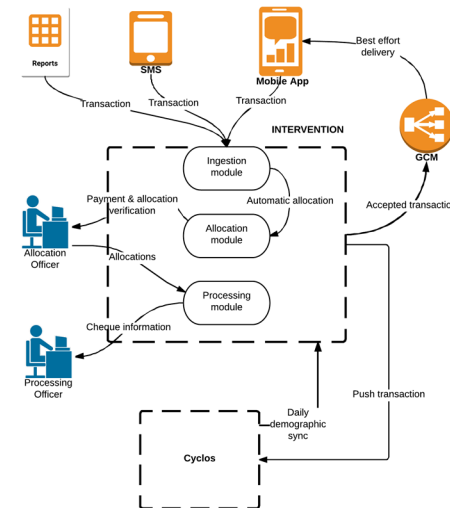

Figure 1: High-Level architecture and workflow with current infrastructure.

at-a-glance information on recent payments, calls and visits.

Loan buckets. Figure 3. show how much has been paid off so far, and its allocation between different parts of the loan (main loan, deposit loan and TWU fees). Color-coding gives visual feedback about whether the driver is on-track or not.

Collectors' Screens
We wanted to design the collector screens to make it easier for them to support their drivers. This involved enabling collections and administrative work, enhancing loan counselling, and supporting collectors' in providing drivers with the necessary flexibility.

Collector Home Screen. Figure 4. We redesigned this screen to support driver management through calls.

Each driver has a red/green border, providing at-a-glance information on if they are behind or not on their loan.

Call Feedback. Figure 5 is a screen which pops up each time a call is made or received from a driver's number. Collectors record when the driver will pay, reasons for non-payment, etc. As this is shared with the back office it creates new organizational knowledge about driver's circumstances which previously only resided in the collectors' heads.

Discussion and Conclusion

We will demonstrate the various design challenges we encountered when developing applications for a range of digital, print and financial literacies. We will also show how the mobile and web apps streamline TWUs workflows whilst providing up-to-date information to drivers on their loan status. Together the system helps create a tighter feedback loop between back office, field workers and drivers, which we hope will lead to more informed choices about loan management.

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