

Freelancing Mobile Application Development for Low-literate and Semi-literate People: A User-centered Approach

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OVERVIEW

- Growth of internet and mobile technologies have become a powerful tool to improve socio-economic status of people.
- However, one of the major challenges that hinders the wide use of digital platforms is the inherent discomfort of low-literate and unskilled people about mobile applications.
- This project developed a freelancing platform intending to contribute to women empowerment and also considers the common challenges faced by low-literate people in the design process.
- Here, the study conducts a structured analysis to identify the challenges of the target user group, and feedbacks are accommodated subsequently during the different phases of the user-interface design process.
- Precisely, this project implements a user-centered app development cycle and identifies a few issues that may be useful for the app developers targeting rural or low-literate user group.

CHALLENGES

- One of the prime challenges in developing digital platform for the common people is to increase its usability.
- As they are marked by - [1]
 - less cognitive ability
 - low literacy
 - digital discomfort
 - not so flexible with this kind of internet platform
- Another challenge is to understand the needs of the common people.
- Generally this end-user community seems very reluctant to express their views and they often hesitate to use technological tools.
- We had to go through previous case studies[2] and take preparations accordingly. Nevertheless refusals to share opinions were not uncommon.

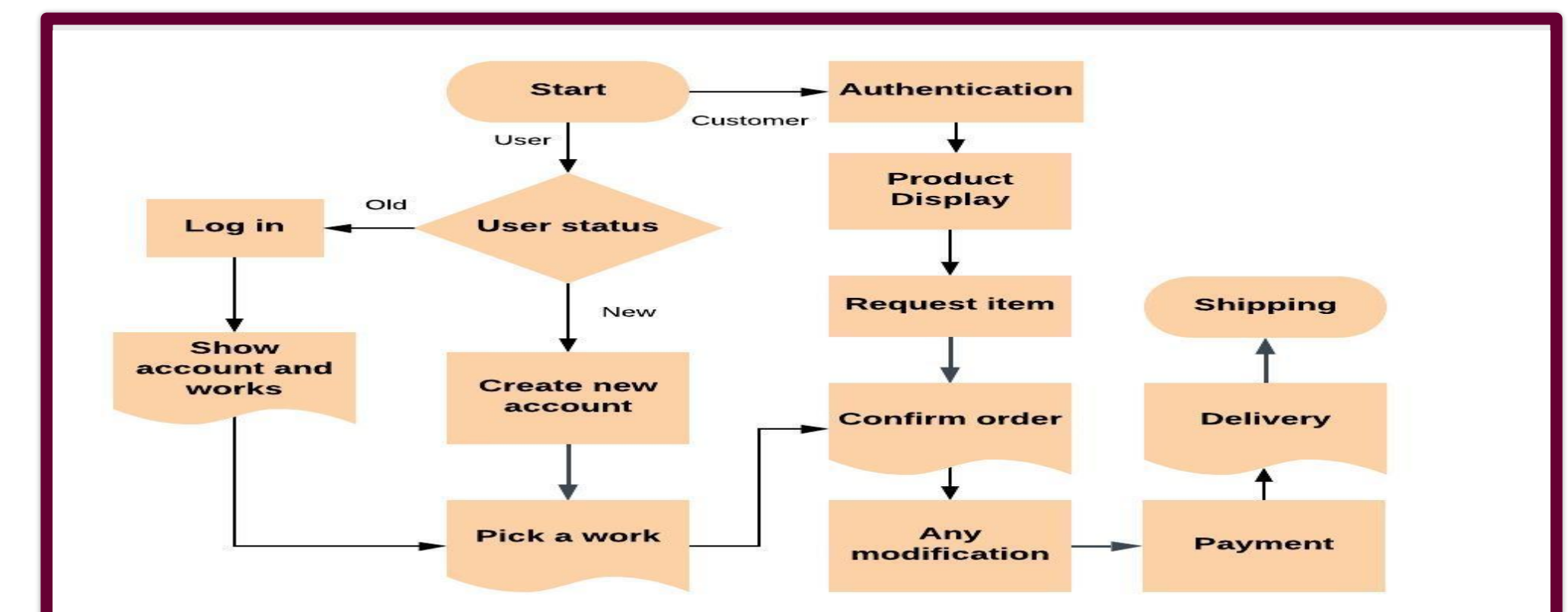


Fig. 1: System workflow diagram

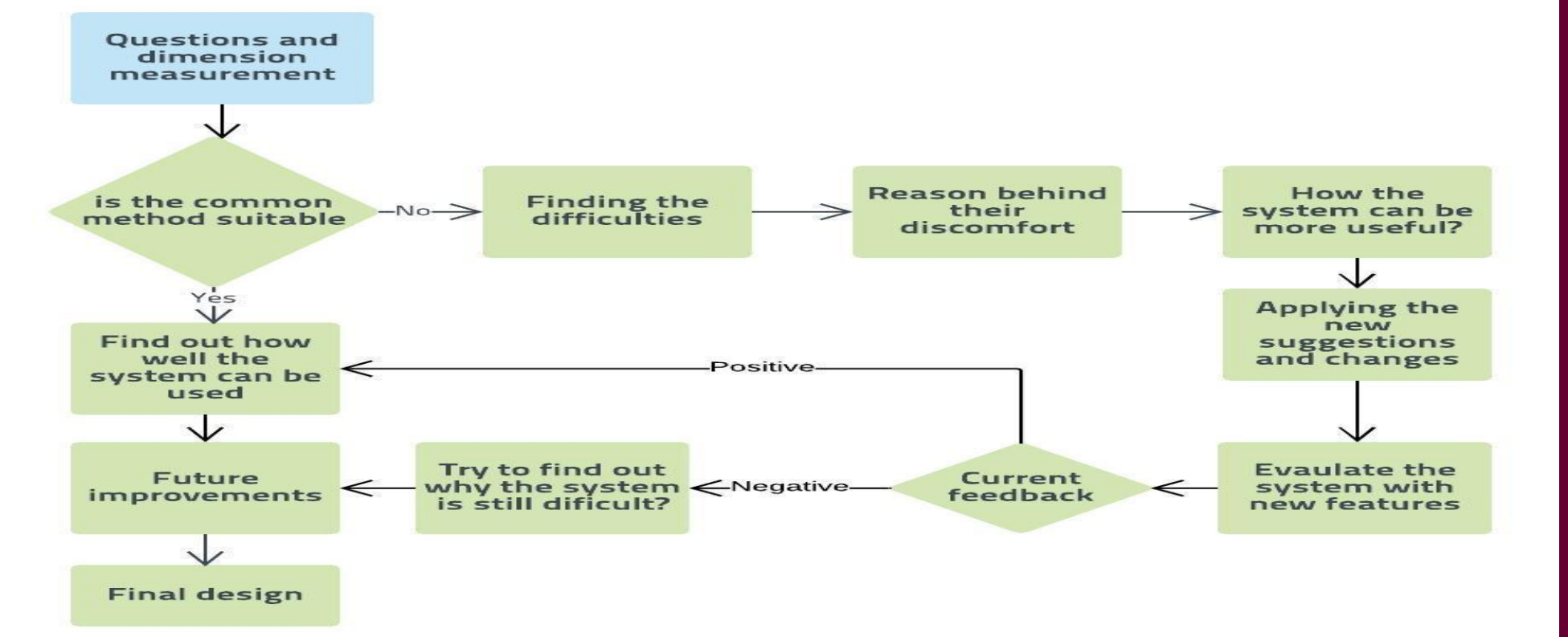


Fig. 2: Feedback based U/I design workflow

TEXT VERSION PICTURE VERSION



DESIGN EVALUATION

Phase-1	Phase-2	Phase-3
কারিগর		
নাম নিবন্ধন করুন		
NID দিয়ে নিবন্ধন করুন		
Only text	Abstract image	Drawn image

Fig. 3: Button design process

- **Phase-1:**
 - Bangla font is used in buttons.
 - Instructions are given in text format.
 - Brighter contrast is chosen as done in opera mini.
- **Findings:** 17 out of a sample of 30 people have found them easier to read and understand instructions given in Bangla.
- **Phase-2:**
 - Abstract icons corresponding to each of the activity buttons of phase 1 are taken into consideration.
 - Icons chosen are similar to existing apps like Bkash, Rocket etc.
- **Findings:** Demonstrates lower cognitive ability to comprehend these line images.
- **Phase-3:**
 - Image based customized buttons are designed as per the preferences in survey.
 - For instance, non-abstract painted images are designed based on the feedback given by the rural community.

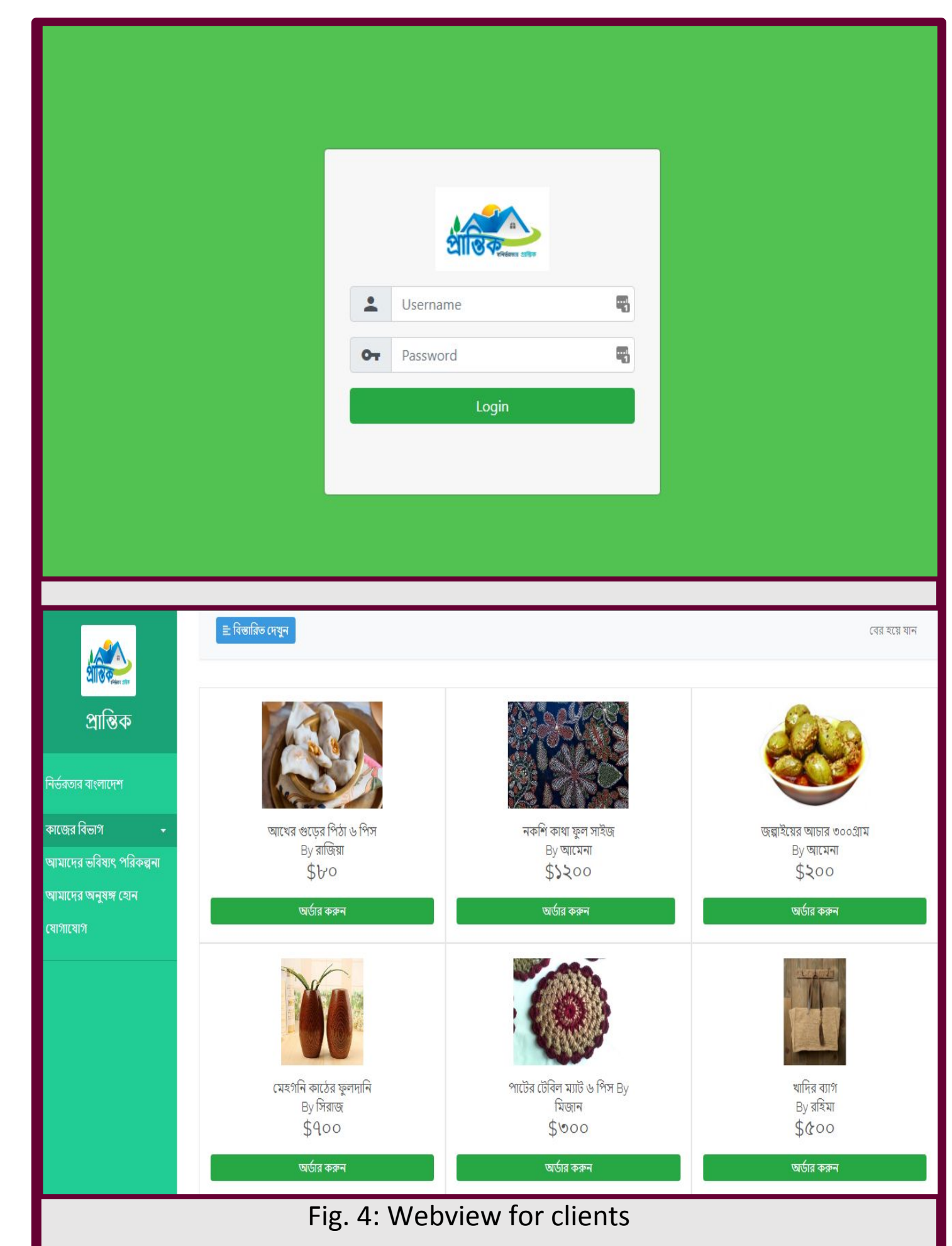


Fig. 4: Webview for clients

DESIGN EXPERIMENTS

Below questions are asked during the survey:

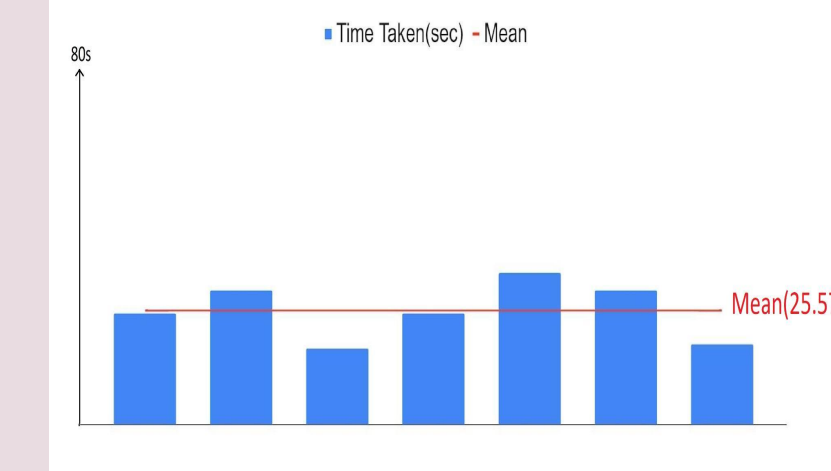
- Which of the following pictures gives you the clearest idea of a house?
 - Findings: 6.7% Line Drawings and schematic shapes are less comprehensible for low-literate people.
- From which of the following instructions you understand you're being asked to go to the back page?
 - Findings: 53.5% Four options for a sample button, users preferred commonly used icon.
- "Tap below" - which image does the instruction clearly indicate?
 - Findings: 40% Abstract designs are not welcomed, instead, people understand natural looking designs more quickly.
- Which of the following articles can you read most easily?
 - Findings: 40% for A Simple black font is easier for them to understand and follow.
 - Findings: 20% for F Strong contrasts and brighter colors such as red, magenta are preferred.

STATISTICAL ANALYSIS

- Participants are mostly housewives and their academic qualification is lower or equal to 8th to 10th standard.
- Two different samples of size 7 were considered. We explained the app to the sample 1 and sample 2 was unexplained about the app.
- Firstly, they were asked to navigate the app till the last page following the instructions given in each button.
- Lastly, they were given definite tasks to complete.

Findings: Inclusion of demo video explaining the app navigation steps tend to reduce users' discomfort.

Sample 1 (with demo)



Sample 2 (without demo)

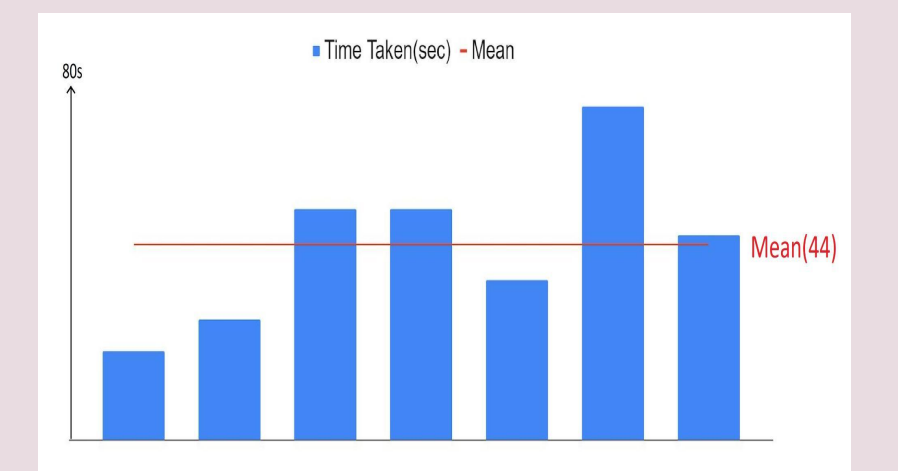
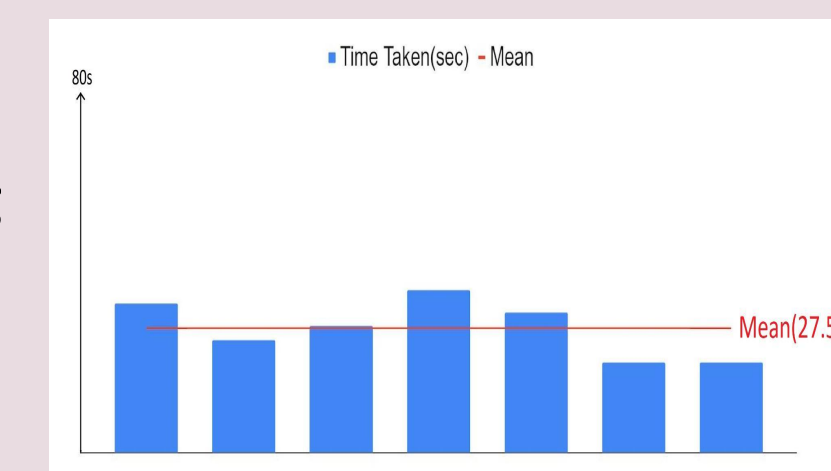
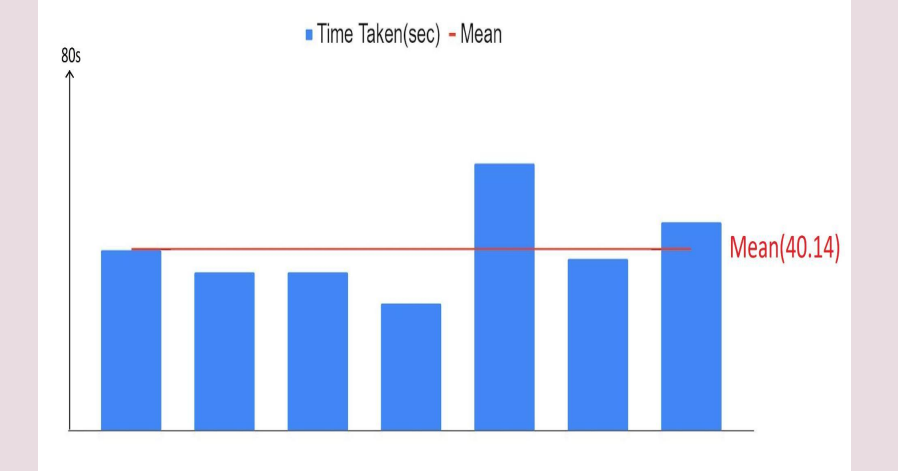


Fig. 5: Comparison of time taken (Sample 2 took almost 50% more time than sample 1 in each task on average)

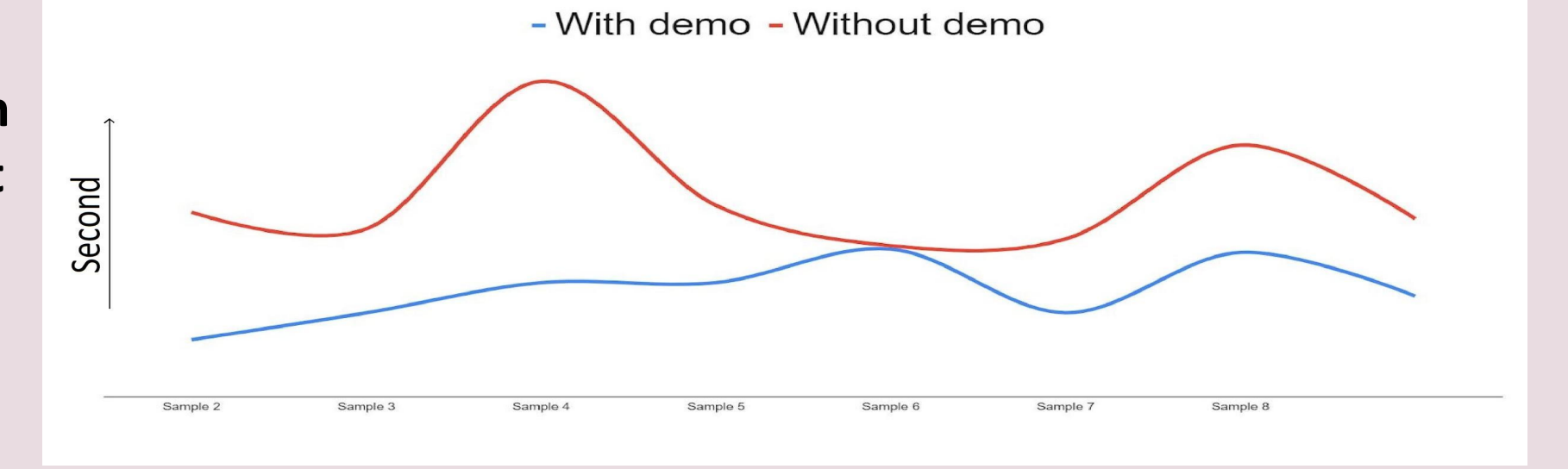


Fig. 6: Comparison of time taken (sample 2 took higher time than sample 1 on average)

FUTURE WORKS

A large scale survey and the subsequent feedback-based approach to optimize the app further.

REFERENCES

- [1] <https://itidjournal.org/index.php/itid/article/viewFile/243/113>
- [2] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6127496/>

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