

PHASE 3 - Report

Low Fidelity Prototype And Usability Testing



WiseWal.ai
(Savings and Expense tracker with AI based financial advisor)

Team 2

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1. Introduction

1.1 Introduction to the system:

WiseWal.ai is a financial management application designed to meet the dual needs of expense tracking and budget planning, alongside providing reliable financial advice which is AI curated. This solution aims to streamline financial management for users by offering a seamless interface where they can manage their income and expenses, visualize their financial status, set up budgets, and receive AI-powered financial guidance.

1.2 Purpose of Usability Study:

The purpose of the usability study for WiseWal.ai is to see how well its interface meets users' needs for managing finances. To study this, we have considered three tasks of varying difficulty levels, as listed below:

1. Adding/Updating expenses (Task 1) - Users will assess the intuitiveness and user-friendliness of adding/updating expenses/income within the app, aiming to determine the ease of the adding/updating an entry, for a specified time.
2. Budget planning (Task 2) - Users will evaluate the app's capability in budget planning, focusing on how well it accommodates users' requirements in creating/managing budgets.
3. Financial advice from AI (Task 3) - Lastly, users will explore the integration of financial advice provided by the AI-powered advisor by answering a series of questions.

Through this study, we aim to understand more about the user requirements and answer certain **questions about our interface**. Here are the ones that we mainly focused our testing upon -

- Are the input fields clearly labeled and easy to understand? (text, sliders, choices)
- Is the navigation intuitive for users to move through different sections of the application?
- Is the process of asking for AI-curated financial advice clear and straightforward?
- Users should feel empowered to customize AI-generated advice according to their preferences and comfort levels. Something like, are they comfortable / believe it?
- Is there enough guidance to navigate through tasks in budget planning and tracking?
- After completing tasks, how satisfied are users with the overall usability of the app?
- What suggestions do users have for improving the user experience of the app?

2. Prototype description

2.1 Prototype Description for all tasks:

The prototype was built for the three main tasks mentioned in the introduction **section**

1.1. The tool used for prototyping the application interface is **Balsamiq - Desktop app** version. The detailed description of the prototypes built and the flow of interactions are given below:

Task 1: Adding/Updating Income and Expenses

Feature Description:

- **Income and Expense Entry:** Users can add details of their income and expenses, including amounts, sources, and dates. This feature supports multiple income sources and categorizes expenses for better financial tracking. Users can update previous entries.

User Flow:

- The user selects the 'Income' tab from the main menu.
- They enter the amount of their monthly salary and categorize it as 'Salary' from a dropdown menu of income sources.
- For expenses, the user switches to the 'Expenses' tab, adds a new expense, selects 'Toys' as the category, enters the amount, and saves the entry.
- To update the income, the user returns to the 'Income' tab, finds the salary entry, and edits the amount to reflect the raise.

Design Elements: Simplified entry forms with auto-fill options for recurring expenses. Visual cues (e.g., icons) to differentiate between income and expenses quickly.

Task 2: Planning or Setting Up a Budget

Feature Description:

- **Budget Creation Tool and threshold setting:** Allows users to set up a budget by inputting their expected income and allocating funds to various expense categories, including rent, groceries, and savings. Allows users to set a specific budget threshold.

User Flow:

- The user navigates to the 'Budget' section of the app.
- They enter the total budget amount for the month.
- The user allocates portions of the budget to different expenses, starting with fixed expenses like rent.
- The app automatically calculates the remaining budget available for other expenses.

Design Elements: Interactive sliders for adjusting budget allocations. Visual representations (e.g., bar plots, graphs) to show the budget breakdown.

Task 3: Obtaining AI-Curated Financial Advice

Feature Description:

- **AI Insights:** The app analyzes the user's financial data to provide personalized advice, focusing on savings, investment opportunities, and expense optimization.
- **AI questionnaire:** This allows users to specify their financial goals, status and their needs in a more detailed manner so that the personalized advice can be tailored in a reliable fashion.

User Flow:

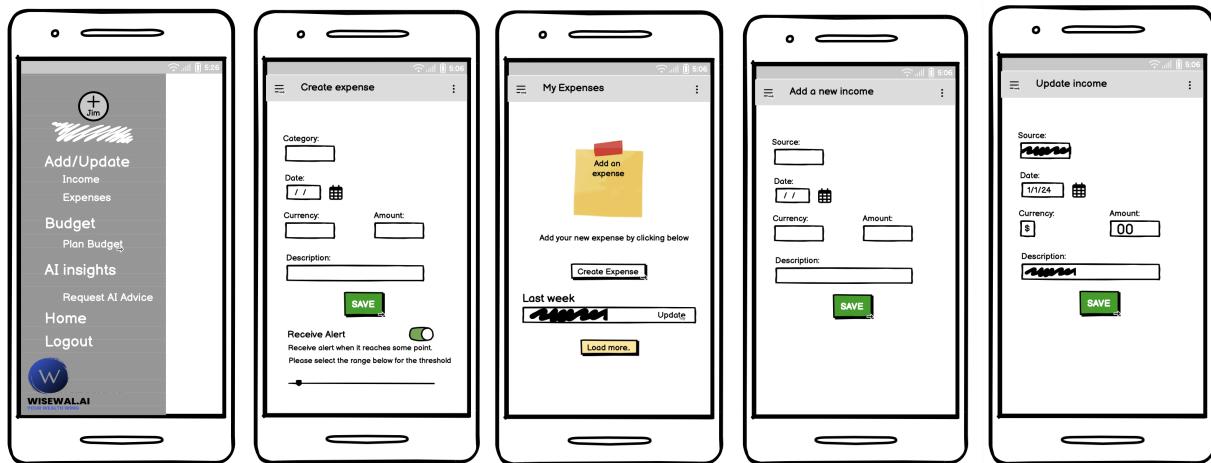
- The user accesses the 'AI Insights' section from the app's main menu.
- They provide additional information if required, such as prioritizing income sources and highlighting financial goals.
- The app presents personalized financial advice, including potential investment opportunities and ways to optimize spending.

Design Elements: AI-driven recommendations tailored to the user's financial situation. Interactive Q&A sections to refine the advice based on user preferences and goals.

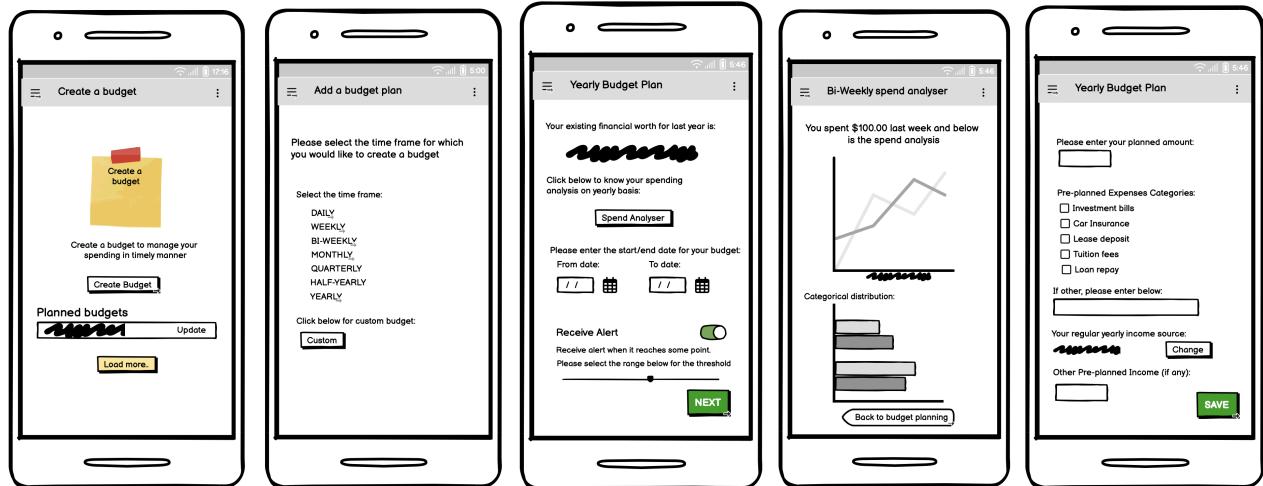
2.2 Digital Photos of Prototypes:

The snapshots of the initial prototype are as listed below:

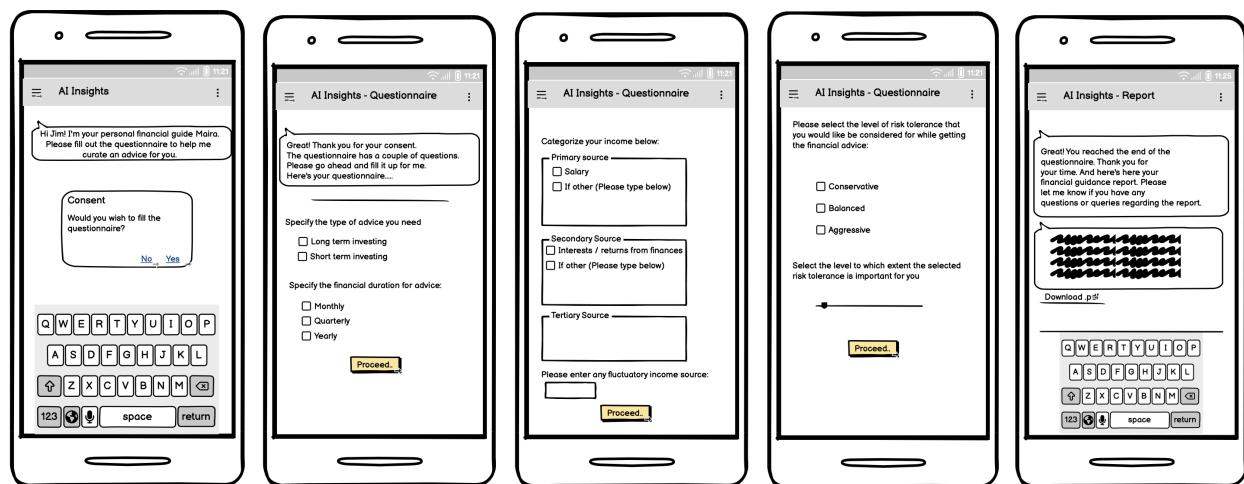
TASK 1: Income or Expense Adding and Updating



TASK 2: Budget Planning



TASK 3: AI Insights



3. Method

3.1 Usability Study Execution

3.1.1 Preparation Phase

Demo Script:

For the execution of usability study we had prepared a detailed demo script which consisted of the workflow to be followed during the usability testing, probing questions to be asked and feedback inquiry that had to be done. (Refer *Appendix section for the Demo Script*).

Task Description:

The index cards kind of task description were created for all the three tasks. These task description sheets were handed over to the users while they tested our prototype. (Refer *Appendix section for the Task Description*).

3.1.2 Conducting the Study - (In class)

We conducted the study for 5 users as mentioned below:

Dhruv Kolhatkar (dukolhet), Smit Patel (spatel68), Adnane (aelhach), Pranjali Jadhav (psjadhav), Ishika Gandhi (igandhi2)

The observations/feedback from these users are discussed later in the report (*section 6 and 5*)

The step-by-step breakdown of the usability study execution is as follows:

1. **Introduction and Icebreaker:** The facilitators - Reshma and Manasi began with a welcoming introduction, explaining the purpose of the study and participants' expectation. An icebreaker was used to comfort participants and ease communication.
2. **Background Questions:** Initially demographic information was collected to assess participants' previous experience with budgeting apps and technology. This step helped us in understanding their background and how it might influence their interaction with app.
3. **Consent:** We ensured that the participants read and agreed to consent, acknowledging their voluntary participation and the use of their data for research purposes.
4. **Task Execution:** The Facilitators guided participants through the usability tasks, while the observers (Yukta, Suraj and Aditya) were observing their interactions and noting any difficulties or points of confusion. We allowed them to perform tasks without assistance to get genuine feedback on the app's usability.

Task 1 (Easy): Adding/updating income and expenses.

Task 2 (Medium): Planning or setting up a budget.

Task 3 (Difficult): Obtaining AI-curated financial advice.

5. **Systematic Observations and Probing Questions:** The observers observed and documented non-verbal cues and asked probing questions after each task to delve deeper into participants' thought processes and experiences. (*Please refer the Demo script in the Appendix section for Probing questions*)
6. **Wrap-Up Questions and Feedback:** To conclude, we asked open-ended questions to gather overall impressions, suggestions for improvement, and any additional comments participants may have. This served as suggestions for further iterative redesigning.

3.1.3 Conducting the study for real users - Post Iterative design

Following the iterative redesign of the user interface incorporating feedback and suggestions from users, we moved forward with **actual user testing**. This involved two individuals:

- our team member, Manasi, who tested the UI before the ultimate end-user,

-
- and one authentic end-user who evaluated our final prototype.

The observations of this testing are in ***Observations section 6***

3.2 Roles of team members

The roles of team members are as follows:

- **Facilitators:** Reshma Rajashekaraiah, Manasi Bhagwat
- **Observers:** YuktaSree Muppala, Aditya Sonar, Suraj Raghu Kumar

As we used the Balsamiq tool to create our prototype, our team doesn't have a "**Computer**" role. In addition to the above roles, each of the team members also served as users for other teams to test their prototypes. Below is the breakdown of **who were users for which team**:

Reshma: Team 16 - Help the Pack; **Manasi:** Team 4 - ScanToSave **YuktaSree:** Team 20 - Solo; **Aditya:** Team 1 - Places of Interest; **Suraj Raghu Kumar:** Team 3 - Skilloos

4. Observations

4.1 User interactions during usability studies

Here's the description of what users did during the usability test/studies during each task-

Task 1: Adding/Updating Income and Expenses

User Actions: Participants navigated to the income section to add their monthly salary details, followed by entering an expense for a toy purchase. They then attempted to update the salary entry after receiving a hypothetical raise.

Interactions: Users interacted with form fields, dropdown menus for categorizing the income and expenses, and edit buttons for updating entries. Some users utilized the search functionality to quickly find the expense category.

Task 2: Planning or Setting Up a Budget

User Actions: Participants were tasked with creating a budget plan for the month. They entered the total budget amount, allocated funds for rent, and anticipated income. Users interacted with the app to input pre-planned expenses and income figures.

Interactions: Interaction with budget allocation tools, such as sliders or input fields for setting up different budget categories, was common. Users also engaged with visualization tools, like charts or graphs, to review their planned budget distribution.

Task 3: Obtaining AI-Curated Financial Advice

User Actions: Users sought personalized financial advice by providing details about their income prioritization, essential vs. discretionary expenses, and interest in short-term investments. They navigated to the AI insights section for this purpose.

Interactions: Participants interacted with questionnaires or forms to input their financial data, used toggle switches or checkboxes to indicate preferences, and engaged with the AI-generated advice presented in text or infographic format.

4.2 Non-verbal cues

Task 1 - The initial entry of income and expenses was met with **nods of satisfaction**, suggesting that this part of the process was straightforward and intuitive.

Task - 2: During budget planning, users displayed **concentration and engagement**, often leaning closer to the screen when allocating funds. Uncertainty or hesitation was observed in some participants through prolonged pauses, when deciding on adding uncertain expenses.

Task - 3: Interest and curiosity were evident as users explored the AI insights. However, instances of confusion or disappointment were also noted, when the questionnaire had complex financial terms, indicated by puzzled expressions.

4.3 Classmates (users) interacting with our prototype

4.3.1 Users in class interacting with our prototype:

1. Dhruv Kolhatkar (dukolhet)

Suggestions:

On the home page, the icon has ‘+’ sign.
Change it. Put navigation on one page back.



2. Smit Patel (spatel68)

Suggestions:

Add a ‘+’ icon so that the users can add expenses by just clicking that.
Need a back button on navigation.
Chat based questionnaire is better



3. Adnane (aelhach)

Suggestions:

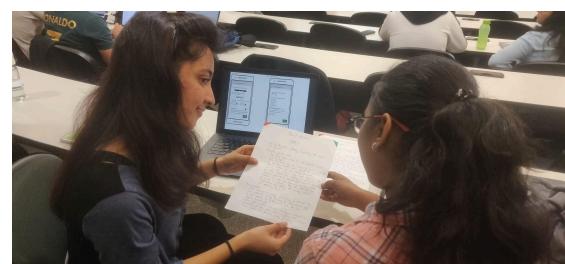
For setting threshold, slider might not be an accurate option



4. Pranjali Jadhav (psjadhav)

Suggestions:

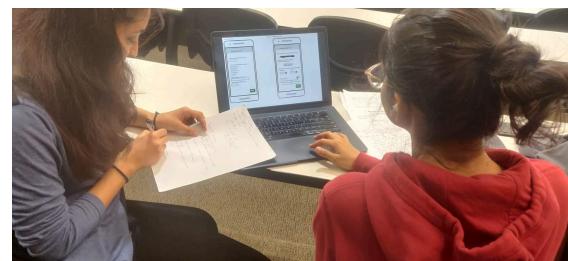
Need a back button for navigation.
Rest of the flow seems intuitive.



5. Ishika Gandhi (igandhi2)

Suggestions:

Overall flow of the app seems good, apart from the navigation button missing.



4.3.2 Real user testing our prototype:

After the iterative re-designing of the user interface based on these users' feedback and suggestions, we proceeded with the real user testing.

For this testing we followed up with two of the below users -

1. **One of our team member Manasi** - tested the UI prior to the real end-user
2. **One real user** tested our final prototype

Team member - **Manasi** Testing our finalized prototype (*left most pic*) and the **real user testing** our finalized prototype (*second and third pic*)



5. Prototype iteration

The overall feedback from the users upon testing out the prototype of WiseWal.ai was pretty satisfactory. However there were few modifications that the users suggested for the ease of flow in interacting with the app and the clarity of the selections in the tasks.

5.1 Improvements in Prototype after usability testing feeding:

1. Addition of Navigation Buttons: - (Refer Fig. 2, 3 and 4)

- **Feedback Origin:** Pranjali Jadhav, Dhruv Kolhatkar, Smit Patel observed the absence of a straightforward way to navigate between pages, which affected the app's usability.
- **Improvement Implemented:** We introduced navigation buttons at the top left corner of every screen, allowing users to effortlessly switch between current and previous pages.



2. Listing Cleared Options on the Menu Page - (Refer Fig. 1)

- **Feedback Origin:** Dhruv Kolhatkar suggested making options clearer on the menu page to facilitate ease of selection during tasks.
- **Improvement Implemented:** We revised the menu layout to list all available options more clearly, ensuring they are readily visible and selectable without confusion.



3. Removal of the Confusing '+' Icon on the Menu Page - (Refer Fig. 1)

- **Feedback Origin:** Dhruv pointed out that the '+' icon on the menu page was confusing.
- **Improvement Implemented:** We removed the ambiguous '+' icon from the menu page to prevent confusion regarding its purpose.



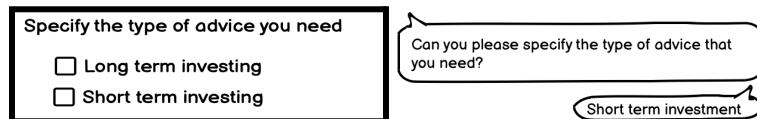
4. Addition of '+' Icon to Indicate Adding an Expense - (Refer Fig. 2)

- **Feedback Origin:** Dhruv Kolhatkar recommended adding a '+' icon specifically for adding expenses to make this action more intuitive.
- **Improvement Implemented:** A clear '+' icon was added to the expense tracking section, explicitly indicating the option to add a new expense.



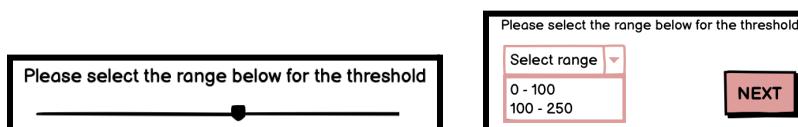
5. Modification of Questionnaire Format to Chat-Based Interface - (Refer Fig. 3)

- **Feedback Origin:** Adnane suggested that a chat-based interface for the questionnaire would be more intuitive than the original format.
- **Improvement Implemented:** We transformed the questionnaire into a chat-based interface, mimicking a conversational style to make interactions more engaging and less formal.



6. Replacing the Slider Option for Budget Threshold Alert - (Refer Fig. 4)

- **Feedback Origin:** Adnane mentioned that the slider option for setting a budget threshold alert was imprecise and suggested replacing it with a more accurate method.
- **Improvement Implemented:** We replaced the slider with a dropdown option for users to select a range of their budget threshold, ensuring precision in setting alerts.



5.2 Improved and changed designs after initial prototype evaluation:

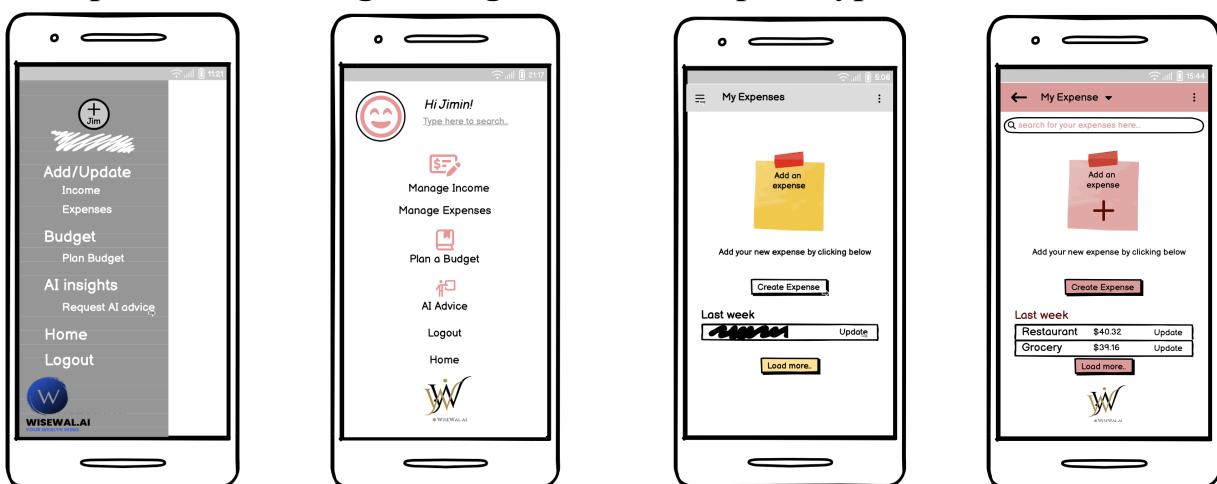
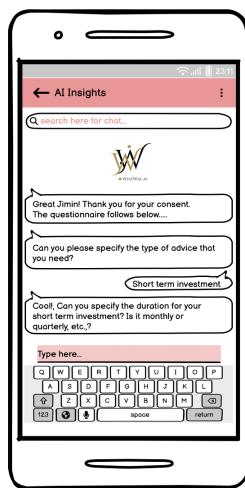
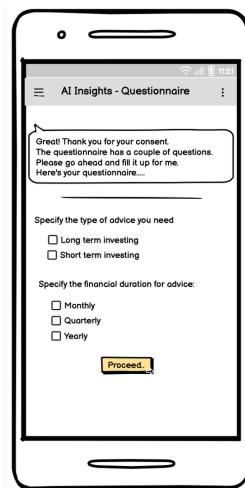
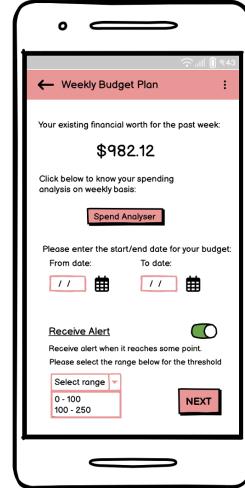
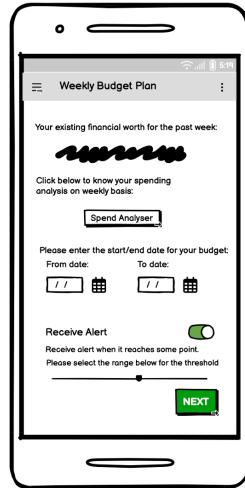
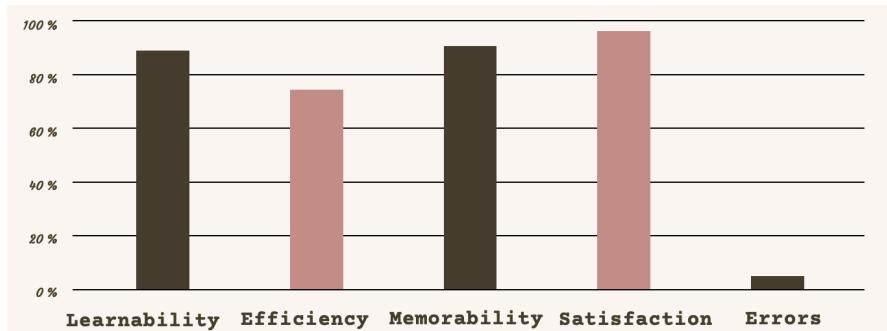


Fig. 1: Clear options in Menu page**Fig. 2: Changes in Expense add page****Fig. 3: Chat based questionnaire**

6. Discussion

6.1 Results of Pilot Study:

The pilot study, designed as a preliminary assessment, revealed critical insights into the interface's usability and user experience. Participants interacted with the core functionalities of the app, including **navigation, transaction entry, and budget setting**. Initial feedback highlighted the app's intuitive layout but pointed out issues with certain interactive elements, such as the difficulty in editing transactions and understanding budget allocation visuals.

**Fig. 5: Result Analysis - Usability Goals**

6.2 Results of Real Study:

Following adjustments from the pilot study, the real study encompassed a participant who was a real end-user and aimed to validate changes and uncover deeper usability issues. This study had the finalized prototype with improvements in transaction editing and budget visualization. This version of the prototype was efficient and error free than the previous version. The user showcased a **high amount of satisfaction** and **ease of performing the tasks**.

6.3 Risky parts of Interface:

One major risky part of the interface was the AI based questionnaire as it was the one which needed more information regarding the user's financial situation and any errors in that would lead to wrongly curated advice by AI.

Apart from this, the studies exposed other risky areas in the interface:

- **Complex Navigation:** Users found it challenging to navigate between different sections, affecting their overall task efficiency.
- **Gesture Inconsistency:** There was confusion over gesture controls (swipe vs. tap) for different functionalities, leading to a disjointed user experience.
- **Information Overload:** Some sections of the app presented too much information at once, overwhelming users and obscuring key features.

6.4 Aspects that weren't revealed from the study

Despite the comprehensive nature of the studies, certain aspects remained underexplored:

- **Long-Term Engagement:** The studies did not reveal how users' engagement with the app might change over time, including the app's effectiveness in promoting sustained financial management habits.
- **Accessibility Concerns:** Limited feedback was gathered on the app's accessibility, particularly for users with disabilities, which could impact the app's inclusivity.

6.5 Usability Problems found

1. **Inefficient Task Flows:** Tasks like setting a budget or adding expenses required unnecessary steps.
2. **Confusing UI Elements:** Some icons and buttons did not clearly convey their function, leading to user confusion. The icons on the budget planning page and the menu page were quite confusing
3. **Limited Customization Options:** The app offered limited options for personalizing the interface and financial tracking features. Users expressed a desire for more customization, such as choosing themes, setting custom alerts, and tailoring the dashboard to highlight information most relevant to them.

6.6 Proposed design solutions

To address these issues, we proposed the following design solutions:

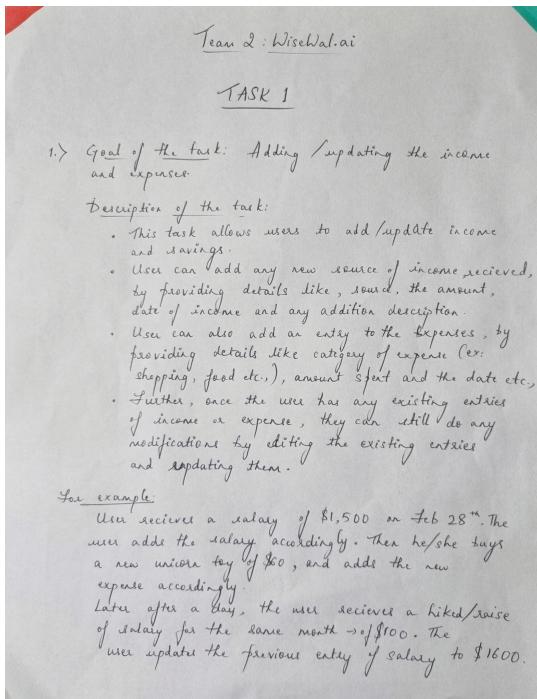
- **Simplified Navigation:** Implement a top navigation bar with clear, labeled icons for major sections of the app to improve ease of access. (*Added back button on the left*)
- **Standardized Gestures:** Standardize gesture controls across the app and include a brief tutorial on gesture use to enhance consistency.
- **Information Hierarchy:** Redesign screens to prioritize key information and actions, using **collapsible menus** and filters to manage content density. (*adding search bar*)
- **Iterative Task Flows:** Streamline task flows by reducing the number of steps to complete actions, incorporating smart defaults and predictive text during .
- **Clarified UI Elements:** Redesign ambiguous icons and buttons with clear labels or tooltips that appear on long-press or hover, improving clarity.
- **Enhanced Personalization:** Introduce user profiles to customize, allowing users to set preferences and goals for a tailored experience.
- **Accessibility Enhancements:** Conduct accessibility testing and incorporate features like voice commands, screen reader compatibility, and adjustable text sizes to ensure inclusivity.

Appendix

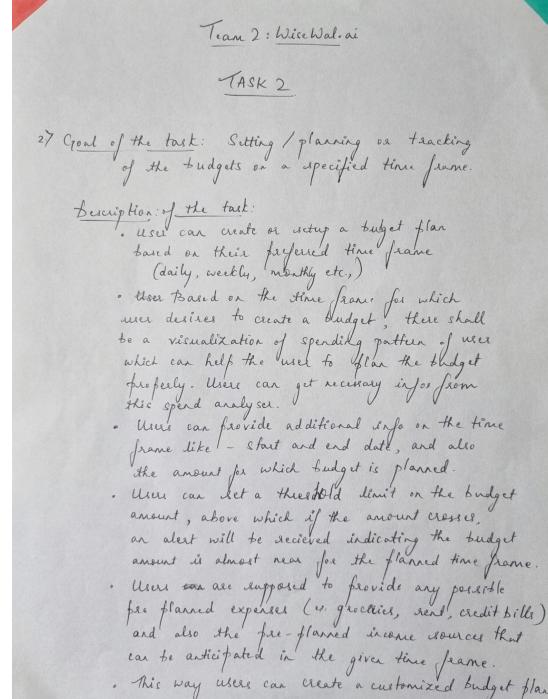
I. Task Description:

The below images are the task descriptions for all the three tasks, which were made to hand over to the users to make the directions clear as to what needs to be done by them.

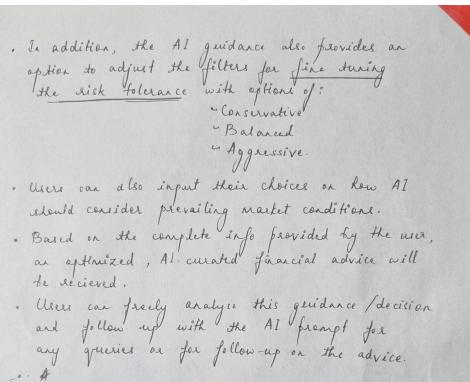
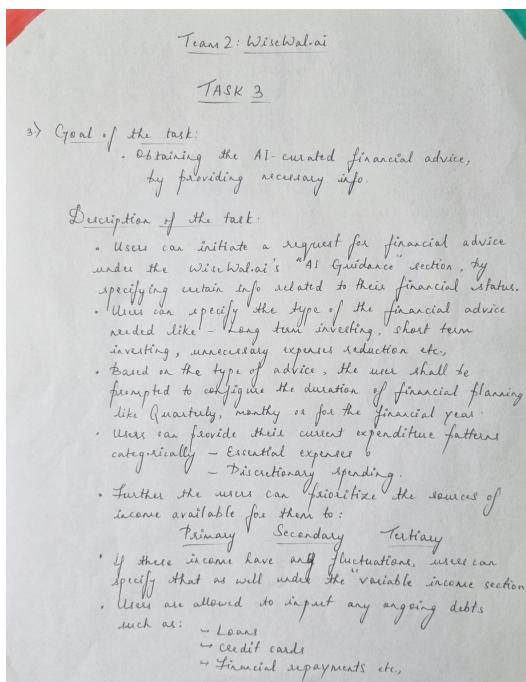
Task 1



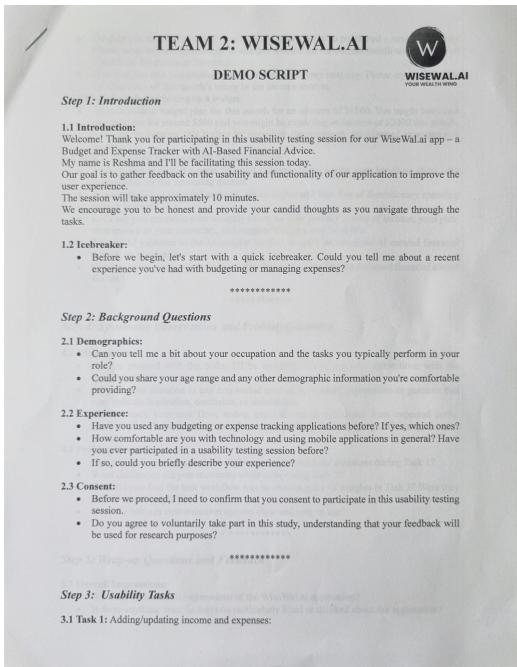
Task2



Task 3



II. Demo Script



Step 3: Request for Documentation and Questions

3.2 Task 2: Planning or Setting up a budget

- Imagine that you received your monthly salary, and you purchased a new unicorn toy. Please navigate through our app, to add this income for the current month and then add an expense of purchase for today.
- Now imagine that you receive a raise in salary the very next day. Please try updating the existing entry of this month's salary in the income section.

3.3 Task 3: Consulting the AI-curated financial advisor

- Say you need a budget plan for this month for an amount of \$1500. You might have rent payment due for around \$500 and you might be expecting an income of \$2000 this month. Can you try creating this budget by providing the necessary pre-planned expenses and incomes?
- Imagine that you need a good financial guidance to try laying your hands-on short-term investments for the upcoming quarter.
- Imagine that your essential expenses are on higher end than that of discretionary spending (which is good!) ☺.
- Let's say you prioritize your monthly salary as your primary source of income, your part-time money as your secondary, and imagine that you owe no debts.
- Try our AI guidance in the AI insights section, to get a personalized AI curated financial advice, by proving the
- Can you identify any trends or recommendations provided by the AI-based financial advice feature?

Step 4: Systematic Observations and Probing Questions

4.1 Observation:

- As you proceed with the tasks, I'll be carefully observing your interactions with the application.
- I'll pay close attention to any non-verbal cues such as facial expressions or gestures that may indicate frustration, confusion, or satisfaction.
- I'll also track your task flow, noting any patterns or deviations from expected paths. Additionally, I'll monitor the time taken to complete each task to gauge efficiency and ease of use.

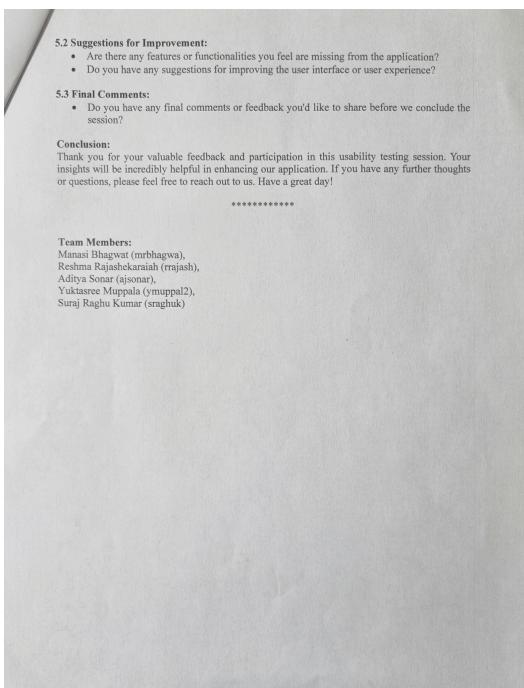
4.2 Probing Questions:

- Can you walk me through the thought process behind your decisions during Task 1?
- What challenges did you encounter while completing Task 2?
- How did you find the task workflow was in obtaining the AI insights in Task 3? Were they helpful or not helpful?
- Were the settings customization options clear and easy to use?

Step 5: Wrap-up Questions and Feedback

5.1 Overall Impressions:

- What are your overall impressions of the WiseWal.ai application?
- Is there anything specific that you particularly liked or disliked about the application?

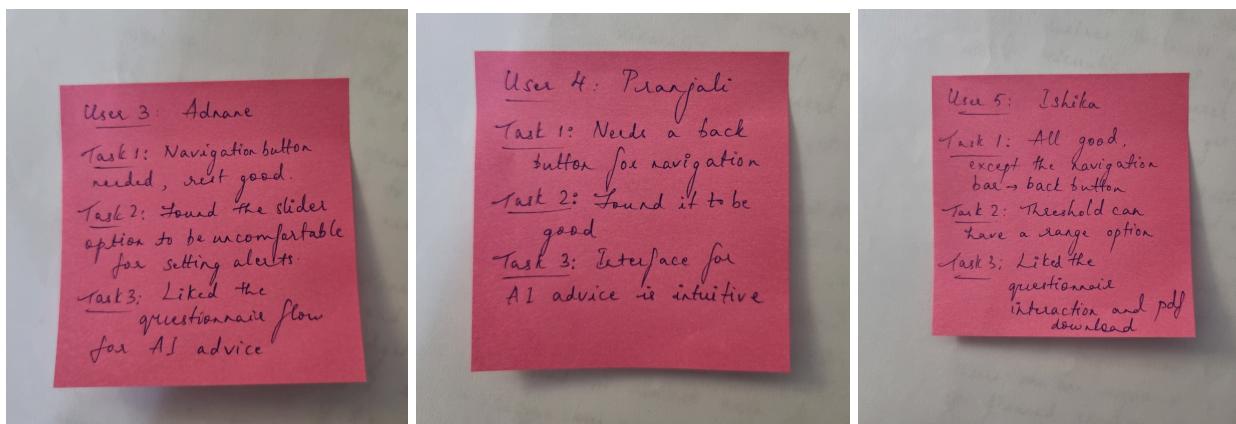
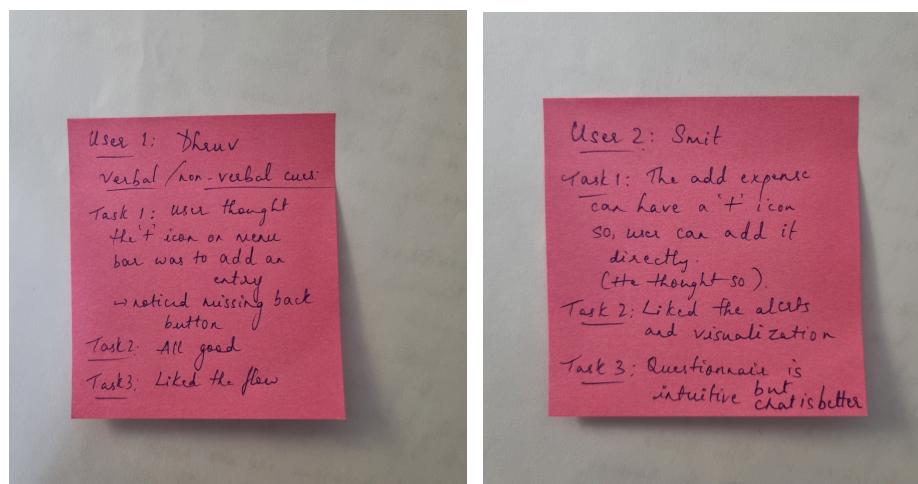
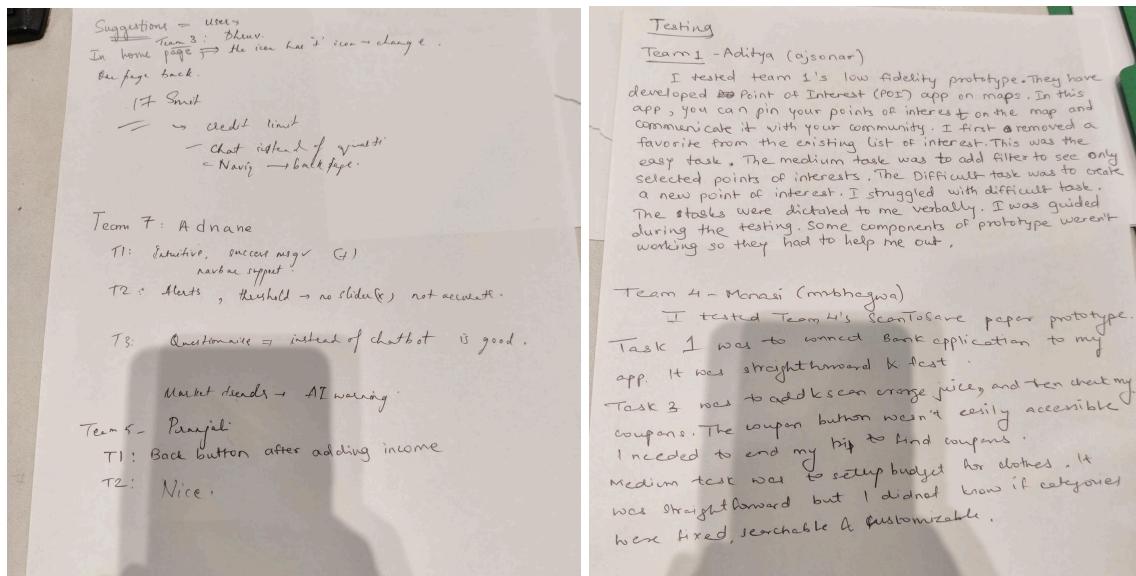


NOTE:

The Demo Script was slightly changed after certain suggestions were given by the professor and the updated Demo script is a soft copy which can be accessed here -

<https://drive.google.com/file/d/1TZ02LuTC99pqqR9o6QJKwSXX3GSICZAO/view?usp=sharing>

IV. Observation Notes made during the demo



Team 2 Members who tested other prototypes

1. Aditya - Tested Team 1's prototype

I tested team 1's low-fidelity prototype. They have developed a Places of Interest (POI) app. It shows your places of interest on maps. In this app, you can pin your points of interest on the map and share it with your community.

For an easy task, I removed a favorite from the existing list of interests. The medium task was to add filters to see only selected points of interest. The difficult task was to create a new point of interest. I completed easy and medium tasks easily. I struggled with the difficult task. The tasks were dictated to me by the facilitator verbally. I was guided during the testing. Some components of the prototype were not working so they had to help me out.

2. Suraj - Tested Team 3's prototype

I tested Team 3's Skilloos low fidelity prototype which is a learning platform that utilizes skilloos as a credit for learning and teaching skills. The user interface of the application was friendly and interactive. Here the easy task for me was registering for attending a lecture on a selected skill by utilizing the gained skilloos, but there wasn't any window that shows the available skilloos which are required to register for a particular lecture duration which looked like a missing feature for me . Scheduling a lecture for gaining skilloos was more of a challenging task for me because it had 3-4 steps along with selecting the duration for lecture via analog clock which required certain effort to adjust the duration of the lecture offered.

3. Manasi - Tested Team 4's prototype

I tested Team 4's ScanToSave paper prototype. Easy task was to connect a bank application to my app. It was straightforward and fast. Medium task was to set up a budget for 'clothing'. It was straightforward but I didn't know if categories were fixed, searchable & customizable. Difficult task was to add and scan orange juice and then check my coupons. The coupon button wasn't easily accessible. I needed to end my trip to find coupons.

4. Yukta - Tested Team 20's prototype

I tested Team 20's low fidelity prototype Solo, which is a solo traveling application that helps the users connect with other travelers with similar interests. The UI was user-friendly to an extent. The ticket booking interface of the application lacks key features, such as intuitive flight browsing, comparison, and ticketing components. Preferences for finding matches are not completely clear and some options should be made optional based on the privacy of the users. I felt there is a need for a more intuitive interface for searching other travelers and also for managing the matched connections.

5. Reshma - Tested Team 16's prototype

I tested the prototype of application team 16, which is 'Help the Pack', which is a platform that helps the international students to settle and get comfortable at the new place. The UI was complicated when it comes to checking available accommodations.

The home button was not easy to locate. The easy task was the OIS check application which just requires the user to read the OIS norms and regulations and accept the conditions. The difficult task was accommodation searching as the search feature was not easy to locate and navigation to this page requires a lot of steps.