

CSCI 5601 – Milestone 1

Group Information

Project Title: Spending / saving / bill tracking

Date: 12-10-2022

Group Name: GOLD

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Project Description

Purpose and Background

Study Purpose

Money management could be a tedious task when it comes to manually writing it down each spending we made or remembering when to pay out bills monthly. Our study focusses on the various money management applications and how users can use them to manage money, get analysis of their spendings, track expenses. This study also focuses on providing timely reminders to users to pay their bills and calculates interests for loan installments. The main objective of this study is to find the necessity of using these applications and finding the drawbacks of the existing money management applications available in the market. In this study, we listed down various aspects which users needs to manage money rather than using the conventional approach remembering the bill due dates or writing it down each expense. To perform this study, we have asked users various questions based on the existing application's usage and observed them while performing the tasks. At first, we studied the application and came up with the features that these applications had and interviewed users to perform some tasks based on the features. We also asked users some post-study interview questions on various themes to know exactly what user wants and what need to be improved in the application. One more crucial purpose of this study is the focus on user experience and user interface which makes a huge impact on application's usage. By interviewing the users, we will be able to know the areas where the users are more tending while using the application and focus on areas which users think might be improved. After getting the feedback from the user, we will improve the applications standards which will allow user to manage bill payments, expenses and get the reminders before the due dates. Our end goal of this study is to meet the expectations of this user and provide them with the new experience of managing money by avoiding traditional approaches.

Objectives

In this study process, our main objectives are

- To understand users needs and provide them an application which provides a hassle-free way to manage money.
- To focus on the improvements to the applications based on the user's feedback and user's expectations.
- To observe users while they are performing the tasks and take notes on how they are performing the task/using features to perform multiple tasks.
- To interview users based on their usage and ask questions on the approach they used to take to perform task and observe if they are facing any difficulties while performing these tasks.
- To focus on the user experience of the applications and make changes to the existing features in the application.

Literature Review and Application Assessment

This study presents how mobile based financial management applications impact users with various literacy rates and how the User Interface of the application impact the learnability of the user and avoid conventional ways to manage money. For any user, design or the Interface of an application matters while it comes to the learnability of the application. This impacts user to shift to the app-based system rather than traditional money management strategies. Learnability may again vary between different users and the impact of digital finances and budget planning has brought a change in how people spend and save money for the future. Many researchers have tried to address the issues in the areas of learnability of users, what exactly is the best Interface or design, user's needs and expectations. But there are many areas in which these questions go unexplored.

The user's needs and expectations lie on the process or the pattern that they follow to manage their finances. One of the patterns which is getting the user's attention these days is by using the mobile apps that will allow users to manage finances digitally, get timely reminders before bill due dates, create budget plans for future saving or hassle-free way to calculate interest for the loans. Hence, the researchers are tending more towards finding the patterns in Smartphone-based applications for spending/saving/bill tracking that will reduce the time overhead for users and create awareness on the need for these digital financial services.

Our study on "spending/saving/bill tracking using mobile apps" will allow users to make budget plans and get the analysis of their spendings by increasing the user experience on the existing applications and provide learnability for users of various literacy rates.

The authors have come up with applications for a target audience with wide range of literacy levels. The authors also tried to present the challenges introduced on digital interface as well as learnability. Although, communicating the information about the loan and interest rates has been challenging, this paper tries to perform loan interest calculations in a hassle-free way that could influence user to use these finance management applications. This paper also focusses on shortening the time required for household or business financial tasks.

The authors tried to use three personal finance software programs to test the design and learnability of the users. These software programs include report generation which provides analysis of the spendings, budgeting tasks, reminders for bill payments, financial planning, tax planning and loan interest rate calculations. In the report generation, the graphics or the user interface includes charts and graphs in 3D form which can be personalized based on the transactions of the users.

In this paper, authors tried to give strategies of each of the functions while addressing the challenges in the existing system. Some of the descriptions to these functions include:

Budgeting support, the dividing of transactions across several categories, the automatic creation of budget accounts based on user input by creating various categories, and the automatic creation of a draught budget are all examples of budgeting help. Reminders for bill payments, one to twelve bank accounts can be tracked using personal finance software, which can also schedule future transactions, memorize recurring transactions, reconcile bank statements, link to credit card statements, and bill-reminder and bill-paying services provided by banks and "middleware" vendors like Pay Online, Intuit CheckFree Financial Services, and similar businesses. This will remove the overhead to the users to remember when to pay the bills or where sometimes users might forget about the bill due dates. Financial Planning includes analyses of net worth, spending habits, and cash flows; loan calculation and amortization tables; automatic crediting of loan payments transferred from checking accounts; accounting for the splitting of payments among principal, interest, and escrow; and "what if" scenarios to assist users in determining their life insurance needs and plans for debt repayment and retirement. This financial planning strategies help user to control their spendings based on the previous spending where the user is allowed to set a fixed budget for that month/year. In addition to establishing tax liabilities, linking categories to specific tax forms and schedules, exporting data to significant tax applications, and enabling the viewing this feature aids in the identification of tax deductions. This additional feature in the application helps in managing taxes. Calculating interest loan after there is any change to the installments will provide user to easily manage loans and avoids the manual calculations which might be confusing when there is any change in the loan.

Although these are the functions serve the purpose of the users, there have been some proprietary bank software's that few banks have developed on their own whereas some other banks have purchased off-

the-shelf programs. For the internet (Wi-Fi) access, customers used web browsers that has encryption algorithms which facilitated them to use the mobile applications. There are also many personal finance software's in the market that will allow users to connect to the bank by dialing-up directly from the customer's PC. After establishing a connection, customers may send electronic payment instructions and download their financial information to spreadsheets or personal finance software that is installed locally.

The authors tried to focus on the middleware applications as well which will improve learnability and the awareness to use DFS. The creation of middleware—applications that connect databases to a user interface—has increased the functionality of personal financial software and increased public awareness of online banking. Electronic bill payment requests are issued to middleware firms using home banking. These companies pay the bills, while the relevant financial institution handles account transfers and requests for balance information. When Peter Kight founded CheckFree in 1981 to electronically collect monthly health club membership payments, middleware businesses were born. The business saw the demand for electronic bill presentment and payment services right on and went on to establish the required bank partnerships and create the required software.

As part of the study, the authors tried to identify DFS adoption opportunities such as user readiness to use these services, User Interface improvements, and one more crucial factor: women's independence to use these financial services. All of these opportunities stem from awareness and understanding of relevance, which occurred as a consequence of exposure to the application under evaluation.

By using three prototypes and following different strategies by interviewing users of different age groups the authors performed studies on the usability of the application. The results of which were used in our money management application.

Information Gathering Approach

Location, Equipment/Application and Study Instruments

Location

The study will be done in a lab in the Goldberg Computer Science Building. Users will be asked to do a variety of tasks using YNAB (You Need A Budget) on a *phone* for us to better understand spending/saving/bill tracking using mobile.

Participants will be asked to do 4 tasks that demonstrates these features: set reminders for bill payments, perform the analysis of your expenditure, save money by planning using the app and get an estimation of saving interest on the loan, followed by a short interview on their experiences using YNAB see Appendix B for the tasks and questions.

While participants complete the tasks, we will observe them and record these observations using a coding sheet (Appendix C). We may record the session but only the interactions on the screen will be recorded. Nobody will have their video on [for privacy reasons]. All recordings will be deleted at the of the study (after analysis).

Process

This is a step-by-step process of what the user will do. (note, you should refer to Appendix A – study script in this section)

In the study, the process includes certain steps which the user needs to perform. In the first step, user will be given with the complete overview of what our study. Next, the user needs to perform 4 tasks which were given by us using the YNAB application. Once the user completes the task, we will observe and ask few questions regarding the tasks which user has performed. These questions are based on how that feature was, what could be improved, and these are asked after every task. Once this interview is done, we will ask the user some post-study interview questions to get more feedback on the experience of using the application.

Researcher Roles

There are in total 2 researchers involved in the study. These researchers are responsible to observe the user while they are performing the tasks which are given to them. They are also responsible to take notes at each step to know how the user has performed that task and to know whether user has liked or disliked using that feature in the application. They are also responsible for asking questions about the features to the user.

Expected Time to do the study

The study is expected to take approximately 40 minutes focusing on 20 minutes for each user.

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Appendices

Appendix A – Introduction Script

Appendix B – Task List/task scenarios and interview questions

Appendix C – Coding Sheets

Appendix D – Work break down by team member

Appendix A – Introduction Script

Hello, we are a team of passionate UX Designers. We are team “GOLD”

We are studying the topic of banking: spending/saving/bill tracking using mobile. In order to find out more about this, we have chosen an application based on this topic. This application is about banking aspects that is sending reminders for bill payments. It enables users to analyze the expenditures which in turn helps to reduce unnecessary expenditures and helps in saving money. It also aids in saving interest on the loans.

We have come up with 4 different tasks that we are going to ask you to perform on our device using this application. The first task that we would like you to perform is to set reminders for bill payments. Another task we would like to have is a walkthrough to perform the analysis of your expenditure. Thirdly, we would like you to perform is use the application which will encourage you when you are planning to save money. The last task you can perform in our application is to get an estimation of saving interest on the loan.

After you perform the tasks, we have a short interview with specific questions about your experience using the app and also about banking: spending/saving/bill tracking in general.

The process should take 37.5 minutes. Please let us know of any questions that you have at any time.

Appendix B – Task List/task Scenarios

TASKS AND QUESTIONS

Task 1:

The first task we would like you to perform is to set reminders for bill payments.

Using the application, you want to get the reminder for bill payment of your credit card as you have missed the due date last month. For this month, you do not want to miss the due date as it is affecting your CIBIL score. So, you are setting the reminder for reminding you for the bill payment two days before the due date which will give you alerts every 6 hours from two days prior.

Questions:

After doing this task, we have a few questions we would like to ask you:

- 1) What features in the application you used to set the reminders for the bill payments?
- 2) What did you like/dislike about the setting reminder feature?
- 3) How did you use to set alerts previously?
- 4) What would you like to have added or improved to the existing feature?

Task 2:

The second task we would like you to perform is an analysis of your expenditure.

Using the application, you want to set your budget as last month you spent too much in restaurants and cafes. Due to this, your budget is disrupted, and you want to track expenditures for the coming months. For this, you need to get some insights to help you analyze your expenditure. For analyzing the data, you are using the reports feature which displays the charts such as pie charts, bar charts, etc. that give you in-depth insights into income and expenses.

Questions:

After doing this task, we have a few questions we would like to ask you:

- 1) How have you used to analyze your expenditures previously?
- 2) What features in the app did you use to analyze the data?
- 3) What would you like to have added or improved to the existing feature?
- 4) What did you like and/or dislike about using this feature?

Task 3:

The third task we would like you to perform is to use the application which will encourage you when you are planning to save money.

Using the application, you want to plan to save money to buy a new car. For this, you need to set a goal which encourages you to save money for buying a car. This application can track your expenses and can help you control some avoidable expenses by suggesting some ways to cut off or reduce some unnecessary expenditures.

Questions:

After doing this task, we have a few questions we would like to ask you:

- 1) How did you use to save money previously?
- 2) What did you like and/or dislike about using this feature?
- 3) What features in the app you used to set the goals to save money?
- 4) What would you like to have added or improved to the existing feature?

Task 4:

The last task we would like you to perform is getting an estimation of saving interest on the loan.

Using the application, you want to get an estimation for paying off your loan amount as early as possible which will help you to save interest amount. Consider that you bought a house that is having loan instalments for 25 years. Now, you get a promotion in your job and your salary has increased so you are able to pay 1000 bucks more each month. It will become a tedious task to calculate manually or ask a loan agent for new estimations. Now, you want to find out how much interest you can save and how quickly you might be able to pay off your loan.

Questions:

After doing this task, we have a few questions we would like to ask you:

- 1) By using what ways did you use to save interest from your loan?
- 2) What features in the app did you use to save interest on loans?
- 3) What did you like and/or dislike about using this feature?
- 4) What would you like to have added or improved to the existing feature?

End of Study Questions

Finally, we have a short interview to find out more about your overall experience using the application and the application in general. We have organized the questions by themes:

Theme 1

First, we will ask you questions about avoiding unnecessary spending:

Questions:

- 1) How do you identify an expense which is unnecessary?
- 2) What methods do you opt for to avoid spending on not-required things?
- 3) Which are the ways that encourage you to stop overspending?

Theme 2

Next, we will ask you questions about making a budget for specific categories:

Questions:

- 1) How do you usually make categories for budgeting?
- 2) What parameter do you use to consider for making a budget?
- 3) How much you can save by making a budget for specific categories?

Theme 3

Next, we will ask you questions about getting future predictions about spending & saving:

Questions:

- 1) What kind of budgeting or spending forecast do you think will help to save?
- 2) Why getting prediction in the application is better rather than conventional calculations?
- 3) How can the prediction help you save money monthly?
- 4) How does getting savings predictions to motivate you for financial planning?

Appendix C – Coding Sheets

Coding Sheet

Participant ID: Participant 1

Researcher: Researcher 1

Date: October 19, 2022

Task 1:

You didn't remember to pay your credit card bill last month. You are supposed to pay every month by the 26th. You can use the application to remind you. Using the app, create a reminder to pay your bill two days before the due date which is the 26th. Set the frequency of reminders to give you alerts every 6 hours from that day.

Observations:

User found little bit confusing to use app. Difficult to set calendar reminder. But managed to successfully create reminder for payment

Post-task Questions:

Q1. What features in the application you used to set the reminders for the bill payments?

Create category, Edit category and calendar.

Q2. What did you like/dislike about the setting reminder feature?

Like: Dark theme,

Dislike: not intuitive interface, took while to explore / get used to app, no option for multiple credit card reminder.

Q3. How did you use to set alerts previously?

Used to marked calendars, alarms, written notes in diary.

Q4. What would you like to have added or improved to the existing feature?

Option for multiple credit card (sub-category). Different alerts with colors to distinguish dates.

Task 2:

Last month you have spent too much in restaurants and cafes. Due to this, your budget is disrupted, and you want to track expenditures for the coming months. For this, need to get some insights to help you analyze your expenditure. For analyzing the data, see the charts that give you in-depth insights into income and expenses.

Observations:

User found that she needs to add bank account first. Got lost while exploring app.

Post-task Questions:

Q1. What did you like and/or dislike about using this feature?

Like: Interface is good, Navigation bar is intuitive due to icons.

Dislike: Add bank, tough to go to recent page (back button). Difficult to modify expense (lot of clicks for doing)

Q2 What would you like to have added or improved to the existing feature?

Guided tour, subcategory, back button. Easy buttons for modify expense (delete expense). Add time stamp in budget list.

Q3 What features in the app did you use to analyze the data?

Add category, edit category, delete category, create report, add expense.

Q4 How did you use to analyse your data previously?

Manually used to write expense in book and manually calculate average expenses.

Task 3:

You want to buy a car and need to start saving money. For this, you need to set a Goal which encourages you to save money for buying a car. The application can track your expenses and can help you control some avoidable expenses.

Observations:

Eased to manage budget using feature. Created a new budget called "save for car" and assigned amount for different categories.

Felt great while exploring this feature and liked the fact that it can send reminders on how much are the spendings.

Post-task Questions:

Q1. How did you use to save money previously?

Created fix budget and always worried about it while spending and writing in book.

Q2 What did you like and/or dislike about using this feature?

Like: Get notifications on time, Direct link with bank account

Dislike: None

Q3 What features in the app did you use to set the goals to save money?

Open budget/create budget, Add category, assign money to category, Add bank account

Q4 What would you like to have added or improved to the existing feature?

Quick tutorial and or summary of feature.

Task 4:

You bought a house that is having loan instalments for 25 years. Consider that now you get a promotion in your job and your salary has increased so you are able to pay 1000 bucks more each month. It will become a tedious task to calculate manually or ask a loan agent for new estimations. Now, You want to find out how much interest you can save and how quickly you might be able to pay off your loan

Observations:

User was able to do task easily. Found themselves quite familiar with app due to usage with past tasks.

Post-task Questions:

Q1. What would you like to have added or improved to the existing feature?

They found this feature quite intuitive and appreciated everything about feature.

Q2 What features in the app did you use to save interest on loans?

Edit budget, Edit category

Q3 What did you like and/or dislike about using this feature?

Like: Easy to edit and change budget, just need to edit able to spend amount app will do rest and calculate loan installation automatically.

Dislike: None.

Q4 How did you use to save interest from your loan?

Used to Contact bank advisor and get their appointment to discuss about financial planning to save interest from loan.

POST-STUDY INTERVIEW QUESTIONS:

THEME 1: Theme 1

We will ask you questions about avoiding unnecessary spending:

- 1) How do you identify an expense which is unnecessary?
By looking at bank statements and shopping bills to find out amount which were over their initially set budget and marked them as over expensive or unnecessary.
- 2) What methods do you opt for to avoid spending on not-required things?
By delaying the plan of spending for few days and figuring out the necessity of that spending by then.
- 3) Which are the ways that encourage you to stop overspending?
By periodically checking bank balance and credit card statement.

Theme 2

We will ask you questions about making a budget for specific categories:

- 1) How do you usually make categories for budgeting?
Divided expenses in three different categories
Must category: rent, phone bill, insurances, etc. (Expenses which are must and cannot be avoided)
Dynamic : groceries, entertainment, restaurants (Expenses which can change by opting alternate items)
Miscellaneous: medicine, emergency (Expenses which may or may not occur during month)
- 2) What parameter do you use to consider for making a budget?
Amount, priority (urgency), time period
- 3) How much you can save by making a budget for specific categories?
For food: around 20%
For entertainment: up to 30-50%

Theme 3

We will ask you questions about getting future predictions about spending & saving:

- 1) What kind of budgeting or spending forecast do you think will help to save?
Have monthly, quarterly, year forecast to help spend better and save better.
- 2) Why getting prediction in the application is better rather than conventional calculations?
Hassle free with app meanwhile with traditional had to calculate manually which is complex and can have errors. App can consider various accounts and get precious prediction.
- 3) How can the prediction help you save money monthly?
Forecast can help to save money by suggesting changes to current spending to save money for next month and helps to manage or save money in critical days.
- 4) How does getting savings predictions to motivate you for financial planning?
Forecast can help with investment. It can give estimate money to be invested and plan strategies accordingly.

Task 1:

You didn't remember to pay your credit card bill last month. You are supposed to pay every month by the 26th. You can use the application to remind you. Using the app, create a reminder to pay your bill two days before the due date which is the 26th. Set the frequency of reminders to give you alerts every 6 hours from that day.

Observations:

User was looking for a button to add reminder on the home page

Post-task Questions:

Q1. What features in the application you used to set the reminders for the bill payments?

Create category, Edit category and calendar.

Q2. What did you like/dislike about the setting reminder feature?

Like: Dark theme,

Dislike: There should be an icon of date for reminder on home screen as well as edit menu

Q3. How did you use to set alerts previously?

Used other applications like Splitwise and bank also sends e-mails to remind user.

Q4. What would you like to have added or improved to the existing feature?

Having some tutorials for the features

Task 2:

Last month you have spent too much in restaurants and cafes. Due to this, your budget is disrupted, and you want to track expenditures for the coming months. For this, need to get some insights to help you analyse your expenditure. For analysing the data, see the charts that give you in-depth insights into income and expenses.

Observations [take notes while participant does the tasks]:

User explored application for a while, then tried adding bank account to find them self in the targeted feature.

Post-task Questions [leave room to take notes]:

Q1. What did you like and/or dislike about using this feature?

Like: Logos make good looking buttons.

Dislike: Reports should also be generated for fewer transaction

Q2 What would you like to have added or improved to the existing feature?

User would like a filter button by month, week and year to analyze properly, and also can use different graphs

Q3 What features in the app did you use to analyse the data?

Add category, edit category, delete category, create report, add expense.

Q4 How did you use to analyse your data previously?

User used to write it down and analyze on my own and used other budgeting applications.

Task 3:

You want to buy a car and need to start saving money. For this, you need to set a Goal which encourages you to save money for buying a car. The application can track your expenses and can help you control some avoidable expenses.

Observations:

Found this application very helpful to create a budget and made budget called "Car goal" and set reminder to track different spendings.

Post-task Questions:

Q1. How did you use to save money previously?

By writing down the income by month and listed expenses made so that they got rough idea that how much more they need to spend.

Q2 What did you like and/or dislike about using this feature?

Liked the fact that the notifications will be sent on time, liked the feature of linking the bank account

Q3 What features in the app did you use to set the goals to save money?

Open budget/create budget, Add category, assign money to category, Add bank account

Q4 What would you like to have added or improved to the existing feature?

Summary / tutorial on how to use this feature

Task 4:

You bought a house that is having loan instalments for 25 years. Consider that now you get a promotion in your job and your salary has increased so you are able to pay 1000 bucks more each month. It will become a tedious task to calculate manually or ask a loan agent for new estimations. Now, You want to find out how much interest you can save and how quickly you might be able to pay off your loan

Observations [take notes while participant does the tasks]:

User was able to set the categories and add amount

Post-task Questions [leave room to take notes]:

Q1. What would you like to have added or improved to the existing feature

Found this feature pixel perfect.

Q2 What features in the app did you use to save interest on loans?

Edit budget, Edit category

Q3 What did you like and/or dislike about using this feature?

Liked the fact that user can just edit the categories and the loan installments amount will be calculated automatically

Q4 How did you use to save interest from your loan?

User used to discuss with their friend(s) and watched videos online to learn and plan financial decisions.

POST-STUDY INTERVIEW QUESTIONS:

Theme 1

We will ask you questions about avoiding unnecessary spending :

- 1) How do you identify an expense which is unnecessary?
By observing the bank statements and looking bank balance at the end of the month to find out if user is running low on savings, then looked for item(s) over budget limit and identified them as expensive and unnecessary.
- 2) What methods do you opt for to avoid spending on not-required things?
By observing previous expense statements, user identifies the non-essential things and ignore them from buying in future.
- 3) Which are the ways that encourage you to stop overspending?
Creating budget and making savings goal for something to buy in future.

Theme 2

We will ask you questions about making a budget for specific categories :

- 1) How do you usually make categories for budgeting?
By making notes so that I could easily identify the expense.
- 2) What parameter do you use to consider for making a budget?
Based on the monthly income.
- 3) How much you can save by making a budget for specific categories?
Approximately 15-25% of the monthly income can be saved.

Theme 3

We will ask you questions about getting future predictions about spending & saving:

- 1) What kind of budgeting or spending forecast do you think will help to save?
Daily, monthly, quarterly and yearly forecast helps to save better.
- 2) Why getting prediction in the application is better rather than conventional calculations?
It saves the time, and the phone is also flexible to keep the data and have a track on predictions.
- 3) How can the prediction help you save money monthly?
Will get better idea on how much to spend in a month.
- 4) How does getting savings predictions to motivate you for financial planning?
If they save money now, then it motivates them to buy some things in future.

Appendix D – Work Breakdown

The template has a number of sections and appendices. It is assumed that all members will contribute to the main parts of the assignment (e.g., purpose, background, task list, interview/contextual inquiry) but other parts may be assigned to different team members.

As well, everyone should take turns being the group assignments/final report as proofreaders to ensure that the team hands in a complete, cohesive and well organized (with consistent layout/fonts) document. This extra step which doesn't take a lot of time BUT can have a substantial effect on your grade.

At the end of the project, your teammates will evaluate your overall performance and participation in the group project.

Activity	Team member/s who helped or were responsible
Purpose	Tejaswini Rallapalli, Dharmay Sureja
Background/references	Tejaswini Rallapalli, Radhey Rupapara
Objectives	Tejaswini Rallapalli, Sagarkumar Vaghasia
Process	Jayashree Ramasubramanian, Radhey Rupapara
Script	Jayashree Ramasubramanian, Sagarkumar Vaghasia
Task list and Questions	Sagarkumar Vaghasia, Dharmay Sureja, Tejaswini Rallapalli
Post-study Interview Questions	Sagarkumar Vaghasia, Tejaswini Rallapalli, Radhey Rupapara
Coding Sheets	Sagarkumar Vaghasia, Dharmay Sureja, Radhey Rupapara
Proofreader/s	Sagarkumar Vaghasia, Radhey Rupapara, Dharmay Sureja, Jayashree Ramasubramanian, Tejaswini Rallapalli