

Assignment M2, Summer 2021

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Abstract—Using personal finance applications can be intimidating and even anxiety-inducing, especially for novice users. This project will examine the task of keeping a personal financial budget, and explore a potential redesign for *experience-level-agnostic*, online, budget management. Specifically, we will focus on an interface for *initially establishing* a budget, including subtasks such as deciding on categories, spending limits and notifications.

1 NEEDFINDING: SURVEY

1.1 Takeaways

The survey received 24 respondents (raw data in *Appendix 7.1: Survey responses*). The first questions asked were optional demographics questions, including age, gender, and financial security. Summarized results from these questions are shown in Table 1. Additionally we asked if the respondent kept a budget.

Table 1- Demographics of survey respondents.

Question	Summary of Responses (n=24)			
Age	18 - 29	30 - 39	40 - 49	50+
	33.33%	41.67%	25.00%	0.00%
Gender	Female	Male	No Response	
	37.50%	58.33%	4.17%	
Worried about your financial situation?	Yes	No		
	20.83%	79.17%		
Keep a budget?	Yes	No		
	70.83%	29.17%		

The responses to the demographics questions warn us that our responses over-represent male users as well as younger users- 75% were under 40, and no respondents were older than 49.

The post-demographics questions were contingent on a “yes” answer to the binary budgeting question. If they answered “no,” they were asked why not, and

whether they had any interest in budgeting. Of the 7 respondents who said they didn't budget, 3 (~43%) said they were interested. The primary reason given for not budgeting was **annoyance with tracking every purchase**.

The questions that followed (Table 2) were targeted toward those respondents who used a digital tool to assist their budgeting. I was interested in how satisfied those users were with the simplicity, educational content, categorization and notifications of their chosen tool:

Table 2- Satisfaction with budgeting tool of choice (if applicable)

Question	Summary of Responses (n=17)				
Ease of creating budget (5 is easiest)	5	4	3	2	1
	6.67%	53.33%	20.00%	20.00%	0%
Usefulness of educational content (5 is highest)	5	4	3	2	1
	0.00%	31.25%	31.25%	37.50%	0%
Category satisfaction (5 is highest)	5	4	3	2	1
	20.00%	33.33%	46.67%	0.00%	0%
Notification quantity	Too Many	Right Amount	Too Few	Don't Receive	
	12.50%	37.50%	6.25%	43.75%	

Each satisfaction question was followed by an optional prompt to explain further. Despite a slight negative lean regarding educational content, **these questions did not yield obvious areas to focus our redesign**. One problem was that the users answered about any budgeting tool they used, rather than about one tool in particular. However, some helpful patterns did emerge in the free response explanations of these answers: **hitting a savings target**, both generally and for a large purchase was the most common reason for budgeting. The next most common was to **cut down on unnecessary expenses**.

1.2 Biases

I controlled for biases in the following ways:

- **Observer bias:** I had a family member read over my questions to check if any seemed to be leading. They confirmed the questions seemed neutral.
- **Confirmation bias:** I made questions free-response style wherever I wasn't confident I could enumerate all the possibilities- for instance,

asking what budgeting tool the participant used. This was helpful because some participants mentioned tools I'm unfamiliar with.

- **Social desirability bias:** I only received responses from students at Georgia Tech who did not know me or have to interact with me personally, so there was very little pressure to give a socially desirable response.

2 NEEDFINDING: REVIEWS

2.1 Takeaways

I looked at 25 recent reviews of the Intuit Mint mobile application (full data in *Appendix 7.2: Google Play reviews for Mint*). I searched specifically for reviews that mentioned the budgeting feature, and chose the 5 most recent of *each star rating* (1-5).

The most common positive feedback about Mint is having one's **financial information all in one place**. Several of the users who rated Mint positively mentioned the app helps them to **save more**. This matches what survey participants said when asked "why do you budget," and lends evidence that we should focus on this user goal.

On the other hand, a piece of negative feedback in multiple reviews was difficulty setting up **budgeting and saving goals**. One 5-star reviewer suggested an option for *percentage-of-income-based* budget limits, rather than a specific dollar amount. Two reviewers had difficulty finding the budget feature or keeping track of transactions "outside" the established budget- e.g. an uncategorized expense or excess income. Another mentioned that they wanted to be able to set custom start and end dates that lined up with their paydays, rather than using the default monthly budget. These pieces of feedback point to a desire amongst users to **customize their budget based on a unique financial situation**.

There were several problems and suggestions noted for Mint's categorization of transactions. Among these:

- Desire to categorize pending transactions so as not to forget what the transaction was, later
- Transactions and merchant names often appear in uppercase with no way to change this, making them more difficult to read

- Automatic categories often need to be corrected later, and don't provide enough override functionality, e.g. set a particular merchant to the "grocery" category every time.

2.2 Biases

I controlled for **voluntary response bias** by making sure to look at reviews of every star rating, as opposed to only the most recent reviews. Because of this, I saw a mix of positive and constructive feedback, as well as interesting suggestions from reviews across the rating spectrum.

3 NEEDFINDING: USER INTERFACE EVALUATION

I had never personally used the Mint mobile app, so I downloaded it to my Android phone to do a qualitative evaluation of the interface. As an initial step, I connected my credit card and checking accounts to pull in my transactions. After that, I went through the experience of creating a budget from scratch.

3.1 Takeaways

What I liked:

- The top "card" in the mobile app lists your current net worth, and a summary of your cash, credit card debt and investments. This feels like a solid snapshot of my financial situation.
- A plus button at the top of the screen allows you to easily add a transaction from anywhere in the app.
- A use of color (green, yellow, red) along with how much I spent in a category helped show the status of each category in my budget.

What I didn't like:

- The budget section of Mint was several screen lengths "below the fold."
- Tapping the "Create a budget" button opened a list view of the categories Mint automatically found in my bank account transactions, paired with the amounts that Mint calculated I'd spent in each one this month. I was expecting more of an introduction to the budgeting feature.
- I tapped the "Renter's Insurance" category, which correctly identified a payment I'd recently made. However, I was then prompted to choose a monthly limit for this category, which didn't match my situation- I pay my renter's insurance every 6-months.

- Every category is referred to as an individual budget. This didn't match my own mental model about budgeting.
- I can't configure notifications by budget category, for instance if I want to be alerted when I'm nearing my restaurant spending limit. I was only able to find settings for enabling/disabling all push notifications.
- Adding a category to your budget always prompts setting the limit for that category at \$100, even if the transactions already in that category were far beyond or far below that number.
- I had to tap "Add budget" for every category I wanted to add. There was no option to add all of Mint's suggested categories.

3.2 Biases

I controlled for **observer bias** by attempting to be as objective as possible, and using a version of the interface (mobile app) that I had no prior experience with. I used this as an opportunity to compare my own experience with the things I saw in the survey results and reviews.

4 DATA INVENTORY

Inventory Question	Notes
Who are the users?	The users are a mix of beginners, established budgeters, and advanced budgeters, generally corresponding to their age (younger users are less experienced). Some do not currently budget but are interested in doing so, and may have in the past. The focus of this redesign will be on less experienced users, or those who were frustrated by budgeting previously.
Where are the users?	The users are interacting with their budgets both at home and while they're on-the-go, based on the popularity of the Mint mobile app.
What is the context of the task?	Budgeting occurs in the context of other financial situations, both long term and short term. The survey and reviews tell us users are setting goals like saving to buy a home, and expect their budgeting tool to help them in achieving those goals. Day-to-day, they are making purchases, investments and other decisions about their money. All of these affect their budget.
What are their goals?	Some users in our survey provided their literal goals: buying a home, meeting a general savings goal, reducing waste, and improving their financial security. These line up

	with the kinds of features requested in the app store reviews.
What do they need?	<p>Novice users need guidance on how much they should budget, and how to budget effectively based on their situation. This was feedback we saw in the reviews, especially. What is a reasonable amount to spend on a particular category? How can I budget weekly instead of monthly? There is a real need to customize their budget to match the way they think about money.</p> <p>On the other hand, experienced users (who we heard more from in the survey) want efficiency, via more accurate categorization of their spending and visualizations of their budgeting over time.</p>
What are their tasks (and subtasks?)	<ul style="list-style-type: none"> • Setting up their budgeting categories <ul style="list-style-type: none"> ◦ Choose a name (custom or existing) ◦ Set a limit ◦ Customize how a particular category is budgeted (weekly, monthly, bi-monthly, bi-yearly, etc.) • Entering manual transactions <ul style="list-style-type: none"> ◦ Typing the amount ◦ Renaming the transaction ◦ Changing the category • Viewing budget status <ul style="list-style-type: none"> ◦ View a breakdown by category ◦ Set notifications based on budget status • Set goals <ul style="list-style-type: none"> ◦ Connect a goal to their budget ◦ Understand what a reasonable goal is, based on their income and spending

5 REQUIREMENTS

Since our focus is designing an interface that is usable by novice users, I will emphasize the following requirements:

Requirement	Evaluation metrics
Creating a budget must be accessible to beginners	<ul style="list-style-type: none"> • Provides data-driven suggestions for category limits • A novice user can establish a budget in less than 10 minutes
Interface is usable from a mobile	<ul style="list-style-type: none"> • UI is built to fit the dimensions and

device	functionality of a cell phone screen , takes advantage of touch gestures
Goals are easy to set, and built into the budget interface	<ul style="list-style-type: none"> From the budgeting interface, a user can find the goals feature and set a new goal
Budget is customizable to unique financial situations	<ul style="list-style-type: none"> Users have the ability to set custom start and end dates for their budget (non-monthly, based on pay cycle, etc.)
Budget-related notifications can be customized or disabled	<ul style="list-style-type: none"> Users can disable all notifications easily Users can create new notifications related to a budget category

6 CONTINUED NEEDFINDING

The main questions that remain after this round of needfinding are the following:

- For users who *do want notifications*, how would they prefer those notifications work?
- What specific educational material would new users want to see? What things make novices nervous about budgeting? What information could the interface provide to guide them without hiding *too many* details?
- It would also be great to hear even more from users who don't budget but are interested in doing so- at a minimum, what would need to change about digital budgeting for them to give it a second chance?

Interviews would be a helpful way to get answers to these lingering questions, in order to really dig into what users do and don't know, and how they think about budgeting in the context of their own financial situation.

7 APPENDICES

7.1 Survey responses

The following is the raw CSV data from PeerSurvey:

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response,Q1,Q2,Q3,Q4,Q5,Q6,Q7,Q8,Q9,Q10,Q11,Q12,Q13,Q14,Q15,Q16,Q17,Q18,Q19,Q20,Q21,Q22
2,40 - 49,Male,No,Yes,,,,,To keep track of my spending trends over time and not overspend,More than 10
years,Mint,,Weekly,4,,3,,Satisfied,,The right amount,,2,Favorite feature is ability to set up rules for
auto-categorization
3,18 - 29,Male,Yes,Yes,N/A - I do budget,,,To make sure I have a certain amount saved every period,5-10
years,,,,,,,,,,,,,
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4,18 - 29,Female,No,Yes,,,,To hold our family accountable and keep each other cognizant of what and how we spend as well as plan for the future and prepare for any unknowns,2-5 years,A manual excel file that my husband and I made - we had tried to use mint in the past but struggled with keeping it up to date and using it to enforce our decisions,,Monthly,4,,2,,Neutral,"we have the option to add as many categories as we want as we maintain our tool, but we are often lazy about adding new categories so a lot gets thrown into ""miscellaneous""",I don't receive notifications,,4,

5,30 - 39,Female,Yes,No,"I have earned more than I have spent, I don't have time and I dislike accounting",Yes,,,,,,,,,,,,,

6,30 - 39,Female,No,Yes,,,,It keeps me aware of how I'm spending my money! It helps me know what I can afford. It gives me security. I'm neurotic and can't not keep a budget,,5-10 years,YNAB 4,,Monthly,4,,4,,Very Satisfied,I can create my own categories,I don't receive notifications,I don't receive notifications but don't really need them,4,"It's very outdated, but it works for me and I've already paid for it. However, I do miss having it on my phone (I can no longer get an iPhone app for it)."

7,40 - 49,,No,Yes,,,,Planning,2-5 years,Excel,,Monthly,4,,2,,Neutral,I don't receive notifications,0 notifications is the right amount,2,"No notifications, no advertisements, data is store locally"

8,18 - 29,Female,Yes,Yes,,,,keep track of expenses,2-5 years,"excel, mint",,Monthly,3,,4,,Neutral,sometimes mint categorizes things wrong.The right amount,,2,

9,18 - 29,Female,No,Yes,,Yes,,Originally I was saving for a house. I bought a house--now I'm not sure what I'm saving for. I'm sure there will be something!,2-5 years,Mint,,Monthly,4,,3,,Satisfied,Mint allows you to create your own categories pretty easily. .The right amount,,5,"I actually don't follow my own budget very well at all, and it has kind of fallen into neglect. I have plenty of money, so I haven't really needed to stick to a strict budget to buy the things I want, as long as I put enough money in my savings then I am good. "

10,30 - 39,M,No,No,I don't feel like keeping note of every expense I make. It is time consuming and you have to remember to track it.,Yes,,,,,,,,,,,,,

11,18 - 29,Male,No,Yes,,,,To keep track of finances,5-10 years,Mint,,A few times per week,5,,3,,Very Satisfied,,The right amount,,3,

12,18 - 29,Male,No,Yes,,,,"To meet my savings rate target, to avoid stressing about bills",5-10 years,Mostly I automate the next month's bills to get paid immediately as soon as the paycheck comes in. Then I transfer a certain percentage automatically to a second savings account and from there I try to never touch it unless putting it into investments,,Monthly,4,"So my ""tool"" is automated bill subscription and automated money transfers scheduled on my bank accounts.",4,,Very Satisfied,,I don't receive notifications,,2,

13,30 - 39,Male,Yes,Yes,,,,"It is a good way to control my expenses, it allows me to save money",2-5 years,Pocketguard,,A few times per week,4,,2,,Neutral,,The right amount,,3,

14,30 - 39,Female,No,Yes,,,,To save money and plan for the future,,More than 10 years,YNAB and Mint,,A few times per week,2,,2,,Neutral,,Too many,,5,

15,30 - 39,Male,No,Yes,,,,It gives me confidence and security in my financial decisions,,5-10 years,Excel,,Daily,2,,3,,Neutral,I don't receive notifications,,2,

16,40 - 49,Male,No,Yes,,Yes,,To know where all of my money is going. No wasteful unknowns,,More than 10 years,Quicken,,Multiple times per day,2,Quicken is not fun to setup,,3,,Satisfied,,I don't receive notifications,,2,I like the net worth tracker. It's what ultimately tells me I'm on track.

17,40 - 49,Male,No,Yes,,Yes,,5-10 years,Mint,,A few times per week,3,,2,,Satisfied,,Too many,,3,

18,30 - 39,Male,Yes,No,I used to keep a very robust budget but basically became too lazy to maintain it.,Yes,,5-10 years,,,,,,,,,,,,,

19,40 - 49,Male,No,No,I don't spend a lot and keep household costs low. It hasn't occurred to me that I need a budgeting app,,No,,,,,,,,,,,,,

20,40 - 49, Male, No, Yes,,,, Grow wealth, More than 10 years, Spreadsheet,, Weekly,,, 4,, Neutral,, Not enough,, 2,

21,18 - 29, Female, No, No, Comfortable with my spending, No,,,,,,,,,,,,,

22,30 - 39, Male, No, No, budgeting would not impact my spending behavior., No,,,,,,,,,,,,,

23,30 - 39, Female, No, Yes,,,, To manage the finances better and to cut down on unnecessary expenses., 5-10 years, Splitwise,, A few times per week, 3, "I used to have an excel sheet initially for managing the finances, but after I came to know of Splitwise, I started adding all the expenses that I or my spouse make entered into the tool, which helps us to have a look at the miscellaneous expenses at the end of every month.", 2,,,, I don't receive notifications,, 3, "Favourite features would be, I can add the expenses anywhere anytime using my mobile phone. And it allows me to add my friends as well, if we had planned for a trip and it offloads the task of adjusting the expenses amongst us all by itself as soon as all the details are entered by the users. The missing feature would be, it could also be provided with a monthly visualization of the total expenditure. That could help us manage things a lil better."

24,30 - 39, Female, No, Yes,, Yes,, helps to track my savings, 5-10 years, "Personal Capital, excel",, Daily, 4,, 4,, Satisfied,, The right amount,, 4,

25,18 - 29, Male, No, No, "This'll be a little long but I used to budget, and set savings goals. The issue ended up being that strict limits like I had set for categories on Mint led to a sort of ""budget breaking fatigue"". This might be due to unrealistic budgeting goals but I had issues where I'd cross my restaurant budget in a single day sometimes because I'd pick the tab for friends from out of town etc. Or I might be hosting people for a once a year holiday event so my grocery category would be broken. I'd balance it out by under spending in other categories but it became a hassle to negotiate against myself. Instead I've started to pseudo budget by saying I have a goal every month to spend X amount on things beyond rent / utilities. I don't feel like I'm hounded by a budget app then if my expenses shift between categories on a monthly basis as a result.", No,,,,,,,,,,,,,

7.2 Google Play reviews for Mint

Rating (out of 5)	Features Liked	Features Disliked	Suggestion
5	Helps them stick to budget		
5	Ease of creating budget		
5	Credit scores, saving, education		
5			Option for percentage budgeting based on your income
5	Saving		
4		No budget recommendations	Budget goals & recommendations about how much you should be spending on things based on income and spending habits

4	Transactions can go "unbudgeted"	Include every transaction in the budget by default, so nothing can be missed
4	Everything in one place	Missing bank connections
4	Improved budgeting	
4	Everything in one place, reminders, credit scores	
3	Can't edit budget on this device	
3	Categorizing transactions is annoying if using the same merchant many times	Categorize by merchant, instead
3	Excess money earned "disappears" in income category and becomes unaccounted for	Show what happened to excess income
3		Summarize what was spent since pay day, or what was spent during customizable start and end dates.
3	Can only create a monthly budget. Must delete transactions to create a weekly budget.	Weekly, even daily budgets
2	Notifications are unreliable. Budget set up across a quarter was exceeded. Notification only opened the "monthly" budget view.	
2	Difficulty viewing past month's transaction and budget on mobile.	
2	Budgets are hard to find. Used to be on the main screen. Dollar amounts differ when viewing the same metric on different screen.	

2	<p>Unable to edit the category of pending transactions, so you forget what the expense was by the time it isn't pending.</p> <p>Automatically deducting expenses from budget is overly complicated</p>
2	<p>Hard to track cash transactions.</p> <p>More types of goals. Too many credit card ads</p>
1	<p>No auto-categorization for investment accounts. Can't change upper case names.</p>
1	<p>Don't understand how to read the budget.</p>
1	<p>Budget goals are not appearing.</p>
1	<p>Can't see past month's budget</p>
1	<p>Duplicates some transactions, miscalculates expenses</p>