Financial Literacy

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ABSTRACT

This work introduces a financial well-being platform specifically tailored to students over eighteen years old. Through extensive research utilizing surveys, questionnaires, and other techniques, the platform addresses the most challenging and relevant financial topics identified by our stakeholders, focusing on **budget management**, **savings planning**, and **investments planning**. In addition, the platform aims to provide a comprehensive and user-friendly solution for financial education, containing all the features in one accessible platform.

INTRODUCTION

Financial well-being is a critical component of our overall well-being, as it encompasses the ability to manage our financial obligations and have confidence in our financial future. However, gaining knowledge and understanding in this area can be daunting for many individuals.

This is where our platform comes in place, as it is designed to make learning and utilizing financial information more accessible and user-friendly. By utilizing user-centered design approaches, we can empower individuals to take control of their financial futures and promote financial literacy in a meaningful and effective way. Our platform not only provides the necessary information but also guides the user through the process of understanding and utilizing this information, making it a valuable resource for anyone looking to improve their financial well-being.

This pictorial illustrates the various stages of the design process we underwent to arrive at the final result. The process began with a thorough study and planning of the work, followed by an analysis of potential issues. We then proceeded to create prototypes, starting with a low-fidelity version, and subsequently refining it to a high-fidelity prototype. Throughout this process, we employed user-centered design techniques, taking into consideration feedback and input from our stakeholders. Ultimately, this approach allowed us to create a final product that is both functional and user-friendly.

HUNT STATEMENT

To begin, we formulated a hunt statement that encapsulates the scope of our research, including budget management, savings planning, and investments planning. This statement served as a guiding principle for our study and helped to ensure that all aspects of the project were aligned with the overall goal. In addition, the hunt statement helped us to stay focused on the main objectives and ensure that all the research was directed towards achieving the goal.

"We will research what students know about budget management, savings planning and investments planning.

We want to understand their difficulties regarding managing their budget and savings, as well as understand if they present a deep knowledge regarding investments. We want to help and facilitate their learning about investments. As a result, we want to deliver an application that contains all the functionalities to meet our stakeholder's needs."

USER RESEARCH PLAN

To accomplish our objectives, we developed a comprehensive user research plan to gain a deeper understanding of the needs, challenges, and preferences of our stakeholders concerning the themes of our study. By incorporating this user research plan throughout the design process, we were able to create a product that effectively addresses the specific needs of our stakeholders.

Stakeholders And Objectives

Our target users are university students aged 18 and above. Through our research plan, we aimed to understand our stakeholders' financial knowledge, especially regarding the three different topics. Therefore, we pretended to understand the following questions:

- What do they know regarding budget management, and how do they allocate their budget to their short-term and long-term goals?
- To what degree are they familiar with savings and the savings calculators offered by their bank application?
- How knowledgeable are they about investments, including the different investment assets and options provided by their banks?

Research Insights

To gather the necessary information for our research, we have devised a plan to conduct two iterations of a Google Forms survey, both with closed and open-ended questions.

The first round aimed to provide a broad overview of the participants' knowledge and challenges of each topic under investigation.

The second round, however, delved into more specific questions to identify the reasons for any gaps in knowledge and determine whether the bank's application adequately provides the necessary information to the users.

While the first iteration was geared towards obtaining a general understanding of the participant's knowledge and challenges of each topic under investigation, the second one focused on identifying the underlying causes for gaps in knowledge.

DATA ANALYSIS

For the data analysis, we collected relevant information from both surveys. We will present the data for each financial theme we studied. To start with the analysis, we started by analyzing the budget management. Afterwards, we moved on to the savings and investments planning.
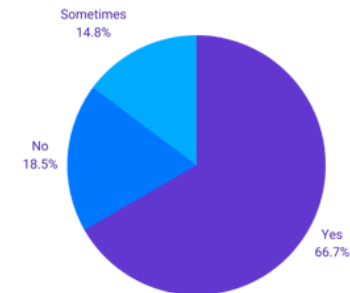
Budget Management

For our assessment, we wanted to discover how our stakeholders control and track the money spent monthly. We also wanted to know what different functionalities their bank application offers.
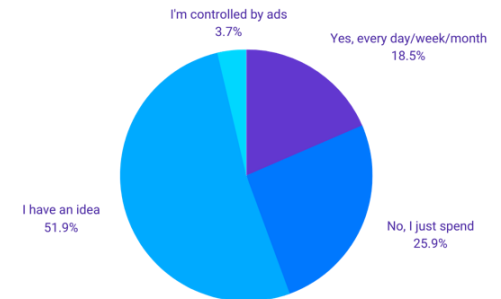
Regarding the results of the first pie chart, we observed that approximately 67% of the students keep a monthly record of their income and expenses. This was different from our initial expectations, as we believed that almost all our stakeholders would keep track of their financial transactions.

When this data is compared with the second graphic, we found that only 18% of the 66% of people who regularly track their finances also track how much they spend in each category, which translates to approximately only 12.4%.


Do you track how much money you receive and spent every month?

Sometimes 14.8%
No 18.5%
Yes 66.7%

Do you control the amount of money you spend in each category?

I'm controlled by ads 3.7%
Yes, every day/week/month 18.5%
I have an idea 51.9%
No, I just spend 25.9%

Does your bank application allows the following functionalities: Limit how much money you spend periodically (weekly, monthly)? Limit how much money spend by category (Insurances, Food, Utilities)?

It allows to limit by category
It allows to limit periodically
It does not allow anything
I don't know
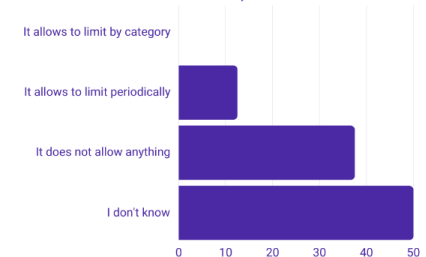
Upon conducting a thematic analysis of the open-ended responses, two key themes emerged in the stakeholders' feedback. Firstly, it was noted that some students exceed their monthly budget, and according to their feedback, there is currently no easily accessible mechanism to control and limit this. Secondly, a significant number of users expressed a desire for a visual representation mainly to limit their expenses per category.

To determine the validity of our research question, we included a question in the second iteration of our survey to assess whether the bank application utilized by participants offered the ability to track expenses by category and to set spending limits by category or by a period of time. Results indicated that while many banks offer these capabilities, some users noted a need for improved visual aids to facilitate understanding of their spending patterns. Furthermore, some participants reported using external applications to track their expenses due to a lack of this feature within their bank.

Interestingly, our analysis revealed that half of the stakeholders were uncertain about the feature's availability to set spending limits by category or by period within the bank application. Additionally, 37.5% of stakeholders reported that the application did not offer this capability, as confirmed by both iterations of the open-ended survey question.

Savings Planner

For the savings planner, we aimed to discover whether the bank application offered a savings simulator and how users would find it helpful. Furthermore, we wanted to comprehend if our stakeholders were familiar with the different types of savings accounts their challenges.

Our analysis indicated that 37% of the users surveyed had no savings account, although most knew how to open one. However, 85.2% of users were unaware of the various savings accounts offered by their bank, as confirmed by the second iteration of the survey. Additionally, 56.2% of participants were unsure their bank offered a savings plan.

Are you familiar with the different types of savings accounts your bank offers you?

Yes 14.8%

No 85.2%
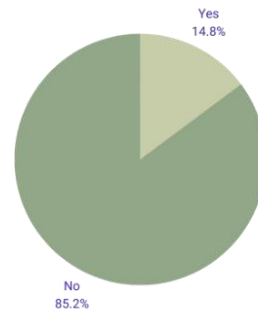
Does your bank application offer a savings plan simulator?
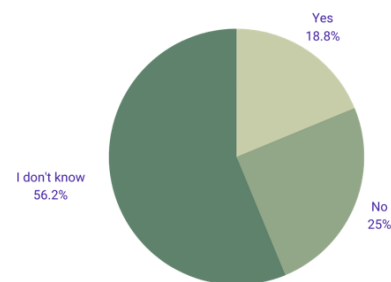
Yes 18.8%

I don't know 56.2%

No 25%

Our analysis indicated that 37% of the users surveyed had no savings account, although most knew how to open one. However, 85.2% of users were unaware of the various savings accounts offered by their bank, as confirmed by the second iteration of the survey. Additionally, 56.3% of participants were unsure their bank offered a savings plan simulator yet expressed interest in having access to such a tool.

Open-ended responses revealed that the surveyed users expressed a desire for a savings plan simulator and highlighted the importance of its ease of use.

Investments Planner

For the investment's planner, we tried to understand if the bank already provided a guide regarding the risks and benefits as well as understand our stakeholders' knowledge regarding investments, their difficulties and if they know how to invest.

Our initial survey indicated that nearly 52% of students surveyed were unaware of how to invest their money.

Our follow-up survey further clarified this finding, with 70% of students reporting that they were uncertain if their bank provided guidance on investments, including information on associated risks and benefits. Through the open-ended questions, we could confirm that most students desire to learn more about investments in a clear and easy-to-understand manner, focusing on understanding the potential risks and benefits.

Do you know how to invest your money?

Yes 18.5%

I have an idea 29.6%

No 51.9%
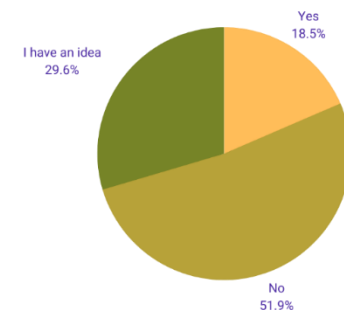
Does your bank provide an investment guide regarding the risks and benefits?

Yes 25%

No 6.2%

I don't know 68.8%
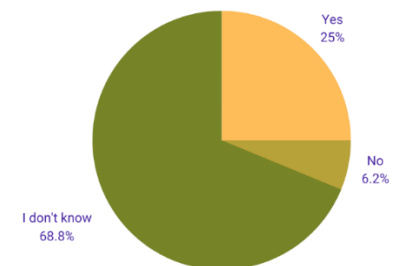
DATA SYNTHESIS

To consolidate the information previously analyzed, we presented in the data synthesis the personas created. We also created the scenarios that depict them and their corresponding storyboards, and a CI Model.

Personas, Scenarios and Storyboards

We created two personas based on our users' needs and characteristics: Lisa and Lucas.
We have created specific scenarios for each persona, which served as the foundation for the subsequent creation of our storyboards.

Lisa
Lisa, a 22-year-old student, is busy trying to write her master's thesis while at the same time doing sports regularly and seeing family and friends. Her friend proposes the idea that they should go travelling together next summer. However, while Lisa wants to travel, she does not have any extra money. Her friend suggests she could start following her expenses and figuring out how to save money.

Lisa needs a fast and easy way to follow her expenses to see where she could save money. Currently, she needs help tracking where all her money goes, and sometimes after a stressful day, she wants to treat herself with buying things she would like. Therefore, a bank application that limits her spending by category would be helpful. Lisa also needs support to create a savings account and plan the trip. She has this information easily available for her in a mobile application or a visual dashboard.

Lisa

Demographic profile

22 years old

Female

3rd year Computer Science student in a university, writing her Bachelor thesis

Lives in a shared apartment in the city center

Lisa has an active lifestyle: she is studying full-time while going to the gym three times a week and trying to spend time with friends and family.

Lisa's financial knowledge is very limited. She doesn't have a savings account but she tries to keep a buffer on her primary bank account.

Personal Goals and Motivations

- maintain good work – free time balance
- be able to travel in the future
- better financial planning would make her life less stressful
- saving and investing money would help her achieve her goals

Needs

- fast and easy budget/saving planner to fit her lifestyle
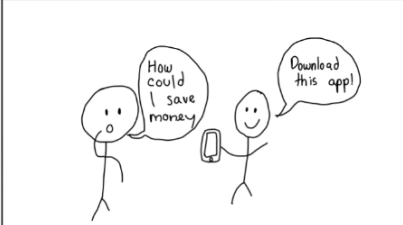
Challenges

- sometimes it's difficult to keep up where the money goes
- doesn't know where to find the information she would need easily

Values

- freedom
- health

> " My life is so hectic that I don't have time to think about my expenses. Sometimes I just have this need to treat myself. "

Lucas

Lucas is a 23-year-old young adult studying for his master's degree. He still lives with his parents and has a moderate financial knowledge. However, he needs some guidance on the investment's topics, particularly to know when it is better to invest and how to accomplish that.

His friend, Maria, is already comfortable with investments and is trying to convince him of all the benefits. He already has a bank application that allows him to invest. However, he does not know how to do it and fears losing his money since he does not know the risks. While he lives with his parents, he needs guidance on how to invest, mainly what money should be allocated for it and the best options to do it, so he can still have extra money to buy a new house when he finishes his master's. Lucas can access his bank application to retrieve information on how to invest and select new funds where he can invest securely and according to his expectations.

Lucas

Demographic profile

23 years old
Male
Studying 1st year of his Master's studies in university
Lives with his parents

Lucas is a student with moderate financial knowledge.

Because he is living with his parents, he wants to start saving money for a future apartment, but he doesn't know what would be the best savings plan.

Personal Goals and Motivations
- buy a house in the future
- understand how the stock market works
- because he's living with his parents, he has extra money that he would want to start investing

Needs
- guidance for how to start investing
- knowledge on when it's better to save and when it's better to invest

Challenges
- doesn't know how to start investing
- is scared of losing his money

Values
- family

> I wan't to start investing but I'm a bit scared to start. What if I lose all my money?

Maria tries to convice Lucas to start investing.

Lucas wants to buy an house in the future, so he thinks that investing is a great option

Lucas does not know how to invest and would like to have a guide.

Lucas found a guide in the new bank application and understands now how to invest in his dream house.
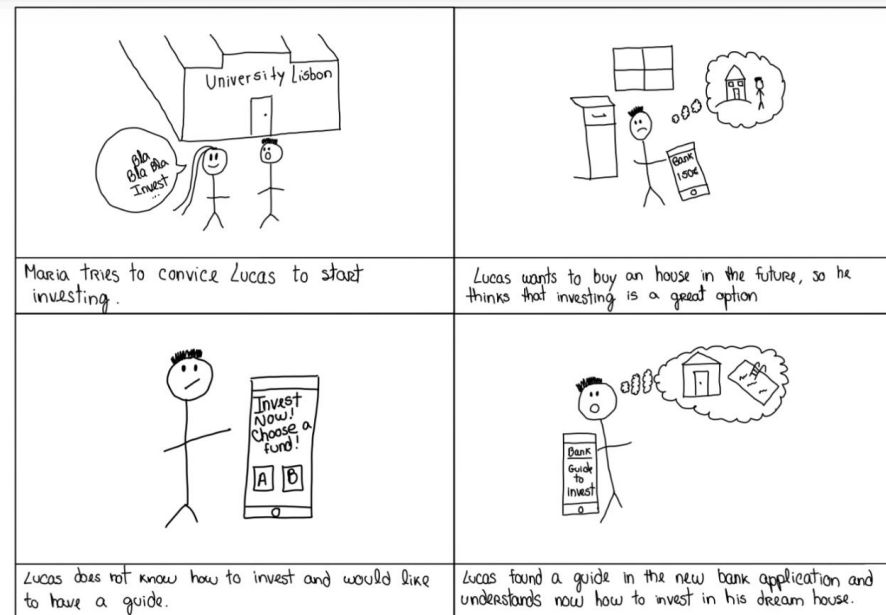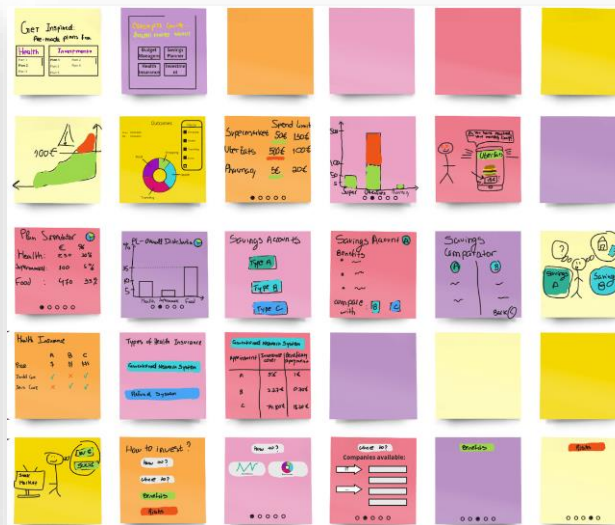
CI Model

Considering the needs of the personas presented above, we built a CI model that exemplifies the struggles users had on managing their budgets and the excessive number of steps they must perform without using our application. In this model, we can see that, to manage their budget, a user needs to find an application that fulfils these needs. However, it requires many steps, such as creating an excel page, finding a good template, finding the income value from the banking application, and finally gathering the results. Even after all these steps, not a single template can provide all the information desired by the user.

Ideation

We used the 10x10 sketch method for the ideation process to highlight ideas we could bring to our work.

We explored alternatives that could be used in our future application to solve the stakeholders' needs presented in the data analysis and synthesis. For example, we designed a sketch representing how our future application could let users limit the amount of money spent and how it would warn a user when he surpassed that limit. We also had some ideas on dividing information for all the investment funds available and highlight their advantages and disadvantages.

From the previous analysis, we obtained some requirements to develop the application to meet the stakeholders' needs and solve problems presented by our personas and CI models. Therefore, we defined some design goals.

DESIGN GOALS

For the design goals, we defined what we wanted to deliver in our application regarding budget management and savings and investments planning.

Budget Management

From the surveys, we learned that students need a system that warns, limits, tracks the amount of money spent periodically, and is grouped by category. This is particularly important for students that not yet track their money spent but would find a system like this useful. Moreover, we want to deliver such functionality by making it clear and straightforward to use. As a result, it would be best to provide graphs and charts. This goes along with our initial surveys' responses, as users implied that graphical images would facilitate the visualization of their budget progress.

Savings Planner

Students lack some knowledge regarding the available savings plans, so we want a system that clearly explains the different types of saving accounts and lets them select each account. To achieve this, we wanted a system that distinguishes the different types of savings accounts and makes a comparative analysis highlighting their advantages. We believe that a system like this will make it easier for users to choose the best savings account according to their needs. This can be important for students who live with their parents, as we can see, for example, in our Luca's persona, that a savings planner would help him save money for his future plans. We also want to push further interest for users to open a savings account, since we have seen that a third of our users do not currently have one.

Investments Planner

During our research, we learned that students' knowledge regarding investments is really poor and, even some are not familiar with the risks implied. Therefore, it's crucial to deliver a platform that clearly distinguishes all types of investments, including their risks and benefits, and allows users to invest easily and quickly. We want to make sure

that our stakeholders can gain more confidence regarding this topic.

After settings our goals, we moved on to designing the low-fidelity prototype.

LOW-FIDELITY PROTOTYPE

First Iteration

For the low-fidelity prototype, in our first iteration, we started by implementing a home page that presents the different themes, as well as the budget progress bar regarding the limit amount set by the user. Based on our personas and needs of our users, this will provide an easy and fast way of knowing the budget progress and meeting our stakeholders' basic needs as soon as they enter the application

The user can access the budget planner from the menu, where he can define the monthly income value, expenses limit, and expected spent values in investments and savings. In the expense's menu, the user can select predefined categories or add new customized categories and define the maximum monthly value he wants to spend. For example, in the investment's menu, it is possible to invest inbound, stock, and mixed funds. Below each option are the user's investments for each investment category. We believe that this functionality is crucial to enforce our users to start controlling their budget, especially the amount of money spent for each category, as we can see that, from our analysis, some students lack this habit.

In the savings menu, the user can create different savings accounts, seeing which options are more advantageous.

From our scenarios, we realized that having an investment menu that distinguishes between all the available funds can be a possible way to help our personas on where to invest since they are new to this subject.

Returning to the main menu, the user can analyze his spendings in the analytics menu. After clicking on the analytics button, the user can select a period for which he wants to explore his spendings. After that, a doughnut chart will appear, showing how the user spends his money by category. The presentation of the budget information thought a doughnut chart will facilitate the visualization of the information. This goes in h and with our questionnaires since users revealed a significant desire to have an application that delivers this mechanism.

Lastly, when moving again to the main menu, the user can click on the "General Balance" button, where he will select a year to analyze all the savings over the months, representing the difference between the income and the spent money. By clicking on a particular month, the transactions over that month will appear listed, as well as the remaining budget.
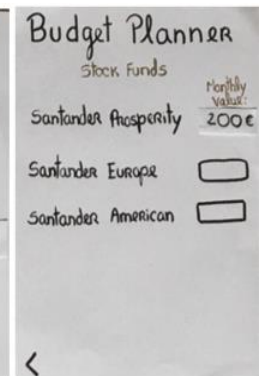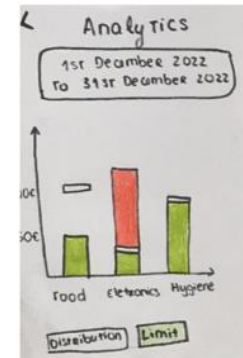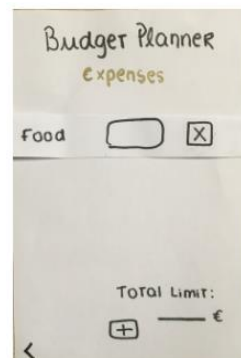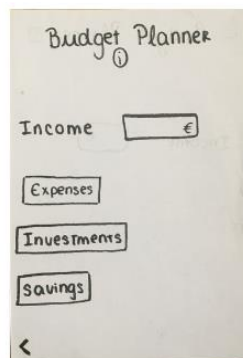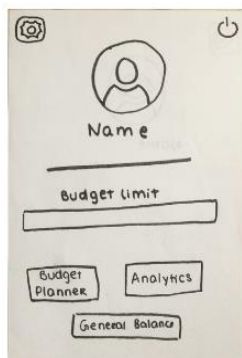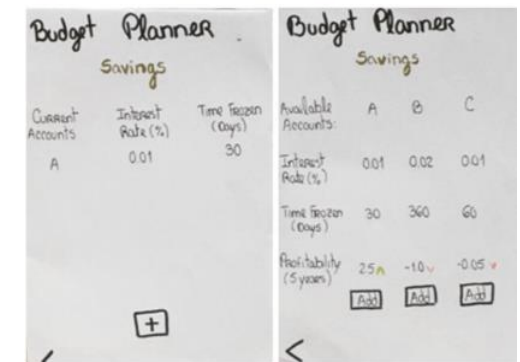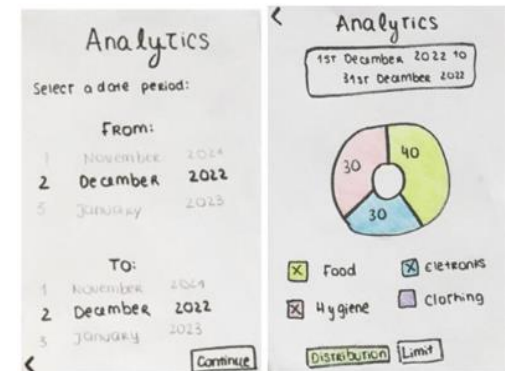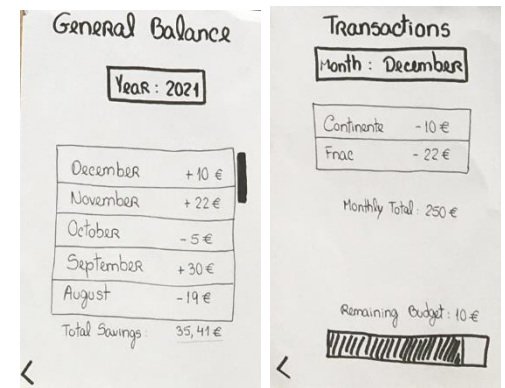
Wizard of Oz

To test the initial prototype, we used the wizard of oz strategy with five users. First, we gave them a guide with the steps they needed to follow. The entire content of the guide is presented on our webpage.

From our analysis, we concluded that our users overspent money as they did not have a way to manage and control the amount of money spent for each category. As a result, we tested our application's performance by letting users define a monthly limit value for the food category. Additionally, we wanted to test the capacity of users to invest, especially those new to this subject.

The user interaction showed that the budget planner menu was the major problem on our prototype. For example, most of them inserted a value on the budget limit bar on the initial page. Besides that, they were hesitant about the expenses, investments, and savings menu. In addition, they said many pages were inside the same topic, making it difficult to know on which page they were.

MID-FIDELITY PROTOTYPE

First Iteration

Based on the users' test, we decided to remove the budget planner and bring its options to the main page. Since users found the investments page too complex and had too much information, we opted to have separate types for each page that can be selected at the top. The users had no doubts about the other menus and used them efficiently. They mostly liked the graphics of the analytics menu because it is very easy to analyze their spending habits. Thus, we decided to keep it for mid-fidelity.

Since users found the investments page too complex and had too much information, we opted to have separate types for each page that can be selected at the top.

The users had no doubts about the other menus and used them efficiently. They mostly liked the graphics of the analytics menu because it is very easy to analyze their spending habits. Thus, we decided to keep it for mid-fidelity.
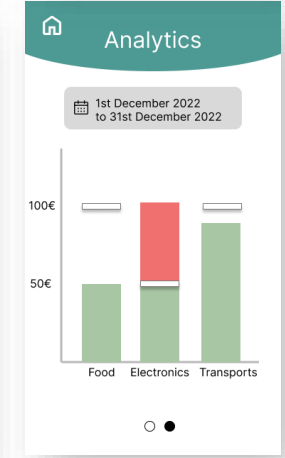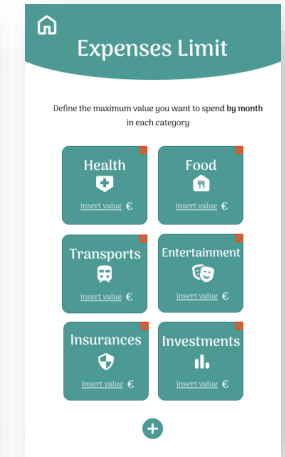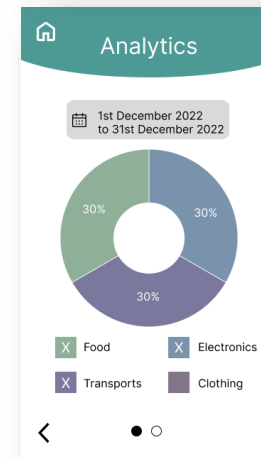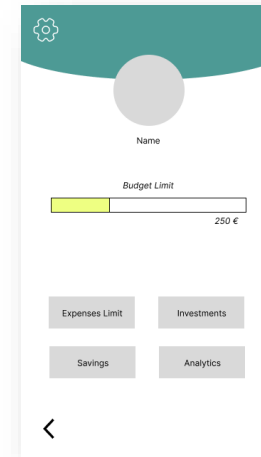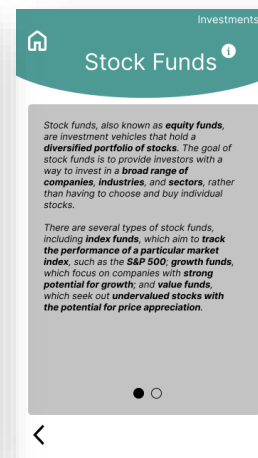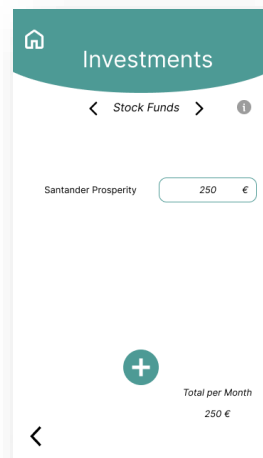
Second Iteration

From the 1st to the 2nd iteration, we tested with users using a similar guide to the previous one to test all the application functionalities.

From the user tests, the first limitation was the creation of a stock fund. When the users clicked on the investment's menu, the default option was bond funds, so they had difficulties finding the stock funds option because the arrows were not clear enough.

So instead, we changed the arrows to buttons. When they click on one button, other options turn transparent to indicate the currently displayed option.

For the general balance, the users had difficulties understanding that the month rows were clickable to see the transactions for that month. Therefore, we added arrows next to the months to make it clearer.
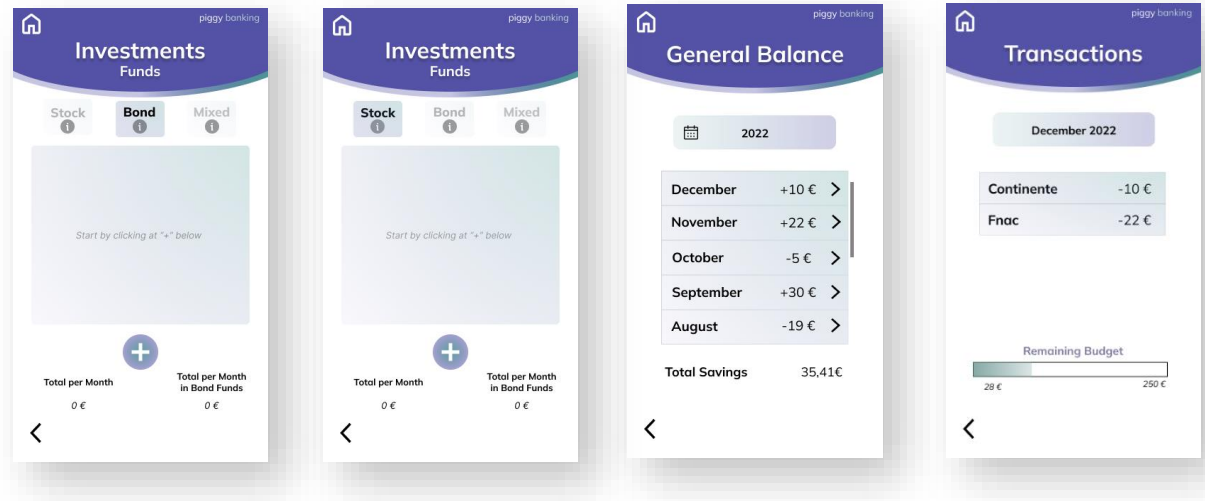
Regarding the analytics menu, we got feedback from our users stating that the percentages shown were too general and they cannot acknowledge the overall value related to the percentages. Hence, we decided to include the total amount spent in the middle of the pie chart. In addition, in the bar charts, we figured it would be nice to include the percentage value under the bar to specify the growth of the bar itself to facilitate the user's comprehension.

Besides that, we made minor changes in the color and layout to make the platform more aesthetically pleasing.
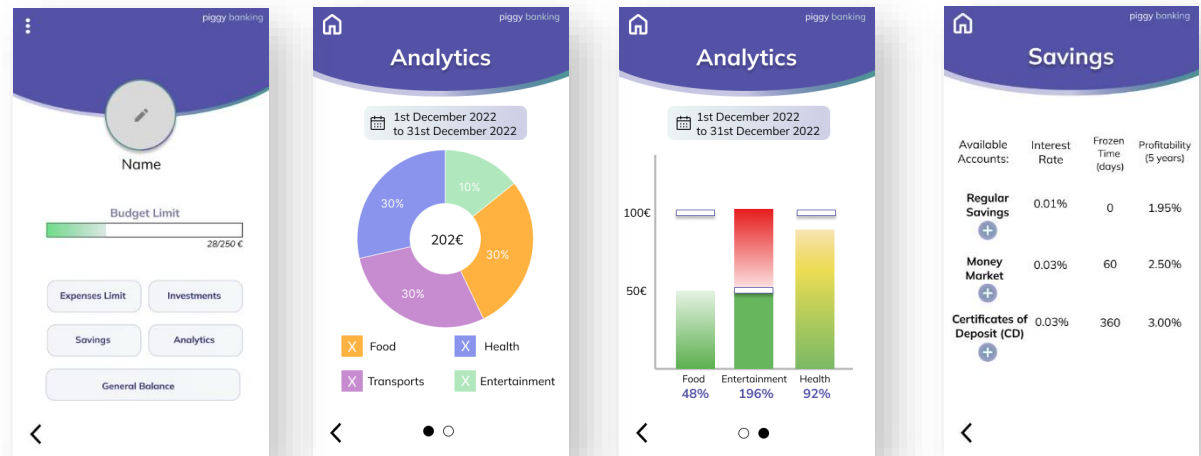
FROM MID TO HIGH-FIDELITY PROTOTYPE
From the mid-fidelity to the high-fidelity prototype, we made our application functional by inter-connecting the frames in Figma. For the high-fidelity prototype, we decided to define a summative user evaluation to measure the performance of our application when used by our stakeholders.

Summative User Evaluation
One of the main goals of our evaluation plan for the final prototype was to discover if our users found the application interactive and user-friendly. We also wanted to discover whether or not the investments menu was easy to interact with, especially for users that lack knowledge in this area. This was one of our major concerns since, from our analysis, many of the users were not familiar with investments.

For that, we used the Wizard of Oz technique with 5 users and asked them to think out loud while doing the tasks. All the users successfully completed the tasks without any doubts.

For quantitative analysis, we used the Single Ease Question method to evaluate the difficulty of the tasks. We got an average of 6.8. from a scale from 1 to 7, where 1 was very difficult and 7 very easy. This matched our initial expectations since during the evaluation the users succeeded in the tasks without any problems.

As qualitative feedback, we found that, in fact, our application does not enforce a further interest in the investment sections. This is because:

- The information on the different types of funds is not immediately displayed and users lose interest.
- Users cannot observe the market's performance over time so, if they have limited knowledge, they don't know which fund is better to invest in.
- Users found it is hard to click on the *information icon*, as it was not visible enough and, therefore, they had no interest in looking for more information in the investments.

With all of this in mind, we refined the high-fidelity prototype to satisfy all the needs presented by our users and solve their challenges regarding the application.

Refinement of High-Fidelity Prototype
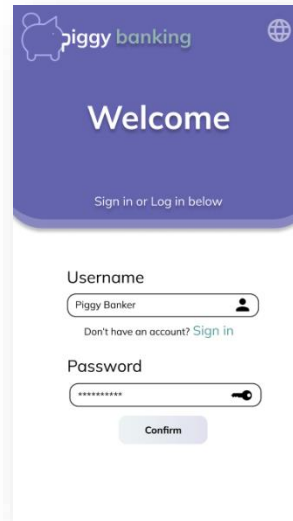For the refinement, we decided to perform the following changes:

- Firstly, we decided to split the investment menu into two sub-menus: Analytics and Investments. The analytics sub-menu is the one appearing by default and concerns the market's performance. On the other hand, the investment's sub-menu concerns the current user's investments.
- In the analytics menu, we decided to implement a graph that should appear, by default as soon as the analytics menu is open. This graph represents the market performance over time along with the trend of each fund. We can see the percentage of growth and decrease of each investment so users can see which one is the most advantageous to invest.
- In the analytics menu, users can select and unselect the funds they are viewing to ease their comparison.
- Lastly, we reformulated the "Total per Month" to "Total Investments per Month" in the investments sub-menu text since some user's found the previous text confusing.
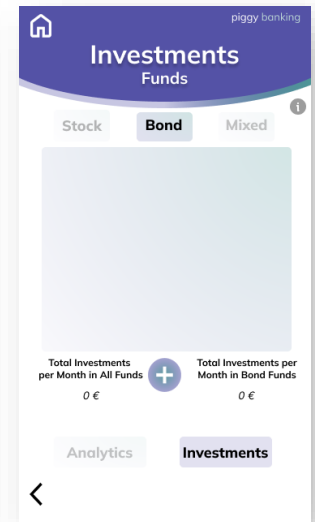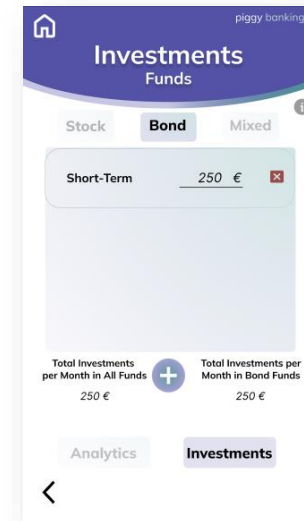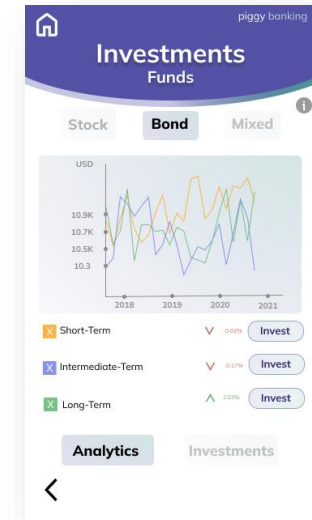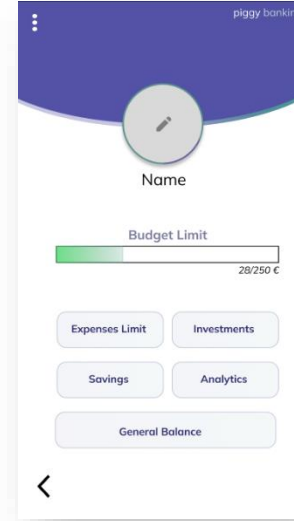
Conclusion

To sum up, our application successfully meets the intended user needs and design objectives. It effectively solves the issues faced by our initial stakeholders through its user-friendly design and comprehensive features. Budget management is made easy with its ability to track spending by category, while savings options are clearly presented with their respective advantages and disadvantages. With such a mechanism that lets users define a limit amount of money spent, we believe that it will be extremely helpful particularly for students who have a hard time controlling their outcome.

We also believe that the graphs used for managing the budget are a great method to visualize the information, which is often overlooked by some existing applications. Finally, users can become well-informed on various investment options and their associated risks and benefits, enabling them to make informed investment decisions.