

Part C: User Evaluation

1. Evaluation Design

For the evaluation of my Hi-Fi prototype, I will be using a questionnaire. In this case, a questionnaire could be used to gather information about how easy it is for users to learn and use the interface for selecting and trading stocks sustainably, as well as to verify that the application accurately displays relevant information about the environmental impact of different stocks and investment options. Additionally, a questionnaire can be used to test the effectiveness of the application's design and layout in helping users find and compare different environmentally conscious investment options. This is important because the design and layout of the application can significantly impact the user experience and gathering this information through a questionnaire allows researchers to identify areas for improvement and make changes to the prototype accordingly.

Usability and User Experience Goals:

1. Evaluate the ease of use and time needed to learn the application's interface for selecting and trading environmentally conscious stocks
2. Verify that the application accurately displays relevant and appropriate information about the environmental impact of different stocks and investment options
3. Test the effectiveness of the application's design and layout for helping users easily find and compare different environmentally conscious investment options

2. Participants

My representative pool of participants was made up of my friends and family, specifically those who have a general grasp of how stock trading works and know of the importance of certain environmental practices. However, they all had varying degrees of knowledge in these fields to assess different types of users.

1. One of the users is a 47-year-old male, who has a moderate-consumer level of understanding for stock trading, with a few decades using this knowledge, and has a general understanding of environmental practices within companies, although he does not have a high-interest in environmental issues.
2. One of the users is a 47-year-old female, who has worked for a financial institution and dealt with stock trading for several years, and has some understanding of environmental practices within companies, although she does not have a high-interest in environmental issues.

3. One of the users is a 17-year-old female, who has a low-consumer level of understanding for stock trading, with a few years using this knowledge, and has a general understanding of environmental practices within companies, with a high-interest in environmental issues.
4. One of the users is a 20-year-old male, who has a high-consumer level of understanding for stock trading, with a few years using this knowledge, and has a general understanding of environmental practices within companies, although he does not have a high-interest in environmental issues.
5. One of the users is a 20-year-old male, who has a moderate-consumer level of understanding for stock trading, with a few years using this knowledge, and has a general understanding of environmental practices within companies, although he does not have a high-interest in environmental issues.
6. The last of the users is a 20-year-old female, who has a low-consumer level of understanding for stock trading, with a few years using this knowledge, and has a high understanding of environmental practices within companies, with a high-interest in environmental issues.

3. Procedure

Before conducting a user evaluation of a prototype via a questionnaire, it is important to provide clear and concise instructions on how to use the prototype. These instructions should cover the following points:

1. Introduction: Provide a brief overview of the purpose and goals of the prototype, as well as any relevant background information.
2. Objectives: Clearly state the objectives of the evaluation, including what you hope to learn from the questionnaire.
3. Usage instructions: Provide step-by-step instructions on how to use the prototype, including any relevant controls or features. Be sure to cover all relevant aspects of the prototype, including navigation, input, and output.
4. Tips and guidelines: Offer any tips or guidelines that may be helpful for users as they work with the prototype. For example, you might suggest that users try out different features or functions, or that they pay attention to specific elements of the prototype.
5. Timeframe: Let users know how long they should expect to spend using the prototype and completing the questionnaire.
6. Feedback: Encourage users to provide honest and detailed feedback about their experience using the prototype. Let them know that their input is valuable and will be used to improve the prototype.
7. Contact information: Provide your contact information in case users have any questions or need additional assistance.

The questionnaire below will be administered using Google Forms and will not have a face-to-face component due to time constraints and the prior commitments of the users. Instead, the detailed instructions will be able to guide the user on how to operate the prototype and answering the questionnaire.

Most of the analysis of the responses will be descriptive analysis: gathering statistics on how respondents filled out each question to try and see trends in the data. A correlation analysis can be made between some questions, like whether a positive response to the usability of the interface correlates to a positive response in how rewarding the application is to use. Lastly the final question serves as a qualitative analysis to gain direct feedback about how the prototype may have operated in an unintended way.

4. Results

	Question 1	Question 2	Question 3	Question 4	Question 5	Question 6	Question 7	Question 8	Question 9
Mean	4.67	4.17	3.83	4.67	3.17	4.67	3.83	4.67	3.83
Median	5	4	3	5	3	5	4	5	3
Mode	5	4	3	5	2	5	4	5	3
Standard Deviation	0.47	1.06	0.95	0.47	1.03	0.47	0.95	0.47	0.95

These are the statistical results of the numerical ratings of the questionnaire. It shows that question #5 has the lowest average response, with a 2 being the most common input. This means that the most common response to the statement “The organization of the financial and environmental information was logical and intuitive,” was disagree, which unlike most of the other questions, raises some concerns. The organization of the application is critical to how well a user will be able to engage with the information that they are given. In order to improve on this, I will consult have to consult the written responses that were submitted in question #10. The responses were as follows:

- "I didn't encounter any technical issues or errors while using the application. It seemed to function as intended."
- "I did have an issue regarding the back button, which would not always bring the user back to the previous page."
- "No issues here! It was easy to navigate and provided all the information that I needed to make informed decisions on investing."

- "I didn't have any technical issues, but I think that the amount of info being displayed on each company widget made it hard for me to gather information quickly.
- "Didn't have any technical issues."
- "When clicking the back button from the help page, it always goes back to the home page. Otherwise, it was good."

It appears while the organization was not satisfactory for many of the users, it was only mentioned in one response. I believe that I should've had either more open-ended questions, or a more general ending question, since the way the information was displayed is not a technical issue.

5. Future Work

I would immediately fix the bugs that affected the back button and help page. If I were to follow up with the users who tested the prototype, I would ask them to specify changes that should be made regarding the organization of the prototype's financial and environmental data. I would brainstorm more ways to organize that data that could make it less cluttered or more intuitive to read. This might be including the ability scroll so that more information can fit on a page but in a larger tile, or to keep most of the information to the company's individual page.

6. Appendix - Questionnaire Draft:

This is a questionnaire that is meant to evaluate the usability and user experience of the EnvironMarket high-fidelity prototype. EnvironMarket is a tool that allows users to analyze the environmental impacts of their investments. Using an environmental data API when fully functional, the system allows a user to view a company's profile, which includes its financial and environmental information. The financial information is like many stock-trading platforms, showing fluctuations in the stock price, while the environmental information comes in the form of an overall rating, made up of several other sub ratings based on different environmental practices. A user can have a portfolio that shows financial gains across all investments, a cumulative rating for all companies on the portfolio, and the ability to save the contents of the portfolio for further use (via a login).

Instructions: When greeted by the landing page, you are told to login by clicking the button on-screen. You are then given the option login via either making a new account (non-functional feature), or by using an existing account. When the existing account button is pressed, you will be given a list of existing users to choose from, however each user leads to the same home page. A user would have different data when fully functional, but it had not been fully implemented.

Once the user confirms their identity with the mock fingerprint scanner, they will be greeted with a home page that holds a lot of information. To better understand the contents of the application, the user can click on the help button to get a general explanation of what each component is meant to represent.

Once logged in, the user can navigate through the Home, Browse, Portfolio, previous pages using the menu at the bottom of the screen. When on the home page, information about a user's account balance, when clicked, can bring them to the portfolio page. Either of the "see all" buttons can be clicked to bring the user to the Browse page, and company tiles can be clicked to visit the Company page (each company has the same page at the moment).

The information displayed on each page is what the application does best. While there may not be a large quantity of functional features, that is not the intention of the application, since it is largely information based.

Before you begin: Testing the prototype and answering the questionnaire should take 10-15 minutes total. Spend approximately 5-10 minutes exploring and using the interface, with a short pass through the application at first that only takes a minute or two, and another pass that is more in-depth to familiarize oneself with how to use the prototype. Remember that the prototype is being tested, not you! Do not worry if the application is confusing or does not work as expected, your honest feedback on the prototype will help improve this. Feel free to contact me at the email where the questionnaire was sent from if you have any further questions. Once you are ready to begin testing the application with the provided link, be aware of when you start so that you spend the appropriate amount of time testing.

Questions: Answer question #1-9 on a scale of 1 to 5, where 1 means strongly disagree, 3 means neutral opinion, and 5 means strongly disagree.

1. I found it easy to learn how to use the application's interface for browsing and trading sustainable investment options.
2. It took me a short amount of time to feel comfortable using the application's interface.
3. I was able to easily find the companies or information that I was interested in.
4. The application's design and layout made it easy for me to compare and evaluate different sustainable investment options.
5. The organization of the financial and environmental information was logical and intuitive.
6. The application provided all the information that I needed to make informed investment decisions.
7. The application's design was visually appealing and easy to navigate.
8. Using this application to find sustainable investment options was rewarding.
9. I encountered no technical issues or errors while using the application.
10. If technical issues or errors were encountered, what were they? How did they deviate from the intended function of the application?

EnvironMarket Questionnaire

This is a questionnaire that is meant to evaluate the usability and user experience of the EnvironMarket high-fidelity prototype. EnvironMarket is a tool that allows users to analyze the environmental impacts of their investments. Using an environmental data API when fully functional, the system allows a user to view a company's profile, which includes its financial and environmental information. The financial information is like many stock-trading platforms, showing fluctuations in the stock price, while the environmental information comes in the form of an overall rating, made up of several other sub ratings based on different environmental practices. A user can have a portfolio that shows financial gains across all investments, a cumulative rating for all companies on the portfolio, and the ability to save the contents of the portfolio for further use (via a login).

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The information displayed on each page is what the application does best. While there may not be a large quantity of functional features, that is not the intention of the application, since it is largely information based.

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Questions: Answer question #1-9 on a scale of 1 to 5, where 1 means strongly disagree, 3 means neutral opinion, and 5 means strongly disagree.

I found it easy to learn how to use the application's interface for browsing and trading sustainable investment options


1 2 3 4 5

☐ ☐ ☐ ☐ ☐

It took me a short amount of time to feel comfortable using the application's interface

1 2 3 4 5

☐ ☐ ☐ ☐ ☐



Part D: Reflection

Did you actually see your design change under the influence of user involvement?
What were the biggest surprises for you – the things you learned from or about users that you would not have predicted based on your own experience and intuition?

I did see the design change under the influence of user involvement, but not incredibly so. I think with more user testing I would've experienced it more so. My UI had an overhaul to satisfy one of the pieces of heuristic feedback I received, which was the biggest surprise to me albeit not too large. My lo-fi prototype was cluttered and getting that feedback was useful to changing that.

Did the methods you chose for your evaluation and prototyping get at what you were looking for? In hindsight, would a different approach have been better?

I believe that the questionnaire was still a great choice for the evaluation, as it allows for power in number of responses, and collects lots of data that way. However, without face-to-face interaction, communication was limited between tester and user.

What were the most, and least, valuable among the activities we've asked you to try out, either generally or specifically for your project?

The most valuable activity in my opinion was the individual/team brainstorming we did early in the class, which really demonstrated how working collaboratively gets you further quicker. The least valuable may have been the LED signal activity, although I still found it helpful and enjoyed it.

Having gone through this course, how might you approach your next interface design project (whether for fun/personal or work, large or small) differently?

I will consult some of the design processes we focused on in class: effective and vast brainstorming sessions, lo-fi vs. hi-fi prototyping, and the importance of user feedback. These are all things I will not skip over when doing personal or even other course projects in the future.