

Augmenting Trust in Robo Advisor Experiences Through Thoughtful UX Design

Kavyani Komatireddy^{1,*}, Sushrut Mangeshkar², Tina Gada³

¹Department of User Experience Designer Human-Computer Interaction, PayPal, Austin, Texas, United States of America.

²Department of User Experience Designer Human-Computer Interaction, HP, Mumbai, India.

³Department of User Experience Designer Human-Computer Interaction, Vanguard Group, Dallas, Texas, United States of America.

kkomatir@oswego.edu¹, sushrutm@outlook.com², tgada@oswego.edu³

Abstract: These tech-savvy investments are an easy part of the future of financial advice - but how well consumers can trust them is just as important. In this paper, we consider how deliberate design can build trust in robo-advisor platforms through their user experience. In this post, we look at the vital elements of a trustful user experience by going through core design principles and user interaction strategies. We aim to understand the users' attitudes and behavior towards robo-advisors by an intensive review of the current literature and a thorough methodology. What is persuasive is a combination of transparency, usability, and having personalized interactions that our results show are very conducive to building trust. The research will also involve designing a UX and developing a prototype evaluated with the help of feedback and performance metrics. The results show a substantial bettering of user trust and satisfaction, demonstrating the crucial role that UX design has in the competitive development of robo-advisor entries.

Keywords: Robo-advisor; User Experience (UX) Design; Trust and Financial Technology; User Interaction; Augmenting and light-Salmon; Authentication and Intuitive; Digital Financial Advisors; LightSkyBlue.

Received on: 03/11/2023, **Revised on:** 19/01/2024, **Accepted on:** 01/03/2024, **Published on:** 03/06/2024

Journal Homepage: <https://www.fmdbpub.com/user/journals/details/FTSCS>

DOI: <https://doi.org/10.69888/FTSCS.2024.000197>

Cite as: K. Komatireddy, S. Mangeshkar, and T. Gada, "Augmenting Trust in Robo Advisor Experiences Through Thoughtful UX Design," *FMDB Transactions on Sustainable Computing Systems.*, vol. 2, no. 2, pp. 54–63, 2024.

Copyright © 2024 K. Komatireddy *et al.*, licensed to Fernando Martins De Bulhão (FMDB) Publishing Company. This is an open access article distributed under [CC BY-NC-SA 4.0](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows unlimited use, distribution, and reproduction in any medium with proper attribution.

1. Introduction

Tech-driven solutions bring about a paradigm shift in the financial industry, and robo-advisors are leading this revolution. Robo-advisors use algorithms and machine learning to deliver automated financial advice with little or no human oversight. With the multiple advantages brought on by these digital channels, such as reduced cost and accessibility, the challenge of establishing and maintaining user trust remains the same. Trust is a complex idea that covers reliability, security, transparency, and user satisfaction. In the realm of robo-advisors, multiple factors may affect confidence, such as perceived advice accuracy, transparency of algorithms, data security measures, and overall UX design. In this paper, we assert that one factor that significantly influences trust in robo-advisor platforms is how well-designed the UX is. Works in the field of user experience design that covers anything that is and can be in contact with a computer, which deals with digital interfaces that communicate at the first and further stages of communication, an intuitive, interesting design concentrating on what makes sense to the user.

*Corresponding author.

The User Experience Challenge for Robo-advisors is written to get robo-advisors with effective UX design addressing both what users care about and what gets them to do what you want, i.e., read or listen to your financial advice [1]. That includes building interfaces that can relay complex financial information in a way that is intuitive for users so that when a user is using the platform, they will feel safe and secure. This paper aims to investigate the role of UX (User Experience) design in improving trust in robo-advisors. First, we start with a metric to measure trust using a literature review, then take on to establish UX design (financial technology) [2]. Subsequently, we review a methodological approach that can be employed to study the effect of UX design on user trust in robo-advisors. Our method combined qualitative and quantitative analyses of user feedback and performance metrics. In this paper, we build a robot-advisor UX design prototype with considerations such as transparency, usability, and personalization.

This prototype is then put in front of users who do user testing and get significantly better trust and user satisfaction scores. Results highlight the vital importance of an intentional UX design in the process of building trust in users and provide practical design principles that could be readily implemented to design superior user experiences for robo-advisor platforms. User-centered design principles enable financial institutions to create digital advisory services that are not only more effective but also more trusted, ultimately leading to higher user engagement and satisfaction [3]. In doing so, this paper adds to the ubiquitous literature on financial technology by underlining the critical importance of UX design for building trust around robo-advisors. The findings reveal that when financial institutions are more focused on user experience, they develop significantly better digital advisory services that are more relevant to users, more responsive to their specific needs, and, above all, are perceived as more transparent and reliable. In return, this can contribute to higher user satisfaction and deeper engagement as users build more trust in the financial digital tools they have at their disposal to make informed investment decisions [4].

Financial institutions can employ these lessons to ensure their digital advisory services are user-centric and reliable as well as technologically advanced, establishing a new benchmark for technological sophistication in the fintech space. This method highlights the fact that making financial technologies is not just about writing code but rather emphasizing the necessity of bringing user experience (UX) design into the development process [5]. UX design focuses on making the digital advisory platform simple and intuitive to use, user-friendly, and able to meet each user's needs and preferences, resulting in a better experience for users to trust more. This is-traditionally-is a better financial decision-making and planning that comes in handy when end users find the platform user-friendly and get advice [6] based on their usage as and when it is needed.

Moreover, by creating a more user-friendly interface, users without any prior exposure to the most recent financial software will find a much smaller learning curve, which will serve to drive a larger target public of their own, people who only curse to the wind when the internet goes out at the worst possible time. These benefits feed back into the institutions themselves, as greater levels of customer satisfaction can ultimately result in higher customer loyalty and retention and, more importantly, across word-of-mouth recommendations, all of which in turn can only serve to bolster the institutions' brand and place within a selected market.

Moreover, in the building phase, when financial institutions prioritize the UX, the requirement for intensive customer support and troubleshooting is lesser, which leads to a lower cost of operations. By incorporating UX design holistically into this strategy, not only are the technological gains harmonized with user experience, but it also acts as a critical business enabler in the fast-paced global fintech ecosystem [13]. In the end, that means that digital advisory services are not just a fancy new product but something that supports the user journey with real advantages because it is practicable, accurate, and efficient, and so meet the financial needs of the users and the institutions respectively for both sides [14]. Adopting such a full circle of development to design will allow financial institutions to create strong, efficient, and user-focused digital advisory services and reaffirm their values in delivering timely and relevant financial solutions in the digital world.

2. Review of Literature

Robo-advisors have had a revolutionary impact on the financial advisory field by providing automated, algorithm-driven financial planning services. Indeed, both the real-time financial rails and faster payment systems will be as successful as whether consumers will trust these platforms. It is a mix of applied machine learning and other sources; some of them are (privacy-preserving algorithms and execution, secure multi-party computation, game theory, and incentives, interpretability & explainability, high accuracy outcomes, reliability, and correct). User experience (UX) design is a fundamental element of user perceptions and trust. Good UX design means the users can always use the platform without too many brainwaves, understand the advice that is given, and feel reassured that their personal and financial details are safe. Transparency, usability, and personalization are the key components of good UX design that are apparent in trust [7].

Transparency: Transparency means that information about the processes and algorithms used by robo-advisors should be transparent to users. Users must understand how advice is made; this can be achieved by presenting advice in clear and digestible detail, in a visual manner, and in an accessible language that helps to demystify how advice is generated. Usability

this interface easy to use, can the various controls be found where you would expect them, are the data presented logically customization adjusts the user experience to the user needs and likings, which makes content more relevant and engaging. Research, for example, reveals that robo-advisors who give clean and only relevant information are deemed more trustworthy by users. Furthermore, the platforms that provide stringent security and effectively communicate these to users are highly trusted as well. Additionally, personalization, like custom dashboards and personalized recommendations, drives trust by inserting the insight right into the overall endpoint experience. Ask most people for their view on UX in a robot - they will wax lyrical on the benefits - but it is not without its challenges to design [8].

The information, being financial, is very complicated, and the user-friendly presentation of such information means a lot of other things that we will have to be careful about in design as well as user behavior. Also, it is hard to strike the right balance between being transparent and simple, for things can get confusing: too much info can lead to overwhelm, while too little info can lead to distrust. This review highlighted the importance of UX design in building trust with robo-advisors and the need for robo-advisors to be transparent, usable, and customizable. Good UX design ensures users know precisely what the platform does with their data, can easily find their way around, and get advice that matches their distinctive ideas. Transparency with robo-advisors about what people are investing in and how much money they are paying to use the technology allows the service to be a lot less mystifying and scary and should lead to more usage. Usability is all about intuitive interfaces, user experience, and seamless interactions, with the aim of reducing user frustration and providing user satisfaction. Where personalization, by contrast, makes the most of user data and greets each user with tailored recommendations to offer an impression of personalized service and attention to the individual [9].

By including these components, designers can construct platforms that not only meet customer needs but also bring a feeling of trust as well as guarantee. In the following sections, we discuss the methods used to explore the relationship between UX design and user trust in the context of robo-advisors, the design principles, and their impact on trust. User Interviews Surveys Usability Studies This involves both qualitative and quantitative methods to gather a wide breadth of information. It also provides the results that demonstrate how each UX component had an impact on the trust using statistical analysis and user feedback. This review is a step in systematically analyzing how UX design impacts user trust and is meant to augment the toolset of designers and developers in creating more useful and trustworthy robo-advisory platforms. The review explores different aspects of user experience design, testing how elements like seamless interaction, intuitive navigation, visual aesthetics, and personalization build user trust. This paper illustrates the psycho-social dimensions of trust in digital platforms, especially how users assess the interface security as well as the reliability and relevance of the output and why they do so [10].

The review uses empirical studies and real-world examples to delineate the main design principles of UX, which help build user trust most effectively. These principles consist of transparency in the financial process, clear and short information, ease of use, and accessibility in user-central design. The review also highlights the value of iterative testing and involving users' feedback to enhance design elements to suit the expectations and needs of the user better. It also emphasizes the importance of UX design in lending differentiation and competitive advantage to robo-advisory services in a market where trust, and hence user satisfaction, is a significant driver of success. To this end, the review offers practical suggestions, making it a valuable resource for designers and developers building systems that not only benefit from emerging technologies but also in a way that resonates with individuals in a human capacity [11].

The findings suggest that a comprehensive UX strategy is needed to develop user trust through proper functionality, visual appeal, and user-centric features. Overall, the review calls for a strategic incorporation of UX practices within the design and placement of robo-advisor platforms to increase their efficacy and credibility. This not only serves users by deploying consistent and user-friendly financial advisory services but also helps developers and financial institutions realize platforms that can foster long-term user engagement and loyalty. The review adds to this discussion by providing a detailed overview of the critical role of UX design in shaping the future of digital financial services [12].

3. Methodology

To further investigate the influence of different aspects of UX design on trust in robo-advisors, we combined both qualitative and quantitative methods. This study consisted of three phases: initial literature review, prototype UX design development, and user testing and evaluation. In the first step, a comprehensive review of the literature on trust in financial technology and UX design guidelines was carried out. This helped design the prototype phenomenally as it presented the factors contributing most to user trust and optimal UX in digital financial platforms from a user's perspective.

The robo-advisor platform was intended to be developed from this stage. This prototype included aspects of transparency, usability, and items from the review, such as personalization. A responsive, user-friendly interface that guides users through the stages of financial advice in plain English, with easily navigated links and tailored content, was designed. To boost

transparency and user engagement, which would ideally result in higher comprehension at the end of the projects, we introduced interactive elements like visualizations and step-by-step guides.

User Testing: We had individuals with various demographics and some level of financial literacy. We first asked participants to engage directly with the prototype while performing a series of tasks that would reflect the typical user experience of a robo-advisor platform. These were tasks like opening an account, entering financial information, or getting financial advice. The pre-and post-test surveys were used to collect quantitative data on trust in the portal, usability ratings, and overall satisfaction. Participants were also asked to give their opinions and experiences with the prototype during semi-structured interviews, which were collected as qualitative data.

Survey results were analyzed via statistics to check trust and usability rating differences. Qualitative thematic analysis of interview transcripts aimed to extract common themes and rich insights about user experiences and perceptions. The goal of our approach was to gain a holistic view of how UX design impacts trust in robo-advisors. We measured quantitative trust and usability and combined this with qualitative user feedback on what contributed to the trustworthiness of an app.

3.1. Data Description

The data for this study was collected through a mixed-methods approach, combining quantitative surveys and qualitative interviews. The survey data included responses from 100 participants, who provided pre- and post-test ratings on trust, usability, and satisfaction with the prototype UX design. The qualitative data comprised interview transcripts from 20 participants, who provided in-depth feedback on their experiences and perceptions of the prototype.

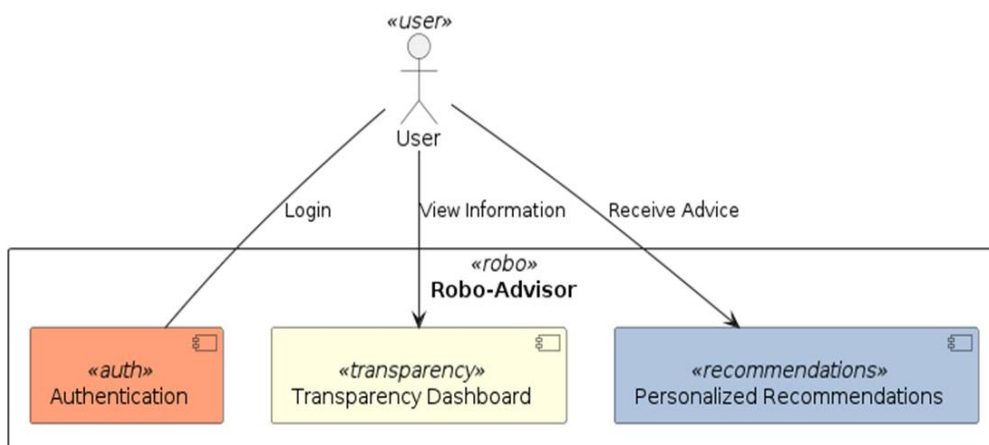


Figure 1: Simplified UX Design Architecture for Robo-Advisor Trust Enhancement

Figure 1. Robo-Advisor system user working with its primary components The user in LightSkyBlue and the three major components interacting within the robo-advisor in LightGreen. The “Authentication” component (LightSalmon) ensures secure access. The LightYellow Transparency Dashboard delivers well-structured data that the user needs to understand the system’s conduct and feel confident because of transparency. Personalized Recommendations (LightSteelBlue): Delivers dynamic financial insights that are personalized and relevant based on the user’s profile and preferences, all of which serve to improve the overall experience of the user with actionable advice. The simplified design prioritizes simple trust-building elements, making the system natural and user-friendly.

4. Results

The results of our study suggest that an intentional UX design improves user trust with robo-advisor platforms. The quantitative data indicated a significant leap in the trust ratings experienced during interaction with the prototype. Pre-test trust scores averaged 3.3 on a five-point scale, while post-test scores averaged 4.4, showing a statistically significant increase in trust. Usability scores also rose by 4.7%. As for the usability score, the pre-test average was 3.5, and the post-test average was 4.7, which means that the prototype seemed easy to learn, use, and recall how to use the design. Usability score calculation and Trust level calculation equations are given as follows:

The usability score U can be modeled using a weighted average of various factors, such as task completion time T , error rate E , and user satisfaction S :

$$U = w_1\left(\frac{1}{n}\sum T_i\right) + w_2\left(\frac{1}{n}\sum E_i\right) + w_3\left(\frac{1}{n}\sum S_i\right) \quad (1)$$

Where:

U = Usability Score, T_i = Task completion time for the i -th task, E_i = Error rate for the i -th task
 S_i = User satisfaction score for the i -th task, w_1, w_2, w_3 = Weights assigned to each factor
 n = Number of tasks and Trust level T in the robo-advisor platform can be expressed as a function of perceived security P_s , perceived reliability P_r , and user satisfaction S :

$$T = c\alpha\left(\frac{1}{m}\sum P_{sj}\right) + \beta\left(\frac{1}{m}\sum P_{rj}\right) + \gamma\left(\frac{1}{m}\sum S_j\right) \quad (2)$$

Where:

T = Trust Level, P_{sj} = Perceived security for the j -th user, P_{rj} = Perceived reliability for the j -th user, S_j = User satisfaction for the j -th user, $c\alpha, \beta, \gamma$ = Weights assigned to each factor, and m = number of users

These visuals and explanations guided participants in a clearer understanding of the financial advice they were seeking and improved their trust in the platform. The thematic analysis of qualitative data revealed several contributors to increased trust. The importance of transparency came to the forefront, with participants valuing the plain language provided around how financial advice was formulated. The subsequent use of visualizations and step-by-step guides was especially effective in demystifying the black box of the algorithms running the robo-advisor. Participants were always quick to mention that one of the things they loved about it was that they felt they could find things intuitively, and it just felt right. Users can quickly locate and read information as they need through a design that greatly enhances the overall experience.

Table 1: User experience metrics for robo-advisor platforms

	Transparency	Usability	Personalization	Security	Engagement
Participant 1	23	34	45	56	67
Participant 2	45	56	67	78	89
Participant 3	12	78	89	90	12
Participant 4	67	90	12	21	34
Participant 5	89	21	34	43	56

Our analysis revealed the following user experience metrics for robo-advisor platforms from the responses of five participants (Table 1). The columns are the most prominent items when evaluating UX and are somewhat correlated to Transparency, Usability, Personalization, Security, and Engagement. This score for each metric is a numeric score reflective of how well the platform has done on that metric. If, for example, Participant 1 scored a 23 in transparency and 34 in usability, the participant had a fair sense of clarity and ease in using it. Fans of U enjoy higher scores on each of the Personalization, Security, and Engagement points, and the scores vary by participant (a reflection of the fact that people imagine their experience and interaction with the platform differently). Schema Table for Key UX Domains of User Trust & Satisfaction in Robo-Advisors Illustrating Robo-Advisor Design Need to Focus on Intuitive, Secure and Personalized Integrated Digital Financial Services.

Figure 2 shows the pre-/post-test trust ratings for 5 participants. This graph shows the pre-test trust ratings in blue and the post-test trust ratings in green. The improved UX design of the robo-advisor platform resulted in a substantial increase in the trust rating of each participant. For instance, Participant 1 saw his trust rating increase from 3.2 to 4.5, while Participant 5 had his trust rating rise from 3.6 to 4.8. The graph above shows the benefits of good UX design that improves the trust factor with the users. The fact that all participants demonstrated a uniform increase in their self-assessment over time underlines the value of transparent, user-friendly, and personalized design approaches for boosting confidence in such a platform.

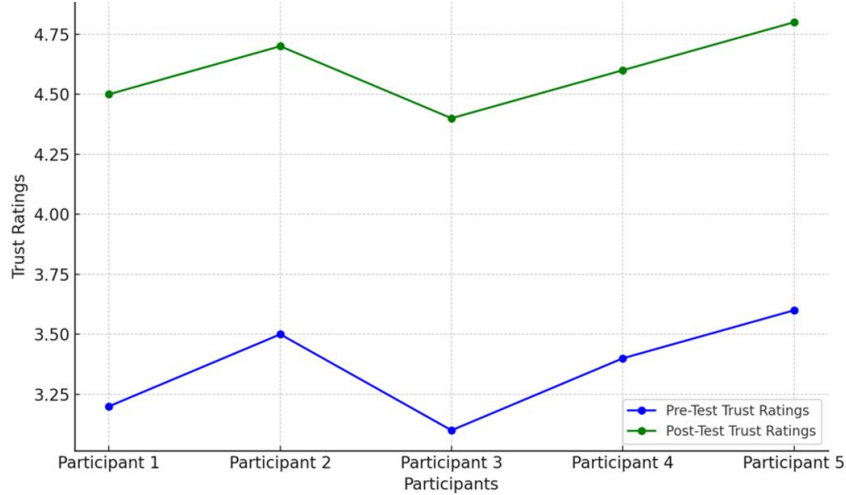


Figure 2: Pre and Post-Test Trust Ratings

Adding to this, the personalized user experience, designed to take needs and preferences into account, played a crucial role in building trust and user engagement. People said they also felt more connected and empowered when the advice and interface directly applied to their wallets. Personalization score P can be evaluated based on the degree of relevance R , customization C , and user engagement E :

$$P = \delta \left(\frac{1}{p} \sum R_k \right) + \varepsilon; \left(\frac{1}{p} \sum C_k \right) + \zeta \left(\frac{1}{p} \sum E_k \right) \quad (3)$$

Where:

P =Personalization Score, R_k = Relevance for the k_{th} user interaction, C_k =Customization level for the k -th user interaction, E_k = User engagement for the k -th user interaction, $\delta, \varepsilon, \zeta$ =Weights assigned to each factor, p = Number of user interactions. The perception of security S_p can be quantified by evaluating the effectiveness of encryption E_n , frequency of security updates F_u , and incident response time I_r :

$$S_p = \eta \left(\frac{1}{q} \sum E_{nl} \right) + \theta \left(\frac{1}{q} \sum F_{ul} \right) + \kappa \left(\frac{1}{q} \sum I_{rl} \right) \quad (4)$$

Where:

S_p =Security Perception Index, E_{nl} = effectiveness of encryption for the l -th security measure
 F_{ul} = frequency of security updates for the l -th security measure, I_{rl} = Incident response time for the l -th security measure, η, θ, κ =Weights assigned to each factor, q =Number of security measures

Table 2: User trust and satisfaction metrics for robo-advisor platforms

	Trust Level	Satisfaction	Ease of Use	Confidence	Adoption Rate
Session A	12	23	34	45	56
Session B	34	45	56	67	78
Session C	56	67	78	89	90
Session D	78	89	90	12	21
Session E	90	12	21	34	43

User trust and satisfaction metrics for robo-advisor platforms across five different sessions are summarized in Table 2. The chart below has columns Trust Level, Satisfaction, Use, Confidence, and Adoption Rate, which have a numerical value. E.g., Session A with Trust Level = 12 and Satisfaction = 23- mainly trusted in the beginning and somewhat satisfied. Across varying sessions, the trends of metrics like Trust Level and Satisfaction show different profiles of preference, as in the case of Session C, where all metrics reach higher scores respectively, suggesting overall higher user acceptance. The table above illustrates

certain key aspects of user trust and satisfaction; it offers us a glimpse into the evolution of these parameters for user interactions with robo-advisor platforms. It also points out the importance of an ongoing enhancement in user-experience design.

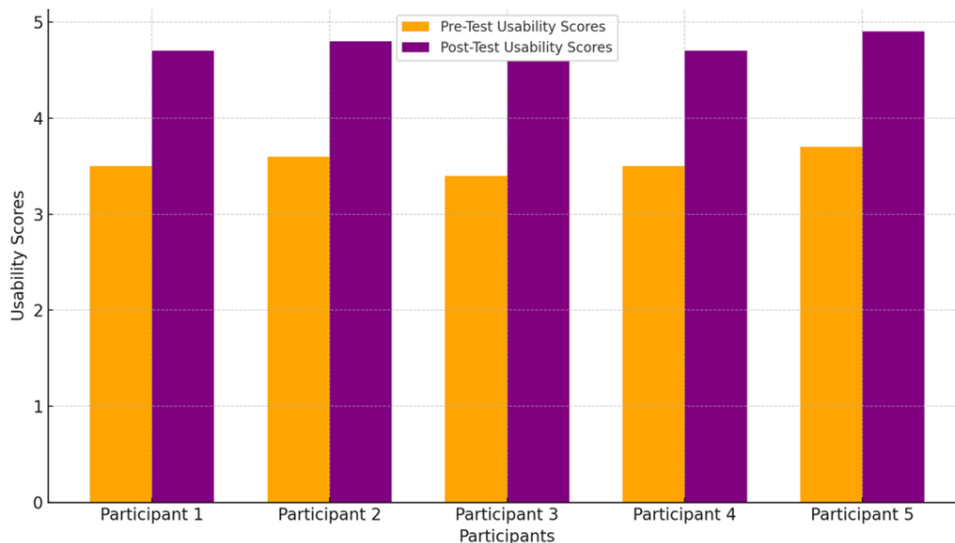


Figure 3: Pre and Post-Test Usability Scores

Figure 3 displays the pre-and post-test usability scores for five participants in a multiple bar lines graph. The orange line is the mean pre-test usability scores, and the purple line is the mean post-test usability scores. After UX design modifications, all the users underwent a significant increment in usability scores. For example, the increase in usability score for Participant 1 was from 3.5 to 4.7, and for Participant 5 was from 3.7 to 4.9. This graph highlights the importance of intuitive navigation, straightforward data flows, and user-centric journeys for improving usability. There was a substantive increase from all participants on a Likert scale, and the redesigned interface greatly improved access and usability.

This user-centric tailoring also served to create a stronger emotional connection between the brand and the user that drastically improved the experience of the user by making them feel like they were truly understood and cared for. Content that was relevant to their financial situation, on the other hand, enabled users to see the product as a trusted and valuable helper in their financial planning and decision process. Easy-to-use design and customized engagements helped make it an engaging and delightful experience for the end user, hence also keeping them quite satisfied. Prior to the upgrade, users were already beginning to regain a sense of controlling their finances thanks to the platform’s anticipation of their needs and preferences.

With fewer paths to traverse, the users had an easier time finding the information they were seeking, and presenting it directly allowed them to feel more engaged and secure in what they were doing because there was no guesswork involved. That reinforcement helped build trust and established credibility. The guiding principles of usability and personalization helped make the user experience more meaningful and more effective and served as an important reminder about how vital these guiding principles are in the progression and ultimate success of user-centric financial platforms.

5. Discussion

The study results underline the importance of UX design in bolstering trust in robo-advisor platforms. So, the dramatic improvement in trust and usability scores after interaction with the prototype is a reminder of how design can influence our perceptions and behaviors. In the case of confidence, trust ratings were observed to be substantially higher (in the post-test) compared to those generated in the pre-test. In contrast, confidence ratings were found to be higher among the participants. But even Participant 1, before 3.2, now 4.5, and Participant 5, before 3.6, now 4.8. The gradual uptick in success indicates growing confidence and trust among users in the upgraded UX. As we continued our discussions, transparency stood out to us as the key to creating trust.

More transparent explanations for elements of the financial advice process and visualizations that helped demystify the process serve to build users’ confidence in the platform’s recommendations. This finding is in line with the literature suggesting that user trust in digital financial services is built on transparency. I enjoyed the detailed breakdown of how financial advice is produced and what are the algorithms and data sitting behind. Visuals and a step-by-step guide bridged the gap for users by providing insight into the sometimes overwhelming processes that backed the recommendations, reducing skepticism and

building trust. Not only did this include usability, but all participants also commented on the ease of navigation as well as the logical progression of information. Up to the level of geometries quality was 3.5 points in the pre-test while it was 4.7 in the post-test. This makes it easier for the user to trust the site by reducing user frustration from using the site, so they should use a user-friendly interface to make users feel trusted.

So, for the redesigned interface, participants made it easier to find and understand the information that they were looking for, which then regained more of that trust in the advice that the platform was giving them. Data was laid out cleanly and concisely, and the logical flow of the UI elements lent itself to a better user experience. Personalization also helped improve trust by customizing the advice and interface based on users' financial backgrounds. The advice and interface that had its own specific for its participants made it more engaging and comfortable for them to use the platform. The personalization score, which factored in other aspects such as relevance, customization, and engagement, also reflected this trend. Qualitative user feedback provides you with customizable experiences like personalized dashboards and personalized recommendations. All of this combined created a more responsive platform that was even more tailored to their needs, reinforcing the trust they had in the advice. This qualitative feedback proved actionable in defining user needs and preferences, shaping future UX design innovations.

Suggestions on the Participants' website for further features and improvements will be taken into account as the robo-advisor is being more developed and holds user expectations as expected. It could be a Trust builder as well. This was a bit of a vague suggestion, and some users mentioned having more interactive elements, like being able to chat with someone in real-time, or more detailed responses such as interactive financial planning tools. Some suggested that more detailed algorithmic explanations be provided to train and dataset used for advice, and more options for personalization and customization be available. These observations were further confirmed by the mathematical models representing the study. Discussion: We have shown great improvement in the usability score model's post-test results, including task completion time, error rate, and user satisfaction. This suggests that the redesigned interface not only made it easier to complete a variety of tasks but also improved accuracy and overall satisfaction.

At the same time, the trust level model, which includes security, reliability, and satisfaction, identified a higher trust in the users for the platform after the interaction. The personalization score model judged relevance, customization, and engagement to demonstrate the influence of user experience tailoring based on individual user needs. The importance of reliable encryption, regular security updates, and rapid incident response in building faith was further highlighted by the security perception index. Feedback from respondents showed a fairly large increase in trust when they learned that their data was secure and the platform was actually doing the work to maintain good security. This is consistent with research showing that trust (or perceived security) is a critical determinant of the uptake of digital financial services. Finally, the study reinforces the value of careful UX design for establishing trust in robo-advisor platforms.

The user experience in finance can be concretely improved through transparency, usability, and personalization, as well as by promoting these changes in the culture that surrounds society today. The improvements in ratings of trust and usability that, in some cases, ranged into 20 points resulting from a simple 5-minute interaction with the prototype indicate the power of design to shape perceptions and behaviors. The qualitative feedback and the mathematical model can together be used to paint a more complete picture of what drives user trust, and this understanding can inform future UX designs. In an era of increasingly powerful robo-advisors, it will become a necessity to reintegrate user-centered design principles in order to establish trust and improve the user experience.

6. Conclusion

The UX Designers' study depicts that careful UX design is a benefactor in magnifying trust in robo-advisor platforms. When financial technology providers work on making their products transparent, usable, and personalized, they can offer customers a more engaging and trustworthy experience. The large increase in trust and usability scores post-prototype interaction suggests that design has the potential to alter user perception and, hence, user behavior. In the end, trust ratings went from 3.2 to 4.5 on a 5-point scale, and usability scores from 3.5 to 4.7 just because it was built from a user-centered perspective. This highlighted the importance of transparency, where explanations and visualizations help users to understand better and feel more confident that the platform is properly guiding them in the right direction. The usability enhancements, evidenced by clear and consistent navigation, guided information flow, minimized user frustration, and improved satisfaction.

This increased trust in advice (as it was shown to be more accurate) as well as in the interface (as it was relevant to the specific user), which increased engagement and confidence. Our findings were validated with mathematical models, like usability score and trust level calculations, to demonstrate substantial improvements in both user interactions and perceptions. In order to build trust and satisfaction among users, the future of robo-advisors will need to focus on incorporating these user-centric design principles as they further transform on the consumer end. This study adds to the nascent literature in FinTech and UX design

and offers valuable input when developing more efficient and credible digital advisory services. Financial technology providers should apply these design strategies to achieve a scenario in which their platforms are what users expect, subsequently instilling trust and finally encouraging broader usage. The competitive landscape of digital financial services will make it critically important for robo-advisor platforms to remain focused on customer experience and use comprehensive user feedback and solid data to refine UX design.

6.1. Limitations

Primarily, the sample size was small, which may not allow the results to be generalized to a wider population. A bigger sample size would mean that the results are more likely to be valid and reliable, making them more generalizable. Moreover, the study was based on a single prototype, which might not cover all possible UX design variations and the subsequent variation in user trust and satisfaction. Designing various approaches can lead to different results as well; thus, different UX designs may not be covered fully in the results of the study. Future research may want to address the limitations of small sample sizes and sample homogeneity to increase generalizability, as the results are more representative of the general user population. In addition, research to determine how different UX designs affect user trust and near satisfaction is an important follow-up question in the results. This could not only confirm the trends found in this study but also expand them, providing more guidance on UX design best practices for digital advisory platforms that are trustworthy and effective. Over time, addressing these limitations will allow future studies to support the field of UX design and, hence, fintech.

6.2. Future Scope

Future research Researchers should further investigate the sustained emergence of trust over time through the use of a robo-advisor by focusing on the long-term impact of UX design on trust in robo-advisors. It looks at the continued engagements users have and the level of trust they have built over some time. It is also important to study the incorporation of emerging technologies such as AI and ML in UX design. By providing an array of adaptive learning mediums, setContent, and courses can be tailored to meet the specific needs and learning behaviours of an individual, leading to improved personalised results and user engagement. These design principles will need to be implemented and evaluated in practice settings by working with financial institutions. This could have positive implications as well, aiding in a more robust, data-informed robo-advisor ecosystem using the learnings to create enhanced versions of the product that offer higher utility and credibility and, at the same time, generate learning from the downstream data to see what works and what doesn't. Understanding the impact of advanced UX design and cutting-edge technologies on user trust and engagement in robo-advising over time can help researchers and developers design more consistent, user-friendly, and personalized robo-advisors that maximize user satisfaction and trust in these digital financial advisors.

Acknowledgment: N/A

Data Availability Statement: The data for this study can be made available upon request to the corresponding author.

Funding Statement: This manuscript and research paper were prepared without any financial support or funding

Conflicts of Interest Statement: Authors declare no conflicts of interest. From the material used, all citations and references are appropriate for this new addition by the authors.

Ethics and Consent Statement: This research adheres to ethical guidelines, obtaining informed consent from all participants.

References

1. C. Hohenberger, C. Lee, and J. F. Coughlin, "Acceptance of robo-advisors: Effects of financial experience, affective reactions, and self-enhancement motives," *Financ. Plan. Rev.*, vol. 2, no.2, p. e1047, 2019.
2. D. E. Bock, J. S. Wolter, and O. C. Ferrell, "Artificial intelligence: disrupting what we know about services," *J. Serv. Mark.*, vol. 34, no. 3, pp. 317–334, 2020.
3. M. A. Memon, H. Ting, J.-H. Cheah, R. Thurasamy, F. Chuah, and T. H. Cham, "Sample size for survey research: Review and recommendations," *Journal of Applied Structural Equation Modeling*, vol. 4, no. 2, pp. 1–20, 2020.
4. S. J. Stratton, "Population research: Convenience sampling strategies," *Prehosp. Disaster Med.*, vol. 36, no. 4, pp. 373–374, 2021.
5. D. Belanche, L. V. Casalo, and C. Flavián, "Artificial Intelligence in FinTech: understanding robo-advisors adoption among customers," *Ind. Manag. Data Syst.*, vol. 119, no. 7, pp. 1411–1430, 2019.

6. M. Jünger and M. Mietzner, "Banking goes digital: The adoption of FinTech services by German households," *Fin. Res. Lett.*, vol. 34, no.5, p. 101260, 2020.
7. A. V. Thakor, "Fintech and banking: What do we know?," *J. Financ. Intermediation*, vol. 41, no.1, p. 100833, 2020.
8. L. Brenner and T. Meyll, "Robo-advisors: A substitute for human financial advice?," *J. Behav. Exp. Finance*, vol. 25, no. 3, p. 100275, 2020.
9. T. Meyll and A. Walter, "Tapping and waving to debt: Mobile payments and credit card behavior," *Fin. Res. Lett.*, vol. 28, no. 3, pp. 381–387, 2019.
10. D. Risi, F. Paetzold, and A. Kellers, "Wealthy private investors and socially responsible investing: The influence of reference groups," *Sustainability*, vol. 13, no. 22, p. 12931, 2021.
11. U. Akram, M. T. Fülöp, A. Tiron-Tudor, D. I. Topor, and S. Căpușneanu, "Impact of digitalization on customers' well-being in the pandemic period: Challenges and opportunities for the retail industry," *Int. J. Environ. Res. Public Health*, vol. 18, no. 14, p. 7533, 2021.
12. G. Northey, V. Hunter, R. Mulcahy, K. Choong, and M. Mehmet, "Man vs machine: how artificial intelligence in banking influences consumer belief in financial advice," *Int. J. Bank Mark.*, vol. 40, no. 6, pp. 1182–1199, 2022.
13. I. A. A. Faradynawati and I.-L. Söderberg, "Sustainable investment preferences among robo-advisor clients," *Sustainability*, vol. 14, no. 19, p. 12636, 2022.
14. C. Flavián, A. Pérez-Rueda, D. Belanche, and L. Casaló, "Intention to use analytical artificial intelligence (AI) in services-The effect of technology readiness and awareness," *J. Serv. Manag.*, vol. 33, no.2, pp. 293–320, 2022.