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OPTIMIZING USER ENGAGEMENT IN ROBO-ADVISORY SERVICES: AN ANALYSIS OF SERVICE DESIGN STRATEGIES

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ABSTRACT

The extensive development of Robo-advisors, AI-driven financial management, and personalized financial advice delivered to users via an application has vastly changed how individuals interact with the financial sector. As Robo-advisors gain popularity in Finland and across Europe, the question arises: "What kinds of service designs can help users better engage with Robo-advisors?" This research examines the influence of service design to improve their engagement with Robo-advisors, as well as get a high adoption of the Robo-advisors.

This study deals with the works or articles on Robo-advisors by summarizing their establishment and the level of their dominance. It is identifying the core service design strategies and methods to foster the service adoption and facilitate a holistic user experience Principles like user-friendly buttons, customizable features, and clarity of directions put user experience at the optimum point as they show the directions on how to effectively use the Robo-advisory apps and platforms. The study, moreover, seeks to understand the viewpoints of certain potential users as regards Robo-advisory services, which would clarify what factors those individuals may incline to or away from active participation.

The objective of this study is not only to broaden the knowledge around service design but also to add new information to the potential for Robo-advisory services. The study will examine consumer experience and how it relates to Robo-advisors' use and challenges implied, to provide possible lessons learned and thus allow for the enhancement of service mechanisms. The purpose is to drive the industry to step up its development through innovative and user-friendly service designing and, in the end, the distinguishing point for potential customers to choose using the Robo-advisory services becomes higher.

Keywords: Robo-advisors, financial management, service design, design thinking, user-engagement

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By

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ACRONYMS

1. AI: Artificial Intelligence
2. AUM: Assets Under Management
3. HCI: Human-Computer Interaction
4. PDF: Portable Document Format
5. UX: User Experience
6. FAQ: Frequently Asked Questions
7. ETF: Exchange-Traded Fund
8. RQ: Research Question

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CHAPTER 1 – INTRODUCTION

1.1 Context of the Study

Our society's approach to financial investing is changing. Technology innovation in the financial realm is set out to evolve. The rise of artificial intelligence (AI) empowered financial advisory services mostly termed as Robo-advisors has captured the interests of financial management. In the study of service design methodologies, this technological innovation presents itself an opportunity to explore and leverage the use of service design strategies to enhance its design and development.

The predicted valuation worldwide in assets under the management of Robo-advisors is projected to reach US $1,802.00bn by the year 2024 (Statista Market Insights, 2023). By 2027, it is estimated that the number of users will be over 34,020 m. Such a company has a striking performance and holds the leading position in the US market (Statista Market Insights, 2023). Automated services that we know as Robo-advisors are increasingly used all over the world and are regarded as one of the most promising novelties in the fields of technology and the financial services industry.

Tao et al. (2021) considered Robo-advisors to be one of the wonders of the fourth Industrial Revolution in financial markets (Tao, Su, Xiao, Dai, & Khalid, 2021). Its developments rapidly evolved since it emerged in 2008. According to Fahruri et al. (2024), the 2007/2008 financial crisis greatly influenced the advancement of this service in wealth management (Fahruri, Warganegara, & Tihinrticle, 2024).

In 2015, Robo-Advisor as a digital service officially entered the market (Xia, Chen, Luo, & Wang, 2022). This supports investors to access a digitally automated investing service that helps manage their investment portfolio such as stock, bonds, mutual funds, and all other asset classes (Xia, Chen, Luo, & Wang, 2022). The use of these services attracts different kinds of investors like private, retail investors, and institutions. On the contrary, since its inception there lies different opinions and thoughts about the marvels and paradoxes of this hailed development in wealth management.

As part of growing interest in Finland’s financial management system, specifically for individual investors, the Bank of Finland had a press release that has a goal that proposes a financial literacy

strategy to guarantee that Finns possess the best financial literacy skills worldwide by the year 2030. The objective is for people to understand the importance of financial literacy in their daily lives and possess the capability to make sound financial decisions. In 2021, the Governor of the Bank of Finland, Olli Rehn, introduced the national strategy proposal for enhancing Finland's financial literacy to Anna-Maja Henriksson, the Minister of Justice (Vision: Finns Will Have the World's Best Financial Literacy by 2030, 2021).

Since its invention, Robo-advisor has been viewed as a digital service that is a technology-driven financial management advice provider for investors (Wall, 2023). This is also known as a class of financial advisors that uses algorithms and computer programs for portfolio creation and management (Wall, 2023). The growing demand for these services demands critical consideration when designing a digital platform, such as user-friendly interfaces that can effectively bridge the gap between technical complexity and user engagement.

In addition, its development has already made a significant milestone both before and after the COVID-19 pandemic. Mostly, the purpose and target market are investors who prefer a hands-off style of investing and are not financially investing savvy (Tan, 2020). This service delivered sophisticated capabilities from investing passively to active data-driven management, utilizing, artificial intelligence (AI), machine learning, and big data (Tao, Su, Xiao, Dai, & Khalid, 2021).

It was during the COVID-19 pandemic that there were noticeable trends toward strong preference toward digitalization, support of social distancing rules, and the extensive dependence on the use of algorithms to enhance capabilities, considered to heighten the developments of Robo-advisors (Koskelainen, Kalmi, Scomavacca, & Vartiainen, 2023).

In addition, it is worth noting that functional differences and functions are the other key characteristics of these Robo-advisors. Although Robo-advisors provide algorithmic investment advice, the use of human-advisors with this service still remains a significant distinction among different platforms. As Lourenco et al. (2020) argue, there are connections made between the firm and the users' perception of trust and expertise about Robo-advisors acceptance. Hence, it is noteworthy to consider the contribution made by this study is not only focusing on a surface level of exploration of Robo-advisors, rather also looking in the same vein in building trust through

candid understanding, building empathy to users in delivering services, which service design methodologies emphasize (Lourenco, Dallaert, & Donkers, 2020).

Subsequently, this study endeavours to adopt service design methodologies in the context of developing financial technology such as Robo-advisor. As stated by Suoheimo, Trapani, and Miettinen (2023), service design is one of the things that is said to help improve product development, therefore yielding dependable productization. It is the hope to fill the knowledge gap of service design role in product development of this technology (Suoheimo, Trapani, & Miettinen, 2023).

1.1 Personal motivation for the study

The topic described in this research study is not only personally appealing to me, rather I sense that this topic is timely, relevant, and deserves attention. I am keen to know about the advancement in the financial industry field since I believe that it is one with the most challenges in coping with technological advances.

It is my endeavor of studying the principles of service design and its practical implication on business development that made me want to explore more on its applicability. The implications of this technology in the capital markets are relevant not only to investors but also to industry professionals. In this study, I want to present the role of service design in shaping the users' engagement, user experience, and adoption of this innovation.

I believe that the holistic approach to service design strategy and methodologies would contribute to a wider perspective. As Mager (2009) suggest, service design includes the organization and planning of individuals, infrastructure, communication, and material resources of a service to enhance its quality and the interactions between the service provider and customer (Mager, 2009).

Moreover, consumers as well as service providers should address nuances and complexities in interacting with these services. It is the hope of this study this present this subject objectively considering that service design as a strategy could have a mediating role in intangible service offerings like Robo-advisors.

1.2 Research Aim and Research Questions

The overall aim of this research is to explore and advance an understanding of the application of service design strategies to enhance potential user engagement of Robo-advisors. Within the context of financial services and services design, the specific objectives of this research are the following:

1. To study the publications on the basis of both Robo-advisory services development and adoption.
2. To find out the main service design strategies and methodologies that may be the way to enhance the acceptance and involvement of the service.
3. To examine how Service Design principles are applicable to Robo-advisor platforms to boost user experience and user engagement.
4. Explore potential users' views and perceptions related to Robo-Advisory services, including drivers and barriers to acceptance and engagement.

There is a gap in knowledge on the design process of these Robo-advisory platforms to improve the quality of services and ensure that they meet the needs to foster engagement and adoption.

Hence, the research question of this study is the following:
How can the application of service design strategies enhance potential users' engagement with Robo-advisors?

Therik (2023) suggests that the lack of knowledge in this area is because digital services are a relatively recent development, and the design process is still evolving. It is essential to understand the design process behind digital services to enhance their quality and ensure that they meet the needs of both users and service providers (Therik, 2023).

1.3 Theoretical Framework

The financial services study builds on the synthesis of this emerging technology with artificial intelligence and innovative service design concepts. According to the researchgate.net website, their Portable Document Format (PDF) presents a well-rounded taxonomy of the fundamental design dimensions that show how services are rendered, the various stages of technological adaption, and the nature of the dynamic interactions at each stage (researchgate.net, 2024).

These stages reveal the kind of flexibility that digital services exhibit and the versatile range of price rates for using these services. For example, how financial service providers set their corporate objectives, use technology, meet the expectations of their users, and interact with them can greatly influence the design, engagement, and adoption of digital financial services (researchgate.net, 2024).

The basis of the research topic depicts the practical essence of applying service design approaches to upgrade the users' engagement with Robo-advisors utilizing multiple theories and concepts such as service design, human-computer interaction, behavioral economics, and financial technology.

The central side of this research topic is the service design, which is based on the users' requirements and experience, in other sense. Service design methods including user journey mapping, prototyping, and co-creation consider the users' claims as well as the strengths and mending gaps in the current user experience with Robo-advisors. These strategies can be applied to tailor the service to meet the specific needs of users and their preferences, thus facilitating contact between people and Robo-advisors (Westerlund, Groth, & Almevik, 2022).

Human-computer interaction (HCI) theories as popularized by Card (1983) offer a reflection on human-to-computer interactions and the optimization of people's interaction with technological tools. In addition, Forsman (2009) states further that applying HCI principles such as usability, accessibility, and intuitive interface design a customer may be brought closer to and feel comfortable using a Robo-advisor. Therefore, the user experience may be improved as positively perceived tech may create a perception of convenience and fit in users' expectations thus leading to better engagement of users (Forsman, 2009).

The area called behavioral economics (Thaler, 2015) questions how these psychological factors affect the process of choice-making in the field of economic activities. While this theory is relevant for user interaction with the Robo-advisors, we more or less focus on how it can explain the interface among them. For that matter, framing effects, default options, and loss aversion are likely to influence whether the user commits Robo-advisors. Developers can utilize this knowledge in the Robo-advisors by aligning the design of the service, thus, human choice processes are in consideration. As a result, users can better comprehend the Robo-advisor and this would increase user engagement (Knecht, 2024).

Innovation in financial technology, like Robo-advisors, follows the fundamental objective of bringing to clients or investors more effective and stable financial services. The FinTech concept as a theoretical framework determines the patterns that digital transformation and technological innovation fit in to facilitate more personalized, accessible, and effective financial services (Harris & Wonglimpiyarat, 2023). Employing FinTech theory in the designs of services, programmers can develop Robo-advisers with tailored advice, and personal investment options targeting users' end and increase their interaction, thus exciting their service involvement (Harris & Wonglimpiyarat, 2023).

The study outlines how user engagement can be gained through service design and looks at user engagement's main elements like security, satisfaction, and the perception of value. The designing of Robo-advisors employing service design concepts that concentrate on the very essence of the elements is key to the creation of a product having the trust and satisfaction factor positively responsible for the engagement and adoption of the resultant technology (Harris & Wonglimpiyarat, 2023).

By seamlessly combining the theories and ideas into the research framework we will be able to give a complete picture of strategies of service design for fulfillment of the potential user's engagement with Robo-advisors. This way of thinking may result in recognizing which points need to be improved, shaping the robot advisor's design and its services. In the end, the users and financial providers will surely see the advantages of this approach.

1.4 Methodology Review

During this research process, a qualitative method approach will be applied. Qualitative techniques provide unique, unbiased conclusions that previous research works could not offer. The qualitative research includes scrutinizing the present demonstrations and information sources that may be in the form of journals, whitepapers, library books, websites, E-books, and data repositories (Tenny, 2022).

Primary and secondary sources are used in this study to make sure major points of the study are covered and technical specifics of Robo-advisors are not undermined. However, this novel method

allows insights into trends, correlations, and patterns of past, present, and future work through a thorough review of the published scientific literature.

The detailed procedure goes back and forth between coding, quantifying, and interpreting the data. The assessment builds on the words, sentences, and ideas computation rates to be able to give relevant information and answers that can be understood easily (Bounegru & Gray, 2021). Consequently, this in-depth analysis helps the study to draw conclusions from its findings and to provide knowledge that applies to the existing evidence around service design and Robo-advising.

Additionally, to improve the readability and cohesiveness of this study, the researcher opted to use AI tools to improve the quality of grammar and the quality of information presented in this study.

1.5 **Research Scope & Limitations of the Study**

The main theme of this research work on Robo-advisory services is to look into the involvement of people who can be the users of these methods with Robo advisors and to study the results of this implementation on the customer experience and satisfaction. Such a study emphasizes identifying the role played by service design principles such as user flow mapping, customization, and self-explanatory interface in Robo-advisors' interactions with potential users. The research aims to identify the designing strategies of specific services that have a positive effect on the trust, adoption, and willingness of Robo-advisors among investors. This encompasses, therefore, attitudes and behaviors of various utilizing publics toward service design as well as their implication of users' capital contribution.

The research then strives to comprehend the limitations and possibilities that occur at the time when service design is successfully combined with technology which the Robo-advisors are composed of. Through an investigation of the present industry trends and fintech innovations, the focus of research is to uncover ways in which service design can overcome the most prevalent obstacles in Robo-advisors acceptance including, for instance, data privacy concerns and the existing personal human interaction deficiency.

However, the research thesis does face certain limitations due to its design and the available data sets. The researcher's control over the data sets offered during data collection is limited, which may affect the interpretation of results and constrain the scope of analysis. This could potentially

lead to adjustments in the research questions and goals, depending on the nature and quality of the data obtained.

Furthermore, the reliance on available data sets may restrict the comprehensiveness of the study. Data from specific sources may not fully represent the entire population of Robo-advisor users or potential users, impacting the generalizability of the findings. Additionally, the study's focus on service design may overlook other critical factors influencing user engagement with Robo-advisors, such as regulatory changes, economic conditions, or broader trends in financial technology.

Despite these limitations, the research thesis contributes valuable knowledge to the field by providing a detailed examination of how service design strategies can enhance user engagement with Robo-advisors. The study's findings offer a foundation for future research and practical applications in designing more effective and user-friendly Robo-advisors. Generally, the current study's design has limits because its framework is primarily focused on the idea of service design. The researcher has limited control over the data sets offered when collecting the data. This could limit the interpretation of results and may modify the original questions that the researcher aimed to address (Tripathy, 2013).

1.6 Thesis Structure

Six chapters are included in this study. In the introduction chapter, a description and context of the study are presented along with the significance of the study and why this topic is significant to research and practice. The second chapter discusses the theoretical background of robotics as a service and artificial intelligence in the use of the financial sector, and the digital transformation in the form of Robo-advisors and its service development. In addition, the second chapter bridges the context of service design as applied in the development of financial services and its role in the field of finance. This includes the section where the research gap is highlighted. These studies discuss how service design can be applied to the development of financial advisory services related to robotics and artificial intelligence based on existing knowledge.

In the third chapter, the research design and strategy are emphasized, and data collection and analysis are presented. In the fourth chapter, the analytical process and interpretation of the results

are presented. The fifth chapter discusses the findings of the previous chapters, and, in addition, the service design methodologies applied to bridge the gap between the technical complexity of robot advisors and user-friendly interfaces. Finally, the sixth chapter focuses on the conclusion and future design research needed to answer ethical questions related to robot-advisory investment services, such as transparency and sustainable investments and suggestions for future research.

CHAPTER 2 – THEORETICAL BACKGROUND

2.1 Introduction

This chapter aims to delve deeper into the subject matter by utilizing the knowledge obtained through the examination of relevant literature. The objectives of this study are identified and written on objectives 1 and 2 below. Furthermore, this chapter will explore the connections and involvement of service design as a methodology to improve business services and to interpret the role of service design in shaping the users' experience and interaction.

1. To review existing literature on the development and adoption of Robo-advisory services.

2. To analyze past studies on the application of methodologies from a service design perspective to improve the user experience with Robo-advisors.

As depicted in Figure 1, recognizing various fields of literature is essential in constructing the core principles and fosters a more profound comprehension of how service design approaches can be applied to improve users' involvement with Robo-advisors (Fisher, 2004). The primary objective is to present succinct definitions, retrieve pertinent concepts, and advance towards a comprehensive evaluation of implementing service design methodologies in the emerging digital platforms of Robo-advisory, particularly in the European and Finnish contexts.

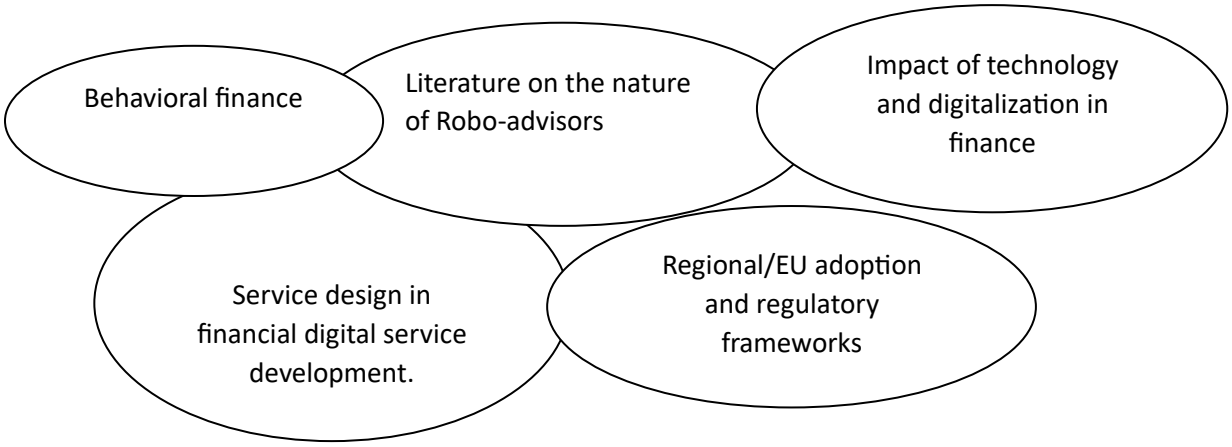


Figure 1. Mapping the literature. Adapted from Fisher, (Fisher, 2004).

Figure 1 serves as an important part of identifying the major literature to the relevant theoretical foundation of this study. The main theme is finding basic facts and understanding the nature of

Robo-advisors. There are several key research done on this subject. Yet not many references to journals, research, and articles can be found since the origins of Robo-advisors can only be traced back to approximately 2008 (Albrecht, Toutaoui, & Roethke, 2022). The impact of digitalization in finance is a crucial area related to this topic (Blanche et al., 2019).

Meanwhile, the role of this emerging technology in shaping the changing landscape of service delivery systems Hentzen et al. (2021) also shed light on the adoption and usage of consumers and the influence of human biases and decision-making on the use of financial advisory services such as Robo-advisor (Hentzen, Hoffmann, Dolan, & Pala, 2021). The theoretical background on the role of service design in the financial services landscape is also explored in the literature. The focus on the role of service design that influences the engagement of users and increases usability is synthesized in this chapter (Lisauskiene & Darskuviene, 2021).

2.2 Background on Robo-advisors

The origins of Robo-advisors can be traced back to approximately 2008, as demonstrated by Albrecht, Toutaoui, and Roethke (2022) in their study on the influence of complexity and personalization on investment intention in Robo-Advisory. At this time, Robo-advisory services started to gain traction as a means for private investors who were comfortable with internet-based services but still sought the guidance of an investment advisor. This notified the start of a new era in financial services, where technology-guided solutions like Robo-advisors began to take care of the needs of investors searching for online investment guidance and management (Albrecht, Toutaoui, & Roethke, 2022).

According to Lu et al. (2021), Robo-advisors are commonly used to automate financial investments. These digital platforms or mobile apps are utilized by financial institutions, including banks, neobanks, and asset management companies, within the financial services sector (Lu, Hao, Pinedo, & Xu, 2021). By using artificial intelligence (AI) algorithms and data-driven capabilities, Robo-advisors construct personalized investment portfolios for their clients. This creative application of financial technology, often referred to as fintech, integrates software and hardware to develop these new systems (Lu, Hao, Pinedo, & Xu, 2021).

2.2.1 Definition and Key Concepts (FOCUS ON EUROPE AND FINLAND)

As the artificial intelligence (AI) use cases grow more, an interesting rise in the use of algorithmic-empowered financial advisory called Robo-advisors is a heat of topic. The report transpired by Better Finance, states that during the year 2020, Robo-advisors had 11% assets under management (AUM) and about 20 million users in Europe alone (Better Finance, 2020). According to Statista's data report of 2023, the EU specifically Finland is having a steady growth in the use of Robo-advisors projected to reach US$1,372 million in 2024 in assets under management (Statista Market Insights, 2023). It can be observed that advancement in other parts of the world is steadily growing, while it is worth noting that the United States has the most growth and has the highest assets under management and is projected to reach US$1,459,000 million in 2024.

Financial Robo-advisors serve their customers by completing an automated investment management transaction and financial advice (Seiler & Fanenbruck, 2021). The emergence of Robo-advisors utilizes the technologies of artificial intelligence (AI), machine learning, and big data applications. The banking and financial sector had come up with these new technological innovations and the mortgage financial crisis that happened in 2017/2018, which was said to be one precipitating factor in the advancement of Robo-Advisory services (Fahruri, Warganegara, & Tihinrticle, 2024).

The rise of these developments brings about changes in traditional banking, where some literature emphasized the word "traditional banks" and its divergent and more technology-based start-ups, so-called FinTech. The latter compared to traditional banks are more focused on innovation (Seiler & Fanenbruck, 2021). Also, these FinTech companies and start-ups have focus and more specific services provided (i.e. Robo-advisors or mobile payments) than traditional banks which offer a wide array of financial services altogether within bank services (i.e. loans/mortgages, insurances, wealth management).

2.2.2 Overview of development and evolution

A Robo-Advisor is a software that financial intermediary utilizes. It has a product type that is segmented into either an Automated Robo-Advisor or a Hybrid type of Robo-Advisor. According to a report published by Maume (2021) to the European Parliament's committee on Economic and

Monetary Affairs (ECON), an automated Robo-advisor utilizes algorithms and machine learning to manage investment portfolios in a fully automated way. The Hybrid type of Robo-advisors combines automated management with access to a human financial advisor and the key advantages of its use are cost efficiency and higher returns (Maume, 2021). However, a study stated by Eren has a contradictory viewpoint that the higher returns they achieved – not solely the use of Robo-advisors, but rather the diversification strategies employed after adopting the technology (Eren, 2023). Below is a summary of the typical process of providing Robo-Advisory services. The process can be divided into two main phases, which are presented in Table 1 below.

Table 1. The Robo-Advisor service process. Source: (Maume, 2021).

Phase 1	**Phase 2**	**Additional Consideration**
Onboard the Customers and Design the Customized Accounts	Portfolio Management and Rebalancing	✓ Robo-advisors are picking a limited number of Exchange-Traded Funds (ETFs) for investment. The selection of ETFs is being made using some parameters, such as past performance and volatility. ✓ The possible scenario is that the Robo-advisor might aim for investment in financial products related to the business
Robo-advisor interface requests prospective users to respond to the set of pre-formulated questions relating to the client's age, income, investment objectives, risk tolerance, and ability to afford the losses.	With this stage, we stick to a common approach fund managers often apply	
The algorithm does a consistency check and assesses the situation	The main task is multi-asset portfolio rebalancing, here the algorithm neutrally distributes the assets	

considering all the factors of selection.	whenever their ratios become different from our target range.	of their company or affiliate organization, which, in turn, may lead to a conflict of interest. ✓ Investing strategies or risk positions modifications may appear in the form of notifying client confirmation of it. ✓ The process aims to give automated portfolio management which will also do the rebalancing of the portfolio but at the back table, the human element will be minimal at the beginning when we upload the client details and every other time the client will have to sue us to make any major changes.
The algorithm matches the investor's profile together with respective risk measures and a list of the possible portfolio models.	Recalibration can be initiated when the ratio is outside the pre-set thresholds or at a certain frequency (e.g., per two or three weeks).	
The client then validates whether they would like the software to compose their investment portfolio using their money and putting it into the valued defined classes.	When there is a change of time horizons for the client, the Robo Advisor initiates a new advice process and thus makes the portfolio more suitable.	
Clients are to be presented with Three to Four		

investment options that include the different risk levels (equity/debt ratio) and sustainable goals among others.		
Afterward, if the customer assents, the software allocates their funds into the predetermined categories by investing them.		

2.2.3 Current state of adoption and predicted growth

There is an increased interest in the research field regarding the use and adoption of Robo-advisors. Several studies have inquired into the factors that influence its adoption like Belanche et al. (2019), they delve into making a research framework to understand the adoption and impact of Artificial Intelligence (AI) in financial technology (Belanche, Casalo, & Flavian, 2019). According to Fan and Chatterjee (2020), the adoption of the use of Robo-advisors for individual investors is due to the need to free up their time, high-risk-risk tolerance has a subjective view of financial knowledge (Fan & Chatterjee, 2020).

Moreover, the awareness of Robo-advisory services is achieved by customers through their means or their banks directly (Flavian et al., 2021). However, the study has not exemplified specifically how banks actively promote this Robo-Advisory integrated with their digital platform services. As observed in the statistics presented above, this technology has seen steady growth over the years, but it has modest adoption. The literature presented many different influences that impacted Robo-advisor adoption like external factors including financial crisis (Gan, Khan, & Liew, 2021). Belanche emphasized the importance of taking design to enhance user experience and usability to achieve a higher adoption rate of Robo-Advisor services (Belanche, Casalo, & Flavian, 2019).

The next section will tackle a review of the topic of service design as a strategy with tools and methodologies for designing a digital service with a more creative approach. The evolving needs of users and seamless digital offerings are the factors that are consistently taken into consideration for a digital innovation like Robo-advisors.

2.3. Service Design Principles and Frameworks

2.3.1 Definition of Service Design

Service design has came into view as a transdisciplinary field of study that encompasses product, system, and business since its inception in academic research in the early 1990s (Penin, 2017), (Polaine, Lovlie, & Reason, 2013). The term was first introduced at the University of Applied Sciences in Cologne as an area of study (Mager, 2009). Lee et al. (2023) suggests that design expertise from various disciplines, including industrial design, interaction design, communication design, business design, experience design, and service design, has undergone a transformative paradigm shift. Jones and Ael (2022), Kim (2021), and Evenson & Holmlid (2008), in response to the wave of transformations at individual, organizational, and societal levels, link the public and private sectors (Evenson & Holmlid, 2008), (Jones & Ael, 2022), (Lee, et al., 2023), (Seravalli & Witmer, 2021).

Scholars have sought different views in their definitions of service design. According to Stickdorn, and Schneider (2012), it is a human-centered, collaborative, iterative, and practical approach to creating and improving services or offerings made by organizations (Stickdom & Schneider, 2012). The authors emphasized being adaptive in terms of producing products or services by making small, cheap experiments, allowing, and making failures, and iterating their way to success in answering the needs and creating real value for all stakeholders involved. As a result, organizations often develop their products and services through a service design process, whether they are consciously aware of it or not (Stickdom & Schneider, 2012).

Designing services involves multiple stages, such as research, concept development, prototyping, and implementation (Vicentini, Foglieni, & Camocini, 2021). The emphasis here is on understanding the entire value proposition of the business and considering its stakeholders, rather than just focusing on aesthetics. The goal is to create a highly targeted solution by utilizing a design

process (Lee et al., 2023). Service design principles and techniques can be used to enhance an existing service or to create a new business offering from scratch. Service design encourages cooperation and collaboration among individuals within the organization, enabling them to jointly develop and deliver new value propositions (Stickdorn et al., 2012, p. 10). While sustainably integrated service design presents its own set of challenges. As Brenda Laurel (2024), a designer at MIT put it, “A design isn't complete until someone is using it” (The Principles of Service Design Thinking-Building Better Services, 2024).

2.3.2 Key Principles and Methodologies

We are moving towards a "service era" where the emphasis is on access to goods and accompanying services and resources, rather than only owning physical products. In contrast to the past, society now prioritizes goods that come with accessible services and resources without the need for outright ownership (Chandler & Teckchandani, 2023).

Organizations aim to achieve a comprehensive understanding of their products and services. According to Vicentini, Foglieni, and Camocini (2021), service design is a multidisciplinary approach that caters to both the user and the provider of the service. The emphasis is on fulfilling the user's needs, which are deemed useful, desirable, and usable from their perspective. In the same vein, the organization, as a service provider, can also strive for operational efficiency. Therefore, there needs to be a balance to meet the organization's goals and ensure user satisfaction (Vicentini, Foglieni, & Camocini, 2021).

Additionally, Liu (2022) demonstrated the human-centric approach integrated into service design. The birth of User Experience (UX) aspects has been given priority for organizations to focus on. Specifically, in the age of digital transformation where user interaction is being studied, not only that, but this also includes emotional well-being. Also, learning narratives, creating stories, and meaning that recognizes cultural significance have been taken into consideration. All of these are considered to emphasize creating additional value for the users and stakeholders (Liu, 2022).

The need to balance to meet users’ goals and ensure organizations' efficiency with emphasis on human-centricity sums up the relevance of the applicability of utilizing design thinking principles which were contributed by IDEO, a consultancy that played a pivotal role in popularizing the

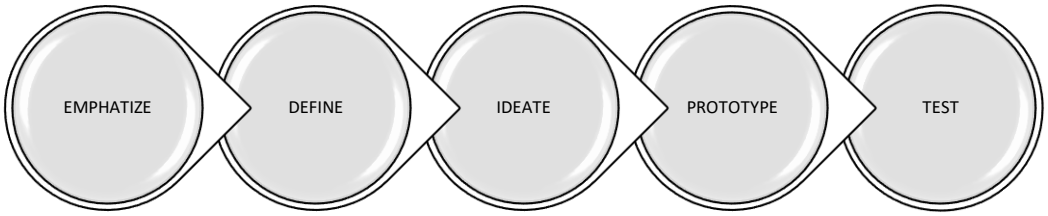
concept (O'Donoghue, 2022). IDEO's CEO Tim Brown, stated *"Design thinking is a people-centered approach to innovation that draws from the designer's toolbox to integrate people's needs, technology's capabilities, and business success requirements"* (IDEO Design Thinking, 2008). Although from his blog on IDEO's website he (Brown, n.d.) argues that design thinking is one approach and must not be perceived as the only approach to using creativity to solve problems. Additionally. it can neither be perceived as a sole approach nor fail-proof (IDEO Design Thinking, 2008).

The design thinking process as shown in the figure below is a methodology and solution-based approach that seeks to develop creative solutions (Stickdorn et al., 2012). Moreover, Stickdorn et al, (2012) also highlighted that the utilization of design thinking to standardized innovation processes could be utilized by businesses and organizations that want to create or improve their products, processes, and services. Inherently, adding value to their current business acumen. The process involves empathizing which seeks to understand the deeper needs of the clients' way to emphatically understand the users' deeper needs and answer the question as to why they want to buy your product or services (Stickdorn et al., 2012). Furthermore, Dam (2024) demonstrated the assumption of using the beginners' mindset to explore, observe, and navigate the problems and realities of the users whom a designer is designing for. This is practically done with surveys interviews, observation, and empathy mapping to gain insights on the users to gather emotional responses on the associated products or service (Dam, 2024).

This figure illustrates the five stages of design thinking: Empathize, Define, Ideate, Prototype, and Test, as described by Dam in "The 5 Stages in the Design Thinking Process" from the Interaction Design Foundation (Dam, 2024).

Figure 1. The Design Thinking Process

The Stages of Design Thinking Process (IDEO Design Thinking., 2008).



However, although empathizing in the first stage of design thinking is perceived to be useful, in my observation of the process presents a challenge to set aside one's assumptions and biases to get real insights. The defining stage is shown to be crucial in determining users' needs and specifying a problem to be solved (Stevens, 2021). Encouraging creativity is shown in the ideating phase. Working with creativity while challenging assumptions and thinking beyond usual boundaries are set to uncover in this stage. During the prototyping stage, designers put all their tangible solutions, this could be mock-ups, visualizing concepts, and building simple models to convey the idea or solution (Gregoire, 2022).

Gathering feedback at this early stage could help reiterate the idea or concept. The testing phase comes decisively after prototyping This is where validation and trying out the solution is made (Kim, Min, & Kim, 2020). Testing with real users to align, validate, and provide valuable insights to improve the solution identified. This is a non-linear process (Dam, 2024). It suggests non-sequential stages and is an iterative process. The approach is flexible in solving complex problems although ambiguity in the lack rigid sequence of steps could hinder effectiveness (Dam, 2024).

2.4 Analysis of Past Studies

Robo-advisors have emerged and thrown into disarray traditional financial advisory by serving a wider audience with automated investment management. Meanwhile, different aspects of the development, adoption, and implications of these innovative platforms have been researched by various scholars. However, a critical analysis of extant literature shows that there is little on service design strategies to enhance user engagement with Robo-advisory services. Some studies have used quantitative techniques, for example, choice-based conjoint analyses (Hou et al, 2023), to

examine service attributes, the factors responsible for their adoption, and user preferences towards Robo-advisors.

A case in point is Hou, Li, and Kankham (2023), who sought to understand the moderating effects of characteristics such as annual fees, promotions, education about investing, and human assistance on customers' choice preferences for adopting Robo-advisors. It was also established that preference diminished when annual fees were increased and rose with other factors including promotions as well as additional human assistance. Nevertheless, these quantitative methods lack a profound contextual understanding and life experiences that qualitative inquiries might provide, thereby missing out on critical dimensions of user engagement. In addition to this, they overlooked the motivations underlying individual preferences for particular service characteristics while undertaking their assessment (Hou, Li, & Kankham, 2023).

Qualitative approaches like in-depth interviews and focus groups could give more insights into how users engage with Robo-advisors in terms of psychological, social, and cultural factors. The research, which narrows down to preference for choice only, fails to acknowledge that user engagement with a service is dynamic throughout; beginning from when they become aware of it through on-boarding to continuous use and loyalty. Another significant percentage of the literature under review also leans toward policy issues, regulatory frameworks, and wider implications posed by Robo-advisors in the financial services industry. Chiu, Abraham, as well as Fisch (2019), put much emphasis on topics such as consumer education, regulatory oversight, cybersecurity matters, and data privacy concerns. These are undoubtedly important elements for the responsible development and adoption of Robo-advisory services; however, policy-driven perspectives take a larger share, indicating a relative dearth of studies that explicitly aim at understanding and improving user engagement from a service design perspective (Abraham, Schmukler, & Tessada, 2019) (Chiu, 2019) (Fisch, Laboure, & Turner, 2019).

A good example is the study by Fisch, Laboure, and Turner (2019), on Robo-advisors' disruptive role in retirement systems calling for regulation and public education (Fisch, Laboure, & Turner, 2019). Though such information is important in policy formation, it does not address the specific tactics and methods that must be taken to develop interesting and user-friendly Robo advisory experiences. In the same vein, Chiu considers regulatory reforms in the UK meant for issues like

distrust and cost within the financial advice market but also recognizes the potential of Robo-advice in promoting access to financial advice (Chiu, 2019). However, the study also draws attention to how existing Robo-advice services do not cater to individual requirements regarding personal finance planning indicating that service design strategies can be implemented to align specific needs arising from these platform's peculiarities.

Notably, Hildebrand & Bergner's (2021), research stands out as one of a few studies focusing on how conversational interfaces can enhance users' engagement with Robo-advisors. The authors concluded by stating that conversational Robo-advisors can contribute to a more positively balanced consumer experience, higher trust levels, and better preparedness to follow investment professionals' recommendations (Hilderbrand & Berner, 2021). Nevertheless, although this study has provided insights into the effect of different modalities in conversations, it has failed to touch on other ways of designing services that could enhance user engagement. Different principles and methodologies are involved in service design which spans User Research, Experience Mapping, Prototyping, and Iterative Refinement (Dam, 2024). These principles can help in the creation of more engaging and people-centered Robo-advisory services.

On the contrary, by concentrating on conversation interfaces only, Hildebrandt & Bergner's (2021) research has ignored other approaches to service design such as co-creation workshops journey mapping, or service blueprinting that could offer a complimentary understanding of insights and strategies aimed at enhancing user engagement across a whole service journey (Hilderbrand & Berner, 2021). Despite some studies like Baek & Kim (2023), and Ashrafi (2023) which do consider factors such as perceived value, risk, and financial knowledge that tend to affect user engagement with Robo advisors; these works mainly focus on adoption and investment decision stages (Baek & Kim, 2023), (Ashrafi, 2023), for example, evaluate investment behavior effects related to anthropomorphic appeals' influence and regulatory focus while discovering that when robots resemble human beings rather than machines; prevention-focused consumers will be inclined to invest more (Baek & Kim, 2023) (Ashrafi, 2023).

Nevertheless, the study of Baek & Kim (2023), fails to examine comprehensively the strategies and methods that might improve the user's involvement other than making a decision on the initial investment, overlooking continuous interactions and experiences of users that mold their

engagement with time. Likewise, Ashrafi (2023) explores the determinants of willingness to use financial Robo-advisory services including perceived value, perceived risk, and perceived financial knowledge (Ashrafi, 2023). Nevertheless, an argument brought about by O'Brien (2016) that these factors determine adoption rates during early engagement, but they do not discuss service design strategies that can drive continuous engagement throughout the user journey. (O'Brien, 2016). Engagement is a process with multiple dimensions that keeps changing over time requiring complete knowledge of user experience in different touch points and service life cycles from initial awareness & onboarding to ongoing interactions & loyalty.

Jung et al. (2018) discusses design considerations for Robo-advisors targeting specific consumer segments such as risk-averse low-budget consumers. Study findings reveal requirements and design principles evaluated through a controlled laboratory study indicating how Robo-advisory services could be customized for individual users thereof. It does not, however, explicitly explore the possible application of methodologies from service design to improve the user experience and retain enduring attention among an array of users. Appropriate application of service design principles can help bridge the gap between the functional aspects of Robo-advisory services and emotional, psychological as well as contextual aspects shaping user engagement. Hence, designers can come up with user-oriented designs through processes like co-creation, journey mapping, and prototyping that will be able to reverberate within consumers' desires and satisfaction expectations leading to increased loyalty (Jung, Domer, Weinhardt, & Pusmaz, 2018).

Despite these findings, there were some limitations in our literature review on this topic. The second limitation identified in the reviewed literature is that most studies have been conducted in Western contexts; thus, ignoring cultural diversity and consumer behaviors experienced by individuals in various regions. For example, Pallavi & Dsa's (2024) review primarily discusses financial advisors' role in investment decision-making as it relates to advisor-investor relationships only in Western countries. Although they may have relevance, their findings do not necessarily reflect the peculiar problems and opportunities that could exist in other cultures where trust, risk aversion, and patterns of technology adoption among others may vary significantly. This analysis presents a lack of studies explicitly exploring service design strategies for enhancing user engagement with Robo-advisors (Pallavi & Dsa, 2024).

Quantitative methods predominance and policy-centric perspectives over-reliance, a limited exploration into service design principles relating to Robo-advisory platforms, as well as the lack of diverse cultural perspectives show that this research area should take a holistic approach that is more user-oriented. For this reason, it would be necessary for future studies to concentrate on qualitative inquiries aiming at understanding the experiences lived by people in different cultures while having an interest in Robo-advisors. This method would contribute towards an enhanced comprehension of several factors that impact user engagement besides those measures that are quantitative-only employed by most existing studies. Effective strategies that support continuous user engagement, enhance value proposition, and promote the adoption of new financial services that are innovative can be developed using methods such as prototyping, journey mapping, and co-creation.

2.5. Summary of Research Gaps

The critical analysis of the existing literature on user engagement with Robo-advisors has revealed several significant research gaps that need to be addressed:

1. Not enough qualitative inquiries: There is a prevalence of quantitative studies with an absence of qualitative research methods that can give insight into the way users interact with Robo-advisors by examining their lived experiences, perspectives, and environmental factors regulating it.

2. Service design strategies are scarcely addressed: The lack of studies that directly explore the use of service design principles and methodologies to orient towards challenges and opportunities found on Robo-advisory platforms has left a gap in knowledge about how effective service design strategies can lead to better user engagement.

3. Too much focus on adoption and decision-making stages: Forgetting about what should be done to make potential clients loyal after they make final decisions, many researchers concentrate only on determinants influencing the formation of the opinion during the acquisition process for investment purposes.

4. Technology integration not fully explored: Therefore, there is a need to examine how service design principles and new technologies like conversational interfaces, artificial intelligence, or data analytics could integrate within the context of Robo-advisory services.

The gaps could be filled by way of qualitative inquiries, service design methodologies exploration; a whole user journey insight; embracing cultural diversity, and integration of emergent technologies to achieve a comprehensive understanding of users' engagement with Robo-advisors so that efficient systems can be developed, and their experiences enhanced as well as continued involvement encouraged.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the Philosophical Worldview, research design, Methodological choice, target population, description of the study area, sampling design, sample size, sampling techniques, entry permissions, data collection instruments, and validation, data collection, data analysis, and research ethical considerations.

3.2 Research Methodology

The research method implied in this study provides a structure for gathering and analysing data. This chapter outlines the process that elaborates the research design methods, the sampling approach, the interview schedule, and the proceedings of the analysis (Bell & Bryman, 2015).

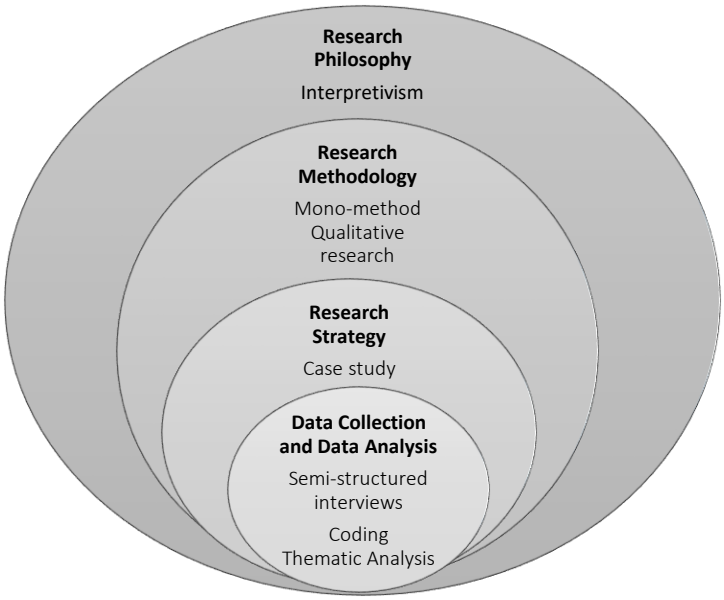


Figure 2. The research "onion". The research design of this study adapted from Saunders' and Tosey's *(Saunders & Tosey, 2013)*.

The utilization of a research" onion" diagram adapted from Saunders' and the figure above helps in determining a route to a research approach. The following components below reflect the researchers' plan to show the relationship between the choice of data collection techniques and analysis in answering the research question (Saunders & Tosey, 2013).

3.3 Philosophical World View

Several philosophical paradigms can be espoused in research. However, for my research on Robo-advisory, I adopt an interpretive worldview as the philosophical orientation. According to Seiler and Fanebruck (2021), interpretivism points out in my research that focusing on the meanings and experiences of individuals is of paramount importance which is aligned with user's interaction with electronic advisory services and devising solutions that are best suited to their needs (Seiler & Fanenbruck, 2021).

As a researcher, my objective is to seek the kind of knowledge, understanding, and perspective that users enjoy as they use Robo-advisory services. Through this technique, I gained an understanding of how people rank these services within their specialized settings and spheres of interest. Through interviews as one qualitative method, I can achieve complex insights into the motives, worries, and tendencies of future users.

Interpretivists believe in the social, cultural, and economic factors that form the environment that users react to when interfacing with Robo-advisory apps. The research will recognize that these contexts are significant in determining whether the users are satisfied and engaged with automated financial advisory services by considering them. By the nature of this comprehensive inspection, I will gain the necessary skills to succeed in producing user-friendly designs and providing people with satisfying products (Badache, R., & Maertens, 2023).

In the end, interpretivism contributes to a multi-faceted and detailed understanding of the fascinating user-Robo-advisory relationship which in turn results in tools allowing us to improve a client and develop a Robo-advisor further. The foster approach leads to long-term changes in the financial industry because it is focused on the real-life the users are experiencing and how they interact with the ordinary advice machines (Chowdhury, 2014).

3.4 Research Design

According to Glaser, research design is the structure strategy that regulates the researcher's move while working on the topic and solving the research questions at the end of the study (Glaser, 1979). In a qualitative approach to the study that is related to user experience and opinion of Robo-advisory services, the objective will be to understand the experiences, perceptions, and attitudes

of potential customers towards these services. In contrast with the quantitative approach, in this research quality research is positioned to uncover human behavior peculiarities and provide deep and rich data that disclose the ways of Robo-advisory services development that can lead to more engaged users.

This qualitative study has primary data sources which are interviews. Immersing in the interviews, the researcher gains first-person access to the participants, enabling him, her, or them to touch deeper by exploring their experiences and thoughts about the Robo-advisory services. Researchers can manipulate semi-structured interviews rather than having to proceed in a one-way manner and the participants can then share their personal experiences and emotions in an unrestricted way (Babb, 2021). Thus, this method will help explore complex theses and rising topics relating to customers' goals, motivations, and anxieties concerning Robo-advisory services.

In addition, interviews give a researcher a chance to ask further questions and probe an answer for more detailed meaning, so that the view of the participant is fully captured. Through the process of building trust and providing the required comfort, the research workers will receive unbiased judgments from the participants thereby making the dataset more versatile and comprehensive (Jamshed, 2014). In this case study, the researcher conducted semi-structured interviews with a small group of Robo-advisor potential users. The process is done through in-person or online conversations, video/audio recorded transcribed the recording into text or worded document using transcription software.

The transcribed worded text interviews were processed further by" cleaning" the data gathered in which the researcher manually carefully read the texts and removes duplicates, detect inaccuracies and typos corrected in order to produce more succinct and cohesive text. The data analysis part includes the application of a systematic approach to the coding process which will eventually give rise to the themes and patterns from the responses given by respondents (Saldaña, 2016). This method gives precedence to user tryouts, so analysts can make valid interpretations about the way Robo-advisory services can be optimized following users' requirements and tastes. By considering and analyzing users' responses, researchers can make useful proposals related to providing the users with a better experience and with user involvement in the management of their Robo-Advisory platform.

3.5 Methodological Choice

In my endeavor to understand the relevance of Robo-advisory services, the methodological approach to be employed is the qualitative approach. This method is especially appropriate for profiling subjective experiences, perceptions, and views of potential clients of Robo-advisory services. Such qualitative research provides a detailed look into the way users understand and use Robo-advisory platforms, which are crucial for creating good service design strategies.

The decision to use a qualitative method will allow the researcher to collect detailed and rich information that provides the key to understanding the motivations, uncertainty, and expectations of the potential users. By focusing on individual insights and narratives, the study can discover recurring trends and themes that may not show up in quantitative research (Williamson & Long, 2005). Providing this data analysis will not only make recommendations on how to enhance the user experience but also increase engagement with the Robo-advisory services.

In this qualitative method, data gathering is primarily conducted through interviews with targeted users of the Robo-advisory services. Semi-structured interviews give flexibility and depth to the discussion where the participant can express their opinions and feelings freely as the researcher can then ask for more related questions, thus, having a more in-depth exploration of the topic. This approach is worth noting because it brings about the personal views, as well as user experiences that are important in determining how humanized the Robo-advisory services should be to fit their requirements and liking.

Therefore, the qualitative approach to methodology highlights collecting multileveled data that reflects the whole picture of how people utilize Robo-advisory services. Adopting this approach provides the basis for making knowledgeable advice which can in turn translate to enhanced user-centered and more effective Robo-advisory platforms.

3.6 Target Population

According to Kombo, a population is a group of individuals, objects, or items from which samples are taken for measurement (Kombo, 2018). In this study, the target population consists of 25-year-olds to 45-year-olds, who may be interested in using Robo-advisory services. This segment of young adults is important as they are passionate enough to manage their finances and investments.

Individuals within this age range are probably at different stages of their employment and savings planning, which makes them suitable for exploring Robo-advisory systems and how they can enhance their lives.

These individuals will have a variety of financial goals, investment methods, and a level of experience with technology and finance. Such variability offers a solid ground for comprehending various elements, including user experience, trust in technology, and personalized service will determine how an individual engages with Robo-advisory services. Besides that, people in this age range are usually receptive to the use of digital financial methods, which is a part of the general development of the trend toward automated investment management.

Defining this specific target population allows the study to cover the range of opinions and experiences that can serve as the base for the development of user-focused service design methods. The research can contribute a wide array of insights to the Robo-advisory industry as it seeks to implement solutions that are responsive to the unique concerns, preferences, and expectations of the 25-45-year-old age group.

3.7 Description of Study Location

Vaasa, situated on the west coast of Finland, serves as the administrative center of the Ostrobothnia Province. Known for its robust energy sector and academic community, the city is home to esteemed institutions such as the University of Vaasa and Novia University of Applied Sciences. This rich academic presence, combined with the city's history of innovation and entrepreneurship, positions Vaasa as a key location for research on applied service design strategies and their impact on enhancing customer engagement with Robo-advisors (Norrgrann, 2022).

The city's bilingual population, speaking both Finnish and Swedish as official languages, creates a unique cultural environment conducive to inclusive and diverse perspectives. This aspect is particularly relevant to the study of Robo-advisory services, as it provides a rich context for understanding varied user experiences and expectations (Norrgrann, 2022).

Vaasa's geographic location on the Gulf of Bothnia fosters active cooperation with other Nordic countries and expands its export reach across the European market. This strategic positioning, along with the city's commitment to sustainability and modern infrastructure, offers a

contemporary and dynamic setting for analyzing the impact of Robo-advisors on user engagement. The city's dedication to environmentally friendly investment practices align closely with the research focus, making Vaasa an ideal backdrop for studying the application of service design strategies in Robo-advisory services in Finland (Encyclopædia Britannica, n.d.).

3.8 Sampling Design

Sampling is a critical step in the process of identifying groups of individuals who are representative of the entire population. Sampling enables the researcher to select a manageable population of individuals and collect data, but the selected population represents the entire population (Mennes, 2023). The term population refers to a group of individuals who have the same characteristics. In the case of finding a sample group of individuals to interview, the researcher identified persons who are keen to investing and potential users of Robo-advisory services. The associations like Mimmit sijoittaa and other Finnish media platform that focuses on financial literacy, investing, and personal finance are relevant in identifying the sample group. Within these groups, the researcher will then select a sample of the study. According to Mennes, a sample can be defined as a subgroup of the target population that the researcher plans to study for generalizing about the target population (Mennes, 2023).

On the other hand, Kombo (2018) defines Sampling as the procedure a researcher uses to gather people, places, or things to study" (Kombo, 2018). In this research Snowball sampling method will be applied. By snowball sampling, we mean the non-probabilistic sampling technique, which is frequently applied in research environments where the targeted population is hardly accessible or representable.

The snowball sampling technique starts with a researcher ascertaining a small group based on the criteria of the study. Through them, participants ask for referrals from those individuals they know and who conform to the criteria creating a chain of referrals. It runs for an extended period until the target number of participants is reached or there are no more emerging themes (Xashimov & Khaydarova, 2023).

This sampling technique is instrumental for data gathering purposes, which are qualitative, because in this way the researcher can interrogate the perceptions and experiences of different users of the

information and communication technology systems including those who may be more invisible or hard to reach using traditional sampling methods. Snowball sampling technique may lead to exposing the judgments and advances of certain classes of users which could be put into consideration and empower the service thinking of the future (Xashimov & Khaydarova, 2023).

3.9 Sample Size

A sample size is the selected group of people that is used to represent the whole population in the study (Ben-Zvi, 2015). Snowball sampling will be used in the selection of samples at the study location. In this research where the service design strategies will be adopted for stimulating the human engagement with the Robo advisors, snowball sampling for determining the sample size has several considerations. Firstly, the researcher must select a small group consisting of 7 participants who are either existing clients of Robo-advisors or those who are planning to use this financial service in the future. These first participants are the target of the sampling stage (Currie, 2009).

The researcher will interview the initial participants, who will reflect information about their experiences, preferences, and attitudes toward Robo-advisors. Finally, at the end of the interviews, participants will be requested to give the names of people they know who also use or are inclined to use Robo-advisors as well as those that might also be willing to take part in this study. The referral process will be used until the researcher either reaches a fixed sample size or data saturation occurs (McCann & Clark, 2005).

To guarantee a diversified and representative sample, the researcher may create criteria based on the questions of what kinds of referrals they look for (Martínez-Mesa, González-Chica, Duquia, Bonamigo, & Bastos, 2016). For example, they may want to involve certain participants for referring people with varying degrees of experience using Robo-advisors, different demographics, as well as varying financial goals and appetite for risk. Such an approach is capable of covering various viewpoints and observations, creating a generalized package of how users interact with Robo-advisors (Martínez-Mesa, González-Chica, Duquia, Bonamigo, & Bastos, 2016).

The size of a sample in snowball sampling usually relies on the principle of data saturation rather than any definite number (Currie, 2009). Data suffocation happens when new data ceases to carry

new ideas or threads concerning the research question. The researcher will track the quality and depth of data received from every participant and their referred persons (Dey, 2003). Once data saturation is reached, the researcher will wind up the sampling process (Caldwell & Atwal, 2005). Hence, snowball sampling is potentially competent at making the process of getting the users' views about Robo-advisors' experience straightforward with the assistance of an individual's social circles. By employing this method, the researcher can get to the subjects who might otherwise be out of reach, meanwhile granting the researcher a good, overarching perception of the particular object (Caldwell & Atwal, 2005).

3.10 Sampling techniques

Sampling is a procedure that the researcher uses to bring together, people, items, and things for the study (Philemon, 2015). According to Kerambo Philemon, sampling means the selection of individuals, items, and things from a selected population such that the number of entities chosen contains representative characteristics, values, and behaviors of the general population. This study will use both probability and non-probability sampling (Philemon, 2015).

3.11 Entry Permissions

Entry permissions are critical documents that are required to help the research access participants without restrictions. They are approval documents granted by persons of authority in any given organization (Tkachyk, 2020). In this study, the researcher applied for permission letters from the university, government, and study site. Though a letter of permission from the university and government may be sufficient, the researcher will seek permission from the study site to carry out data collection without fear of any person. The participants will also be required to sign an informed consent form to guarantee them certain rights such as anonymity and willingness to participate in the research.

3.12 Data Collection Instruments

Data collection refers to the gathering of information to serve or prove some facts (Kombo, 2018). Interviews will be used to collect the required information for data analysis. They will have four main parts which the respondents will consider responding to.

The first part seeks to review existing literature on the development and adoption of Robo-advisory services. Here, the respondent will give his/her understanding or any knowledge about Robo-advisory services, and how they became aware of the service. The second part seeks to identify the key service design strategies and methods that facilitate acceptance and engagement in Robo-advisors. The third part seeks to analyze how service design principles can be used to improve the user experience and engagements with Robo-advisor platforms. The fourth part seeks to explore potential users' views and perceptions related to Robo-advisory services including drivers and barriers to acceptance and engagement. The last portions included in the fifth and sixth chapter intended for discussion on the results of the study that links to the literature review and deliberate implications. Highlighting the strengths and limitations of this study and suggestion for future areas of research regarding this topic is considered relevant. A conclusion that provides a summary of main findings and its future implications are stated in the end part of the study.

3.13 Research Instruments and Validation

Research instruments are tools used in research for evaluation they include; questionnaires, experiments, observation, interviews, focus group discussions, and scales. (DES MOINES UNIVERSITY LIBRARY, 2019) In this research, the measurement tool that will be applied is Interviews so that the research can reach the best results possible.

3.14 Data collection

Data collection is a process of gathering facts about the research topic or area of interest (Kutessa, 2019). Primary data in this study was collected by conducting seven semi-structured individuals online and in-person interviews. Semi-structured questions with a pre-determined thematic framework are prepared by the researcher at hand. The key questions are planned, and supplementary questions may be asked but the indicative order of questions may vary depending on the flow of the interview.

Secondary data in this study comes from Journals, Websites, and E-books. are also collected as part of data sets. The purpose is to have a broader range of information providing a unique perspective and a comprehensive view of the topic. The journals and reports are useful resources providing expert insights and academic objectivity. As part of documenting observations, the

researcher initiated the use of recorded observations in the form of a research diary. The contribution of the insight on the participant's interactions, and methodological challenges contribute to the detailed account of what happened in conducting the study.

3.15 Data Analysis

Data analysis refers to logical techniques carried out to ensure the integrity of data (Kutessa, 2019). In this research, the qualitative method will be used to analyze the data collected. individual understanding/knowledge, views, and experiences spoken out about the Robo-advisory services will be used.

The data gathered through interviews, E-books, Journals, and Diaries shall be processed by coding and thematic analysis, a prevalent technique in qualitative research. Creswell (2014) describes coding involves making sense of the text data, segmenting sentences (or paragraphs) into themes, and taking apart and putting them back together just like when you peel layers of an onion and make a careful examination (Creswell, 2014 p. 195). This process will be conducted with the help of a qualitative computer software for data analysis called Atlas. ti. The program will be used to organize, sort, and search the data. Although, as with any other program it will take time for the researcher to learn and employ this effectively. Nonetheless, this strategy will especially fit this investigation as it supplies a versatile and constructive research instrument capable of yielding a complex yet rich and detailed depiction of the data.

3.16 Research Ethical Considerations

The following ethical considerations will be taken into consideration.

Informed consent

The researcher will take the principles of ethics considered during the study to ensure the participants' rights are not violated. Participants will be informed of the reason behind the study before the process starts. The researcher will ensure that she informs the respondents and creates awareness of the intended study and what the respondents are expected to do as they go through the questionnaires.

Confidentiality

The researcher will inform the respondents that no information will be shared without individual consent. The information received from the client will not be used for any other purpose except the intended study. The audio/video recordings gathered from the interviewees are deemed to be confidentially stored properly and intend to be deleted upon the completion of this scholarly work,

Withdrawal and voluntary participation

The respondents will not be forced to participate in the study. The researcher will be honest and will not manipulate the respondents during the period of data collection. Respondents can withdraw from the study at any time they feel to do so due to reasons that the researcher may not be aware of.

Concerning the responded

The researcher will ensure the respondents are respected and allowed to ask questions where they do not understand. Informed consent, confidentiality, anonymity, and privacy ensure no harm and allow respondents freedom to participate in the study.

CHAPTER 4: RESULTS

This study was aimed at discussing **"**How can the application of service design strategies enhance potential users' engagement with Robo-advisors?" This chapter is going to present, analyze, and interpret the findings according to the research question. First is how the data was analyzed following various steps from coding, presentation the charts then the thematic analysis of primary data. Secondary data from journals, websites, e-books are discussed. Lastly, the research diary and reflections gathered by the researcher.

4.1 Analyzing the Data- Coding and Thematic Analysis

In the following part, the data analytical procedure will be presented with some description of how employing chosen methods has resulted in the obtained results.

The primary data set is collected through semi-structured interviews of seven participants. The interview was done in the study location in Vaasa, Finland. The researcher opted to have an in-person and online interview combined with the use of audio recordings to record the responses of the interviewees. All the audio recordings were transcribed into text documents using a transcription software called TurboScribe. The transcripts were organized so that they could be inputted into the software for analysis by cleaning up the data. This work was done by listening to original audio files, correcting the text, and proposing all solutions unrelated to the research questions to ensure the confidentiality and privacy of the individuals involved

Coding of interview transcripts is the first part of data analysis which came as a step to follow. Here, the researcher reads each transcript carefully and assigned/labeled segments of the text by subject or theme related to the particular research questions (Manti & Licari, 2018). In these cases of coded segments, the researcher covered topics like customer experience, the sympathy criteria of good design, or the lead stumbling block on the engagement road. Coding is a kind of system that classifies and identifies the data in a well ordered, thus making it easy for the analyst to work on it with precision (Mofford & Ury, 2023).

The transcripts were organized so that they could be inputted into the software for analysis by cleaning up the data. This work was done by listening to original audio files, correcting the text, and proposing all solutions unrelated to the research questions to ensure the confidentiality and privacy of the individuals involved.

Using Atlas.ti: For Applied Research I Used the Software Atlas.ti for the Analysis. Because of its advantages such as its ability to code and theme analysis of large amounts of data, it was used as the main tool in the analysis. The data was ready to be entered into the software once it was done. The transcripts from the interviews were then imported into it. This ensured managerial operational

ease and proficient use of the data, such as tagging and categorizing data into themes for further analysis.

The Coding Process: I coded using Atlas.ti, and I proceeded with the analysis systematically. This step refers to the process of placing pieces of text from the transcriptions into sections that relate to the questions and the goals of the study. These codes were the main points of the subject as well as the key patterns being extracted from the prompts. Through coding, I was able to systematically identify recurring patterns and in-depth knowledge by going through the data set.

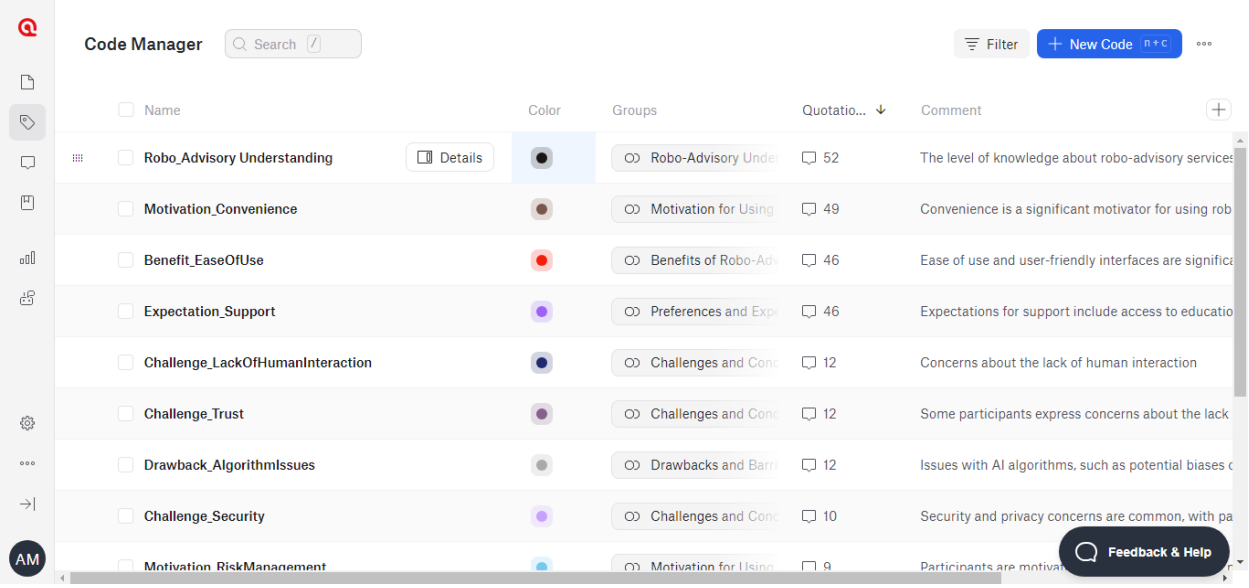


Figure3: Coding

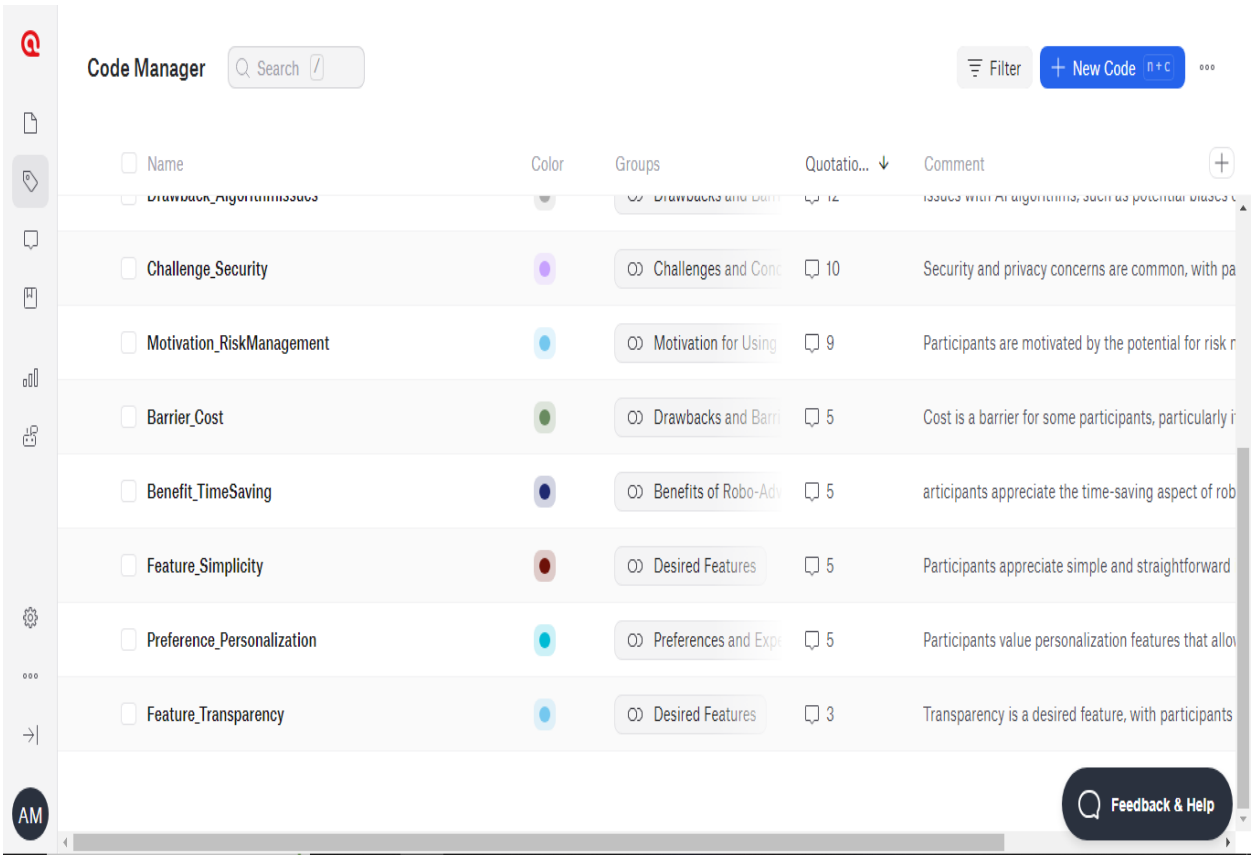


Figure 4: Coding

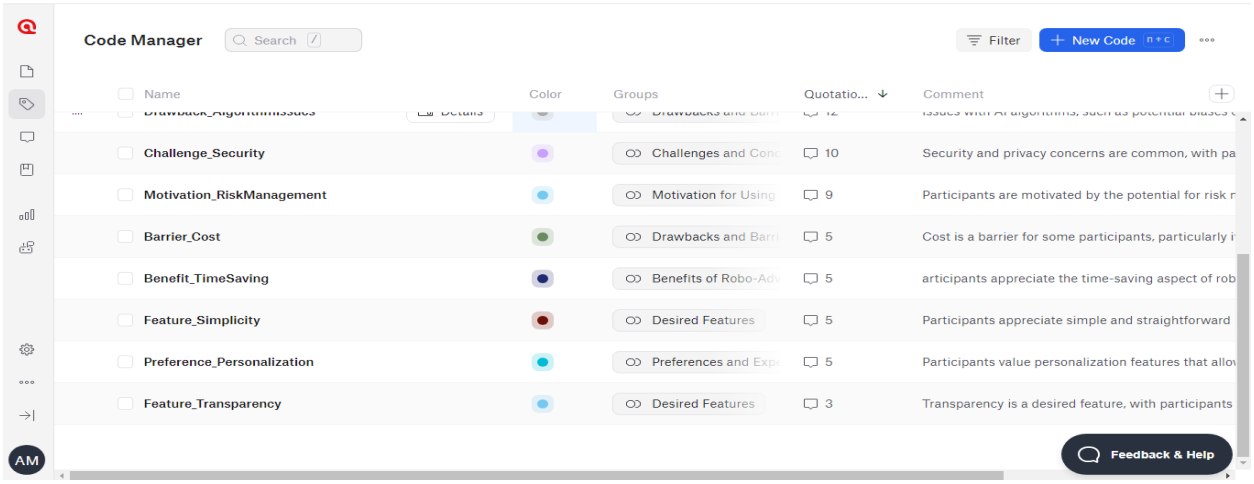


Figure5: Coding

Chart Creation: In addition, Atlas.ti software helped in creating the graphic presentations of the coded information. This eliminated the need to see the patterns and relationships visually, hence

leading to a very clear understanding of the data with less cluttered information. The charts were helpful in that they stood both as the most appropriate way to deliver the findings and as a visual interpretation aid.

Charts

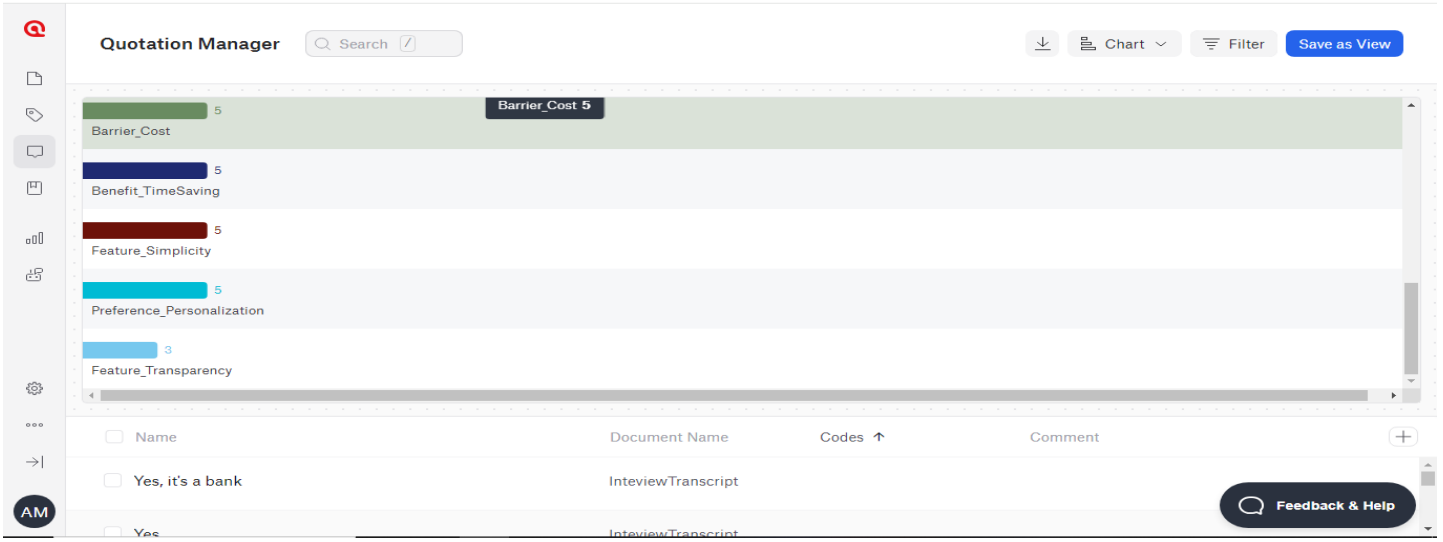


Chart1 Benefit and User Preference Created by Marian Bäckman

Benefit and user preference

The chart visualizes how the participants view Robo-advisory services in terms of time saving, simplicity, personalization and preference. These visualizations helped me identify which features were considered most important for enhancing user experience.

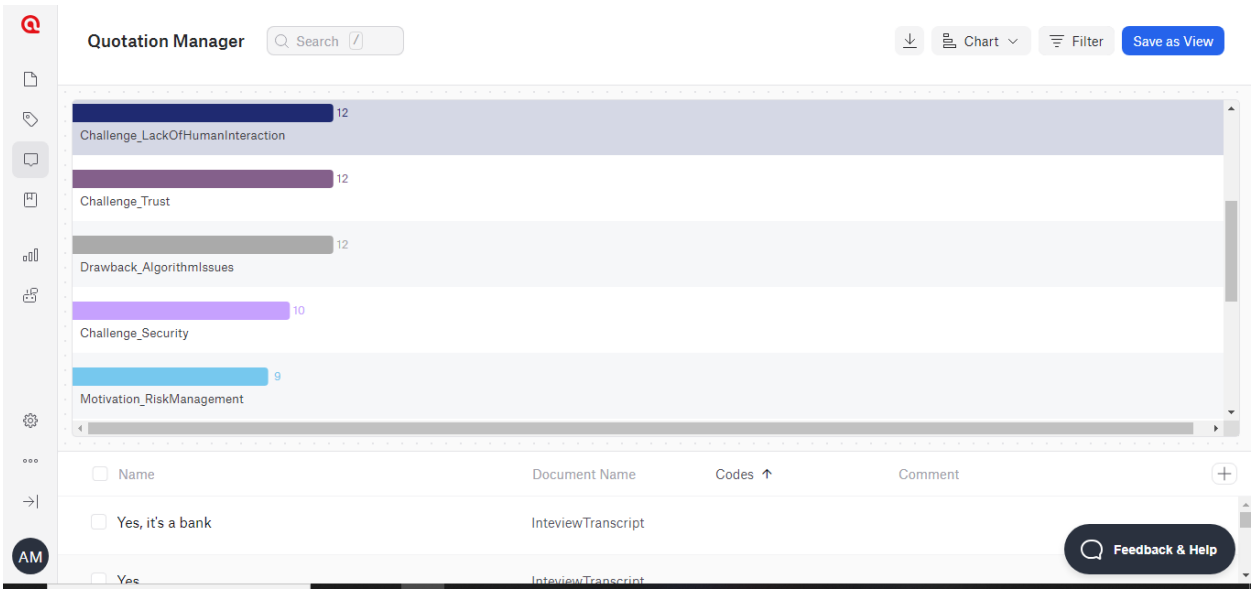


Chart2 Created by Marian Bäckman

Security and Privacy Chart

The Chart demonstrates that trusting Robo-advisors to guard their information will cause participants to have concerns from data security to privacy. Distinct visualization pointed out a few campuses which were mostly cautious who were unwilling to share their personal information.

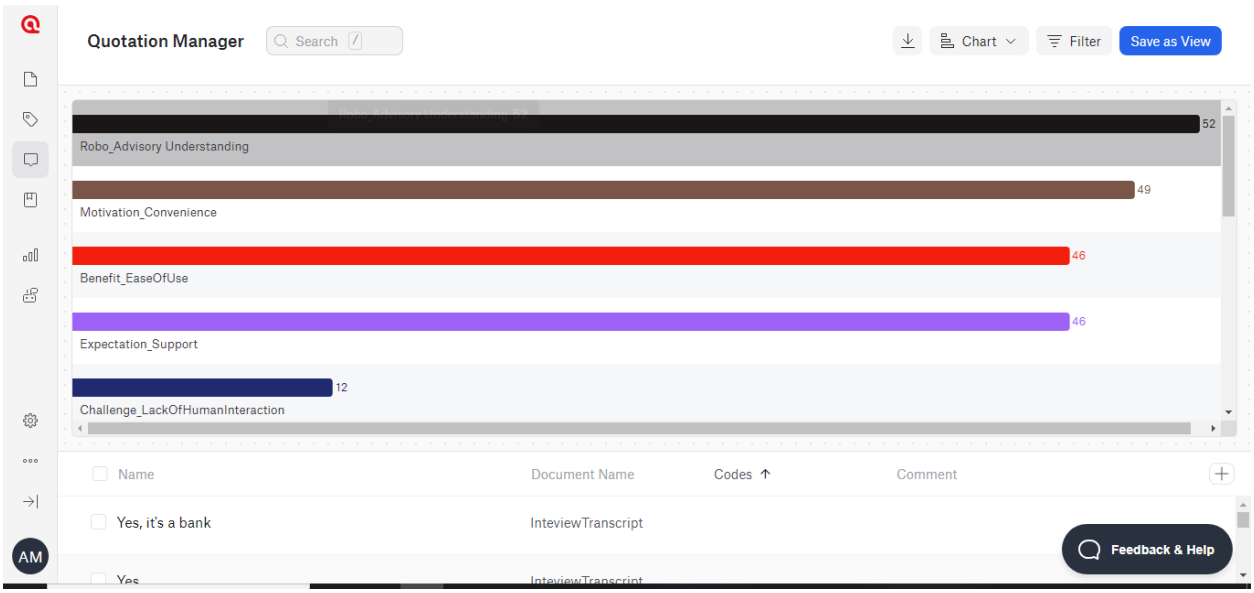


Chart3 Created by Marian Bäckman

Accessibility and Convenience Chart

The Chart shows that factors which participants liked much in Robo-advisory services were the simplicity to use and availability. It turned out that the visuals were crucial in surveying the essential traits I must have considered for the betterment of the user experience.

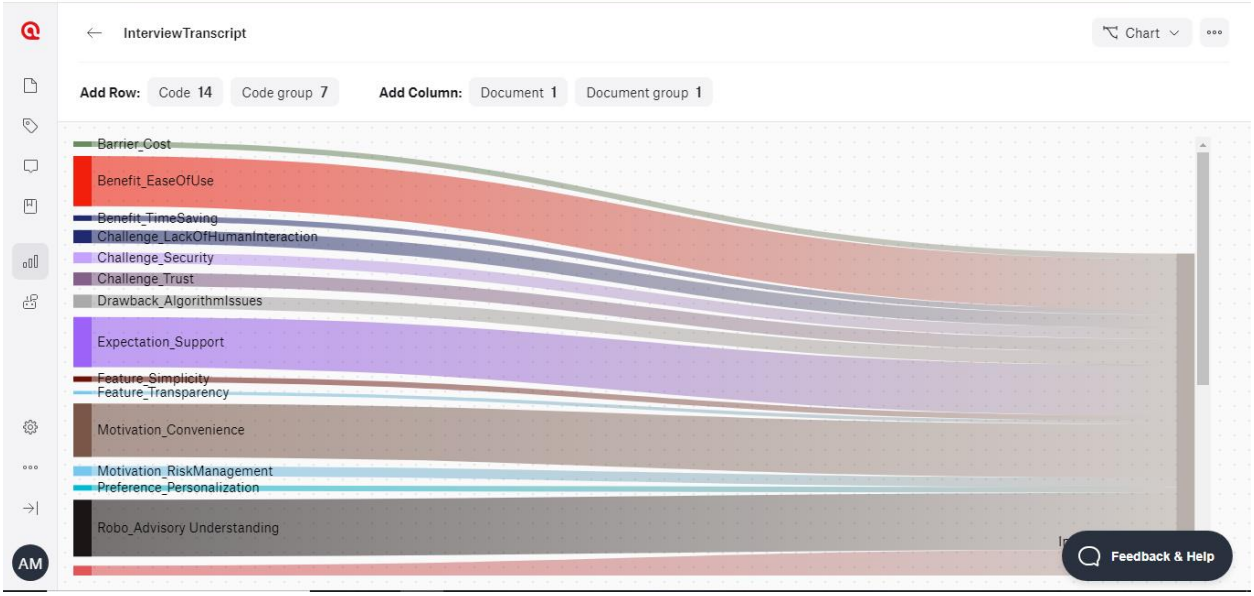


Chart4 Summary Chart Created by Marian Bäckman

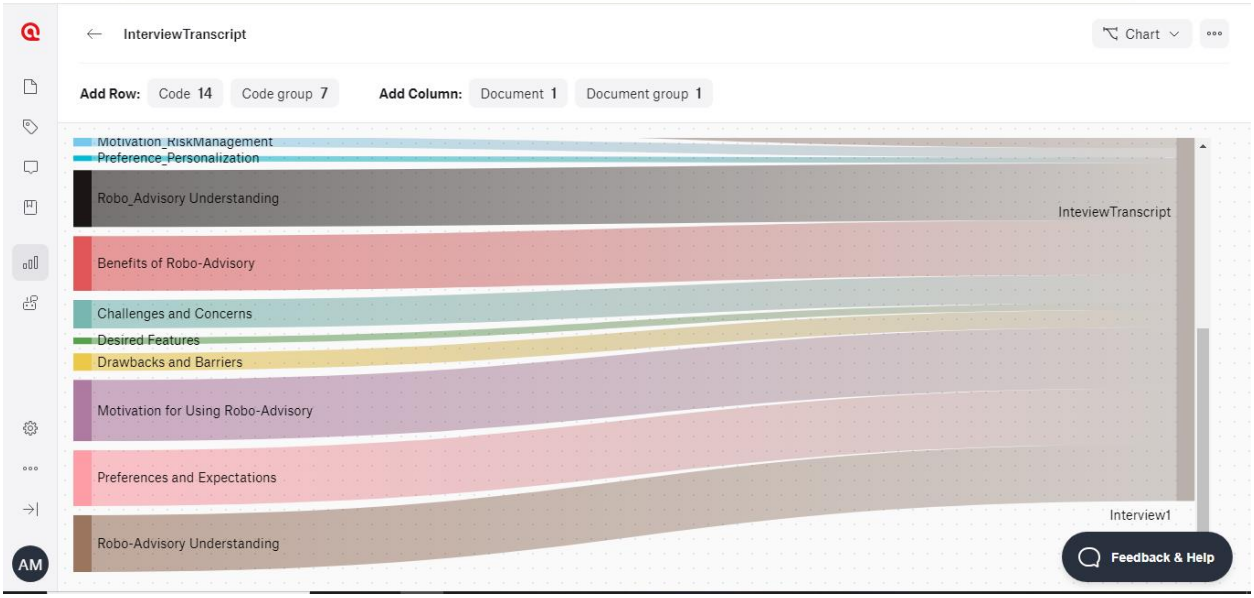


Chart5 Summary Chart Created by Marian Bäckman

Chart6 Created by Marian Bäckman

Summary Charts 4, 5, and 6 Illustrating All Kinds of Themes

These are complete charts, which blended together all the main themes, making it possible to see the main interests and worries that the participants would follow up with. In this way, I could

capture the central features of each of the spheres and comprehend the correlation between them from a wider perspective as well.

These charts I prepared using Atlas.ti., were a simple visual representation of the data, but it helped me to reach the goal with insightful participants' ideas. Through this, I was able to achieve a more unfolded understanding of the main subjects together with the sub-themes, which developed into a comprehensive data analysis.

4.2 Thematic Analysis

After coding, the researcher applied thematic analysis by extracting meaningful phrases, words, hidden patterns, and broad concepts from coded data. This subsumed grouping related codes into broader themes and investigating their contextual significance inside the research question framework. The thematic analysis method allowed the researcher to gather key insights from the data, and it is that such issues as the most popular design variations and the repetition of complaints about data security were discovered. It is where the most important hidden things got into the display.

This was made by applying the labels that have been highlighted during code construction. This was a way of easily bringing the core concepts and subsidiaries from the data. Themes captured the essential aspects and central patterns of the coding process and critically mirrored the research questions being addressed. During this stage, the emphasis was put on the examination of inter-relations and interconnections of different themes and sub-themes.

As an illustration, the researcher wanted to touch on how service design methodologies could lead to better user engagement for Robo-advisory services. Additionally, thematic analysis was also used for objects, by identifying the number of times and occurrences of a certain word, phrase, or concept service. Therefore, it was valuable because it showed the researcher what topics particularly participants approved/disapproved of and what kind of sentiment they were expressing in general. Content analysis served as the only available means to verify the identified relative importance of the agreed.

Application of these methodologies helped the researcher in obtaining a broad spectrum of data insights crucial for the topic of the research. It made it possible for the researcher to draw up

well-logical and real recommendations about service designing methods, which may contribute to user engagement with Robo-advisors.

Main Theme: Trust on Robo-Advisory Service

Sub-theme: Trust in Robo-Advisors

Most participants were skeptical about Robo-advisors because they lacked some understanding of how this technology operates. The investor's drawbacks were inconsistency with the performance of the system, and to what extent the system can interpret the investors' individual needs rightly.

Sub-theme: Trust in Banks

What is more, going through an interview with a person with a bank institution strengthened interviewees' trust in them rather than in a virtual horde of automated investment services. They were convinced that banks were the best choice where they could deposit their money safely and view the changes in their finances with clarity.

Main Theme: Investment Preferences

Sub-theme: Tangible Investments

Many participants signified their preference for the investment representative in nature to real estate and savings accounts over the stock markets. They argued that assets like real estate, gold and other tangible physical positions with value gave their money more stability as compared to other investments that were not so tangible.

Sub-theme: Low-Risk Tolerance

Context: Participants indicated that they would be primarily safe-float kinds of investment because they do not want to lose their amount of money. Lots of respondents have expressed concern over the volatility of markets, which could result in a negative influence on investments.

Main Theme: Accessibility and convenience value chains, from distribution channels to sales promotion, are prioritized in the strategic plans.

Sub-theme: Ease of Use

Respondents recommended Robo-advisors considering ease of use and access, which will help especially those who are just beginning their investing experiences. Some participants raised the need for a clearer and simple application or web design in the user interface.

Sub-theme: Lack of Knowledge

One of the usual obstacles in using a Robo-advisory was a low level of know-how in the existing technology and how it functioned. More educational resources and better understanding were something that the other participants of the groups required.

Main Theme: The Loneliness of Space: Undoubtedly, the most prominent cause of anxiety will emanate from their craving for social interaction.

Sub-theme: Demand for human advisor support

Participants were grateful for the presence of a human advisors in cases of their investment-related problems. They liked it very much because, in addition to their main questions being answered and being individually helped, they now could enjoy a personal touch.

Context: The ones who participated on the interview suggested that the availability of human support be made even if they rely on Robo advisors so that they may feel assured and secure, most of all, during the times when huge sums of money are involved.

Main Theme: Security and Privacy

Sub-theme: Data Security

The participants in the discussion carried out some fears around the security of their personal and financial information while using Robo-advisors. They feared any breaches of their data, which might have been misused. When it comes to financial transactions, the use of fiat currencies limits us to transacting only at specific times during a given business day.

Sub-theme: Privacy

Context: Participants noted that data availability and security had a particular concern to them. In their view, they were demanding institutional streams of information about privacy protections.

Validation and Reliability: The part where the current research work was undertaken at every phase to make sure that the analysis was valid and reliable. It extended to triangulation of codes and themes, adjusting where there was a need to improve consistency and accuracy. This involved checking codes and themes and correcting if they needed further improvement.

4.3 Analysis of all the data sets

The elements of the result were determined through the principal outcomes and viewpoints that were extracted from data analysis. Those findings reflect a multifaceted comprehension of the real users' opinions about the Robo-advisory service, and their views on the design strategies which are specially intended for this service.

The researcher found out that the most powerful feature is the user-friendly and intuitive interface the fact that investor requests are taken personally to develop investment portfolio recommendations or that the information about investment options is in a very transparent form. This evidence proves that a service design strategy aiming for such elements can increase users' popularity with Robo-advisor platforms.

The information from the results could also underline the distinctive barriers to engagement like the integrity of personal information, suspiciousness of AI-driven decisions, and the strong desire for more personal communication in complicated investment cases. They deliver priced insights that are critical for addressing issues users are facing and enhancing their user experience. The findings give a beyond-theoretical understanding of the subject matter and might prove to be instrumental in creating user-friendly advisory platforms. Concerning users' requirements and their favorite things, service designers can reach an effective and innovative implementation of Robo-advisory services that will lead to their growth rate and satisfy the client.

4.3.1 Primary data: Interviews

RQ1 How the existing literature has impacted the development and adoption of Robo-advisory services?

The interviews reveal that the respondents had little knowledge or understanding of the concept of Robo-advisory or how it is used for investment purposes. It could mean that the available materials were not disseminated or were not very effective in reaching relevant users. The consequence is the effect on the progress and acceptance of these applications has been insignificant. One gap that can be identified in the academic and practical applications of Robo-advisory services is the lack of awareness and understanding of these services by most people. Such a divide highlights the importance of organizing educational campaigns and outreach programs where potential users can be informed of the advantages and functions of Robo-advisory.

RQ2 What are the key service design strategies and methodologies that may facilitate acceptance and engagement?

The interviewees point out some service design methods that can help with the service acceptance and engagement of Robo-advisors. This can be in the form of providing simple and self-explanatory interfaces, which are critical extensively commuters. Openness and Clearness in Investment Information like Investment Options and Strategies should not be forgotten. Personalized strategies like advising by considering individual characteristics are an important way of improving the likelihood and active participation. Furthermore, the presence of such supporting materials as FAQs, video tutorials, and a provision of human advisor contacts for consultancy will boost trust and user engagement. The application of these design strategies increases the usability of Robo-advisory platforms and establishes long-term loyalty from users to such platforms.

RQ3 How service design principles can be applied to improve the user experience and engagement with Robo-advisor platforms?

Service design principles such as ease of use, personalization, and transparency can significantly enhance the user experience and engagement with Robo-advisor platforms. Participants emphasized the importance of user-friendly interfaces that adapt to individual risk tolerance and

investment goals. Clear communication and guidance are critical, as users seek accessible and understandable information to guide their investment decisions. Integrating human advisors as a supplementary resource can boost users' confidence in the platform, while automated services offer convenience and efficiency. By combining these elements, Robo-advisor platforms can achieve higher levels of user satisfaction and engagement, ultimately leading to increased adoption and usage.

RQ 4 What are the potential users' views and perceptions related to Robo-Advisory services, including drivers and barriers to acceptance and engagement?

Different groups of users have both positive and negative feelings and opinions about Robo-advisor services. Factors that trigger acceptance and engagement include the convenience and relative effectiveness of Robo-advisors, as well as the ability to get personalized investment advice/s. The participants also cherish the Robo-advisor's ability to make such consistent and data-driven investment decisions. Nevertheless, hurdles/challenges to the adoption and involvement include privacy and security matters regarding data, objections towards decisions based on AI, and preferences of humans in complex investment cases. It is also evident that the interviews show that not knowing what Robo-advisory services may limit acceptance of this type of financial service. It is necessary to promote awareness and education on Robo-advisors and to establish trust through transparency and good customer support.

Secondary Data: Journals, E-books, and Websites

RQ1 How the existing literature has impacted the development and adoption of Robo-advisory services?

The elicited information from journals, blogs, and websites gives a complete view into the introduction and acceptance of Robo-advisory services among investors. The books address the entire evolutionary development of these services, they commend the factors that brought the growth and the advent of this service, and they unveil the stages at which these services arrived to their actual state. The E-books and journals contain detailed accounts of the historical and technological progression of the industry, especially the aspects that have led to its current state. The diaries and personal accounts, on the other hand, give some unique perspectives that

researchers often face. The researcher observed and noted in the diary that during the interviews the word “Robo-advisor” is not familiar to many interviewees. Although, some knew about the service it offers for example through their banks, but it may not necessarily be called in the same name. The literature also indicates that economic and market trends may affect Robo-advisors, thus, it cannot be underestimated that such a form of service will always have to be adaptive in a more changing scene ((PDF) "The rise of robo-advisory in investment management: An individual investors' perspective", n.d.), (Research on the impact of technology on policing strategy , n.d.) (Books, n.d.) (Ethical decision making by individuals in organizations: An issue-contingent model on JSTOR, n.d.).

RQ2 What are the key service design strategies and methodologies that may facilitate acceptance and engagement?

Beyond scarcity issues, the success of Robo-advisory services relies heavily on an effective user engagement strategy which e-books and Online-journals provide in-depth discussion upon. Their take is on user experience-centric design, and this promotes simplicity, clarity of communication, and making the sites personalistic to meet individual needs. A personal account, user diaries offer a via media of the user’s emotions and interactions with the various platforms, with successful design options and ameliorating factors analyzed. Online resources help to capture current trends and benchmarking on the service design front of Robo-Advice, thus allowing a self-improvising and user-enhancing mechanism (Bergaus, 2015), (Service Delivery Platforms and Multimedia Service Design, 2018), (Pavlovski, 2008).

RQ3 How service design principles can be applied to improve the user experience and engagement with Robo-advisor platforms?

The essence of the service design principles to be used in the Robo-advisory applications is mounting appropriate practices in the lead for delivering the best quality of experience and engagement. The Interaction-design organization Website preferably has a style of interface, establishes trust in decision-making, and designs personal experiences for investors. Such sources illuminate examples of interactions that have been disclosed successfully using computer-human interaction guidelines, thereby serving to develop the level of trust and satisfaction of users. Through the usage of diaries, readers will be able to step into the shoes of the designer and

understand the way these design principles are being put into practice, as well as the advantages that they offer. Engaging and time-saving is what a Robo-advisory platform should be about; making sure that users' requirements and preferences can be factored in (The Principles of Service Design Thinking - building better services, 2024).

RQ 4 What are the potential users' views and perceptions related to Robo-Advisory services, including drivers and barriers to acceptance and engagement?

Journals and websites strengthen the understanding of the potential users' sentiments and opinions regarding Robo-advisory services. They talk about the drivers of acceptance such as convenience, efficiency, and access to person-tailored financial advice. However, they address adoption barriers, which include data confidentiality concerns, mistrust in an AI algorithm, and a wish for human interaction in difficult investment situations. Private diaries shed light on the emotional factors that facilitate or impair users' interactions with Robo-advisors, identifying which elements make them eager to continue or satisfied to stay. In summary, the secondary data provides the necessary basis to comprehend the multifaceted aspects that encourage or discourage prospective users from using Robo-Advisory services (BETTER FINANCE, 2022), (PDF) demographic and socio-economic factors as barriers to robo-advisory acceptance in Poland, n.d.), (Dwork, 2022).

CHAPTER 5. DISCUSSION

Concerning the research title which is devoted to the ideas of how the usage of the service design methods can enrich the connection with people who use Robo-advisors, the data analysis procedure consists of several systematic steps. Examination of data collected is carried out through some steps which include viewing interview transcripts and other data sources. This Chapter narrows down the key themes and patterns and comes up with meaningful conclusions based on the research problem that the paper is dealing with.

5.1 The perception of agreement with previous knowledge

Generally, my study results directly align with the existing literature emphasizing the already well-known concepts in the field, adding to the north of its reliability.

One of the important similarities is that they underline the role of human-centered services in Robo-advisory platforms. My study confirmed that ease of use, transparency, and personalization of interfaces deserve special attention emerging from the previous studies that show their importance for user interaction improvement and increase of user engagement and satisfaction. The fact that blind algorithms succumb to humans' preferences confirms the robustness of intuitive design as a basis for Robo-advisory platforms' service designs, which should be designed according to the diverse preferences and levels of financial literacy of users.

Furthermore, the outcomes of the study matched the findings of the previous literature that humans and software should be supported and employed jointly. This was highlighted in some of the comments where the users said that they needed to hear a human advisor for complex investment cases, and this is what a traditional financial advisor would do. This was confirmed in other studies that claimed a hybrid model where technological and AI machines work with humans in delivering services. This experience stands for the obvious trend to favor a personal approach and retention of professional control despite the efficiency of digital services affordability.

Another major issue stated by the users of my study is the issue of issues of data privacy and security, for no one wants to entrust their sensitive information to such a service without guarantee of its safety. Such likewise reflects on the earlier findings involving these factors as major

hindrances to successful uptake and usage by consumers. This research illustrated the central role of comprehensive data protection and effective communication of security methods to develop the trust and confidence of end users.

Additionally, my findings are consistent with previous findings in that access to educational resources as well as assistance for users trying to understand these Robo-advisory services are two critical factors. Participants confessed the need for the availability of FAQs, tutorials, and other resourceful materials that would heighten their understanding and grasp of their skills. It becomes clearer that earlier work shows the crucial aspect of providing consumers with knowledge and tools for making informed decisions.

Last consideration of this, as my results follow indisputable facts about algorithmic decision-making's effect on users' perception. Participants admitted to being at different levels of convenience in algorithm-based decision-making in finance. This puts more need for further attention to service providers on the other side for balancing the benefits of automation with users' decision-making process so that they can be understood.

The examination of previous theories and thoughts proved valid because of many already existing concepts shown here. The continuous study and practice of these main areas will be the way to improve the user experience and engagement.

CHAPTER 6: CONCLUSION

6.1 Overview of Research Findings

To begin with, the significance of this research was to look at how the use of service design strategies could make the users of Robo-advisory services more interested in the services. The research aimed at assessing the existing literature regarding Robo-advisory services development and adoption as well as identifying the core service design strategies and techniques for service optimization in Robo-advisors. In addition, the research considered determining how Robo-advisory services can be improved to provide better user experience and engagement. Finally, the research focused on user views and perceptions regarding the services.

During the investigations, it was found that the component of user-centered design significantly impacts user engagement with the Robo-advisors. The research concluded that transparent communications, intuitive interfaces, and personalized portfolios were key elements for improving the usability of Robo-advisors and client satisfaction with the fintech services. Moreover, the adoption rates and user experience were boosted significantly due to the incorporation of educational resources as well as support of human factors such as financial advisor. These findings demonstrate that service design is a very important element that will eventually lead to determining the state of financial technologies and the sector's users.

6.2 Implications for Financial Institutions

The unprecedented results of the study have wider relevance beyond the realm of research, providing useful information for financial companies that want to increase the level of involvement of Robo-advisors users. By combining technologies with users' preferences and demands, financial institutions will have the possibility to develop more suitable and convenient algorithms for Robo-advisory services. This hypothetical result may result in users being more satisfied and having increased levels of trust leading finally to a larger adoption of the technology and its broader acceptance as a result.

Undoubtedly, the presented study provides profound data for analysis but it is crucial to mention the study's flaws. Although in this study I tried not to introduce any biases, I think there is still a possibility of my data being inaccurate, due to a small sample size and the study's scope. The scale of the next samples can be more non-distinctive with randomized geographical location and ethnicity to capture generalizability. The other note is that we should look beyond the initial uptake and engagement users will be using Robo-advisors over a longer period and in different demographics and financial conditions. Such kind of research could offer well-founded knowledge about the effect of the support design strategies in the engaging of users with the Robo-advisors.

Recommendations

According to the study, financial bodies must opt to adopt user-focused design strategies to attract and retain the customers' interest in the Robo-advisors. This includes for instance blending transparent and polite communication with specific investment strategies.

Integration of human advisors for more complicated decision-making departments will also add trust to and confidence in Robo-advisory platforms. As the research illustrates, users' feedback and the adaptation to it is crucial for maintaining and extending the service quality and the management must be constantly involved in the process.

Summarizing the article, service design in Robo-advisory services is not only about users interacting but more importantly about addressing their concerns and encouraging them to persist with it. Through the resolution of user needs and inclination to desire, financial institutions are at liberty to make their platforms more effective and user-friendly in a way that they will be perceived more positively by their clients and have a high level of satisfaction.

With the development of fintech in the finance sector, the utilization of service design principles would be imperative for the longevity and growth of Robo-advisory services. The study becomes a foundation stone for subsequent examinations and practical utilization, providing a roadmap to create the most effective user interactions for this multi-faceted landscape.

A practical usage of a design thinking process tailored to achieve better user experience and increased appeal can be borne out of this research. In the first stage of empathizing, the user

needs/wants, and obstacles are acquired by the business owner interacting with the clients and gathering feedback.

Through the collection of insights from diverse users of the Robo-advisor services, a more in-depth understanding of what their concerns are such as trust, user interface (UI) preferences, and obtaining the advisor traits can be done to help cater to these issues better. This helps to make sure that the design process relies on real-life user experience and ensures that the final product is in line with what the user expects.

Collection - the process of unobtrusively extracting data through interacting with Robo-advisory services is of vital importance. This can be done by the identification of which hurdles the users face when they use Robo-advisory services. In this respect, close attention should be paid to several directions for improvement such as the ease of use of the interface, clear communication, and, of course, security of data. When the design process allows for more focus on the challenges to the user experience, it is often a good way to enhance the user experience.

As the next step, the Robo-advisory service team should create ideas, embracing a collaborative approach among professionals with diverse expertise and specializations. Creative thinking can be stimulated to find different solutions using the set objectives, i.e. issues for which Robo-advisors will be suitable, will be addressed in this regard, and thereby the overall user experience with Robo-advisors is expected to be improved. This is the phase of an issue that needs to be addressed and which may have many solutions.

From a test of prototypes with a group of potential users, important information about the solutions to the problems can be derived. The assessment of the impact the design modifications have on user engagement, contentment, and reliability in Robo-advisory services will lead to further improvements.

User feedback on the iteration of design solutions makes the outcome more and more perfect. This could require one to go back to the earlier stages of the process to make the adjustments that users noted as well as challenges that are becoming apparent.

By applying design thinking, Robo-advisory service providers will be capable of coming up with products that give user-centered experiences by satisfying the requirements and expectations of

the target audience. This tactic can cause the level of users' engagement, satisfaction, and adoption to become higher, consequently helping the Robo-advisory service achieve longevity in the market.

In addition, the implementation of service design strategies can be used to boost the potential to engage users with Robo-advisors by ensuring a user-centric interface design process that considers the application of intuitive interfaces that are easy to use and targeted at a diverse range of users with various levels of financial literacy. Simple navigation and easy-to-access features do increase user engagement and satisfaction. Personalizing investment strategies by considering risk tolerance levels, financial objectives, and personal preferences will help users feel more in control and comfortable in their investments.

Transparency plays a vital role in the development of trust, and thus, disclosure of algorithms, fees, and investments significant data security measures, can be the prevention of privacy issues. The combination of human advisors with automated investment management services can create a hybrid model of service, which can meet the requirements of many users for individualization, especially in complicated investment situations.

Empowering knowledge with resources such as Frequently Asked Questions (FAQs), tutorials, and webinars that users can understand Robo-advisory and can increase their experience. Another way to boosts popularity is to support associations, groups, or media platforms that focuses on financial literacy, investing, and personal finance such market segments are relevant in identifying the potential users of the said service. Customer care services like chatbots and human agents through multiple channels make the user experience better. Collating user feedback and consistently enhancing the service mix can cause multiple design iterations based on user needs and preferences.

Properly done advertising campaigns can create and voice out the worth of the Robo-advisory services and the consequential satisfaction of the consumer. Additionally, strategic cooperation with other Fintech organizations and Advocates can help clarify the Robo-advisory services in a wider group of people. Instead of being one standalone service, the combination of Robo-advisors with other financial services can be a single platform that has everything the user needs.

Acknowledging the diversity of the current people coming in with different abilities in mind while developing Robo-advisory services is a must. Providing a plan for technological compatibility together with multilingual support is necessary for a better service. Adapting technologies and trends in the financial industry will continuously produce improved products, where advanced conversational interfaces and data analytics leading to improved user engagement will be integrated.

Through these service design methodologies, robot investment advisory services can forge interactions that are more encouraging and personalized, helping to build the customers' trust and overall user activity.

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APPENDICES

CONSENT TO PARTICIPATE IN A RESEARCH INTERVIEW

Thank you for agreeing to participate in this interview. The interview will take about 15 to 30 minutes and it is conducted by Marian Bäckman as a part of her master's thesis research at the University of Lapland. The aim of this study is to find out how real customers see and use Robo-advisory services which are digital tools that help with automated investment management and financial advice. Along with your thorough analysis and knowledge of the factors that affect the adoption as well as the satisfaction of users, you will have a chance to contribute to the overall picture of the situation in the global market. Your responses will be kept confidential.

The ethical guidelines for academic research mandate that interviewees must explicitly grant their consent to be interviewed and to allow the use of the information disclosed during the interview. This consent form is an essential requirement to ensure that you understand the reason for your involvement and that you accept the terms of your participation.

Please read the following information and sign this form to certify of your approval:

- Participation in the interview is voluntary and you will not get paid for it. You can withdraw from the interview at any time if you feel so.
- The interview will be audio and/or video recorded and possibly a transcript will be produced. The transcript(s) may be sent to you, who can correct any factual errors.
- Access to the interview transcript/data will be limited to Marian Bäckman and academic colleagues and researchers with whom she might collaborate as part of the research process.
- Any summary interview content, or direct quotations from the interview, that are made available through academic publications or other academic outlets will be anonymized so that you cannot be identified, other information in the interview that could identify yourself will not be revealed.

- The original recordings and notes taken during the interview will be kept and stored securely.
- Any variation of the conditions above will only occur with your further explicit approval.

By signing this form, I agree that I have read and understand the explanation provided to me, I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this interview.

_____	Marian Bäckman
NAME / Participant DATE (dd/mm/yyyy)	Name of the interviewer
_____	_____
SIGNATURE / Participant SIGNATURE /	Signature of the interviewer

If you have any questions concerning your participation, you may contact:

Marian Bäckman

marbackm@ulapland.fi

INTERVIEW QUESTIONS

INTERVIEW SCHEDULE

Introduction

Thank you for agreeing to participate in this interview. The aim of this research is to investigate individual users' perception and relationships with Robo-advisory service which is a digital platform that offers invested management processes alongside financial advice that is automated. The qualitative data you present is very important for us to understand what factors make consumers adopt these innovative services and what kind of experience they have while using them. Don't be afraid to tell me your straightforward, honest thoughts and invite me to discover your story. We would appreciate your kind consent to share your feedback among the public, which you can be absolutely sure will not be disclosed unless you allow us to do so.

Objective 1: To review existing literature on the development and adoption of Robo-advisory services.

1. What is your current understanding or knowledge about Robo-advisory services? How did you become aware of these services? Probes: Can you explain what a Robo-advisor is in your own words? Through what channels or sources did you learn about Robo-advisors (e.g., banks, advertisements, social media, friends/family)?

Objective 2: To identify key service design strategies and methodologies that may facilitate acceptance and engagement.

2. What factors would motivate you to consider using a Robo-advisory service for your investment needs? Probes: What specific benefits are you looking for (e.g., cost savings, convenience, personalization)? How important is ease of use and user experience?

3. What concerns or challenges do you anticipate in using a Robo-advisory service? Probes: What potential risks or drawbacks come to mind (e.g., lack of human interaction, trust in

algorithms, privacy/security concerns)? What factors might discourage or prevent you from using a Robo-advisor?

Objective 3: To analyze how service design principles can be applied to improve the user experience and engagement with Robo-advisor platforms.

4. What features or aspects of a Robo-advisory service would be most important to you in terms of enhancing your user experience? Probes: How important are user-friendly interfaces, clear communication, and guidance? What types of support or educational resources would you find valuable?

5. How would you prefer to interact with a Robo-advisory service (e.g., online platform, mobile app, conversational interface, etc.)? Probes: What devices or platforms do you typically use for managing your finances or investments? What are your preferences in terms of visual design, navigation, and accessibility?

6. What level of customization or personalization would you expect from a Robo-advisory service to meet your specific needs and preferences? Probes: How important is it for the service to adapt to your individual risk tolerance, investment goals, and financial situation? What types of customization features would you find valuable?

Objective 4: Explore potential users' views and perceptions related to Robo-Advisory services, including drivers and barriers to acceptance and engagement.

7. What are your perceptions or concerns regarding the use of artificial intelligence and algorithms in managing your investments through a Robo-advisory service? Probes: How comfortable are you with relying on algorithms and machine learning for financial decision-making? What factors might alleviate or exacerbate these concerns?

8. How important is the involvement of human financial advisors or experts in combination with the Robo-advisory service? Probes: Would you prefer a purely automated service, or would you value the ability to consult with human experts? In what scenarios might human involvement be particularly important?

9. What factors would influence your trust and confidence in using a Robo-advisory service for your investment management? Probes: How important are factors like reputation, transparency, security measures, and third-party endorsements? What specific assurances or guarantees would you look for?

10. Overall, what would be the key drivers or barriers that would shape your decision to adopt and engage with a Robo-advisory service for your investment needs? Probes: Based on our discussion, what are the most compelling reasons or motivations for using a Robo-advisor? Conversely, what are the primary concerns or obstacles that might prevent you from adopting such a service?