



Consulting Project:
Financial Check-up platforms as a
solution for financial literacy in
Portugal

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Abstrato

Portugal foi identificado como o país com o pior desempenho em termos de literacia financeira, de acordo com a classificação do BCE. O objectivo desta pesquisa é ajudar o Doutor Finanças português FinTech a melhorar a literacia financeira em Portugal, fornecendo uma ferramenta de gestão financeira de acesso livre para todos os indivíduos.

Através de pesquisa secundária, análise comparativa das melhores práticas de ferramentas de gestão financeira no mercado, e um inquérito explorando os desejos e motivações dos clientes por detrás da utilização de tais ferramentas, o estudo identificou três áreas-chave de importância para os indivíduos: ter uma visão geral das finanças pessoais, utilizar uma ferramenta de poupança e optimização orçamental, e receber ajuda para investir e negociar.

O estudo também enfatizou a importância de criar níveis elevados de centralidade do cliente, adaptando as ferramentas às necessidades individuais e ciclos de vida. Além disso, a actualização do website da empresa com um design mais intuitivo e moderno para uma experiência de utilizador eficaz dará também um impulso à Doutor Finanças. As ferramentas desenvolvidas visam capacitar os indivíduos a assumir o controlo das suas finanças e melhorar a sua literacia financeira.

Título: Plataformas de controlo financeiro como solução para a alfabetização financeira em Portugal.

Autor: Maurice Störk

Palavras-chave: Literacia Financeira, Ferramentas de Gestão Financeira, Liberdade Financeira, Poupança

Abstract

Portugal has been identified as the lowest-performing country in terms of financial literacy according to the ECB's ranking. The purpose of this research is to help the Portuguese FinTech Doutor Finanças to improve financial literacy in Portugal by providing a free-access financial management tool for all individuals.

Through secondary research, benchmark analysis of best practice financial management tools on the market, and a survey exploring customer wants and motivations behind the usage of such tools, the study identified three key areas of importance for individuals: having an overview of personal finances, utilizing a saving and budget optimization tool, and a tool simplifying investing and trading.

The study also emphasized the importance of creating high levels of customer centricity, tailoring the tools to individual needs and life cycles. Furthermore, updating the company's website with a more intuitive and modern design for an effective user experience will give Doutor Finanças a boost as well. The developed tools aim to empower individuals to take control of their finances and improve their financial literacy.

Title: Financial Check-up Platforms as a solution for financial literacy in Portugal

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Keywords: Financial Literacy, Financial Management Tools, Financial Freedom, Saving

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1.Introduction

Doutor Finanças was founded in 2014 and since then established its position as a preeminent technology-based start-up, being featured for the last four consecutive years among the TOP 30 of Portugal's Fintech Report. CEO and founder Rui Bairrada initiated the start-up with the mission to fight financial literacy by helping Portuguese families to analyze, compare and negotiate the best conditions for various financial products and thus have an impact on the economic well-being of Portugal on a big scale.

Financial literacy is a widespread issue in Southern European countries but especially Portugal, as occupant of the last position in the European Central Bank (ECB) financial literacy ranking of 2020, is facing significant challenges (European Central Bank, 2021). Recent externalities such as the Covid pandemic, the war in Ukraine, and increasing inflation rates put even more pressure on the country's financial health. Furthermore, while rising in the last few years, Portugal is still struggling with the transition to a digitalized world, being below the EU average on basic digital skills according to the 2021 Digital Economy and Society Index (European Commission, 2021). Given the present situation, it must be an urgent priority for Portugal to catch up and Doutor Finanças is in the pole position to address those issues.

The research aims to provide recommendations on how Doutor Finanças can optimize its services by implementing a free, access-for-everyone financial check-up tool, tailored to individual customer needs and goals. This will support their mission of improving financial literacy in Portugal and undermine overall credibility as a leading advisor for financial matters while having the SDG number one (No Poverty) and number four (Quality education) in mind. To accomplish this, the following three research questions got conceptualized: (1) Benchmark analysis, what are the best practices for existing financial check-up tools, and in which dimensions is potential for improvement? (2) Which features in financial management tools are most important for individuals? (3) How can individuals be motivated to increase their willingness of being financially free and use financial management tools? The main challenge unveiled during the project is, how to boost traffic and provide customer-tailored solutions on a platform providing valuable, yet from the target audience's view tedious and low-involvement perceived information.

This dissertation's scope focuses on a managerial point of view since the "Consulting Projects" target is to provide feasible recommendations for Doutor Finanças, based on the developed main findings. As an academic paper, the analysis section is accompanied by the application of specific research methodologies, theoretical concepts, and models.

In terms of structure, the dissertation begins by introducing essential concepts and theories as part of the literature review which served as the starting point for the entire consulting project and research methodology. Hereby, the focus was on financial management and modern approaches for money management, digital customer journeys, and financial literacy. Subsequently, the applied research methodology including the collection and processing of data will be elaborated in detail in the main part. Lastly, an overview of the research results and recommendations for Doutor Finanças will be outlined.

2. Literature Review

As a prerequisite for the dissertation, introducing the readers to theoretical definitions and relevant concepts about the research topic, is necessary to provide a solid starting point for the main part and support the recommendations. The literature review will highlight Financial Literacy, Financial Management, and Digitalization.

2.1 Financial Literacy

In academia, there is no general definition for financial literacy, according to Wuttke, E., Seifried, J., & Schumann, S., 2016, Financial Literacy is most frequently defined in terms of "personal money and asset management". And financial behavior is a combination of knowledge and attitudes.

Paraboni, A. L., & da Costa Jr, N., 2021 elaborate on the subject, by stating there are many inconsistencies regarding the concept of financial literacy. However, the OECD outlines financial literacy as a "combination of financial knowledge, financial attitude, and financial behavior". Financial knowledge is supporting in the decision-making process for choosing financial products and enables one to conduct mathematical calculations, leading to financial well-being. Therefore, this dimension is dealing with basic mathematic comprehension of concepts such as compound interest, risk, return, savings, and diversification (Lusardi & Mitchel, 2014 cited by Paraboni, A. L., & da Costa Jr, N.,2021)

The second dimension, the financial attitude relates to the attitude and preferences of an individual towards making financial decisions, such as their willingness to act or not and their inclination to spend more money in the present or prioritize saving money for the future.

The last component in the OECD framework, financial behavior, refers to human actions and therefore is the most significant dimension, as behavioral patterns like deferring due payments, and mismanagement of budgeting future financial expenses can have a fundamental impact on the personal finances' long-term and short-term wise.

2.2 Improving Financial Literacy

In the research, many methods and ways are highlighted on how financial literacy can be effectively improved, and in the following paragraphs, some of the practices are elaborated on, as they are valid to may implement for the main part and recommendations.

One evident finding is from Paraboni, A. L., & da Costa Jr, N.,2021 and follows a more conventional methodology, the study measured the impact of a personal finance course on the level of financial literacy of undergraduate students, independently from their cognitive capabilities. Students completed a personal finance course comprising 72 hours over a duration of 4 months. The course entailed a broad range of knowledge in the domain of personal financial planning, such as financial behavior, financial theory, fixed and variable income investments, social security, changes in family structure, and planning for longevity.

Furthermore, classical concepts such as the portfolio theory from Markowitz (cited by Paraboni, A. L., & da Costa Jr, N.,2021) or the theory of efficient markets from Fama (cited by Paraboni, A. L., & da Costa Jr, N.,2021) have been part of the course as well.

When comparing the level of financial literacy of students before and after the course, there is a significant increase in all three categories, financial attitudes, behavior, and knowledge to observe.

In detail, the average level of financial knowledge increased from (76.8%, or 60% to 79%) to a high level of financial knowledge (85.6%, > 80%). Therefore, it can be stated traditional teaching approaches are still effective in improving financial literacy among individuals, although time-consuming and linked to high opportunity costs when compared to other approaches.

When taking into account more unconventional methods to improve financial literacy Sims, T., Raposo, S., Bailenson, J., Carstensen, L 2020 investigated age-progressed images and their impact to motivate students to plan their economic future. Especially young people often struggle to prepare adequately for their future; however, it has been demonstrated that age-progression technology elevates their willingness to increase savings for retirement. As part of the research, students participated in a course called “Transitioning to College” in which they got randomly assigned either an age-progressed or same-aged digital avatar. Interestingly, by making controls, researchers observed that participants with age-progressed avatars showed significantly more confidence in their decision by having fewer “Don’t know” responses and gave more correct answers in general as part of a financial literacy test. Furthermore, students with age-progressed avatars showed also more interest in attending other financial planning workshops through their college. However, no effect on short-term financial planning (student aid and credit cards) was noticed. To conclude, the study demonstrated age progression technology can be an eligible tool to enhance financial education among young people, as it increases their motivation to financially prepare for their future by having a clear vision of them the future and gives them more confidence in making better financial decisions.

While the latter method was focused on visual cues of individuals, Di Domenico, S. I., Ryan, R. M., Bradshaw, E. L., & Duineveld, J. J. 2022, studied how varied levels of motivation are connected to the way individuals perform their financial planning. Therefore, the researchers applied the framework of Self-Determination Theory (SDT) to individuals to observe their autonomous and controlled motivation as well as their amotivation for understanding and managing their finances. The findings demonstrated that autonomous motivation was favorably connected with a variety of advantageous financial actions such as saving, investing, and general financial well-being, while controlled motivation was negatively connected with economic well-being and habits. Amotivation on the other hand was shown to be positively correlated to spending and negatively linked to economic well-being and habits.. Therefore, the findings suggest pressuring people that show no interest in finances is inefficient, and instead, methods to naturally improve their autonomous motivation and addressing amotivation are a domain worth exploring in further detail.

2.3 Personal Financial Management/Planning

According to Swart 2002, “personal financial planning involves the determination of immediate, short-, medium- and long-term goals through a personal financial planning process based on your own identified lifestyle, phase(s) of the life cycle, risks and needs in all the various personal financial planning areas to retire with financial independence”. Thereby personal financial planning can be extended to various dimensions as we can see in Figure 1, ranging from Career Planning to Health Care Planning depending on the individual’s needs and financial goals.

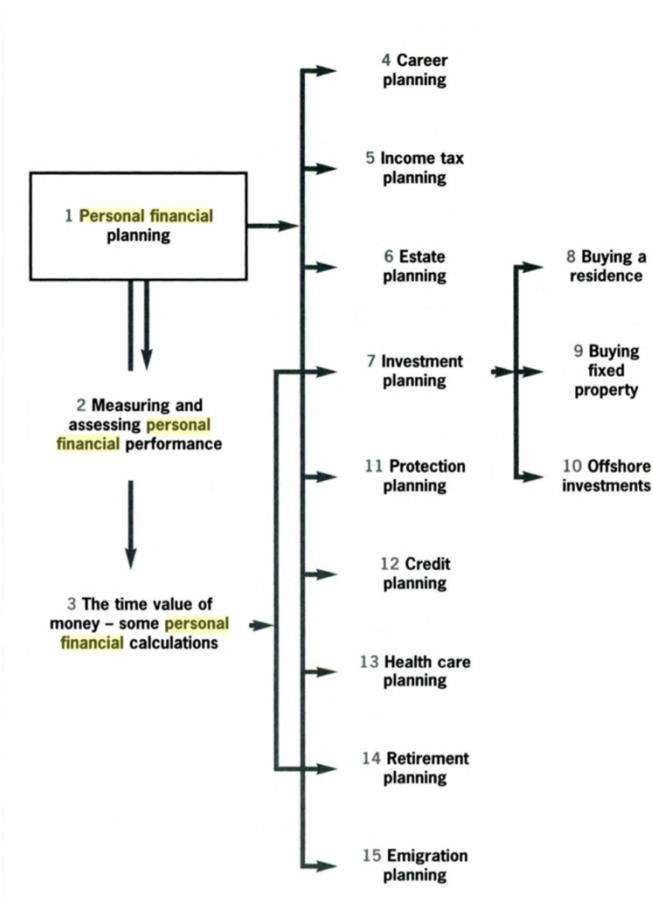


Figure 1: Swart - Scope of Personal Financial Planning (2002)

2.3.1 Modern Solutions for Financial Management

With the rise of digitalization, individuals have access to a multitude of financial management methods, ranging from online blogs to media tools and applications. The subsequent chapter aims to give readers an overview of the two most relevant channels, regarding the research questions and outline the extent such solutions can improve financial literacy and how they are perceived in terms of usefulness by individuals regarding financial planning.

2.3.2 Personal Finance Blog

Hoffmann, A., & Otteby Katarina 2018 describe a personal finance blog as a website published by a group of writers or a single writer containing content about various financial dimensions, varying from banking to family finance, investing, and insurance. Blogs differ in terms of their focus e.g., one blog predominately publishes advice about managing personal finances while another delivers educational articles on a specific topic. Furthermore, there are as well personal blogs written about one person's experience. Especially the latter format gained significant popularity over the last few years. The biggest benefits of blogs are that they are independent and practical sources of information without the issue of conflicting interests such as articles published by a company. Another advantage of blogs is their low maintenance and high on-demand availability of information. Especially this characteristic could be beneficial for low-developed countries looking to improve financial literacy among inhabitants. Furthermore, the use of a personal financial blog comes along with relatively low opportunity costs, which makes it particularly attractive for the younger generation, with high levels of financial fragility and generally high levels of identification with social media. However, when it comes to the usefulness of blogs to financially illiterate individuals' financial blogs are rather an inefficient solution. According to the study's findings, financial literacy, and sensitivity to processing data have a substantial positive relationship with perceived helpfulness. On the other hand, individuals with high degrees of uncertainty in anticipating their future financial demands, have a negative connection with the perceived usefulness of personal finance blogs. And most significantly, perceived helpfulness is a positive indicator of the individual's motivation to use the blog. Therefore, it can be stated personal finance blogs, in their current form, are a helpful medium for individuals with already higher levels of financial literacy, unlike for individuals with lower levels of financial literacy with no interest in the domain. Nevertheless, given the benefits described above, the medium of personal finance blogs is

worthwhile to further investigate on, as it delivers accessible for everyone just-in-time information combined with low opportunity costs.

Luo, X., Gu, B., Zhang, J., & Phang, C. W. 2017 reinforced the legitimacy of social media-based expert blogs as a credible and useful source for individuals by revealing insights leading to the assumption that blogs can lead to a competitive edge and quality signal for consumers. In detail, the study revealed, publishing expert-based articles reinforces the reader's motivation to read subsequent blogs as well from the same publisher and diminishes the relationship to competitors' blogs. Furthermore, expert blog sentiments and volumes have a positive impact on consumers' perception of the publishing brand and a negative relationship with other competitors. Therefore, in addition to the effectiveness in terms of accessibility and low opportunity costs for users, online blogs may also contribute to more loyal customers and reduced competition.

2.3.3 Financial Management Applications

According to Waliszewski, K., & Warchlewska A., 2021, the market for financial management apps is split into applications provided by financial institutions from the banking sector and applications provided by external businesses with no direct connection to the financial industry. The research's aim was to gather information about the user's perception and satisfaction with financial management applications in the Polish market. Most respondents (87.5%) used non-banking applications, with the following as the most frequently used applications, Kontomierz (15.28%), YNAB (15.28%), Spreadsheet (9.38%), 1Money (6.94%) and Family Finance Tracker (6.60%). The findings revealed the biggest target group for applications directed to provide support in managing personal finances is the young generation, especially those on the verge of entering adulthood. Applications with a high number of users are mostly characterized by having a modern interface combined with intuitive functions and availability on a range of different smartphones.

When analyzing the specific features consumers are looking for in such applications, Waliszewski and Warchlewska uncovered those users are highly interested in having solutions typical for open banking which enables to access financial data and freedom to manage it, the ability to manage accounts in different banks, budget their costs based on purchase history from several sources., as well as a high level of customization based on information from their accounts in various organizations. Considering the biggest advantages of current financial

applications, users indicated that they most liked the ability to control expenses, followed by developing the habit of saving, supporting the financial decision, and having an increased perception of the financial security provided by the ongoing control of the bank balance. On the other hand, users reported the inability to perform transfers and link with their bank, set sub-budgets, scan documents, and the absence of currency rates as the most significant shortcomings of the applications.

The study results showed that most users prefer to use applications from providers outside of the banking sector. Furthermore, the individuals using financial management applications the most and evaluating them the best are having higher education, and a positive correlation with increasing income was observable as well. In terms of helpfulness, resulting from the usage of financial management applications, individuals stated that they are helping to monitor their household budget and that the advantages of using financial management applications exceed the disadvantages. Interpreting the results, there is a big demand for mobile phone applications providing financial planning and management support, especially among younger generations.

Angel 2018 confirmed the latter statement by comparing the efficacy of three different media tools including a debt documentary, a web-based practice, and a budgetary mobile application. Likewise, to the findings of Waliszewski and Warchlewska, users of a smartphone budgeting app monitored their balances substantially more than the control group, which is a distinct sign of increased interest. On the other hand, the web exercise, and the documentary about debt failed to have an impact on the financial knowledge and interest of individuals in financial topics.

2.4 Digitalization

With digitalization being the main driver of modern financial management solutions its inevitable to investigate the relationship between digitalization and financial literacy, as well as the components that create a successful digital customer journey.

2.4.1 Relationships between Digitalization and Financial Literacy

Andreou, P., & Anyfantaki, S. 2021, analyzed the interplay of financial literacy and usage of digital financial services among individuals in Cyprus, a country that is below the OECD average in the financial literacy domain. The OECD already highlighted digital financial literacy in 2018 as an important part of their future policy agenda, however, dismissed to define it. Andreou & Anyfantaki define digital financial literacy as “a nexus of competencies spanning elements of financial literacy and digital proficiency, which enable individuals to maintain their financial well-being by confidently making effective and responsible use of digital financial products and services”. The study discovered a high association between participants' levels of financial expertise and their frequency of using online banking, furthermore, financially illiterate individuals reported far more often having a lack of trust in online banking combined with a lack of self-confidence and know-how in their financial and digital abilities. The findings imply that improving the digital skills of individuals could contribute to an increase in individuals' financial literacy and the other way around.

2.4.2 Digital Customer Journey

Dias, J., Ionutiu, O., Lhuer, X., Ouwerkerk, J., 2016 investigated the key characteristics of a strong customer journey and identified the following four elements: focus, simplicity, “digital first”, and perceptions. Relating to the first step of having a solid customer journey, companies should concentrate on from a customer perspective most important characteristics when trying to achieve high levels of customer satisfaction. In the underlying case, McKinsey asked customers to evaluate which features contributed most to their level of satisfaction as part of an entire end-to-end experience with a banking institution. Using the Johnson Relative Weighting method revealed that three factors; Transparency of prices and fees, Ease of communication with the bank, and keeping track of the status of the account-opening process, accounted for a staggering 40% of overall customer satisfaction when considering that total customer satisfaction consisted of 15 factors, the efficiency of concentrating on a limited set of factors but doing them with excellence is getting emphasized here.

Following the second step, simplicity, companies need to make sure that customer convenience is maximized, by shortening and simplification of individual journeys in various aspects such as time to open an account or ease of navigation through the interface.

According to the report, once the time to create an account surpassed 45 minutes, consumer satisfaction plummeted by up to 30% in France.

The third step is putting the digital customer journey in the spotlight. McKinsey compared various forms of customer journeys differing from journeys that are only online, to others that start online but end with a physical interaction in the banking branch, and lastly to journeys that rely on a single focus of physical interaction with the customers. The findings revealed that journeys mixing digital with physical interaction led to high customer satisfaction and resulted in 10-20% more customer satisfaction compared to journeys relying solely on physical interaction. However, most customer journey solely providing online interaction leads to the greatest customer satisfaction as we can see in Exhibit 2 indicated in the upper right corner of the graph. Therefore, interpreting the findings, it can be concluded, concentrating on an entirely digital customer journey makes customers the happiest at present.

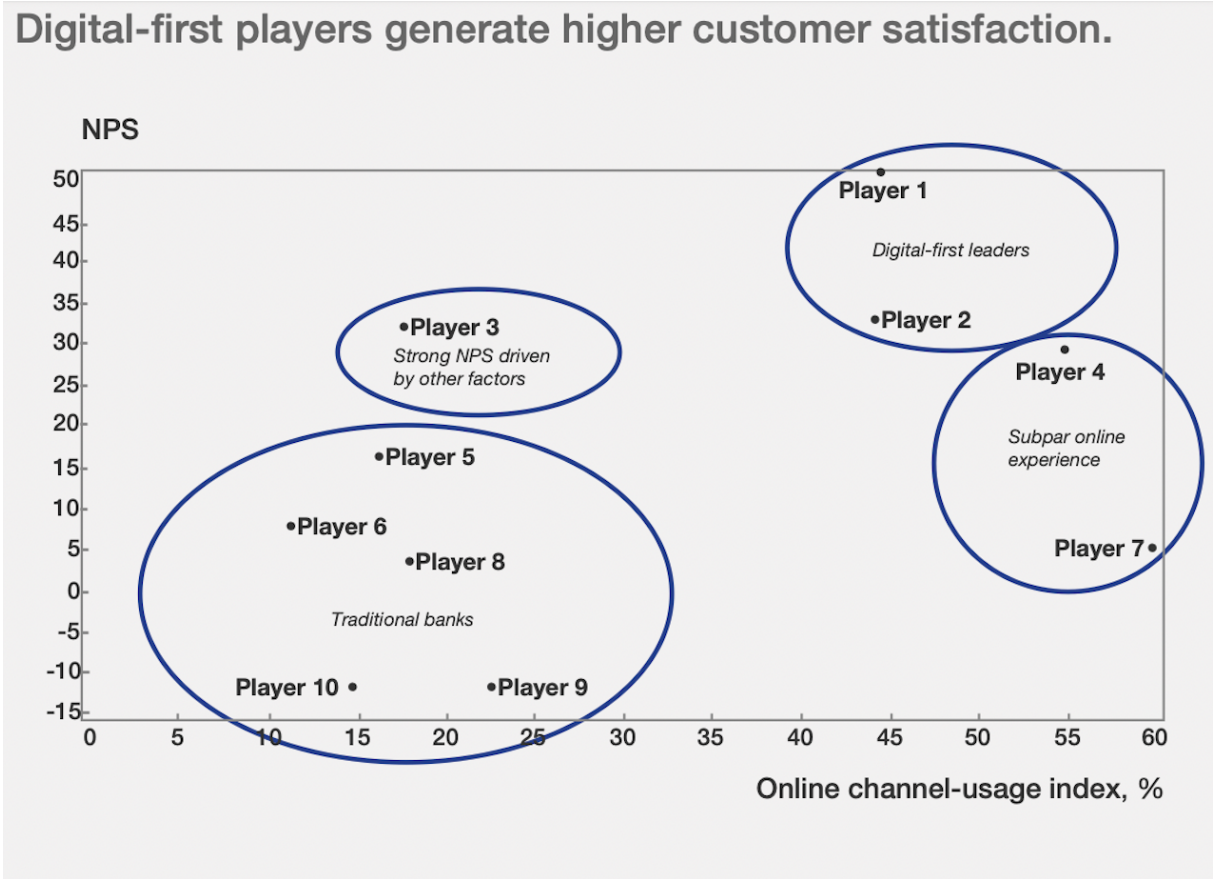


Figure 2: Dias, J., Ionutiu, O., Lhuer, X., Ouwerkerk, J. (2016)
 NPS-Score in relation to online channel-usage index in %

Lastly, the impact of branding plays a crucial role in how a company will be perceived by individuals. The study revealed that companies with inspiring advertisements or effective word of mouth can increase customer satisfaction by between 30 to 40%. The statement was substantiated by the comparison of two banks with practically identical customer journeys, however, customers significantly rated one bank as better in terms of the overall experience, solely based on its advertisement promoting user-friendliness.

The findings above are supported by Timokhina et al. 2021, as part of their research, they identified that even customers of premium banks with complicated issues such as investment strategies, that in the past always involved an in-person consultation are having a higher willingness and interest in digital self-service solutions nowadays.

Combining both insights elaborated on above, we can conclude that customers prefer to interact solely online nowadays and have a significantly higher willingness to reveal and discuss highly confidential information such as investment strategies by online tools without the need for physical interaction.

3. Research Methodology

In November 2022 two research techniques have been applied to collect data in the field of financial management applications and motivational psychology of the Portuguese population. First, a benchmark analysis of the best practices on the market for personal financial planning and management applications was conducted. The insights from the first research technique supported the quantitative analysis in form of a survey in terms of exploring crucial features individuals looking for in the domain of financial literacy. The questionnaire of the survey was directed towards gathering data about consumers' most liked characteristics of financial management applications and explored how the motivation for financial literacy and the usage of financial management tools could be increased by applying techniques such as nudging to trigger the motivation of individuals. For both research techniques, secondary data was collected.

In the following chapter, an in-depth look will be given, at the planning, executions, and limitations of the research methods.

3.1 Qualitative Research

Aspers P., & Corte, U., 2019 defined qualitative research as “an iterative process in which improved understanding to the scientific community is achieved by making new significant distinctions resulting from getting closer to the phenomenon studied”. In this specific case, the research objective was to 1) Identify best practices; 2) Analyze the strengths and weaknesses of best practices solutions.

3.2 Benchmark Analysis Financial Online Management Tools

The Benchmark analysis was conducted to evaluate and compare the best practices on the market for tools and apps addressing various financial dimensions such as insurance, saving, and budget optimization. The main purpose of the analysis was to gain a better understanding of the standards in the market and in which areas is potential for improvement.

The first requirement for the analysis was the choice of competitors. The criteria of an adequate benchmark were made by assessing the best-ranked applications within the finances category of the German Apple App Store. Taking the German Apple App Store as a proxy seems to be a valid choice since Germany is leading the Financial Literacy Ranking from the ECB along with Netherlands and Finland.

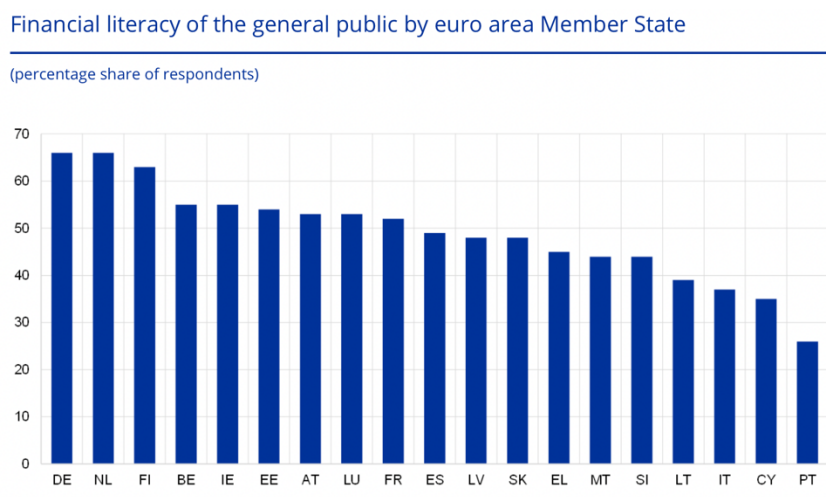


Figure 3: *European Central Bank (2021)*

After deciding to analyze the German market, an in-depth analysis of the best applications for six pre-defined financial dimensions was performed. The applied criteria were thereby; 1) Best rated apps from customers and 2) Highest ranked apps in the German App Store under the category of finances.

As a result of the investigation the following apps were selected; Finanzguru (Personal Finances Overview), Trade Republic (Investing), Taxfix (Tax), Monefy (Budgeting), Haushaltsbuch Money Control (Saving), and Clark (Insurance). All applications have been downloaded and analyzed in the mentioned dimensions.

For the second step, an evaluation grid was created with 5 dimensions including subdimensions; Design and UX, Security, Customer Support, Function of the Tool, and Convenience. The grid was serving as the basis for the benchmark comparison. Subsequently, all apps were evaluated based on the grid and summarized by pointing out their major strengths and weaknesses. (Appendix 1)

3.3 Quantitative Research

According to T. Koh & W. Owen 2000, qualitative research “emphasizes inductive reasoning, whereby the researcher seeks to develop hypotheses from observations”. To assemble such hypotheses a survey in collaboration with Doutor Finanças was conducted.

3.4 Survey about customer needs and motivations to enhance interest in financial literacy

The instrument used to assess individuals’ interest and demand for financial management tools and how their intrinsic motivation to improve their financial levels and use such tools can be increased was based on a survey. Besides the two main objectives of the survey, information about various demographics such as income, age, gender, marital status, level of education, employment status, and the number of people in the same household was collected as well.

The questionnaire was reviewed and approved in collaboration with Doutor Financas. Since the aim of the dissertation is the improvement of financial literacy among Portuguese individuals, the survey was outlined to address Portugal’s perspective, this was emphasized especially in the second block of the survey which was about collecting data on increasing intrinsic motivation of individuals. The survey was translated into Portuguese and distributed among Doutor Financas employees and Portuguese groups on social media.

The survey was published on the 7. December 2022 and was publicly accessible until the 15. December 2022. After data cleaning, the survey was consisting of 162 valid responses.

The responses included individuals with ages ranging from 18 to 64. Regarding the gender distribution of the sample, 12.5% correspond to male respondents, 86.9% to female, and 0.6% to non-Binary.

3.5 Limitations

The purpose of this subchapter is to elaborate on the potential sources of error that occurred as part of the research process and may affect the validity of the stated hypotheses and final recommendations.

Two biases could have been identified leading to a potential random sampling error. Since many responses have been collected from Doutor Finanças employees, a bias in terms of the profession is possible. Furthermore, a gender disparity between males and females is evident with a higher number of female respondents compared to male respondents.

4. Main Findings

The following chapter will display the results of the conducted research techniques that will answer the research questions and serve as a fundament for the subsequent recommendations in the next chapter. Detailed insights into the data can be found in Appendix 1 for the Benchmark Analysis Grid.

4.1 Benchmark analysis, what are the best practices for existing financial check-up tools, and in which dimensions is potential for improvement?

The main source to conclude this research question was the Benchmark Analysis supported by collecting secondary data retrieved from mobile applications and the website of each tool.

4.1.1 Current best practices for different financial management tools

This subchapter will include a general description of each investigated application and provide the biggest strengths and weaknesses under consideration of the predefined dimensions.

Starting with the highest-ranked Financial Management App within the underlying Benchmark Analysis, Finanzguru. With this tool, users can register multiple bank accounts and keep an overview of all bank data. The app is divided into several categories. On the one hand, users can see their income and expenses. On the other hand, the app automatically recognizes their contracts - such as pension insurance, rent, or electricity bills.

Furthermore, it's possible to create analyses in the form of graphical representations. After the analysis, it turns out the tool is not without reason so well rated in Germany. The app is very sophisticated and intuitive, with only few weaknesses. Its biggest advantages are the high compatibility with over 3000 Banks that can be connected to the application, high-security standards according to specifications of the credit card and banking industry (PCI-DSS), the best customer feedback system among other competitors in the analysis, enabling users quickly, effortless feedback for each function they are using and lots of individualization options e.g., getting notifications on how much of your pre-defined budget is available for the remaining week. However, the app has its weakness in customer support. An FAQ section is only included on their internet page, and it takes up to 2 months for Finanzguru to respond to posted user questions. Furthermore, the only way to use the tool is by connecting your banking details, which might deter some users.

Ranked in 12th place among the best finance apps in the German App Store Trade Republic, performed in fact as the best based on the defined dimensions within the analysis. Trade Republic is Europe's largest investment platform. Users can invest in thousands of stocks & ETFs, savings plans, crypto, and premium derivatives. The particular benefit of Trade Republic is, also investors with small monetary resources can start investing, by having the possibility to trade with fractional shares requiring little as 1€ to acquire. Apart from providing an intuitive, pleasing design and UX, Trade Republic offers over 6.500 tradeable stocks and around 500 saving plans. Combined with no deposit fees and costs per trade of 1€, the value proposition is very solid. Furthermore, users can access the tool on several devices such as smartphones, laptops, or tablets. Along with high protection of customer data and investments by being secured by the German Deposit Insurance, which adheres up to 100.000€ of the individual's investment in case of insolvency, the customer service is top notch as well, providing a live chat option that replies within minutes in addition to a telephone hotline. Regarding the disadvantages, more complex trading options such as Forex or CFD are not possible and there is no option to trade with a demo account, not allowing less trading-savvy individuals to experiment without the possibility of losing real money.

The next financial management tool Taxfix, ranked in 22th place in the German App Store is a solid tool, however, lacks sophistication in a couple of dimensions. The promise of Taxfix is to enable the fastest and easiest way for individuals to complete their tax returns online.

Users can decide between filling out their tax return themselves in simple interview mode or handing it over to an experienced tax advisor. In terms of strengths, Taxfix has an impeccable design and user interface, on computers and as well on smartphones. The app is getting updated every week and customer data is always transmitted in encrypted form to the tax offices from the Taxfix servers. Furthermore, the app includes functional features such as a paperless document upload via smartphone cameras for required tax information. In addition, Taxfix promises its users a 50% instant payout for their tax return on the same day they submitted their calculated refund with Taxfix. Regarding its weaknesses, in comparison to the other tools, Taxfix is not free to use and charges 39.99€ per submission. Moreover, Taxfix is designed only for simple tax constellations, for more complex cases such as individuals with rental income, or income from being self-employed, the app is not suitable. Thus, the question arises, if for simple tax constellations cases, professional tax advice is even in demand and if Taxfix solves a plausible problem that needs to be solved in the first place. However, Taxfix is aware of this fact and thus defined its target group as employees, students, and pensioners. Finally, Taxfix has the potential for improvement in terms of customer support. According to customer reviews, Taxfix has issues with its response time during peak seasons in July. Furthermore, giving feedback is rather complicated as the app does not include a direct feedback function.

Monefy is a budgeting tool that requires its users to manually enter the amount they have spent for a transaction, including the chosen payment method (Cash or Card). The category into which the money went is also specified. The tool helps streamline expense tracking and offers helpful customization settings such as different currencies or custom categories for expenses. The performance of the app across the investigated dimensions was only sufficient and offers lots of potential for improvement. One of the biggest downsides of the tool is its high price of 43.99€ per year for its comparably simple value proposition. The app is built around a minimalistic and spartan user interface and UX. The whole app is reduced to one single page, displaying all the individual's expenses in a cake diagram. Furthermore, the customer support of Monefy is below the minimum expected level one can assume.

Monefy doesn't have a direct feedback option for its users and customer support cannot be reached either by a chat function or phone. In addition to a very bad software updating frequency with no single update for 2022, the verdict for the tool is unsatisfactory. Especially when also taking into consideration that competitors such as Finanzguru automatically process and visualize users' expenses made by card payments without charging extra money.

With Haushaltsbuch Money Control users can manage personal income and expenses and create a budget for private finances. The application is ranked on place 57th place in the App Store of the finance category and is considered to be the most popular household book in Germany. Money Control's strengths are its compatibility to operate on computers and smartphones and its provided security standards with customer data being transmitted exclusively via encrypted connections. However, the disadvantages outweigh the advantages within the benchmark analysis. Starting from the dull, sober design layout and UX in comparison to its competitors. In addition to that, the layout lacks in providing an intuitive path and sophistication for users e.g., several icons with unclear images are without a caption and thus are not making it clear what their actual function is. Furthermore, Money Control is not free, users are required to pay a fee amounting to 28 Euro per year. Together with a relatively low frequency of software updates and an average performance in terms of customer service the overall value proposition is less convincing compared to Taxfix, Finanzguru, and Trade Republic.

Clarks offers users the possibility to view, manage and change insurance policies at a glance via smartphone. While the application itself is almost flawless the basic idea of what Clark is trying to solve, is questionable in terms of its validity. However, on the one hand, Clark has a well-refined design layout and its UX is persuasive as well. Functions are well explained by the harmonious incorporation of images and text. Clark lists all the insurances (including priority) that make sense to users. Users can take out a policy with just a few clicks without the hassle of paperwork. Clark also takes care of cancellations without users having to worry about it. The fact that Clark collects quotes from over 160 insurers to find the best value, is also impressive. Moreover, Clark is providing expert advice via chat or phone at no charge from Clark's insurance experts. On the other hand, although the application is free of use, the results of the analysis couldn't unveil added value by using the app compared to a traditional insurance broker who takes care of everything and can give a more personalized consultation.

The dependence on commission payments justifiably raises the question of the extent to which users are offered insurance policies that do not suit them. This is a clear weakness. After investigating customer reviews in the App Store, several remarks have been made that Clark suggests policies that don't add any value for customers. Lastly, while customer data is generally perceived to be safe, with Clark's servers being situated in Germany and thus required to comply with national safety standards, there have been individual cases in which users were

shown third-party contracts, according to Clark, however, these are rare individual cases that are based on human error.

4.1.2 Verdict Benchmark Analysis

The final verdict of the benchmark analysis exposes significant differences in overall quality between the observed apps in this analysis. The analysis revealed competitors' similarities and highlighted what gives certain apps the edge. With a big advance, the apps Trade Republic with an overall Score of 4.86, and Finanzguru with an overall score of 4.58 are the winners of the benchmark analysis. Trade Republic managed to deliver on all 5 categories without having a major weakness. Finanzgurus app was equally impressive, however, improving their customer service could close the gap even more. The third place is given to Taxfix. With an overall score of 4.24, their performance was good, but equally, as Finanzguru, their customer service provides the potential for improvement together with the overall value proposition of the app, since its target group is only individuals with tax declarations of low complexity, which brings up the question if they are solving a legitimate problem since the internet is full of free advice for helping individuals to conduct their taxes. Clark is in fourth place with an overall score of 3.82. Its major weaknesses could have been found as well in the customer support and function itself. Within the means of the analysis, no added value to the alternative of engaging a traditional insurance broker, which can offer a more personalized service in direct comparison could have been identified. With overall ratings below 3, Monefy (2.7) and MoneyControl (2.68) underperformed in the analysis. Both apps show major weaknesses throughout all categories while charging their users, which makes them not comparable to the other apps of this benchmark. In conclusion, having the goal of satisfied customers requires a good performance level in all categories mentioned above. What is significant, all apps, except TradeRepublic, displayed big weaknesses in their customer support, which is an indication for companies to improve, especially considering the complexity of the financial domain among many individuals. For a detailed overview of how each app performed in the 5 categories, Appendix 1 can be consulted.

4.2 Which features in financial management tools are most important for individuals?

For the following two research questions, the survey was serving as the source to draw an answer. As a data collection tool, Qualtrics was used for the subsequent analysis of SPSS.

The statistical analysis was mainly conducted with descriptive statistics. Furthermore, the Chi-square test of independence was applied as well.

The aim of the questions in the first section of the survey was to get a better understanding of the individual needs and wants, and thus be able to give appropriate advice on how to build the most effective financial management tool for Doutor Financas target group. The subsequent two questions reveal interesting insights on the participant’s current exposure to financial instruments such as stocks and bonds, but also spending habits that can indicate what kind of financial management tool could be relevant for them. When respondents got asked what kind of financial products/concepts they are familiar with, frequencies reveal that most of them are familiar with the concept of retirement planning (69.1%), followed by stocks (54.3%). The least familiar to them is the concept of asset allocation and diversification (17.3%) and the compound interest effect (21%).

Indicate with what kind of products/concepts you're familiar.	Percentage
Retiring Plans	69.1%
Stocks	54.3%
Bonds	36.4%
Return on Investment	25.9%
Compound Interest Effect	21%
Asset Allocation and Diversification	17.3%

Figure 4: *Indicate with what kind of products/concepts you're familiar.*
(Source: Survey Data)

A positive sign is the high awareness of the importance of retirement planning to the respondents, however, as respondents indicated stocks as the second highest concept, they are familiar with, its contradictory that only 21% are familiar with the compound interest effect and even less with the diversification concept, as both are two main principles of stock investing. Therefore, since respondents seem to be interested in stocks, but lack knowledge of essential fundamentals, this domain could be worthwhile to explore in the recommendations.

Another insight provides the analysis of the question “What are your most relevant expenses” in which respondents needed to indicate the importance in terms of their expenses of six categories (Housing, Food, Insurance, Shopping, Transportation, and Saving&Investing). As it turns out saving and investing are the least important to the participants followed by insurance. Most important are basic needs such as food and housing. What’s significant is the relatively high importance of shopping, which might be an indication of the need for a budgeting tool to make people more aware of how much they are spending on activities related to shopping.

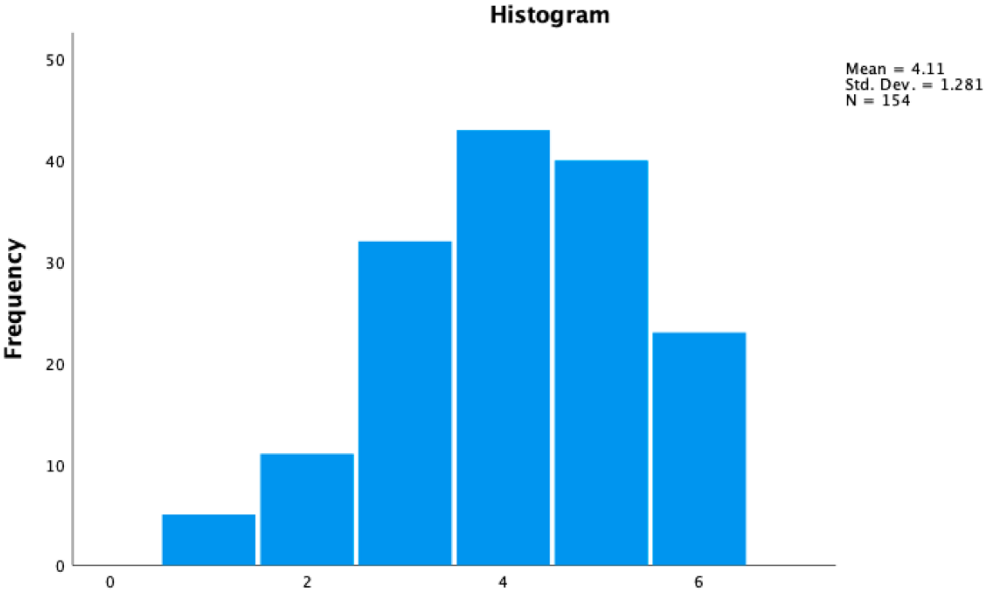


Figure 5: *What are your most relevant expenses? (Rank expenses from 1 very important to 6 least important) - Shopping (Source: Survey Data)*

The following two questions are of major importance for the recommendations and thus an in-depth analysis using descriptives is appropriate. When respondents are asked to indicate which of seven financial dimensions (Investing, Personal Finances Overview, Tax, Budget Optimization, Saving, Insurance, and Net Worth Calculator) are most important to them,

	Mean	Standard Deviation
1. Personal Finance Overview	2.44	1.573
2. Saving	2.92	1.768
3. Budget Optimization	3.45	1.701
4. Investing	3.92	1.802
5. Tax	4.41	1.651
6. Insurance	5.25	1.591
7. Net Worth Calculator	5.60	1.706

Figure 6: *Indicate which of the seven financial dimensions is most important*
 (Source: Survey Data)

figure 6 reveals that the most important category with a clear edge is getting an overview of personal finances. Also, the standard deviation is the lowest among all categories, indicating that most respondents have a similar opinion about perceived relevance. However, also Saving and Budget Optimization is important for the respondents when interpreting the means. Also relevant to mention is the higher standard deviation of them, showing a higher inconsistency regarding the opinions about the perceived relevance of the sample. In the second question, respondents have been asked to specify the most important feature of a website, or application with the following results.

	Mean	Standard Deviation
1. Security - Data Protection	2.09	1.461
2. Convenience - Ease of Navigation	2.78	1.166
3. Design - Appealing UI	3.48	1.612
4. Communication - Responsivness Customer Service	3.96	1.307
5. Free Access	4.29	1.711
6. Idea/Function of the App	4.40	1.645

Figure 7: *What are the most important features of a website?*
(Source: Survey Data)

Again, the respondent's most important perceived aspect has a significant edge over the others. Since financial data is highly confidential, customers expecting high-security standards are reasonable, although not all respondents share this opinion when looking at the standard deviation of 1.461 of the Security dimensions. On the second rank is convenience, and almost all respondents share this result when investigating the lowest standard deviation among all other categories (1.166). As the third most important aspect, respondents consider the design with a mean of 3.48 and a standard deviation of 1.612. What's remarkable to mention, the actual function of an app/website is ranked as least important, thus indicating that even the best idea has no value to users if it comes short in the listed disciplines above.

In the following paragraph, two hypotheses have been established to examine potential associations among variables, that are of use for the proposal of recommendations in the next chapter. To investigate the validity of a hypothesis, the Chi-square test of independence was the preferred method throughout the dissertation. The level of significance ($\alpha \leq .05$) was used as a proxy for rejecting the null hypothesis for each statistical analysis.

H0: Being familiar with financial concepts such as saving and attaining financial freedom is independent of the age of respondents.

H1: Being familiar with financial concepts such as saving and attaining financial freedom varies with the age of the respondents.

The result of the Chi-square test revealed the difference in the respondents being familiar with financial concepts such as saving and financial freedom between different age groups is statistically significant, $\chi^2(4) = 10.611, p = .031$

Therefore, the H1 hypothesis is confirmed.

			How old are you?					
			18-24	25-34	35-44	45-54	55-64	Total
"In order to achieve financial freedom we have to be able to save money first", which concept is more relevant to you: financial freedom or saving?	Financial Freedom	Count	3	10	25	22	4	64
		% within How old are you?	17.6%	34.5%	56.8%	40.0%	25.0%	39.8%
	Saving	Count	14	19	19	33	12	97
		% within How old are you?	82.4%	65.5%	43.2%	60.0%	75.0%	60.2%
Total	Count	17	29	44	55	16	161	
	% within How old are you?	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

Figure 8: Which concept is more relevant to you? Financial Freedom or Saving? vs. How old are you?

(Source: Survey Data)

Analyzing the figure confirms the result of the hypothesis, as we can see especially young people between 18 and 34 years tend to be more familiar with saving and less informed about attaining financial freedom. However, individuals from the prior generation show a significantly higher exposure to the concept of financial freedom. People between the age of 35-44 are even more concerned about financial freedom than saving. Older respondents on the other side tend to care more about saving again.

Interpreting the results, respondents have different financial priorities according to their ages, younger and older people are more concerned about saving strategies, and people in the middle are more open to advanced financial concepts enabling the attainment of financial freedom. The hypothesis can be further supported by Figure 9, displaying the saving rate of working adults in Singapore in 2022 by age group. The peak for the share of monthly income set aside as savings were attained by people between 20-29. Then it gradually decreased with the increase of age and began to increase again for people between 55-65 years.

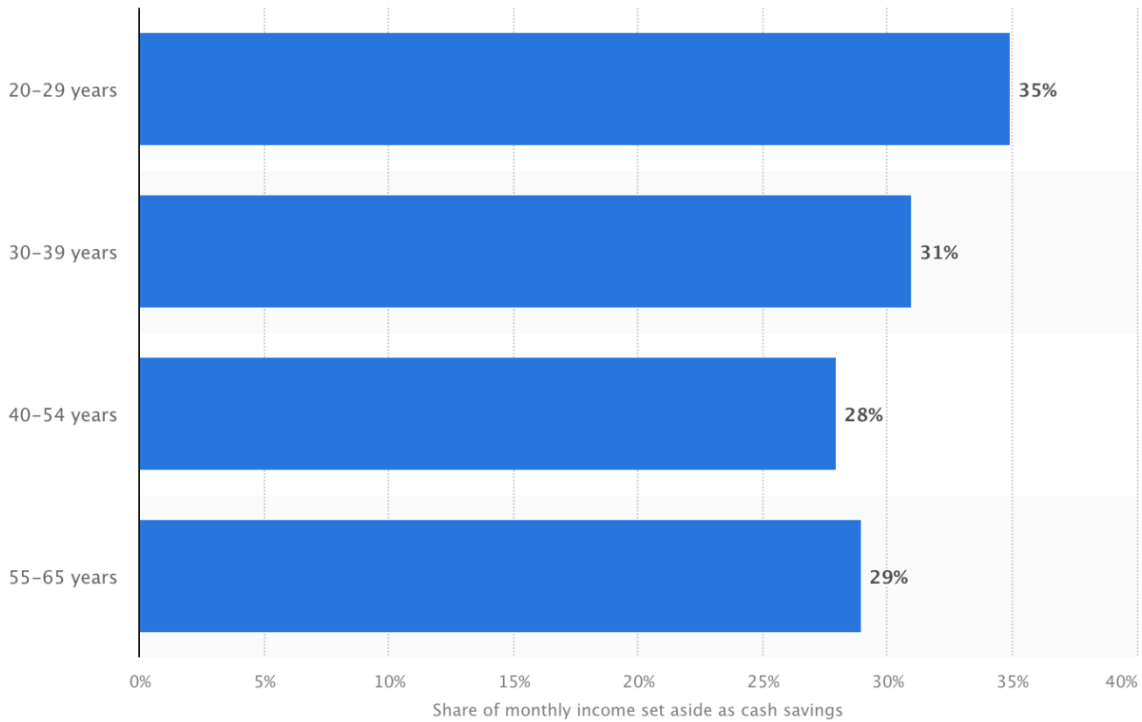


Figure 9: Statista 2022 - Saving rate of working adults in Singapore in 2022, by age group.

H0: The demand for a financial tool enabling the assessment of net worth is independent of the salary of respondents.

H1: The demand for a financial tool enabling the assessment of net worth varies with the salary of the respondents.

Examining the results from the Chi-square test revealed there is no statistically significant interplay between demand for a financial tool and the salary of the respondents. $\chi^2(28) = 31.842, p = .281$.

The H1 hypothesis stated cannot be confirmed.

The intention of testing this hypothesis was to identify if individuals with higher income are more concerned with a tool helping them to give them a comprehensive overview of their net worth, however, this assumption proved to be invalid since there wasn't a pattern to observe confirming this statement, individuals within lower income brackets and higher income brackets share an equally distributed opinion about the usefulness of the instrument.

4.3 How can individuals be motivated to increase their willingness of being financially literate and use financial management tools?

To have a proxy on how the sample’s initial level of interest and exposure to financial management tools is, frequencies help to gain a better understanding. When asking respondents if they ever used a financial management tool, the survey revealed that 61.1% haven’t. Furthermore, 64.6% indicated that they never use them when asked how frequently they use such tools. Therefore 3.5% of the respondents used such tools before but couldn’t be convinced to continue using them regularly. However, interestingly when respondents have been asked how much time they would be willing to spend using such a tool per week, only 13.6 % indicated none, while most respondents 59.3% indicated between 0-30min.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None at all	22	13.6	13.6	13.6
	0-30min	96	59.3	59.3	72.8
	30min - 1H	30	18.5	18.5	91.4
	1H - 2H	13	8.0	8.0	99.4
	More than 2H	1	.6	.6	100.0
	Total	162	100.0	100.0	

Figure 10: *How much time would you be willing to devote to the use of a financial management tool (Source: Survey Data)*

Moreover, when respondents are asked to assess their levels of financial literacy, most with 50.3% specified that they are having an average level, followed by 24.2% with a somewhat good level and 16.8% with a somewhat bad level. Therefore, to conclude based on the four frequencies the sample’s initial exposure to financial management tools is relatively low while showing a substantial amount of interest when looking at the responses regarding their willingness to use such tools per week. In terms of financial literacy, most respondents have an average level with two smaller portions having above and below-average financial literacy levels.

Investigating the results from section two of the survey, which was about discovering how two different motivational techniques would affect the respondent’s willingness to become more financially literate, revealed that questions based on emphasizing the magnitude of poverty and lack of financial literacy Portugal is currently facing had a worse effect on the

motivation, compared to questions based on a nudging technique approach which is defined by the Cambridge Dictionary as “idea of using encouragement or suggestions to change people’s behavior while still giving them the freedom to make their own decisions”.

For example, when respondents have been asked to evaluate the impact on their motivation levels to improve their financial literacy after being exposed to Portugal’s president Marcelo Rebelo de Sousa’s statement that almost 2.6 million inhabitants are at risk of poverty in Portugal, only 47.5% feel somewhat or more motivated while a 34% feel somewhat less or less motivated. Even worse is the impact of the statement that the projected retirement pension amount will be less than 50% after 2045. After being exposed to this statement, most respondents 50.6% feel somewhat or less motivated to be more financially literate.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	More motivated	30	18.5	18.5	18.5
	Somewhat more motivated	31	19.1	19.1	37.7
	Neutral	19	11.7	11.7	49.4
	Somewhat less motivated	29	17.9	17.9	67.3
	Less motivated	53	32.7	32.7	100.0
	Total	162	100.0	100.0	

Figure 11: *The forecast for your projected retirement pension amount will be less than 50% in 2045*
(Source: Survey Data)

In comparison, the two questions based revolving around the nudging method performed significantly better. When respondents evaluated the impact on their motivation levels when receiving an age-progressed visualization image of their future self, changing (Improving or worsening) dynamically based on their current financial habits, 52.4% feel somewhat or more motivated, while only 17.2% of the respondents feel somewhat less or less motivated. Even better is the result of the idea of getting a notification about specific actions to keep track of the respondent’s financial goals e.g., a reminder that skipping one restaurant visit this week will help to achieve the respondent’s monthly financial goal. 68.5% feel somewhat or more motivated by this idea and only 14.2% feel somewhat less or less motivated.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	More motivated	39	24.1	24.1	24.1
	Somewhat more motivated	72	44.4	44.4	68.5
	Neutral	28	17.3	17.3	85.8
	Somewhat less motivated	10	6.2	6.2	92.0
	Less Motivated	13	8.0	8.0	100.0
	Total	162	100.0	100.0	

Figure 13: *Getting a reminder/notification about specific actions to keep track of your financial goals (e.g. Reduce your restaurant expenses by skipping one restaurant visit this week, to achieve your financial goal this month)*
(Source: Survey Data)

To conclude based on the survey result implementing nudging methods can help to increase the individual's willingness to become more motivated and should be further investigated in the future. Relying on facts and negative media, however, has a rather negative effect on the individual's willingness and should be avoided in this context.

Furthermore, two hypotheses were also formulated for this research question to identify and interpret relationships between variables.

H0: The level of financial literacy is independent of the age of the respondents.

H1: The level of financial literacy varies by the age of the respondents.

The result of the Chi-square test revealed the difference in the financial literacy levels between different age groups is statistically significant, $\chi^2(16) = 37.187, p = .002$

Therefore, the H1 hypothesis can be confirmed.

			How old are you?					Total
			18-24	25-34	35-44	45-54	55-64	
How would you rate your level of financial literacy?	Very good	Count	1	1	2	2	0	6
		% within How old are you?	5.9%	3.4%	4.5%	3.6%	0.0%	3.7%
	Somewhat good	Count	7	11	3	16	2	39
		% within How old are you?	41.2%	37.9%	6.8%	29.1%	12.5%	24.2%
	Average	Count	5	12	32	23	9	81
		% within How old are you?	29.4%	41.4%	72.7%	41.8%	56.3%	50.3%
	Somewhat bad	Count	3	4	6	13	1	27
		% within How old are you?	17.6%	13.8%	13.6%	23.6%	6.3%	16.8%
	Very bad	Count	1	1	1	1	4	8
		% within How old are you?	5.9%	3.4%	2.3%	1.8%	25.0%	5.0%
	Total	Count	17	29	44	55	16	161
		% within How old are you?	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 14: How would you rate your level of financial literacy? vs. How old are you?

(Source: Survey Data)

While one could assume the financial literacy level increases with experience, the survey revealed that older participants between 35 and 64 assess their levels significantly lower than their younger peers between 18 and 34 years. This is also in line with the S&P Global FinLit Survey from 2014 which revealed that financial literacy is lowest among adults between 51 and 65+ years and tendentially highest among younger people between 15-35 years.

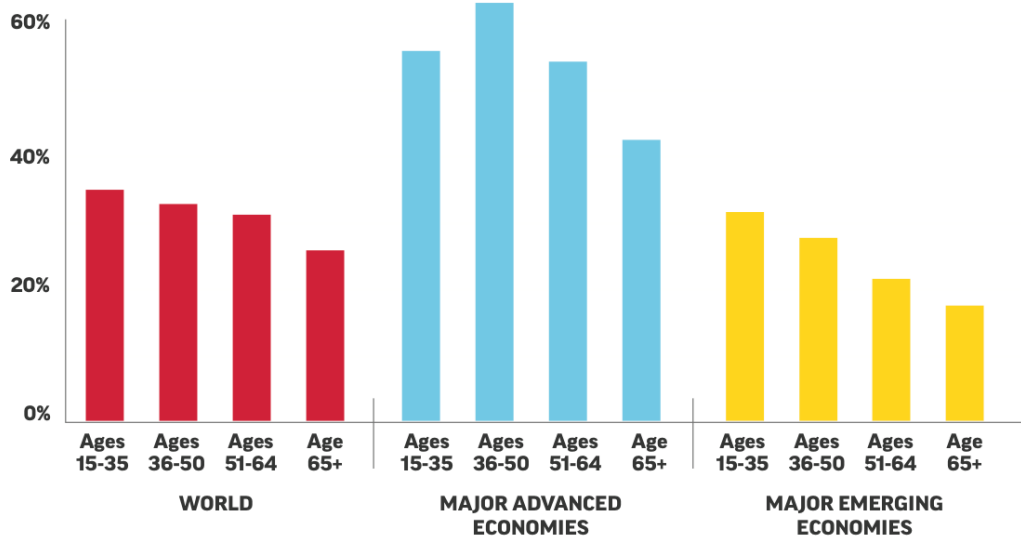


Figure 15: Klapper 2014 - Financial literacy lowest among adults age 65+ (% of adults who are financially literate)

H0: The respondent's preference to use a smartphone or computer is independent of age.

H1: The respondent's preference to use a smartphone or computer varies by age.

The survey reveals almost all age groups, except 55-64 years old people prefer to use a smartphone over a computer, the association between age and preferred is not statistically significant according to the Chi-square test. $\chi^2(8) = 10.830, p = .212$

The H1 hypothesis stated cannot be confirmed.

			How old are you?					
			18-24	25-34	35-44	45-54	55-64	Total
Indicate your preferred device to use financial tools.	Computer/Laptop	Count	7	6	11	21	8	53
		% within How old are you?	41.2%	20.7%	25.0%	38.2%	50.0%	32.9%
	Phone	Count	10	23	33	32	8	106
		% within How old are you?	58.8%	79.3%	75.0%	58.2%	50.0%	65.8%
	Tablet	Count	0	0	0	2	0	2
		% within How old are you?	0.0%	0.0%	0.0%	3.6%	0.0%	1.2%
Total	Count	17	29	44	55	16	161	
	% within How old are you?	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

Figure 16: Indicate your preferred device to use a financial tool vs. How old are you (Source: Survey Data)

The results confirm the trend that also older people are more accustomed to the use of smartphones, Figure illustrates this trend, by displaying the number of users in the United Kingdom accessing the internet via desktop, tablet, and smartphones in March 2021 by different age groups in millions. The statistic revealed that throughout all age groups, users preferred the smartphone over the computer.

Characteristic	Desktop	Tablet	Smartphones
18-24	3.8	1.8	5.3
25-34	5.7	3.4	8.5
35-44	5.5	3.8	7.8
45-54	5.6	4.3	7.8
55+	9.8	8.3	10.6

Figure 17: Statista 2021 - Number of users in the United Kingdom (UK) accessing the internet via selected devices as of March 2021, by age group (in millions)

5. Recommendation

In the following chapter strategies for sustaining and increasing the amount of Doutor Financas customers and therefore also the improvement of overall financial literacy in Portugal are going to be outlined and discussed.

5.1 Maximizing Value by the focus on key dimensions

The first recommendation is to focus on the development of three financial management tools rather than trying to develop a solution for various financial dimensions. Thereby Doutor Financas will build a reputation for a specific niche and focus on what's most important to the customers. When it comes to the most lucrative dimensions, the survey revealed that customers foremost are looking for a tool to provide them with a general overview of their finances. Furthermore, Doutor Financas also should include a tool to help individuals optimize their savings/budget. Lastly, individuals want a tool that enables them to invest in single stocks or ETFs. Building web-based tools in these three categories will increase customer satisfaction and potentially attract new customers as well. Doutor Financas doesn't need to reinvent the wheel here, Finanzguru and Trade Republic can be taken as best practice examples in terms of capabilities offered to end users. Therefore, combining elements from both platforms, adding unique features by themselves, and adapting them to a web-based solution could be a potential approach. Since providing satisfying customer service was a big weakness among the analyzed providers, concentrating on this should be a priority of Doutor Financas, which will help them to stand out, e.g. by providing a hotline that guides customers through the financial tools on the website. Lastly, further value can be provided by implementing simple nudging techniques which had a positive impact on the customer's evaluated perceived motivation in becoming more financially literate as part of the survey. For example, adding notifications that remind customers to complete a specific task, such as reading the latest published blog article about investment strategies or displaying an age-progressed image of the individual future self after logging in, which improves or worsens according to the individual's current spending and investing habits documented in the tools.

5.2 Adapting Tools and Blogs to enable a more customer-centric user-experience

Adapting the tools and blogs to individual customer preferences is going to be one of the most important success trajectory levers for Doutor Financas. In terms of suggested content for their future blog content, trying to create synergies between the 3 tools that are recommended to focus on, and the articles published in the blog section is going to be crucial. Therefore, ensuring regular articles about topics such as general budgeting or saving advice is going to be a must. Moreover, as the survey revealed, most individuals are familiar with stocks and bonds but not complementary concepts such as diversification and the compound interest effect. Consequently, providing articles about basic investing concepts is a recommended strategy for the start as well. The advocated principle is in the beginning “Simplify and don’t overcomplicate” Once customers are exposed to basic concepts, the complexity can gradually increase over time. Furthermore, since the survey brought interesting insights to the table regarding financial interests and literacy levels in general among different age groups, discriminating content according to specific personas could be also an eligible strategy to investigate for Doutor Financas in the long run. For example, integrating a filtering option into the blog section enables one to define a specific topic such as investing, retirement plans, or attaining financial freedom in combination with the difficulty in terms of financial concepts and terminology. Thereby, each customer can be picked up and no one feels excluded. Doutor Financas overall mission should be to focus on delivering customer-centric tools and information to reduce the time for users to find the right content and help them simplify their lives in terms of financial matters.

5.3 Refreshing Landing page

With the trend that not only young but also elderly people prefer to use the smartphone over the computer, which was confirmed as well in the thesis survey, the logical long-term advice for Doutor Financas is to develop a smartphone application. However, since the development is a cost-intensive and long-winding process, providing its users with an updated landing page seems like a valid compromise as a short-term solution.

Considering the survey data revealed that the function itself of an app or website is least important to its users and instead users looking for high data protection, ease of navigation, and an intuitive user experience, even emphasize the importance to make a transition. Especially in the last two points, Doutor Financas has the potential to improve.

In direct comparison to other companies, Doutor Financas website appears overloaded with information and less intuitive to operate. Considering that the survey revealed that users are maximally willing to spend half an hour each week for the use of financial management tools, Doutor Financas main concern should be all about providing efficiency and reducing their content to the absolute essentials.

5.4 Verdict on Net Worth Calculator

One of the ideas contemplated together with Doutor Financas was to explore how the respondents react to the idea of having a net worth calculating tool at their disposal assisting them in providing an overall overview of their current net worth, taking into account, all assets, subtracted by liabilities. However, as it turned out individuals, perceived the tool as least relevant compared to other tools such as getting tax, insurance, or investment. This opinion is also independent of the respondent's monthly income as uncovered by the hypothesis testing. Based on the survey, respondents have different priorities and can't identify a significant value creation with such a tool. Thus, since the evidence is unambiguous, developing such as tool can't be recommended and instead, Doutor Financas should stick to the power of three and focus on the mentioned dimensions above instead of diluting their product portfolio.

6. Conclusion

In conclusion, the dissertation's purpose was to provide sound recommendations for how Doutor Financas can optimize its services through the implementation of financial check-up tools. Through a benchmark analysis of existing best practice financial check-up tools, surveys of individuals to determine the most important features in financial management tools, and investigations of ways to motivate individuals to increase their willingness to be financially free and use such tools, the research aimed to display a solid guideline for the company's mission of further improving financial literacy in Portugal while having the SDG number one and number four in mind.

The main recommendations of the research include the maximization of customer value by focusing on building a tool providing advice in three financial key areas consisting of a general finance overview, budget/saving optimization, and a trading/investing tool. Furthermore, based on the survey data, adapting tools and blogs towards a more customer-centric approach tailored to individual needs and refreshing the landing page to provide a more simplistic, intuitive yet effective user experience for the customers is crucial as well.

Summing up all results from the meticulous analysis and secondary research leads to the reasonable conclusion that the outlined recommendations for Doutor Financas of the dissertation would most likely have a high impact on Doutor Financas customer satisfaction rates, but also on the big picture which is financial literacy in Portugal in general. The research emphasized the potential of taking advantage of modern digital financial tools to improve users' interest and willingness to engage in financial topics and tasks, which makes further research related to the investigated topic a worthwhile endeavor.

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Appendices

Appendix 1: Benchmark Comparison Grids

App: "Finanzguru" - Overview of Personal Finances (9th Place in the Ranking for Finance of the German App Store)		Very Bad	Bad	Acceptable	Good	Very Good
Points to consider		1	2	3	4	5
1. Design and UX						
1.1 Logical path to follow for easy navigation						X
1.2 Attractiveness of the overall Design (Choice of Colours, Resolution of Images etc...)						X
1.3 All Elements add a use or Function to the App						X
1.4 App design focuses on the task that solves the users' problem						X
1.5 UI is intuitive and does not require you to think too much about how to achieve what you want.						X
1.6 Multi-Device Synchronization: Including the capability of use across different platforms and devices		X				
1.7 Design consistency: Elements like font size, font family and color scheme are uniform across the app.						X
1.8 Most important content is visually highlighted: Helping with information hierarchy, facilitating user flow, and improving the user experience.						X
Aggregate Score						4,5
2. Security						
2.1 Level of Protection for Users Data						X
2.2 Multifactor authentication as a standard for validation and user access						X
Aggregate Score						5
3. Customer Support						
3.1 Frequency of Updates						X
3.2 User questions are answered within hours		X				
3.3 FAQ section included						X
3.4 Machine Learning Features (Having an automated Chatboot)						X
3.5 Feedback System (quick and easy process to report bugs, suggest new features or provide criticism)		X				
Aggregate Score						3,4
4. Function of the Tool						
4.1 Variety of Personalization Options						X
4.2 App successfully solves identified problem						X
4.3 Successfully identifies specific target group with features tailored to there needs						X
Aggregate Score						5
5. Convenience						
5.1 Fast Loading Times						X
5.2 High stability (Rare or No crashes)						X
5.3 Customer Friendly Revenue Model						X
Aggregate Score						5
Overall Total Score						4,58

App: "Taxfix" - Tax (22th Place in the Ranking for Finance of the German App Store)		Very Bad	Bad	Acceptable	Good	Very Good
Points to consider		1	2	3	4	5
1. Design and UX						
1.1 Logical path to follow for easy navigation						X
1.2 Attractiveness of the overall Design (Choice of Colours, Resolution of Images etc...)						X
1.3 All Elements add a use or Function to the App						X
1.4 App design focuses on the task that solves the users' problem						X
1.5 UI is intuitive and does not require you to think too much about how to achieve what you want.						X
1.6 Multi-Device Synchronization: Including the capability of use across different platforms and devices						X
1.7 Design consistency: Elements like font size, font family and color scheme are uniform across the app.						X
1.8 Most important content is visually highlighted: Helping with information hierarchy, facilitating user flow, and improving the user experience.						X
Aggregate Score						5
2. Security						
2.1 Level of Protection for Users Data						X
2.3 Multifactor authentication as a standard for validation and user access						X
Aggregate Score						5
3. Customer Support						
3.1 Frequency of Updates						X
3.2 User questions are answered within hours				X		
3.3 FAQ section included						X
3.4 Machine Learning Features (Having an automated Chatboot)		X				
3.5 Feedback System (quick and easy process to report bugs, suggest new features or provide criticism)			X			
Aggregate Score						3,2
4. Function of the Tool						
4.1 Variety of Personalization Options					X	
4.2 App successfully solves identified problem				X		
4.3 Successfully identifies specific target group with features tailored to there needs						X
Aggregate Score						4
5. Convenience						
5.1 Fast Loading Times						X
5.3 High stability (Rare or No crashes)						X
5.4 Customer Friendly Revenue Model			X			
Aggregate Score						4
Overall Total Score						4,24

App: "Moneyfy" - Budgeting (41th Place in the Ranking for Finance of the German App Store)		Very Bad	Bad	Acceptable	Good	Very Good
Points to consider		1	2	3	4	5
1. Design and UX						
1.1 Logical path to follow for easy navigation				X		
1.2 Attractiveness of the overall Design (Choice of Colours, Resolution of Images etc...)			X			
1.3 All Elements add a use or Function to the App					X	
1.4 App design focuses on the task that solves the users' problem					X	
1.5 UI is intuitive and does not require you to think too much about how to achieve what you want.				X		
1.6 Multi-Device Synchronization: Including the capability of use across different platforms and devices		X				
1.7 Design consistency: Elements like font size, font family and color scheme are uniform across the app.						X
1.8 Most important content is visually highlighted: Helping with information hierarchy, facilitating user flow, and improving the user experience.						X
Aggregate Score						3,38
2. Security						
2.1 Level of Protection for Users Data				X		
2.2 Multifactor authentication as a standard for validation and user access		X				
Aggregate Score						2
3. Customer Support						
3.1 Frequency of Updates		X				
3.2 User questions are answered within hours		X				
3.3 FAQ section included						X
3.4 Machine Learning Features (Having an automated Chatboot)		X				
3.5 Feedback System (quick and easy process to report bugs, suggest new features or provide criticism)		X				
Aggregate Score						1,8
4. Function of the Tool						
4.1 Variety of Personalization Options					X	
4.2 App successfully solves identified problem				X		
4.3 Successfully identifies specific target group with features tailored to there needs		X				
Aggregate Score						2,7
5. Convenience						
5.1 Fast Loading Times						X
5.2 High stability (Rare or No crashes)						X
5.3 Customer Friendly Revenue Model		X				
Aggregate Score						3,7
Overall Total Score						2,70

App: "Trade Republic" - Investing (12th Place in the Ranking for Finance of the German App Store)		Very Bad	Bad	Acceptable	Good	Very Good
Points to consider	Evaluation	1	2	3	4	5
1. Design and UX						
1.1 Logical path to follow for easy navigation						X
1.2 Attractiveness of the overall Design (Choice of Colours, Resolution of Images etc...)						X
1.3 All Elements add a use or Function to the App						X
1.4 App design focuses on the task that solves the users' problem						X
1.5 UI is intuitive and does not require you to think too much about how to achieve what you want.						X
1.6 Multi-Device Synchronization: Including the capability of use across different platforms and devices						X
1.7 Design consistency: Elements like font size, font family and color scheme are uniform across the app.						X
1.8 Most important content is visually highlighted: Helping with information hierarchy, facilitating user flow, and improving the user experience.						X
Aggregate Score	5					
2. Security						
2.1 Level of Protection for Users Data						X
2.2 Multifactor authentication as a standard for validation and user access						X
Aggregate Score	5					
3. Customer Support						
3.1 Frequency of Updates						X
3.2 User questions are answered within hours						X
3.3 FAQ section included						X
3.4 Machine Learning Features (Having an automated Chatboot)						X
3.5 Feedback System (quick and easy process to report bugs, suggest new features or provide criticism)				X		
Aggregate Score	4,6					
4. Function of the Tool						
4.1 Variety of Personalization Options					X	
4.2 App successfully solves identified problem						X
4.3 Successfully identifies specific target group with features tailored to there needs						X
Aggregate Score	4,7					
5. Convenience						
5.1 Fast Loading Times						X
5.2 High stability (Rare or No crashes)						X
5.3 Customer Friendly Revenue Model						X
Aggregate Score	5					
Overall Total Score	4,86					

App: "Haushaltsbuch Money Control" - Saving (57th Place in the Ranking for Finance of the German App Store)		Very Bad	Bad	Acceptable	Good	Very Good
Points to consider	Evaluation	1	2	3	4	5
1. Design and UX						
1.1 Logical path to follow for easy navigation			X			
1.2 Attractiveness of the overall Design (Choice of Colours, Resolution of Images etc...)			X			
1.3 All Elements add a use or Function to the App					X	
1.4 App design focuses on the task that solves the users' problem				X		
1.5 UI is intuitive and does not require you to think too much about how to achieve what you want.			X			
1.6 Multi-Device Synchronization: Including the capability of use across different platforms and devices						X
1.7 Design consistency: Elements like font size, font family and color scheme are uniform across the app.				X		
1.8 Most important content is visually highlighted: Helping with information hierarchy, facilitating user flow, and improving the user experience.			X			
Aggregate Score	2,88					
2. Security						
2.1 Level of Protection for Users Data					X	
2.2 Multifactor authentication as a standard for validation and user access		X				
Aggregate Score	2,5					
3. Customer Support						
3.1 Frequency of Updates			X			
3.2 User questions are answered within hours						X
3.3 FAQ section included						X
3.4 Machine Learning Features (Having an automated Chatboot)		X				
3.5 Feedback System (quick and easy process to report bugs, suggest new features or provide criticism)				X		
Aggregate Score	3,2					
4. Function of the Tool						
4.1 Variety of Personalization Options		X				
4.2 App successfully solves identified problem				X		
4.3 Successfully identifies specific target group with features tailored to there needs		X				
4.5 Search Function that helps them to navigate to what they are searching for.		X				
Aggregate Score	1,5					
5. Convenience						
5.1 Fast Loading Times					X	
5.2 High stability (Rare or No crashes)						X
5.3 Customer Friendly Revenue Model		X				
Aggregate Score	3,33					
Overall Total Score	2,68					

App: "Clark" - Insurance (64th Place in the Ranking for Finance of the German App Store)		Very Bad	Bad	Acceptable	Good	Very Good
Points to consider	Evaluation	1	2	3	4	5
1. Design and UX						
1.1 Logical path to follow for easy navigation						X
1.2 Attractiveness of the overall Design (Choice of Colours, Resolution of Images etc...)					X	
1.3 All Elements add a use or Function to the App						X
1.4 App design focuses on the task that solves the users' problem						X
1.5 UI is intuitive and does not require you to think too much about how to achieve what you want.						X
1.6 Multi-Device Synchronization: Including the capability of use across different platforms and devices		X				
1.7 Design consistency: Elements like font size, font family and color scheme are uniform across the app.						X
1.8 Most important content is visually highlighted: Helping with information hierarchy, facilitating user flow, and improving the user experience.						X
Aggregate Score	4,38					
2. Security						
2.1 Level of Protection for Users Data				X		
2.2 Multifactor authentication as a standard for validation and user access						X
Aggregate Score	4					
3. Customer Support						
3.1 Frequency of Updates						X
3.2 User questions are answered within hours						X
3.3 FAQ section included		X				
3.4 Machine Learning Features (Having an automated Chatboot)		X				
3.5 Feedback System (quick and easy process to report bugs, suggest new features or provide criticism)				X		
Aggregate Score	3,2					
4. Function of the Tool						
4.1 Variety of Personalization Options					X	
4.2 App successfully solves identified problem			X			
4.3 Successfully identifies specific target group with features tailored to there needs				X		
4.5 Search Function that helps them to navigate to what they are searching for.		X				
Aggregate Score	2,5					
5. Convenience						
5.1 Fast Loading Times						X
5.3 High stability (Rare or No crashes)						X
5.4 Customer Friendly Revenue Model						X
Aggregate Score	5					
Overall Total Score	3,815					