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Chapter 5: The artificial intelligence-powered financial advisor: democratizing access to real-time, personalized financial guidance

5.1. Introduction

With the rapid advance in artificial intelligence and cloud technology, financial advising has, until recently, been considered well outside the stance of technology-founded approaches. However, in recent years, a plethora of applications capturing these new technology opportunities have sprung up. Additionally, the respect for the traditional user bases of financial advising is very high and based on years of building convincing deals. Also, the prospective partnership with the traditional value chains implies the continued existence of the consumer base (Asatryan, 2017; Chang et al., 2017; Munoko et al., 2020).

With this new robust and configurable AI literature, various opportunities arise. This includes investing opportunities but also creates a problem space. Traditionally, these agents, i.e., the software applications powered by AI technology and acting as financial planners, wealth management specialists, agents, or even just assistants, have been trained, used, or prepared in particular programs. They are pre-configured for similar market conditions, risk profiles defined by or very close to their respective investments and wealth management firms, or just the tools they were designed for.

Quantitative advisory, i.e., assisting or even automating the decision process in financial dealing. This includes alternatives such as investment and wealth management but also loans and consumer financial products. Particularly the quantitative part of this approach, including risk prediction, risk assessment, prediction of financial product performance, and transaction actions based on the risk and audit levels, has been very

competitive and valuable for long even for actionable units or financial objects sterilized and possibly readied before execution.

The new species of financial agents or things on the market, namely family advisory agents, were trying to bring the idea over to the member universe of consumer finance and consumer financial products. Here open analysis and advice about personal finance including preconfigured investments and wealth management, against budget constraints, incomes, expenses, and life conditions as, e.g., kids, students, may turn out very exciting and very powerful (Zemankova, 2019; Shaffer et al., 2020).

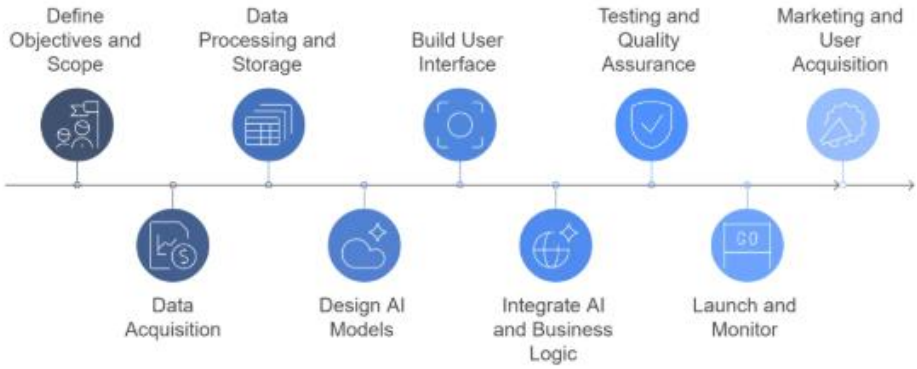

Fig 5.1: AI Financial Adviser Platform

5.1.1. Background and significance

The rapid development of technology, internet, and mobile devices has transformed daily lives, including the way of storing, spending, investing, or giving money. The long-standing trends of increasing financial complexity and rising personal responsibility for financial well-being hit ordinary people's pockets harder than ever. Facing the heavily complex and poorly understood financial products, many people feel like they are "drowning in an ocean of financial information." Only a few are able (or willing) to search for financial information from a crowd of investment products. Access to timely and relevant financial information and advice is thus becoming a brand new form of inequality in the digital and social media age. On the other hand, further fueling the inequality gap, currently, investment advice available on high end investment platforms tends to be "one-size-fit-all." It addresses investment needs aggregated for a specific group with similar investment style instead of targeting individuals. Altogether, this not only raises public concerns about systemic risk, but also leaves millions of people and their trillions in savings unserved or detached. Although designed as a self-learning system that actively learns from past information to provide guidance, conventional automated advisory services target investment decision making but overlook the first

and prior requisite: augmenting information and understanding for financial and investment decision making. Existing wealth and investment management data analytics platforms typically provide basic patterns of existing assets and high-level predictions instead of basic yet meaningful information of analysis specification, or simply aggregation of signals.

5.2. The Evolution of Financial Advisory Services

One of the long-standing issues in personal finance is the accessibility of high-quality financial advice. While high-net-worth clients benefit from a relationship with a trusted financial advisor or wealth manager, the dismally low savings rate among lower- and middle-income individuals illustrates the need for democratized access to wealth management services. Especially with the advent of real-time personal finance management mobile apps, there is a growing expectation that financial advice and coaching can be offered at a very low cost. But providing relevant, customized financial advice at scale to the mass market remains a formidable challenge. Existing supply-side solutions have often relied on public data feeds, crowd-sourced information, and news analytics to provide insights based on fixed rules and heuristics. While these tools may offer alternative perspectives on personal finance, they rarely incorporate individual circumstances and preferences into personalized financial strategies. Other current solutions rely on financial experts, who charge retainers of several thousand dollars. But higher fees imply lower prices for consumer financial products and services, which run counter to the goal of democratized access to wealth management services.

The digitization of human advisors is, therefore, not the answer to revealing meaningfully different financial advice to mass-market individuals. Wealth managers know this and are investing heavily in AI to catch the next wave of disruption with recommendations based on business rules, heuristics, and quasi-static financial models incorporated in deep-learning architectures. Research has shown that these approaches tend to provide bad investment advice, and higher fees would be required to yield sustainable alpha.

5.2.1. Research design

The initial exploration phase entails an extensive inquiry into the identified barriers to consumer adaptation in respect of robo-advisory services. The first phase of the study consists of two components. The first component focuses on the analysis of relevant literature to gain a comprehensive understanding of the topic and facilitate the construction of first-round interview questions for industry experts. Following the literature review insights, a first round of eight semi-structured interviews is performed.

The purpose of this qualitative analysis is to uncover the barriers to consumer adoption that would then be addressed in the second round of inquiry. By means of the qualitative analysis, the first four barriers to consumer adaptation speech are identified with matching data excerpts, as well as experts' implications that detail chances for these barriers to be addressed in the long run.

The second component of the researcher's preparatory work consists of a comprehensive look on a total of 571 pages of discussion among everyday consumers concerning their perspectives of robo-advisory services. The analysis results in the presentation of four additional barriers to consumer adaptation in respect of robo-advisors. With comprehensive foundational knowledge underpinned by two phases of qualitative inquiry, the next exploration stage shifts to uncovering the medium to overcome these eight barriers via an extensive quantitative analysis. The second research phase consists of six components.

First, a broad empirical investigation is performed to highlight, confirm, and quantify everyday consumers' skepticism precluding them from considering the adoption of robo-advice. To this end, a total of 30 430 words of free-description comments on online discussion forums are analyzed, and qualitative thematic analysis is performed on the textual data. Following this analysis, nine skepticism themes are identified and proposed as statements for a quantitative study. A total of 3240 qualified responses are collected in a global online survey, and with the implementation of exploratory factor analysis, skepticism towards the use of robo-advisors is developed. The first quantitative inquiry investigates the main effect of seven individual differences: economic, financial, and digital literacy; cognitive, field-dependent, and interpersonal thinking styles; and prior robo-advice experience. The proposed hypotheses are tested with regression analyses.

5.3. Understanding AI in Financial Services

In recent years, the field of finance technology has witnessed remarkable development. With the advancement of artificial intelligence (AI) technology and algorithms, finance technology is becoming more and more intelligent. Finance technology takes advantage of the increasingly available daily insights and news to promote transaction revenue even for non-professional users. In Brazil, Bradesco Bank uses a chatbot developed based on IBM Watson algorithm to answer basic banking questions raised by their customers. ECMI and the leading artificial intelligence service provider Intuit are cooperating to automatically extract transactions and check fund issues based on the given balance problem. The analyst model of DuTi Capital becomes automatically learning and adjusts based on the scrolling of the market. Nowadays, the most innovative addition to finance technology is the Robo-Advisor (RA) which assists non-financial-industrialized users on managing their investments by utilizing various sources of information including

expert opinions, automated news screening, and the use of big data. RA refers to a platform on which a system provides users with financial asset management services based on an automated advisory process. The field of RA currently refers almost exclusively to financial investment. Similar tasks are also carried out for loan assessment, stock-picking advice, taxation avoidance, among others, but these are currently not termed RAs. The tasks undertaken by RA are usually customer assessment and customer portfolio management.

Customer assessment is a series of questionnaires designed to measure the risk attitude, preferences, goals, concerns, etc., of the customer. The output of the customer assessment process is usually a constructed risk profile consisting of various features with assigned numerical values. Asset allocation is the decision on how much capital to invest in the chosen markets or asset classes based on the customer's risk profile and personal input. The automated investment process is the actual investment in the selected funds or products usually done via API interfaces. Dynamic asset assessment includes the ongoing monitoring of the customer account. This procedure involves running a cost function to continuously assess the current portfolio concerning the goal state.

Fig 5.2: AI in Finance Guide

5.3.1. Defining Artificial Intelligence

Software capable of simulating human cognitive abilities or executing activities that ordinarily necessitate human intellect are generally regarded as AI. Examples of categories in AI and their applications include laboratory devices, social robots, robot cooperation, evolutionary computation, natural evolution in spatial environments, weather forecasting, financial market activities, computer voice and theme recognition, and robot automobile driving and regulations. AI together with the Internet of Things (IoT) is rapidly shaping the environment in which commerce takes place. Since AI is quite practically applied both to visionary discussion and operational sectors like trading algorithms, customer recognition on website data collection, algorithms that busily

recommend material for your viewing pleasure and many other situations, it is a very extensive notion.

This research examined the limitations and concerns of a specific form of algorithmic artificial intelligence, financial AI, responding to controversy regarding algorithmic investments from the 2009 financial crisis to the extreme volatile market condition influenced by the COVID-19 outbreak in 2020 and the warnings on the out-of-control, over-optimization risks of AI. Recently, significant public attention has been paid to black box AI or deep-learning-based algorithms. To provide the complete spectrum of possibilities an AI in trading can possess, this study began by depicting the many requirements of a financial AI, a software package that can gain pure profit in stock investments, in terms of agent, environment, strategy, information structure, and time horizon. With regard to its algorithmic intelligence and operating mechanisms on the surface, the current algorithms used by financial AIs were classified, and their pros and cons were summarized. As the core of a trading algorithm, methods of predicting the more finitely logically defined next market states from the expansive web of unconditionally free and unlimited market information were depicted.

In light of the need for trading algorithm explainability and the seek for a transparent versus black box algorithm trade-off result mixture, a soft box-plus-black box architecture was proposed, and the middleware transparency interface as regards the next state probability distribution was modeled. Once excessive predictive bias is suspected, with correctness accountability programmed into the output distribution pattern, this architecture enables an analyst to inspect the inner workings of the deeper black box, unlike conventional layer-per-layer model interpretability approaches that only leak the aggregated, coarse distribution, which conquers the robustness-accuracy challenge. Recognizing the inevitable complexity jump and opaqueness of AI-based portfolios in their search for the best-performance portfolio, the concept of landscape residuals was proposed to label the local smoothness of dimensionality reduction and manifold approximation measures the upper and resolution limits of data interpretations. With the portable methods and algorithms available, it is guaranteed that proper validation of such knowledge learning AI arbitrageurs should rise to teleological discussions rather than to mega computation technical challenges.

5.3.2. Key Technologies in AI

Despite the vast amount of publicly available options financial planning tools and modeling techniques to model stock price movements a considerable portion of the general public is either unaware of or deliberately does not use these tools and techniques. This leads to long-term poor performance of individuals' portfolios or even loses totally of investment. Thus there is a huge societal need for adequate financial year-

round planning and guidance. Such financial advice and education are limited in nowadays traditional wealth management. The resulting lack of financial literacy is considered to make the financial markets inefficient and lead to negative macroeconomic effects. Investment behaviour is very individual and related to behavioral differences in risk preferences. Secondly, behavioral finance theory shows that individuals tend to be biased in their decision-making and these biases can lead to herd behaviour and boom-bust cycles in stock markets. The second group of "need-met" individuals wishes to have their portfolios structured on an automatic basis and to have their investment decisions made by the financial brain. Ironically this group of individuals is also the one which has been the first to experience sizable losses on their investments.

Nevertheless, even in the case of the largest group of individuals there is still a need for filtering the huge amount of available information about current stock investment opportunities by fast AI powered advisors and feed-back on individual behavioural issues they exhibit when trading on the stock market by means of chat-bots. The offered robo-advisor provides a personal financial planner on a year-round basis offering creative ways to achieve individual life-goals and quantifying their price in terms of monthly cumulative savings. It integrates many creative possibilities on how to channel and structure the investment decisions, and regards a wide variety of investment options across multiple asset classes in main concrete financial products supply. Each investment decision can be calculated by mean reversion model for stock-holding investments or generally via the random walk model for best financial instruments. The one-page enhancement of the portrait of characteristics of the particular individual is aimed at tuning the decision making process on its own existing biases. The analysis of heuristics techniques applied for analysis of stock price movements. New investment decisions based on historical and sentiment information is suggested.

5.4. The Role of AI in Financial Advisory

Artificial intelligence is a powerful and rapidly growing technology that will evolve virtually any business sector, including the finance industry. It can be defined as programming a computer to process information in a way that would be viewed as intelligent if it were done by a human. AI can be implemented in multiple ways, such as facial recognition, computer vision, natural language processing, self-driving vehicles, machine learning algorithms, or data analytics. Implemented properly, it will change almost any industry. AI-based innovations are becoming part of every-day life in many sectors, including entertainment, travel or shopping, while many simple daily tasks like math exercises, translation of a foreign language or voice-to-text transcription can be automated thanks to AI. AI also has its applications in more complicated fields of services, such as financial services. Traditionally considered as a more human-intensive

industry, financial services have also started changing under the influence of technological advancements.

The digital revolution has changed the traditional business environment in an increasing number of industries such as regulatory compliance, banking, asset management and insurance industries. The continuously developing technology has resulted in the emergence of the term FinTech, an abbreviation of financial technology. FinTech is generally an emerging technology involved in the design, creation and delivery of financial services or products. This broad field can be divided into personal finance, bank or insurance side applications, as well as into five categories including payment systems, investing or wealth management, lending, financing and infrastructure. Some key trends in FinTech include peer-to-peer lending, online crowdfunding of industries or startups, processing and analysing big data, cryptocurrencies and blockchain as a decentralized ledger, as well as personal finance or automated investment services. Facilitated by increasing digitalisation, AI is finding its application in credit decisions, risk management, fraud detection and prevention, trading or market making, execution algorithms, portfolio and trading strategies as well as personalised banking or investment advisory. Digital investment advice is an example of an application of FinTech services. Automated investment advisors are called robo-advisors. AI offers many possibilities on revolutionising the wealth management or investment advisory industry. Autonomous investment can refer to many concepts, such as completely automated asset management, automated stock trading, algorithm trading, quantitative trading and high frequency trading.

5.4.1. Personalized Financial Planning

The need for financial planners has arisen because few individuals have well-designed financial plans that coordinate their company's fringe benefits with other assets. Since it is impossible, traditional financial planning is by nature broad-based and goes far beyond the area of investments. It considers insurance, estate planning, income tax strategies, retirement plans, and corporate fringe benefits. With the large number of decisions in those areas and the interrelatedness most decisions do have, it becomes increasingly doubtful whether any one individual can be a full and equal partner in each. The personal financial planner attempts to become that broad-based financial adviser, but most of all, he sees this role as a facilitator. In this sense, he helps clients' decision-making processes by putting the right parties together, and he draws on specialists who know more about a particular area than he does.

The depth of the analysis undertaken also determines to a large extent whether the financial planner has the necessary time resources to do a thorough job. The traditional method of collecting data by means of interviews has major disadvantages. It is time-

consuming and requires the introduction of a large number of questions, most of which are pretty technical, on several topics to be asked in one sit-in session lasting two to three hours. After the data have been processed, they must be re-evaluated during a second sitting with a similar duration. Only then will the client see the implications of decisions already taken, i.e. their consequences in cash flow statements ensuing from investment plans. Much greater effort on the client's part needs to be made before areas of concern in financial planning will be revealed.

On the other hand, questions cannot be too technical or broad during the first sitting for fear of the client being put off. If he does not understand a question, he will probably not ask, but will rather give a nodding reply, be it thumb down, which eventually will be detrimental to the advice offered. The financial planner quickly runs through a properly prepared questionnaire so that a list of topics to be elaborated on during the two or three visits is created. After that, clients are sent the long untangled questionnaire to fill out.

5.4.2. Real-Time Data Analysis

Another revolution in wealth management can be seen at the surface level by examining the Automated advice market. A combination of financial algorithms, big data synthesis, and customer profiling, along with cooperation with financial service firms and banks, may help democratize access for everybody. Algorithmic portfolio management, portfolio rebalancing and tax loss harvesting, are just some of the new tools available to already wealthy customers. More importantly, a combination of internet and mobile technology with algorithmic investing enables the poor to invest. FinTech innovators might have a chance to challenge the establishment. On the other hand, the opportunity of obtaining knowledge about your habits and preferences allows for a wealth of real-time data on investors by incumbents. These companies can easily exploit this data with the right algorithms to achieve zoomed-in segmenting accuracy that was never possible before.

The new offers will begin to democratize financial services for the masses with real-time data analysis, personalized guidance, and high engagement through mobile improvements. Algorithms will make catching up possible in various senses. Free from AI, you will not be able to offer price-sensitive financial services. Partnering with deep data mining banks may become the only way of survival. Robo-advisory is however still a grey area. It is a seven to eight-step recommendation procedure of converting a user’s needs, preferences, and capacity evaluations to a portfolio with buy-hold and sell countries, sectors, and stocks. Personal financial, macroeconomic, and stock price data are extracted for hidden patterns by using ANN to maximize the Sharpe ratio and minimize risk of price losses. Automated model refinement as the environment changes is necessary. The limitations arise in the form of ethical dilemmas of the need for a

supervisory structure that includes control without monitoring and decisions of the margins of actionable knowledge.

5.5. Benefits of AI-Powered Financial Advisors

The most innovative addition to financial technology has been robo-advisors: AI which actively assists in managing investments. Robo-advisors are digital platforms that guide customers through an automated investment advisory process and refer to financial investment. The tasks undertaken by robo-advisors are customer assessment and customer portfolio management. Customer assessment includes questionnaires to measure risk attitude, preferences, goals, and special interests. Customer portfolio management includes asset allocation, automated investment processes, and dynamic asset assessment. These automated assistants can offer 24/7 assistance for a lower cost compared to traditional human advisors. However, adoption of robo-advisors has been slow and is mediated by consumer attitudes such as perceived usefulness and familiarity with robots.

The phenomenon of trust has been shown to be important for successful relationships and cooperation across different contexts. Trust in technology is not a new phenomenon. Technology trust research assesses how trust relationships develop between a user and a technology. Therefore, trust has been identified as a key factor in the context of tech acceptance. Financial products and services are often described as ambiguous, ill-structured, and complex. Financial knowledge is low in the average population, making this domain particularly prone to forms of exploitation and deceit by untrustworthy agents. The AI financial advisors hence have gained considerable attention due to the added fears. The trustworthiness of AI has found to be an important but elusive construct in the banking domain as informed public discourse is often of a rather binary choice "AI or human?". Trust has recently been advanced to investigate the perception of AI and automation in general.

Automated robo-advisors would involve more time spent and efforts on building bots than those managing every profile personally, but additionally, answering very freely phrased complex questions make resource allocated users even quit their services in frustration. The issues raised therefore need to be solved before the democratization of financial advisory services by this means becomes realized. However, the fixed investment costs in off-house content and processes could almost be neglected. It has been estimated that robo-advisors need to have near industry-leading cost-efficiency and a significant asset base to be profitable. Despite the cost savings robo-advisory services offer for customers, these services tend to struggle with customer acceptance and therefore high marketing and advertising investments are required. More effective marketing options, word of mouth and social media on the other hand are potentially

cheaper but at the same time riskier and need more time. A challenge can be that the investor group who has gained enough wealth to be interested in investing and saving are not willing to adapt new technologies and give up personal face-to-face advisory services which have traditionally resulted in more complex investment products despite the higher and less transparent cost structure.

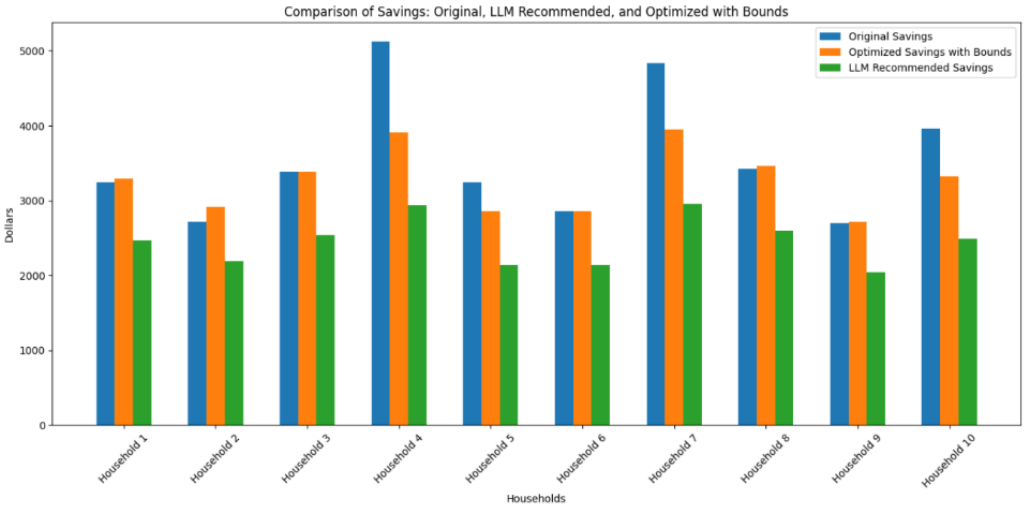

Fig : Optimized Financial Planning

5.5.1. Cost Efficiency

The robo-advisory market initially exploded in popularity due to the simple investment philosophy and the low and transparent cost structure offered by the services. The whole idea of employing ETF portfolios instead of active fund strategies is based on the so-called Efficient Market Theory which is based on solid premises. ETFs are seen as superior and better performing investment products than actively managed funds, with much clearer ancillary costs. On average, 90% of active fund managers do not beat the index which means that investment actions do not pay off but may degrade the performance of the fund. ETFs however represent a negative chance in the investment advisory field because they do not require active decision-making by portfolio managers which makes their cost structure rather simple and easily manageable, thus significantly lower than the average mutual fund. Robo-advisors automate the whole process of delivering a traditional financial advisory service using ETFs instead of mutual funds for investment products. Possible algorithms, rules and/or triggers lead to buy and sell investment actions implemented completely by the prescribed software applications, resulting in lower management, personnel and asset costs simultaneously. Automated services are a more scalable way of serving a larger customer group since usually the

most costly tasks such as compliance and documentation can be done more efficiently than manually. In addition to these, lower prices of the service enable companies providing financial advisory services to reach a broader market segment which in turn can create more profits based on higher market shares. For companies providing financial advisory services, management fees on the invested funds create the main income stream regardless of the market ups or downs. The other income source stems from commissions and fees from banking and other services. Hence it can be stated with high certainty that these fee-generating clients provide a financially low-risk platform for higher income cash flows in banks.

The online questionnaires used for screening the investors, an implementation step in building portfolios, is a straightforward task compared to traditional personal face-to-face discussions. Typically, a common questionnaire takes from a few minutes up to about half an hour for the client to answer compared to two and a half hours on average for personal meeting questionnaires. The needed documents for completion, the personal questioning itself, and pre- and post work connected to the meeting all require additional working hours for the advisors, so this task can be seen as very time-consuming indeed. Less educated users may have difficulties finding the right questions or understanding them properly. The whole task is perceived to be more administratively heavy and complicated for advisors than those processes connected to online questionnaires, which also suffer from great efficiency differences through the task. Traditional investment advisory processes tend to be highly administrative and require repetitive data entries and unnecessary paperwork both for the clients and the advisors. For some profitable companies, offering such client/prospect based advising services has been almost ruled out from their portfolio.

5.5.2. Accessibility for Diverse Populations

The 2007–8 financial crisis drew massive attention to consumer protection issues and the suitability of financial advice. While the field of consumer protection is concerned about such issues as suitability, transparency and other conflicts, the industry has started to offer an alternative channel for financial advice through online platforms. The implications of the emergence of robo-advice and automated investment management for consumers is analyzed here as a case study.

In addition to low fees, simplicity and easy access, the rise of robo-advisory has been claimed to democratise the access to financial services allowing investors below the wealth threshold of traditional wealth management services to have access to such advice and investment management. The logic behind this claim is straightforward: in the absence of any parameters of human judgement, investment services can be produced with a lower cost structure allowing the operation to commence with lower assets under

management, minimum initial investments. The survey and analysis of a number of current robo-advisors indicates that this is only partly true. Due to the constant monitoring of the investment portfolios and mandatory regulatory controls concerning such monitoring, automated advisory services require huge amounts of data to be processed. This in turn adds to the compliance cost structure and makes it difficult to construct a business case solely on low costs as compared to traditional advisory services.

Many of the current tools are clearly still waiting for take-off, typically requiring over €50 000 in assets in order to gain access, although the same business case based on specific algorithms would be available for lower amounts as well. Before that, managing their cash positions, hedging, converting currencies and higher absolute investments are offered primarily on a transactional basis outside the core investment management service offering which typically requires much higher amounts. This would seem to be in conflict with the original message of democratising that was seen to imply targeting lower account size segments.

5.6. Conclusion

The use of AI for 24/7 on-demand human-like assistance will be increasingly more in financial advisory domains as the technology matures, experience is gained, and generative AI tools become more main-stream. The proliferation of AI tools will democratize the access to personalized financial advice. During the emergence of the Robo-advisor market there has been considerable anxiety over the dangers posed by poorly designed or misguided auto-advisors generating inappropriate or undesirable behavior. Behavioral finance research shows that in many instances human discretion in (retirement) advice leads to worse rather than better outcomes for clients. This suggests that reliance on sound automated decision protocols produced by multi-disciplinary collaboration and testing is likely to lead to much better advice. The experience gained through the regulation and coping with Robo-advice is likely to lead to similarly improved automated advice. As machine vision and voice interpreters improve AI avatars will increasingly also take on human-like appearances. This would finally make it possible for robo-advisors to achieve 24/7, anywhere in the world, a personalized attention from a skilled, licensed, regulated fiduciary human financial advisor. Throughout the era of human financial advisors an unmet desire remained for each individual human being to have access to such personalized, trusted advice. For a small group of high net-worth individuals such access has been available and affordability was rarely a serious concern. The advent of Robo-advisors from the mid-2010s has started to make some forms of inexpensive automated advice available to a growing number of people.

5.6.1. Future Trends

The future of financial advice is being transformed, as people's disposable income rises and investment knowledge improves, there's been an increase in interest in investing. Even if the amount of invest-ded funds is not very high, many clients want to invest and thus would like to gain access to investment opportunities. Most customers want access to reliable real-time advice from a knowledgeable person (either human or virtual) depending on the importance of the decision to be made. Customers already show high willingness to receive advice from preprogrammed Artificial Intelligence programs, especially in fields where rules-based professional advice exists in abundance.

Accessibility to 21st-century financial products must be met with 21st-century advice. The emergence of a new generation of trustworthy, personal, real-time AI-financial consultants offers the opportunity to radically democratise tools normally only available to the wealthy few, to individuals having funds as little as 100 euros. Moreover, with the rapid rise of cryptocurrencies, there are unprecedented opportunities for both rewards and fraud, an area where this AI-program would provide the most utility for the broad masses. Today, household participation in the stock market ranks between 50% and 20%, depending on jurisdiction, with similar interest in cryptocurrencies. This AI-program aims to cater to the desires and needs of this vast new clientele, filling the current gap of real-time, personal investment advice from trustworthy sources available to a non-accredited public.

Similar to the production of on-demand 21st-century films, this application uses state-of-the-art AI-models with essentially no limits on sophistication, focusing on natural language processing and neural architectures. These neural models enable emergence of unprecedented capabilities such as sentiment analysis or predictive text, providing new paradigms and opportunities for understanding structured and unstructured financial information. Combining such techniques with methods from algorithmic finance can produce an analytical framework able to navigate existing financial markets, and following the availability of trust and incentive mechanisms, a platform and holistic system for the coming age of AI tools regarding security markets can be built.

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