

FinTech - The digital (R)Evolution in the German Banking Sector?

Dr. Christoph H. Winnefeld¹ & Anja Permantier¹

¹ Trier University of Applied Sciences, Germany

Correspondence: Dr. Christoph H. Winnefeld, Business School, Trier University of Applied Sciences, P.B. 18 26, D-54208 Trier, Germany.

Received: August 6, 2017

Accepted: September 13, 2017

Online Published: September 20, 2017

doi:10.5430/bmr.v6n3p65

URL: <https://doi.org/10.5430/bmr.v6n3p65>

Abstract

During the last years, the German banking sector has faced major changes due to significant progress in the technological sector and hence an increased digitalization in many areas. Changing consumer behavior and customer needs force credit institutions to adjust to these developments in order to maintain their competitiveness. An enlarged number of new financial technology (FinTech) corporations started providing financial services comparable to the ones conventional banks offer. In this context, especially the topic of robo-advice is becoming more and more relevant. Robo-advisors can be defined as digital platforms that provide automated, algorithm-driven financial planning services with little to no human supervision. In our article, we investigate robo-advisors as part of the FinTech movement and in particular analyze the eligibility of digital investment advisory service as potential alternative to conventional asset management. We specifically emphasize the influence that FinTech companies and innovations have on the German banking sector.

Keywords: Financial Technology, Robo Advice, Asset Management

1. Introduction

During the last years, the German banking sector has faced major changes, due to significant progress in the technological sector and hence, an increased digitalization in many areas (Note 1). Changing consumer behavior and customer needs force finance companies to adjust to these developments, in order to maintain their competitiveness (Note 2). As a consequence, an enlarged number of Financial Technology (FinTech) co-operations started providing financial services comparable to the ones conventional banks offer (Note 3). In this context, especially the topic of robo-advice is becoming more and more relevant these days. Robo-advisors can be defined as digital platforms that provide automated, algorithm-driven financial planning services with little to no human supervision. The aim of this paper is to analyze if robo-advisory is or could be an alternative to conventional asset management solutions offered by traditional banks or investment companies and to emphasize specifically the influence these digital innovations have on the German banking sector. Therefore, this paper is going to examine FinTechs as an ongoing development in the financial service sector. In particular, it will deal with the topic of robo-advice, as part of the FinTech movement. Section 2 of this paper will first provide a general definition of the term FinTech, the business model behind it and some general key data. Section 3 is devoted to the concept of robo-advice. In the beginning this concept will be explained specifically, along with some key data. Subsequent section 3.2 will compare the innovation of robo-advisory to conventional asset management solutions to emphasize their most significant differences. Afterwards the advantages and disadvantages of automated advisory service will be discussed in section 3.3. In the end, section 4 concludes this essay by discussing the prospects, issues and challenges facing the FinTech movement and in particular robo-advisory services.

2. FinTech

The FinTech industry is still a rather young market sector, which recently developed over the last couple of years. Such corporations first came into sight in the US between 2008 and 2010 (Note 4). Principally, the word FinTech consists of a combination of two words, namely “financial service” and “technology” (Note 5). In general the term describes companies or representatives of companies, using modern information and communication technology to revolutionize today’s financial service sector (Note 6). FinTechs utilize analytics to create competitive business propositions and consequently emphasize a high level of specialization, which results in transferring financial

services into leaner and more specific digital offers. In particular, they design their business models in such a way that make them able to serve their customers with analytics-driven services, for example when analyzing the individual credit risk (Note 7). Thus, their concept is primarily targeting the offering of already existing financial products and services more customer friendly, more transparent, faster and especially more cost efficient, than their conventional competitors. So, it can be said that it is principally about improving the dimensions of benefit, cost and value to potential investors (Note 8). But it is not only about business transformation and advancement through digitization, also the aspect of business innovations and the emergence of completely new business models play key roles in this context (Note 9). These developments do not necessarily comprise start-up enterprises exclusively, but also several long-established, already operating firms. Giant Internet-companies like Apple or Google may become serious competitors for conventional financial service providers in the future, due to their large customer base and their technical efficiency (Note 10). In the end, some of them target customers to disintermediate long established, conventional financial service providers, with more cost-efficient propositions (Note 11). However, different FinTech corporations have different business approaches and therefore chase different aims. Like mentioned before, some try to offend established financial market players, others seek cooperations or provide service behind the scenes (Note 12). The phenomenon of an emerging number of cooperations has clearly increased in the last couple of years. Especially partnerships between conventional financial service providers and consumer-oriented IT-corporations, like Google or Apple, can be of utmost importance, regarding the future development in this market segment (Note 13). Nevertheless, there is one thing they all have in common, namely to meet the expectations of being innovative and spread diversity by changing the world of finance (Note 14). As a result, especially FinTechs' encompassing alternative ways of financing and financial investment are counted among the major growth markets these days (Note 15).

According to a survey examining the segments represented in the German FinTech market, which was conducted on behalf of the Federal Ministry of Finance, a total of 436 FinTech companies have been counted in Germany (Note 16).

The illustration below provides a holistic overview of the most important segments operating in the FinTech industry. This study from 2015 shows that the majority of FinTech corporations are offering products and services in the payments segment.

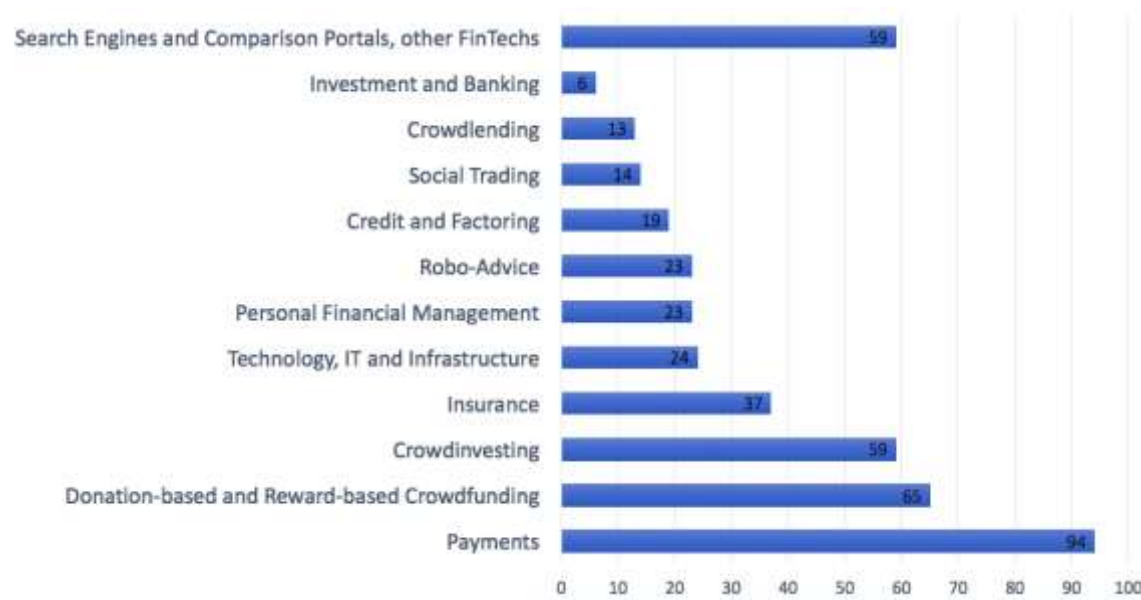


Figure 1. Overview of FinTech companies operating in the German market (Note 17)

When looking particularly at the banking sector, the scope of their product line may range from peer-to-peer lending to digital payments or computer-based investment advisory services and analytics (Note 18). This is precisely the reason, why it should be kept in mind that defining the term FinTech may cause certain difficulties, with regard to a precise delimitation of the differing operating areas. Nevertheless, corporations performing in the FinTech market can principally be classified into four major divisions, relative to their different business approaches (Note 19).

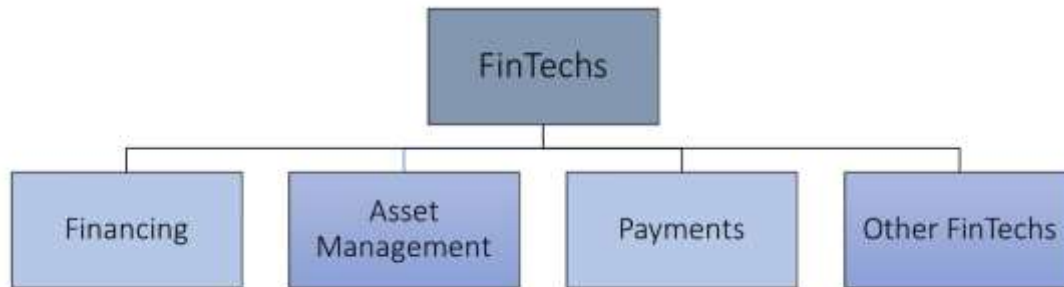


Figure 2. Segments of the FinTech industry

As emphasized in the preceding illustration, FinTech companies can be segmented, according to their engagement in financing, asset management, payments and other forms of FinTechs. The financing segment enables private customers, as well as business customers to satisfy their individual financial needs, by taking advantage of multiple funding alternatives. On the other hand, FinTechs operating in the asset management sector serve their customers with the transfer of shares, investment advisory and asset management, associated with providing the previous services (Note 20). The payments segment in turn relates to FinTech corporations, distributing products and services based upon national and international payment operations (Note 21). In the end, FinTechs being categorized as „other FinTechs“, cannot be allocated to the segment of typical banking services. This may include, for instance, FinTechs providing insurance policies or being engaged in the IT and technology sector (Note 22). While there may be indeed numerous characteristics shared by most FinTech organizations, there will as well always remain a sufficient number of exceptions (Note 23).

Yet, regardless of the differences in these sectors, there is one thing all FinTech corporations have in common, namely the driving force behind their innovative business models: the element of personalization (tailored to individual goals and aspirations). Their main effort is about institutionalizing the personalization of the investment experience (Note 24). The aim of personalization is to predict what the consumer needs or will need over time. Both past and present data can be used to create a uniquely personalized user experience that predicts future account activity and provides simple, actionable guidance.

The focus of this paper is on the German banking sector and the evolving German FinTech market. Therefore, when looking at the scope of their product line, a wide range from digital payments, like mobile payment, to digital commerce transactions or peer-to-peer cross-border money transfer, can be observed. On the other hand, it may also comprise peer-to-peer online credits or equity-based online crowdfunding, which is specifically used by start-ups (Note 25). Due to the fact that there are multiple various business models operating in this business environment, serving customers with exceptionally diverse products and services, it is exceedingly difficult to formulate a holistic definition of the term FinTech.

When looking at the drivers of growth that have affected the FinTech industry development in the previous years, it becomes obvious that not only geopolitical conditions are of utmost importance under these circumstances, but also the current financial environment represents a major challenge (Note 26). In particular, the ongoing globalization trend becomes a significant factor of crucial importance (Note 27). Today's societies and individuals are constantly getting more and more interconnected, due to digital platforms, the Internet or the latest technological developments (Note 28). One of the factors that mostly contributed to these modifications in the financial service sector was the great financial crisis in 2007 (Note 29). Between the years 2005 and 2014, the federal association of German banks recorded a significant decline in the number of banking institutions, as well as in their branch network. The number of banking organizations in Germany decreased by 15%, along with a reduction in the number of bank branches by

almost 20% (Note 30). On the one hand this development is caused by a proceeding consolidation of banking institutions (Note 31). However, on the other hand, many branches had to be closed, due to missing revenue and lacking profitability (Note 32). An increased competition, leading to declining returns, as well as tighter regulations entailing higher costs, are the main factors generating these circumstances (Note 33). A much more decisive consequence of the former crisis is a disturbed confidential relationship between financial advisors and investors, which paved the way for technological innovations and in particular FinTechs (Note 34). Customers became more risk-averse and sensitive with respect to conventional financial service providers and their products (Note 35). It is precisely this combination, of the clients' dissatisfaction with the present economic and financial situation, coupled with the offer of a more attractive alternative provided by FinTechs, which results in the contemporary changes in the financial industry. By carefully investigating this development, the affinity for technological processes of today's investors becomes particularly noticeable by the fact that the number of online banking accounts almost doubled between 2005 and 2014. The current trend towards delocalization in the financial service sector, partly caused by the rising popularity of direct banking businesses, got used, enhanced and further developed by innovative business models of FinTech companies (Note 36). At the moment, the German banking sector finds itself in a phase of concentration and attrition and seems to be struggling with generating medium- and especially long-term stable revenue (Note 37). This effect is also supported and intensified given the continuing low interest period, along with the further ongoing deterioration of profit margins (Note 38). The following chart clearly illustrates this continuous decrease in the capital market interest rate since the mid-1980s, which puts conventional financial service providers under a lot of pressure with regard to their cost structure (Note 39).

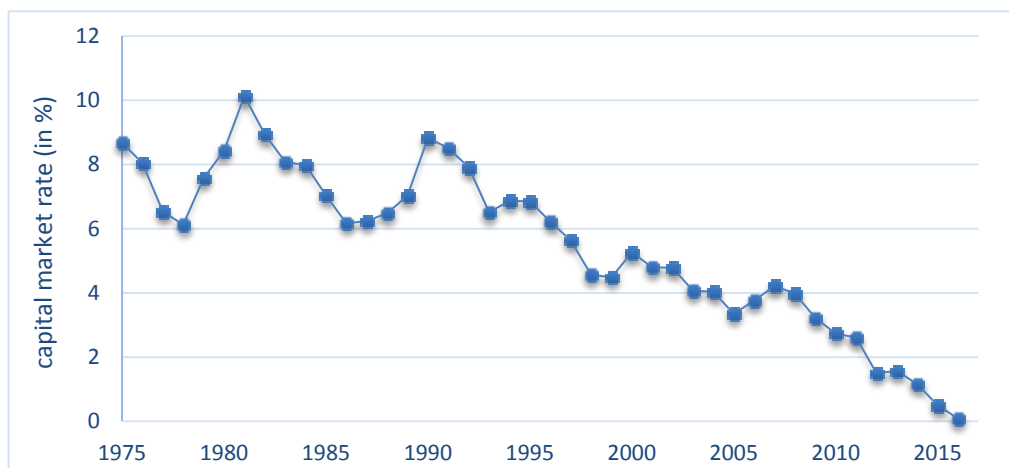


Chart 1. Development of the capital market rate in Germany between 1975 and 2016 (Note 40)

Another burden which is placed on the current financial service sector are tighter regulations (Note 41). Also modifications concerning more severe equity regulations or the definition of global liquidity standards have led to major issues in the banking business (Note 42). Resulting from this, financial institutions lose their bargaining power and become more and more progressively constrained. On the other hand, customers are encouraged to take a more conscious and proactive role in this entire process. By empowering them, conventional financial service providers become forced to reconsider their current business models (Note 43).

Nevertheless, with regard to these key drivers of change in the finance area, it is not surprising, that new, innovative competitors seized their opportunity to take advantage of this situation. By expanding their market position and strengthening their presence, FinTechs were able to rapidly gain market shares and outpace their competitors in the conventional financial market (Note 44). In order to achieve the most fundamental objective, namely to create competitive differentiation purposes, FinTechs develop innovative products and services, which improve the company's overall cost structure by using highly efficient technological processes (Note 45). The continuing success can clearly be observed by examining the total transaction volume in the FinTech market. This volume adds up to 2,973,833 million EUR in 2017. Moreover, it is still expected to be growing at a surprisingly fast rate till the year

2021. In 2021, the transaction volume is supposed to be 6,272,268 million EUR, which implies an annual growth rate of 20.5 % (Note 46). A more detailed overview regarding the future development of the total transaction volume in the FinTech market is depicted in the following chart.

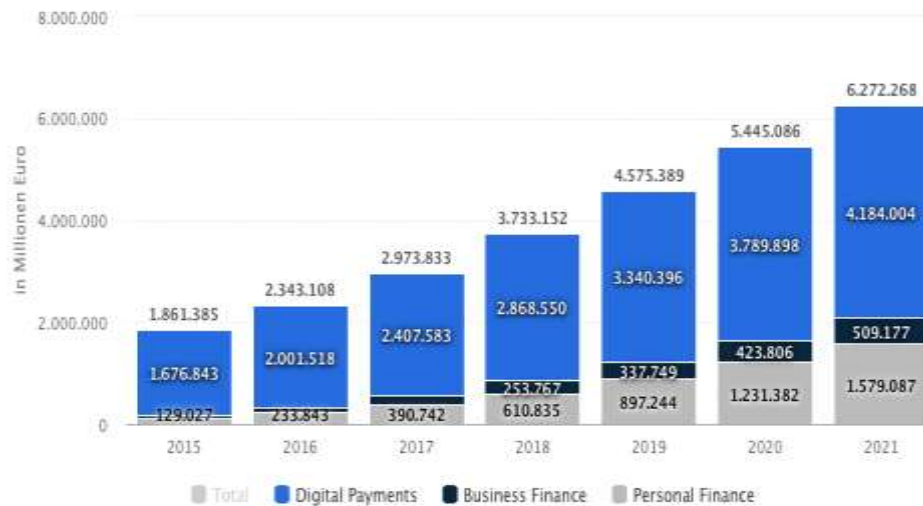


Chart 2. Total transaction volume in the FinTech market (Note 47)

The consulting agency Barkow Consulting for example counted a number of 405 FinTech enterprises in 2016 in the German market, whereas Ernst & Young only reported 250 FinTech corporations (Note 48). Reason for these discrepancies is once more the issue of defining the term FinTech and the delimitation of the specific market. The immense variety of descriptions allows a lot of space for interpretations, especially with regard to the wide range of various corporations, serving customers in different business areas (Note 49). For instance, Barkow Consulting comprises the real estate market as well as the insurance sector when ranking potential FinTechs. However, these market segments are not contained in the listing of Ernst & Young (Note 50). Also, a further third analysis, conducted by G. Dorfleitner, L. Hornuf, M. Schmitt and M. Weber, determined a total of 436 FinTech companies in the German market (Note 51).

It can be emphasized that the FinTech market is a truly fast-moving industry and therefore constantly changing (Note 52). Especially the internet fostered this development in the last couple of years (Note 53). It is a matter of course for today's customers that everything is available to everyone, everywhere, at all times (Note 54). Technological support in the process and information management enables an entirely new quality and speed of workflows, to which many customers became more and more used to in other market segments, such as online trading. Consequently, due to increased customer requirements, investors started expecting similar service quality of their financial service providers as well (Note 55). Considering the fact that this paper is subsequently going to elaborate on robo-advisory as an innovative alternative to conventional private banking and robo-advice being a sub segment of the asset management sector, solely this sector will be of further relevance to this study and therefore exclusively taken into account.

3. Robo-advice

Robo-advisors are a class of financial adviser that provide financial advice or portfolio management online with moderate to minimal human intervention. They provide digital financial advice based on mathematical rules or algorithms. These algorithms are executed by software and thus financial advice do not require a human advisor. The software utilizes its algorithms to automatically allocate, manage and optimize clients' assets.

3.1 Concept and Key Data

Sectoral boundaries are more than ever going through a period of change and begin to dissolve, which is mainly caused by the rapid technological progress in the financial service sector (Note 56). Consequently, the investment industry is certainly going to be redefined in the next couple of years (Note 57). Robo-advisors will drastically

change the way financial institutions are going to serve their customers henceforward, especially by offering the opportunity to benefit from technological innovations (Note 58).

The concept of automated investment advisory service first came into view between 2008 and 2010, in conjunction with the increasing number and popularity of FinTechs (Note 59). Even though, robo-advisors are officially represented worldwide by now, the US market is by far the most significant one, with regard to the total amount of managed assets and the number of competitors (Note 60). According to Statista Digital Market Outlook, nine of the twelve biggest automated investment advisory service companies have their headquarters in the USA (Note 61).

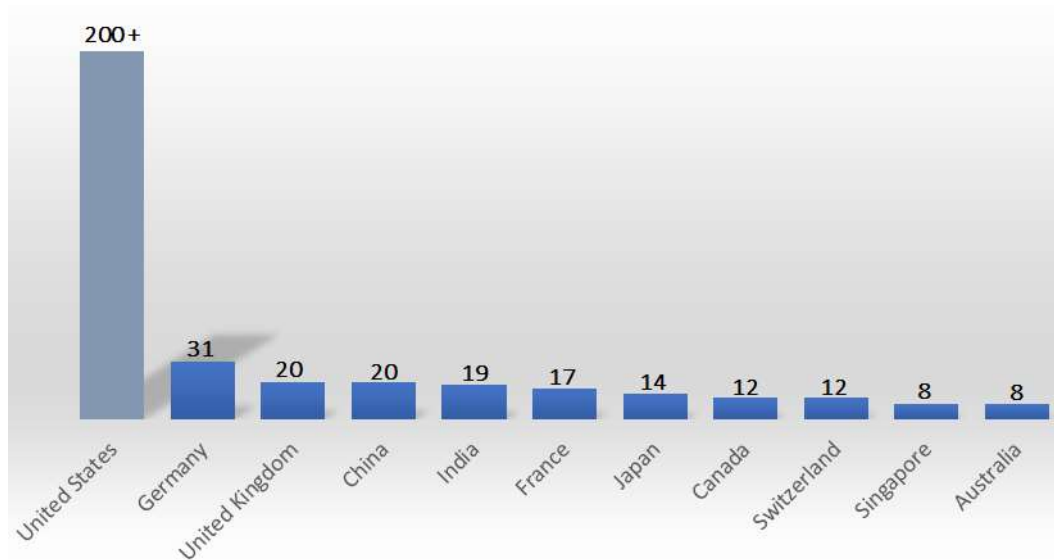


Chart 3. Number of robo-advisors, by country (April 2017) (Note 62)

The above chart illustrates that the US market has more than 200 companies operating in the robo-advisory segment. Even though, Germany is ranked as the country with the second-highest number, it still lags far behind the US with a total number of 31 corporations.

Therefore, it is no surprise that the robo-advice itself has been invented and developed by so called “garage companies” in the US, when using digital tools to gain new customers and embellish their experience to disintermediate banking relationships (Note 63).

When looking at the definition of Paolo Sironi, robo-advisors are “automated investment solutions, which engage individuals with digital tools featuring advanced customer experience, to guide them through a self-assessment process and shape their investment behavior towards rudimentary goal-based decision-making, conveniently supported by portfolio rebalancing techniques using trading algorithms based on passive investments and diversification strategies” (Note 64). In other words, robo-advisors are innovations, using leading technology, to operate as a portfolio management system, which provides predominantly automated investment advice through digital channels. This is being achieved by the use of algorithms, with the aim of minimizing trading costs, which in turn leads to further banking disintermediation (Note 65). Their functional principle is hence, based on passive investments, as well as on diversification strategies, referring to the portfolio theory of Markowitz from 1952 (Note 66). According to his findings, investors are classified as risk-averse and combine all assets within a diversified portfolio, on the basis of their individual premises of risk and return according to the μ - σ -principle (Note 67). Nevertheless, these services may vary significantly in accordance to multiple factors, such as their level of automation, their extent of passive management, their target group, their self-estimation or their degree of human advisors’ involvement (Note 68). When looking at the most important characteristics of robo-advisors, their major benefits can be identified without any difficulty. In the first instance they are automated digital, single minded businesses. Hence, they have the ability to provide a comprehensive and in particular objective view of an investor’s

situation. In addition, they encourage passive investing and have the capability to rebalance portfolios and optimize taxes automatically. Furthermore, robo-advisors engage investors on personal goals and behavior (Note 69). The overall purpose of automated investment advisory is to establish a connection with the individual customer and build up a personalized relationship, by using behavioral finance (Note 70). This comprises a deeper understanding of what is effecting the economic decision making process of individuals and how investment choices are made (Note 71).

As a consequence of the former great financial crisis in 2007, a disturbed confidential relationship between financial advisors and investors paved the way for technological innovations like computer-based investment advisory (Note 72). The automated advisory market segment has experienced a record growth between 2007 and 2015. Market shares have increased almost tenfold during this time period (Note 73). In 2015, assets valued at approximately 170 million EUR were recorded in the robo-advisory market segment in Germany (Note 74). But not only the German market has been successfully participating in this upward trend, in fact, according to a study, conducted in 2015 by MyPrivateBanking Research, the global robo-advisory market is estimated to reach a value of 450 billion USD by 2020 (Note 75).

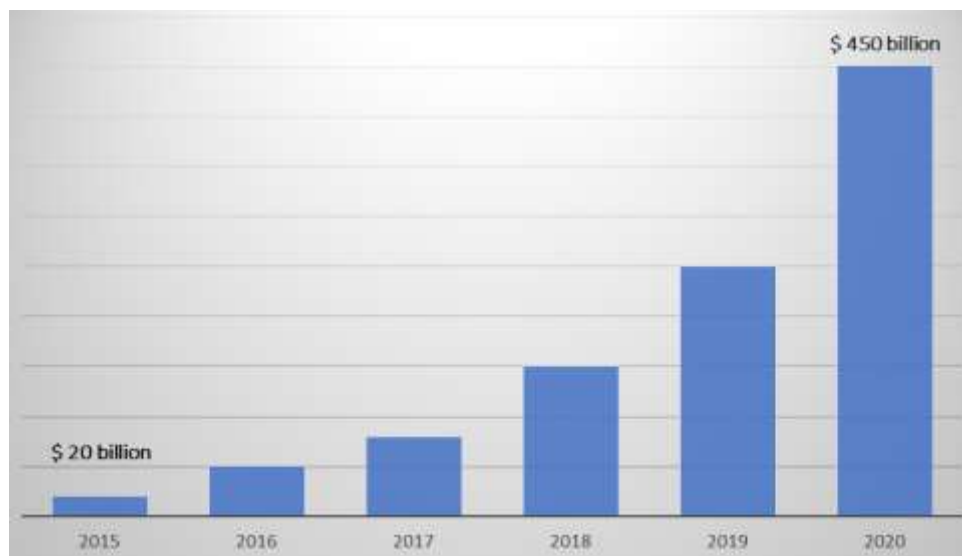


Chart 4. Expected global asset growth trend in the robo-advisory market between 2015 and 2020 (Note 76)

The above chart clearly emphasizes the expected future growth trend in the automated advisory service sector. Taking into account that the volume of assets under management in this market segment merely amounted to 20 billion USD in 2015, their expected value in 2020 is more than 22 times as big as it was five years ago.

But nonetheless, the FinTech market is a truly fast-moving industry and therefore constantly changing (Note 77). This phenomenon can in particular be observed in the robo-advisory market segment. Usually, these corporations are „business-to-consumer“ firms. A clearly observable transition is taking place towards „business-to-business“ models, where technological innovations are sold as a service, as well as towards „business-to-business-to-consumer“ models, which serve as a composition of technological and human advice (Note 78). Especially the internet fostered this development in the last couple of years (Note 79). Taking into consideration the fact that automated investment advisory providers are further going to expand their volume of managed assets along with their customer base, it is expected to see increasing numbers of strategic partnerships, cooperations and mergers with asset managers and banks in the coming years (Note 80). Already by now, many financial institutions have developed their own robo-advisors, in order to keep up with their innovative competitors (Note 81). Furthermore, these FinTechs may also transform the extent of their services offered and provide additional support, such as tax-optimization products, which are already represented in the US market and in turn enable the creation of further customer value (Note 82).

Nonetheless, when analyzing the digital based investment advisory process, it becomes clearly observable that the general concept of automated advisory systems primarily concentrates on simplicity and cost efficiency (Note 83).

The first step in the automated advisory process is about personalizing the potential client and, in this context, analyzing factors and criteria to best meet the customers' expectations. During the entire proceeding, a major emphasis will be placed on characteristics like the investors' age, their willingness to take risks, their financial knowledge and their return appetite, the customers' amount of money available for investment or time horizons. Based on these results, the robo-advisor generates an individual solution that is tailored to the customer, chosen out of an assortment of pre-defined model portfolios. According to the customers' previous self-assessment procedure, an investment recommendation will be presented to them. The investor now has the possibility to adopt the investment proposal or to reject it. Successional, the investment's completion and the money management can either take place in-house or can be outsourced to a solution-oriented service provider. Finally, a constant interaction between the rebalancing process and the performance reporting is of utmost importance and essential to ensure a successful performance. The rebalancing process itself can be both, rule-based or discretionary (Note 84). In general, this process is used to realign the allocation of the assets of a portfolio to ensure that their weightings are in line with the customer's individual investment strategy throughout the entire investment period (Note 85). In addition, at any time during this process a tax optimization is possible and will take place automatically. Key component in this workflow is once again the automation of these processes (Note 86). When looking at the performance reporting there is a division into various types observable. Either it can refer to a standard reporting, which appears every now and then, or it can be an event driven one triggered by a specific occurrence. Furthermore, a rough separation into narrative and digital performance reporting can be made as well (Note 87).

This example of robo-advisory service precisely illustrates the shift taking place towards long-term model portfolios. These investment opportunities are based on exchange-traded fund approaches and therefore granted with a high degree of simplicity due to their minimization regarding exertions in investment design and performance reporting (Note 88). By using exchange traded funds, robo-advisors are reducing their overall costs to a minimum and commercialize their automated portfolio management and rebalancing process (Note 89). Since exchange traded funds are based on indices, merely selling and buying fees can be charged, which in turn makes them a reasonable and highly cost-efficient alternative to actively managed investments. Due to the fact that there is no funds manager involved, no management fees will apply in this context (Note 90). Beyond that, due to further cost reduction also in the compliance, market research or risk management segment, investment becomes accessible to a broader audience, and additionally more transparent and objective (Note 91).

Concluding, it can be emphasized that the overall concept of automated investment advisory systems definitely serve as a sufficient and fair alternative to conventional asset management. Nevertheless, the extent to which today's banks are involved in FinTech operations still varies considerably. As a result of the fact that each and every financial institution is offering an individual product range, along with various distinctive services, to meet diverging customer requirements, most of them are barely providing FinTech-related services yet (Note 92). This again is additionally contingent on their particular current degree of digitization. Merely automated investment advisory service seems to be a future core subject that most banks are already investing in (Note 93). Therefore, the successional section is going to elaborate on the differences and similarities of digital based advisory systems compared to conventional investment advice.

3.2 Comparison of Automated Advisory Service with Conventional Private Banking services

The entire demand-supply chain of the financial investment industry is developing due to new technologies, changes in investors' needs and behavior and stricter regulations (Note 94). As a consequence, FinTechs providing automated investment advice became serious competition to the well-established financial service sector (Note 95). After having analyzed the term robo-advisor and an elaboration on their general proceeding in the automated investment advisory process in the previous section, the following paragraph is going to focus on comparing automated investment services of robots with investment advice given by conventional banking institutions.

First of all, the initial steps in both advisory processes are quite similar and follow more or less the same approach. They are about personalizing the potential investor and in this context, analyzing factors and criteria in order to best meet the customers' expectations (Note 96). Given these circumstances, characteristics, such as the clients risk appetite and their ability to take risk, should be assessed as precisely as possible. The only major difference between the electronic investment advisory compared to investment advisory given by a human being is that this process is taken place entirely online via the Internet (Note 97).

Also with regard to the final investment, another differentiation is made according to the composition of the portfolio. Recommended portfolios, selected for the individual customer by a digital advisory system, primarily invest in passive exchange traded funds (Note 98). This is mainly the reason, due to their primary objective of cost reduction. Whereas conventional investment advisors often involve individual investment instruments, such as active investments, when assembling an investor's portfolio (Note 99). Thus, the investor is given the advantage of creating a completely customized portfolio (Note 100). Nevertheless, it is important to clearly stipulate that electronic investment advisors, such as robo-advisory systems, only present recommendations on possible investment alternatives. Nonetheless, in the end, customers decide for themselves, which of the suggested investment opportunities are the most sufficient and suitable ones with regard to their individual situation and requirements (Note 101).

Another important aspect, which provides differences between automated investment advisory and their conventional counterparts, is the process of portfolio monitoring and rebalancing. Like already mentioned in the previous section, when analyzing the electronic advisory process, key component in the overall workflow is the automation of these processes (Note 102). Conventional financial institutions on the other hand offer a much lower degree of automation in this context (Note 103).

In addition, automated advisory systems provide their clients with the benefit of faster and easier access to their financial investment. Their general business concept is built upon the principle of providing service to their investors, anytime, from anywhere in the world. Whereas, customers of conventional banking institutions are usually bound to business hours (Note 104).

Furthermore, FinTechs' leading key to success behind automated advisory service is their broad range of potential clients (Note 105). Their customer target base is significantly greater, than the one of conventional banks. Over time, reaching the younger customer base and motivating them to visit the bank branch, in order to process their financial transactions, became a more and more severe problem in the conventional banking sector. The fact that FinTechs are able to serve their customers with the opportunity to make minimum investments and manage their money via savings plans, gave them the potential to address a new and notably younger client base (Note 106).

Also, in the past, personalized financial investment advice has been considered an exclusive privilege of the population's wealthier section (Note 107). Due to a survey made by the Financial Conduct Authority in the United Kingdom over the last year, more than half of all human investment advisors, namely a total of 69 %, have refused to advise potential investment clients due to missing wealth (Note 108). Therefore, it is no surprise that an increased number of clients started looking for alternatives and innovative companies like FinTechs seized their opportunity. What distinguishes these FinTechs and sets them apart in this highly competitive market, are the limited funds needed for making an investment (Note 109). By targeting in particular the young, tech-savvy customer base and the large middle class, which cannot afford to spend a huge amount of money on individual financial services, these FinTechs became serious competitors in the battle for customers and market shares.

Apart from that, one of the most important benefits of automated investment advisory systems is, due to their ability to offer these services more cost-effective than their conventional competitors, robo-advisors became very attractive solutions compared to banks, which are struggling with rising cost of capital and stricter legal requirements (Note 110). These much more favorable conditions result in particular from their high degree of automation throughout the entire supply chain, but also from the strategic orientation of their business concept, by basically investing in exchange traded funds (Note 111).

In media robo-advisors are often depicted as a disruptive technological innovation, which is going to demolish the banking sector as we know it today. By changing customers' needs and requirements, resulting, on the one hand, from FinTechs' decisive attributes, but on the other hand, also from modifications of the framework conditions of legal and institutional structures in the financial service sector, it seems to be eminently reasonable to perceive these innovative start-ups as serious competitors (Note 112). Nevertheless, these corporations only took advantage of an already existing situation caused by several different factors in the past. They simply succeeded in offering a service particularly designed to meet the changed requirements of today's customers (Note 113). Something conventional banking institutions failed to adapt to. Therefore, FinTechs have been able to gain an economic advantage in this highly competitive global market.

3.3 Advantages and Disadvantages

When looking at the main characteristics of robo-advisors, its increasing prevalence is no surprise. This section is first going to analyze the competitive advantages of automated investing. Afterwards the major disadvantages are examined in the same way.

First of all, due to the fact that robo-advisors are fully automated investment devices, they are capable of making investment decisions without any human interference and therefore, are an adequate replacement for any investment specialist (Note 114). This not only positively affects the cost structure of such corporations, but apart from that, also enables investment decisions, which are more liable to objectivity and thus eliminating any conflict of interests (Note 115).

Furthermore, portfolio monitoring throughout the entire investment period and automated rebalancing processes, which allow to revert to the optimal model allocation of the assets, enable the achievement of highly positive results (Note 116).

Another essential characteristic, which provides them with a serious competitive edge, is their so called “advanced user experience”. The cause for this development is, that investors start paying more and more attention to financial services tailored to their individual needs and preferences (Note 117). Therefore, FinTechs providing investment advice by using digital advisory systems, place the final customer at the center of the decision-making process when making an investment (Note 118). This aspect will gain more and more relevance with regard to future investment advisory processes.

A further key strength in this context is the high degree of responsibility in the primary decision-making process, which may provide the opportunity to modify the investment behavior in later stages (Note 119). Therefore, this feature of personal empowerment needs to be mentioned as a considerable strength (Note 120). Moreover, the client’s personalization via automated self-assessment procedures, is offering several competitive advantages as well. This process does not only facilitate a revised customer experience, like mentioned in the previous paragraph, but also enables a graphical illustration of the individual investment goals, in order to achieve the customer’s personal desire (Note 121).

Also, due to increasing confidence in technology and a high acceptance, especially among the young customer base, the digital development, which is encompassing almost all areas in life, will further be fostered (Note 122). Hence, FinTechs offering automated investment advisory service will have a clear advantage over their conventional counterparts. But this also means that, with regard to the future, the degree of digitalization and automation will become an even more crucial component for financial service providers, in particular in terms of gaining a competitive advantage in this market segment (Note 123).

Account aggregation competences may be of major significance as well. Although investors might not feel comfortable with their investment advisors knowing everything about their invested assets, they might appreciate getting self-directed robo-advice on their overall financial situation (Note 124).

In addition to this, automated investment advice via the Internet provides a major advantage with regard to the factor of time requirement. For instance, it offers the possibility of making adjustments to the investment, anytime, from all over the world. Thus, customers are no longer bound to a bank’s business hours or the availability of their consultant (Note 125). Still, the investor is able to take advantage of the simple and straightforward service of a digital investment advisor, which includes inter alia the monitoring, as well as automatic rebalancing processes (Note 126). Hence, investors no longer have to concern themselves with making adequate investment decisions, especially when lacking the required knowledge.

Furthermore, the service of making investment information available is a huge plus for digital investment advisors. Besides the loss of reputation suffered during the global financial crisis, conventional banking institutions are still struggling with the disturbed confidential relationship between financial advisors and investors. This lack of trust and confidence in financial service providers makes the information aspect a crucial component in the overall concept (Note 127). As a result of these negative experiences in the past, investors want to be kept up to date with regard to their investments made and receive alerts on demand, when necessary (Note 128). But even more important is, customers want to access such information from everywhere, at any time.

Nevertheless, one of their most essential benefits is their advantageous cost structure, considering the significantly lower cost level compared with traditional fund managers (Note 129). FinTechs have succeeded in accomplishing the task of reducing their overall costs to a minimum and therefore are capable of meeting small-scale demands, which have been neglected by traditional financial institutions in the past (Note 130). Since investment decisions made by

robo-advisors are mainly based on simple exchange traded fund strategies and a high degree of automation, such an expedient and in particular fully transparent cost calculation is made possible (Note 131).

Nonetheless, not only the cost aspect is of major significance when analyzing the robo-advisor. Another major advantage of robo-advisors is, due to the use of leading technology, they do not rely on outdated legacy systems (Note 132). Long established financial institutions, on the other hand, are often restricted with regard to their way of thinking and their operational processes (Note 133). This again makes automated investment advisory an extremely efficient device, which successfully integrates customers along with their expectations and requirements. Moreover, they convince investors with their high level of business focus (Note 134).

On the other hand, there are also several disadvantages attached to this innovative investment approach, which should be mentioned when analyzing robo-advisors.

When looking at the client's personalization procedure, it becomes obvious that the pursued objective of an individual investment advice, adapted to the exact requirements of each customer, cannot be adequately achieved by utilizing a "one size fits all" strategy approach (Note 135). In reality, an increased number of individual objectives need to be taken into consideration, when issuing an investment recommendation (Note 136).

Besides that, the automated self-evaluation process may overestimate the investors' ability to realistically classify him-, or herself, with regard to aspects like risk aversion (Note 137). This in turn may lead to an inappropriate investment advice, not suiting the customer's individual needs and expectations.

In favor of cost minimization, personal consultation had to be sacrificed to a large extent (Note 138). Even though, automated advisory services are working on a solution to resolve the disadvantage, a conventional asset manager is still more capable in taking care of customers' special financial requests and submitting appropriate investment vehicles, simply because customers, along with their current situation in life, are personally known to the advisor.

Also, their limitation on passive investment management could be a restrictive factor in successfully expanding their investment advisory service to a more extensive client base.

Moreover, further technological progress involves considerable expenses, which might not be possible due to severe budget restrictions. Therefore, it might become difficult to create enhanced investment advisory systems and, as a result, implement higher margin services, which is a major drawback (Note 139). Since fees levied by these corporations are very low, their business model depends hugely on an expansive customer base, in order to be able to operate profitably. Thus, managing a large number of assets will constitute one of the major challenges for these institutions in the near future (Note 140).

Nevertheless, probably their most significant downside is the lack of regulation. Even though, FinTech corporations are offering bank-like products and services such as automated investment advisory, they are usually not subject to common regulatory standards conventional banks are bound to (Note 141). Some might perceive this aspect as an advantage due to serious cost saving potentials and a higher degree of flexibility (Note 142). However, their inherent instability, resulting from missing supervision through a regulatory authority and the absence of fiduciary control, provides a much higher risk potential (Note 143).

Still, the robo-advisors' cost-efficient service, in combination with its low minimum investment amount, make it a very effective advisory tool, which is getting increased attention nowadays. Particularly these two characteristics foster such FinTechs' general approach in serving the vast middle class, which previously could not afford advisory service and therefore got neglected by conventional financial institutions in the past (Note 144). These specific attributes, along with the previously mentioned benefits, are the main reasons why this form of investment advisory service became, and will continue to be, a more and more attractive alternative to conventional asset managers.

4. Conclusion and Future Prospects

This paper was designed to investigate robo-advisors as part of the FinTech movement and in particular analyze the eligibility of digital based investment advisory service as potential alternative to conventional asset management in Germany.

Innovations like robo-advice show how financial technology has brought welcome changes to the world of investment management (Note 145). Today's increased emergence of FinTechs show the ongoing financial disintermediation in the investment industry (Note 146). A continued convergence of investment advice and planning via robot-based technology will offer new possibilities in the financial service sector (Note 147). Therefore, understanding digital trends and changes in customers' preferences are both key challenges and opportunities for long established financial institutions in the market sector. Digitalization is destabilizing established economic

principles. Thus, it is essential to comprehend the links between technology and finance, along with the incremental impact they provide (Note 148). Hence, when implementing personalized and efficient investing, FinTech innovations are becoming mandatory. Since the loss of reputation, suffered during the global financial crisis in 2007, customers became way more sensitive and risk-averse, which led to growing pressure for structural change in the banking sector (Note 149). Also, raising fiduciary standards, striving the objective of enforcing superior transparency requirements, became a major challenge for conventional investment providers to overcome (Note 150). However, these companies not only suffered loss in trust and confidence, but also lost part of their bargaining power, making them progressively more constrained (Note 151). On the other hand, the digital revolution, is encouraging customers to take a more conscious and proactive role. Nowadays, investors are acknowledged the flexibility to exchange conventional banking for relatively easier to understand investment experiences, anytime, anywhere, at much lower costs. This empowerment of the individual customer threatens to relegate conventional financial institutions and forces them to reconsider their current business models (Note 152). In this process, the term “banking democratization” is often used, which implies a determination of the price structure by customers, whereas banking institutions become price-takers. A real shift in power seems in fact to be taking place from financial intermediaries to the investors themselves (Note 153). This development has also been reinforced by the ongoing process of reconstructing information asymmetry between investor and financial advisor, which is still taking place (Note 154).

For the future, it is of tremendous importance for the banking sector to realize the significance and value of individual adapted and personalized financial services (Note 155). It can hardly be said, if conventional banks will be extinguished by the currently ongoing technological development taking place in the financial service sector. Due to the fact that the banking industry is a highly regulated market, the sector is more likely to reconstruct itself in the near future (Note 156). Nonetheless, the innovation of robo-technology in the financial sector is certainly going to change the business landscape. In general the question is not whether banks are able to overcome the difficulties their innovative competitors placed upon them (Note 157). It is rather about who is going to dominate the market from now on. And this is primarily dependent on whether the banking sector is willing and most of all capable of adjusting to these modifications and start afresh (Note 158). It is highly unlikely that established financial institutions are simply going to disappear at some point in the future. Due to severe market regulations and superior fiduciary standards, they are an essential component to the stability of the financial system and therefore also to our entire economy (Note 159). In the end, solely the tasks and role allocation between service providers and clients represent the actual imminent changes (Note 160).

Consequently, it can be concluded that robo-technology has seized the opportunity and developed its own dynamics over the last couple of years. Yet, this progressive phenomenon should not barely be considered from a single point of view, namely the threat posed by technological progress in the financial service sector. It is rather based on an interaction of several factors. These factors inter alia encompass demographical shifts, tighter fiduciary standards and the gradual digitalization of our everyday life (Note 161). However, in today’s fast-pacing, digital environment, financial investment advices have to develop into more transparent, more customer-centric, more added-value focused and also more long-term oriented approaches (Note 162). The further development towards so called „goal based investing” should be the long-term objective of any automated investment advisory system, in order to personalize finance and thereby increase revenues (Note 163). Realizing the complexity behind investors’ decisions, in particular their individual values and priorities, their numerous investment goals and various time horizons, as well as their different risk appetites, will enable robo-technology to truly create added-value and personalized investment experiences (Note 164).

So, the general conclusion, which can be derived from this work, is that robo-advisors definitely are an appropriate alternative to conventional investment advisory service. Therefore, these innovations should not be looked at as disruptive technologies. In fact, they are about complementing the financial service market, rather than substituting it, and making conventional financial products available for all market participants (Note 165). Thus, FinTechs should less be considered a threat to long-established business models of conventional financial service providers, but rather as an opportunity, enabling innovation and digitization. They should be seen as a complementation of the financial service sector, with the ability to support and expand services to a completely new level (Note 166). It is about generating added value for investors (Note 167). As Bill Gates already once said, “Banking is necessary, banks are not” (Note 168).

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