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The Fintech sector in Portugal: how 5G can influence the development of these services

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Master in Management

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Marketing, Operations and General Management Department

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Dedicado à minha família e amigos.

(Dedicated to my family and friends.)

Acknowledgments

Bearing in mind the arduous and long process that involved the realization of this dissertation, I want to express the most sincere appreciations to all those who, in some way, contributed to the conclusion of this important chapter of my life.

Firstly, I would like to thank my supervisor, Professor Ana Oliveira-Brochado, for all the support and availability during all phases of this dissertation.

Above all, I would like to thank my parents, for always believing in me, for investing in me and in my future and for never, at any time, letting me get discouraged, even in the most complicated moments.

It is time to embrace a new challenge!

Resumo

O mercado das fintechs, nos últimos anos, tem tido um crescimento exponencial a nível global e Portugal não é exceção. Este crescimento surge associado à forte inovação tecnológica aplicada aos mais diversos setores de atividade, juntamente com a revolução sentida no ainda bastante tradicional setor bancário.

Por este motivo decidi estudar este setor em Portugal, analisando não só o mercado em si, mas também o percurso dos clientes e a sua opinião atual e para o futuro, visto que se esperam grandes evoluções e desenvolvimentos constantes destes serviços, associados às novas tecnologias, nomeadamente o 5G. Ao longo desta dissertação foram analisados os fatores que influenciam a utilização destes serviços e também as limitações apontadas tanto pelos utilizadores como por aqueles que optam por não ser clientes das fintechs. De modo a analisar estas informações, foi desenvolvido um estudo quantitativo, através de um questionário, que indicou que se trata de um mercado em forte crescimento, mas perante o qual ainda existem bastantes inseguranças, sobretudo por parte das gerações mais velhas que revelam uma maior resistência à adoção deste tipo de serviços, não só por questões práticas de utilização dos serviços, mas também devido ao desconhecimento que têm dos mesmos.

Palavras chave: fintech; customer journey; 5G; processo de decisão

Classificação JEL: G23; O33

Abstract

The fintech market, in recent years, has experienced exponential growth at a global level and Portugal is no exception. This growth is associated with strong technological innovation applied to the most diverse sectors of activity, together with the revolution felt in the still quite traditional banking sector.

For this reason, I decided to study this sector in Portugal, analyzing not only the market itself, but also the customer journey and their current and future opinion, since major evolutions and constant developments are expected in these services, associated with new technologies, namely 5G. Throughout this dissertation, the factors that influence the use of these services were analyzed, as well as the limitations pointed out by both users and those who choose not to be fintech customers. In order to analyze this information, a quantitative study was developed, through a questionnaire, which indicated that it is a market in strong growth, but in which there are still many insecurities, especially on the older generations who reveal a greater resistance to the adoption of this type of service, not only for practical reasons of using the services, but also due to their lack of knowledge about them.

Keywords: fintech; customer journey; 5G; decision-making process

JEL Classification: G23; O33

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Introduction

Technological evolution is nothing new and it is something that, in recent years, has undergone increasingly advanced revolutions at a much faster pace. The constant trend towards digitalisation of the most diverse services means that companies have the need to constantly seek new innovative solutions, improving the customer experience, at the same time that they integrate new technologies into the company's own structure, progressively increasing its competitiveness in the market. Nowadays, many agents, from customers to companies themselves, highlight technology as a really differentiating factor for business success.

One of the sectors of activity that has suffered the most from a technological revolution is undoubtedly the banking sector, one of the most traditional and with the greatest potential for transformation. To a large extent, this revolution was highly potentiated by the large-scale emergence of fintech, fully technological companies that combine the latest technologies for digitalisation with the services provided by most traditional banks. This differentiating factor has, progressively, turned these services into major competitors of the traditional banking sector, being pointed out by many as strong threats to the current operating model of banks. Being logically dependent on technology, fintech will clearly benefit from the emergence of 5G, capable of bringing even more value in terms of speed, connectivity and security.

Nowadays, technology plays a fundamental role in the development of any business. 5G is one of the biggest changes in recent times concerning technological innovation and, despite being at a very advanced stage of development, its practical application is still relatively limited. Therefore, the number of studies on this topic is also reduced. 5G will revolutionize mobile apps and the banking industry as a whole, enabling more instantaneous services, higher speeds and reduced latency, which will enable, for example, a faster credit approval process, an improved customer service and, of course, greater security. Considering that fintechs are framed in an increasingly competitive sector, it is essential to constantly improve and optimize these services in order to become differentiating compared to their competitors. In this sense, it is necessary that fintechs rely on credible and up-to-date information in order to minimize the risk of loss of competitiveness.

There are still several limitations of this type of financial services and 5G may be a determining factor to overcome many of these limitations. Portugal is growing as a hub for entrepreneurship, specifically in the fintech business. The country has already five unicorns and the total funding to date from top fintechs already exceeds 400 million euros (Portugal Fintech Survey, 2021). The perception that new technologies have revolutionized the most diverse sectors of activity is clear and the financ

sector is no exception. 5G is one of the most discussed topics nowadays, in various business areas, as a technology that will transform both the way companies offer their products and services, as well as the consumer behavior itself.

According to the published literature, as these are such recent topics, there is still no customer journey analysis applied specifically to fintech, nor studies on the impacts that technologies such as 5G may have on this type of service. This research aims to precisely analyze this impact, adding value also by analyzing how these technologies can attract new customers, while increasingly improving the experience of current consumers.

Research objectives

The main objective of this dissertation is to analyze the customer journey within the fintech market in Portugal, identifying triggers in which new technologies, namely 5G, could be a determining factor, improving the current experience and attracting new customers. It is intended, therefore, to analyze the interaction between companies and customers, and which steps may be more sensitive and with potential for improvement.

Through this research, it is also planned to analyze two different views: the view of the customer and, additionally, the view of those who are not fintech users, trying to understand the reasons that led to such decision and even to what extent new technologies could be a differentiating factor in attracting these potential customers. With the support of a questionnaire, it is intended to analyze, essentially, the following questions:

- What were the reasons that led to become a customer?
- What are the reasons that lead some people not to become customers?
- How are the different generations characterized in relation to the use of fintech?

It will be possible to identify the criteria that lead consumers to use these services and understand how technological innovation could improve the service and their own customer experience. Through the data collected, it will also be possible to conclude if the triggers depend on certain sociodemographic characteristics of the user, such as their age, consequently allowing a comparison of generations. To achieve the objectives of this dissertation, a literature review will be initially carried out, where some fundamental concepts will be presented, such as fintech, customer journey and 5G.

Additionally it will also be addressed the direct impact that 5G will have on the development of fintechs.

Thesis structure

This dissertation aims to increase knowledge about the fintech market and its correlation with new emerging technologies, consequently answering the aforementioned research questions. In this way, the dissertation will follow a structure based on four fundamental chapters.

Chapter I intends to evaluate the existing literature on the topics covered, always based on the three main concepts: fintech, customer journey and 5G.

Chapter II is based on the methodology used where the analysis of quantitative research is carried out.

Chapter III will discuss the results obtained in the analysis, trying to answer the research questions presented.

Finally, Chapter IV will present some final conclusions as well as limitations of the analysis, along with recommendations for future research.

Chapter 1 – Literature review

Definition of fintech

Financial technology, or simply fintech, is the combination of technology and innovation applied in the creation of solutions for financial services that directly compete with the traditional model still prevalent in the sector (Van Loo, 2018).

The financial markets were obviously impacted by the technological revolution of the late 90's, which, thanks to digital innovations, allowed the creation of what we nowadays know as e-finance. This concept encompasses all services performed electronically, such as banking, insurance, and stock trading. In 1994, Bill Gates even stated, "banking is necessary, banks are not". This type of activities carried out remotely allowed access to information at any time and in any location, resulting in a reduction in the costs of financial transactions, which led to a decrease in the number of physical locations for financial institutions.

As a result of this revolution, many of the leading financial institutions began to develop methods to compete and, above all, coexist with fintech. Diemers, Lamaa, Salamat, and Steffens (2015) were the first to identify the participants in the fintech ecosystem. Five players can be identified: fintech startups, technology developers, governments, financial customers, and traditional financial institutions. Logically, fintech startups are at the center of this ecosystem; however, the remaining four players, which end up stimulating innovation and competitiveness in the sector, inevitably influence their operation.

According to Lee and Shin (2018), we can consider that, nowadays, there are six fintech business models according to their main activity: payment, wealth management, crowdfunding, lending, capital markets and insurance services.

Definition of customer journey

One of the most popular tools nowadays for assessing customer experience is customer journey mapping (CJM). According to Lemon and Verhoef (2016), customer experience and customer journey, despite being distinct concepts, are interconnected. The first defines the customer journey as a set of touchpoints with which consumers interact during the purchase process. Therefore, the customer journey consists of the prepurchase, purchase and post-purchase phases. A crucial aspect in the analysis is to understand how these touchpoints interact with each other.

According to Rosenbaum, Otolora and Ramírez (2017), customer journey mapping identifies all the possible organizational touchpoints that customers may experience during the acquisition process of a good or service. A clear identification of these points is decisive so that the management team can make decisions that support innovation, while improving the consumer experience.

As described above, this process consists of three steps: prepurchase, purchase and post-purchase. The first concerns the consumer's experience before actually starting to use the service, such as the identification of the product or service through advertising campaigns, for example, while the purchase period refers to the actual moment of acquisition, from the moment of entry into the store to direct contact with the customer. Finally, the post-purchase phase refers to the user's experience after the actual purchase, namely feedback on the product or service or even the customer's return to the store. After a clear identification of the touchpoints in the three steps, it is necessary to delineate strategies associated with each touchpoint.

Definition of 5G

A major contribution to technological innovation will be 5G, a networking solution to address future communication challenges, enabling efficient communication between an almost infinite number of devices, wherever they are located and at any time (Taboada and Shee, 2021). There are several technological advances of 5G when compared to its predecessor, 4G, among them a much reduced latency, higher speeds, more specifically about ten times the maximum download speed offered by 4G, significantly advanced wireless capacity with lower power consumption, resource virtualization, automated management, network slicing or even an on-demand resource allocation (5GPPP, 2015). According to Kshetri (2018), 5G will revolutionize the entire e-commerce market by enabling a higher degree of consumer engagement through the association of this technology with other existing technologies such as artificial intelligence, virtual and augmented reality, IoT and blockchain.

The evolution of the latest generation (5G) telecommunications networks is increasingly becoming a differentiating driver for the growth of the most varied IoT applications. According to Jaiswal and Mason (2014), 5G is clearly identified as the technology capable of responding to increasingly demanding requirements in terms of security, connectivity, reliability, and low latency. According to Li, Xu and Zhao (2018), regarding IoT, several technologies have been used over the last few years, namely 2G/3G/4G, WiFi and Bluetooth, which allow wireless connections between millions of devices. Initially 2G was implemented to guarantee voice service, followed by 3G for voice and data and more recently 4G for broadband internet experiences. Clearly, 4G was a significant advance as the use of Internet-based services on the most diverse devices became widespread.

As described by Li, Xu and Zhao (2018), the IoT has the potential to offer smart devices to users, but creates new challenges in terms of data security and privacy. In this aspect, 5G is again touted as a differentiating technology as it will allow the IoT to expand beyond what is possible nowadays with current technology, allowing it to achieve an unprecedented scale of coverage offering the fastest communication and capacity.

Fintech economic importance

Fintech creates a paradigm in which information technology is, nowadays, one of the main factors of innovation in the financial sector, with the capacity to affect the normal functioning of traditional financial markets. As stated by PWC (2016), 83% of financial institutions say that certain areas of their business are at risk due to fintech. According to Accenture (2016a), this is precisely the reason that led many of the traditional financial institutions to invest in fintech startups as a way to gain competitive advantage.

According to Boratyńska (2019), the reasons why consumers adopt the services provided by fintechs are not yet clearly defined in the literature, so there is a research gap in this topic, which highlights the innovation present in this research. According to Rangaswamy (2020), fintechs create value for their customers through a technology-driven customer experience. Logically, companies cannot control the customer experience; however, if this same experience is enhanced, increasing the value perceived by customers, the demand would be constantly stimulated. The new technologies presented by fintechs will be crucial for this, through the proximity they offer to consumers (Palomo, Fernández and Gutiérrez, 2018), making the method traditionally used by the banking industry obsolete.

Nowadays, banks and banking services are two different realities. This is also where fintechs have a competitive advantage. Consumers transfer their loyalty from the relationship with the institution itself to focus on the user experience. For this very reason, financial institutions are concerned with putting the customer at the center of the activity. Fintechs have largely contributed to this transformation, creating the need for institutions to offer their services through digital channels, at the same time as guaranteeing the customer full control of their financial life, simultaneously increasing the customer's own literacy, helping them to make the best decisions suited to their specific needs.

Characterization of fintech market in Portugal

The fintech sector in Portugal has experienced a strong growth in recent years and the country is already considered a great hub for entrepreneurship.

Analyzing the top 30 fintechs in Portugal, the total funding to date already exceeds €437 million, with payments and money transfers, lending and credit and insurtech being the three main services provided (2021 Portugal Fintech Survey). 27% of these top companies were founded in 2019, which reveals the strong recent development that the sector has undergone. In Portugal, Lisbon and Porto clearly stand out as the main hubs for Portuguese companies, with a weight of 60% and 20%, respectively. Even so, 19% of Portuguese fintechs already have headquarters outside the national territory. In the specific case of Portuguese-based companies, approximately 85% are business to business (B2B) companies, whose main hardships are the sales cycle itself, which for a predominantly B2B market has a relevant weight, and the search for talent, due to the strong increase in competitiveness for the qualified workforce and greater difficulty in retaining talent.

Of course, capital and investment are necessary for the creation and development of companies. Capital itself provides fintech with the possibility of bringing innovation to the sector. According to an analysis carried out with the main Portuguese fintechs, raising capital is a process that takes at least six months, although access to investors has improved considerably in recent times. In this same analysis published in the 2021 Portugal Fintech Survey, an obstacle pointed out by several entities is regulation fragmentation, insofar as it is up to policymakers and regulators to facilitate the development of these services, but there is still a way to go in this regard.

Portugal has had a special spotlight since hosting the WebSummit in 2016, a factor that has strongly contributed to the development of the startup ecosystem in the country and, consequently, to attracting international capital. Despite being a relatively small market, Portugal already has companies with a very fast growth that already represent more than 1% of the national GDP. The fact that Portugal is a small market is pointed out by many as a weakness, but it became an aspect that enhances the development of companies. It created the need for companies to also bet on the international market, increasing their own expansion. Despite the positive aspects mentioned, there is still a long way to go, as Portugal is not yet comparable with hubs such as London or Paris and there are already strong competitors with expressive growth, such as Poland, Romania and the Baltic countries.

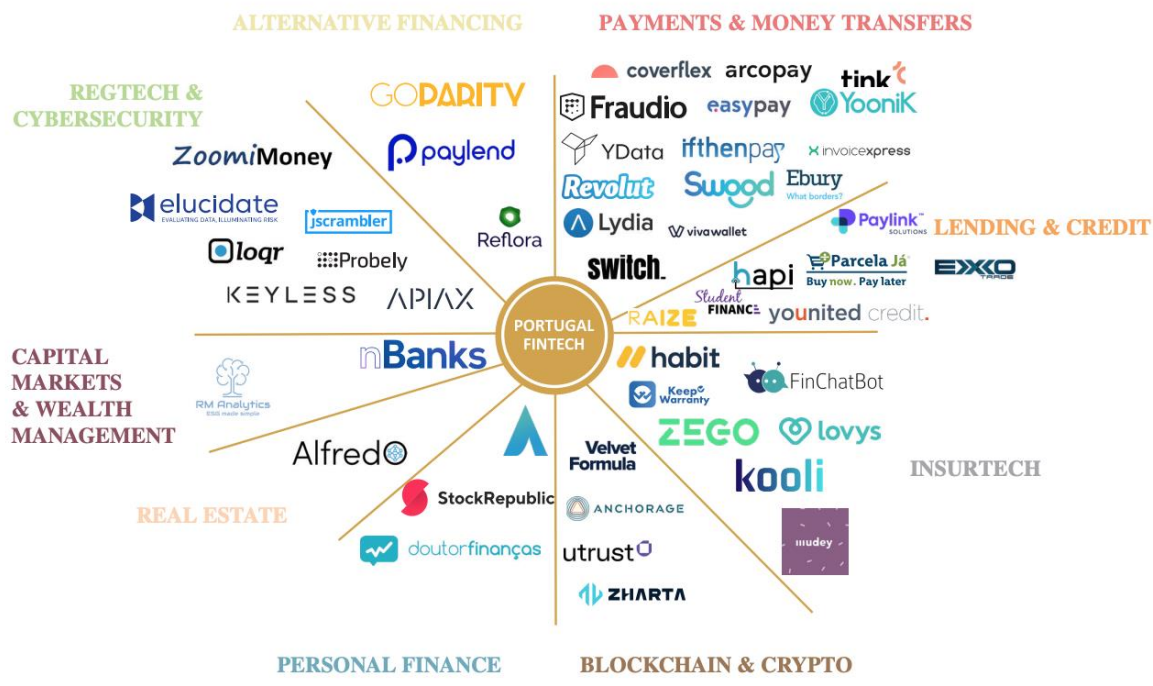


Figure 1.1: Fintechs operating in Portugal, according to activity

In addition to the Portuguese-based companies, Portugal also has several international companies already operating in the country, some of which are widely recognized by the public, such as Revolut. Progressively there has been an increased relationship between fintech and the most varied marketplaces. Marketplaces have become a key element of e-commerce. Even the pandemic was an accelerating factor in the growth of e-commerce, which actually led many retailers to feel the need to rethink their strategy. Portugal currently occupies the 38th place in the ecommerce ranking worldwide, with a revenue of US\$4 billion in 2020, an increase of 30% compared to 2019 (ecommerceDB. 2021), an effect to which the pandemic largely contributed. Despite the numerous benefits of marketplaces for consumers, there is also a need to be more concerned with the risks and greater exposure than traditional commerce. Therefore, it is crucial that these services are based on robust infrastructures that guarantee the security of transactions, while providing a reliable experience for the consumer.

5G economic importance

5G will be crucial in digital transformation. Companies and businesses have increasingly started to apply 5G in their business models with the aim of reducing costs, enhancing operational efficiency and improving the consumer experience (Singh, Singh and Stolpa, 2021).

The technology will allow leveraging investments in the cloud, something fundamental, given the importance of the cloud in the digitization of all organizations. The core features of 5G create the ideal environment for this to happen, namely due to its additional security, expanded bandwidth and cost optimization. Additionally, network-slicing technology, made possible by 5G, will allow multiple networks to be supported through a single common infrastructure, allowing companies to offer integrated services and, consequently, diversifying and increasing revenues.

Much has been said about cybersecurity and the added importance that this aspect has for companies nowadays. In this situation, 5G will also play an important role, allowing the creation of several 5G sub-networks that isolate information and increase network security. The ability of 5G to offer more efficient data transmission, through simpler infrastructures, will allow the use of radio frequencies capable of offering higher data rates, thus increasing the performance in data transmission, something crucial in a digital world so dependent on technology based on networks.

The market associated with 5G services has grown exponentially and is expected to grow even further in the coming years. "The global 5G services market size was valued at USD 41.48 billion in 2020 and is expected to grow at the compound annual growth rate (CAGR) of 46.2% from 2021 to 2028." (Grand View Research, March 2021).

5G limitations

Despite all the potential of 5G, logically there are also some limitations and challenges for the future. The fact that it is such a recent technology means that its access is still somewhat restricted, despite the fact that the main network manufacturers already have ready-made solutions. Even after the technology is introduced, its coverage will have some limitations, taking into account that all mobile technologies are always introduced in phases, and it may take a few years to reach the entire territory. Another limitation, which can be considered a factor that will enhance innovation, is the fact that companies need to create personalized services in order to take advantage of the benefit of this technology, otherwise it will have very limited use and the final consumer will not have access to the full potential of the service.

Of course, the fact that it is a new technology makes it difficult to calculate its ROI (return on investment), as it will only be possible to have a clearer notion until more deployments are made and returns are calculated.

The role of 5G in fintech development

In the era we live in nowadays, financial institutions themselves are beginning to develop synergies with technology companies in order to innovate their services and attract new consumers. Tian, Wang, Yan, Tian, Liu and Rodrigues (2019) were the first to study the impact that 5G would have on financial technology innovation, concluding that this technology would increase productivity and customer satisfaction, while also helping strongly in one of the most sensitive topics when it comes to the financial sector: security. They even concluded that 84% of financial service executives are paying more attention to the potential of 5G to make financial transactions increasingly secure, through high speeds, large-bandwidth and low-latency.

The technological revolution powered by big data, cloud computing, artificial intelligence and blockchain has forced the financial sector to reassess its vision when it comes to service innovation. In 2017, for example, global information represented a total of 21.6ZB (1 ZB corresponds to 10 trillion bytes), with financial information contributing largely to this amount of data (Tian, Wang, Yan, Tian, Liu and Rodrigues, 2019), which creates the need for increasingly innovative technologies and equipment capable of processing all the information, at an ever-increasing speed. This is also where 5G presents a key role. This technology will allow financial institutions to offer increasingly innovative and accessible services by consumers anywhere they are. It will be possible, for example, to have transactions at almost instantaneous speeds, more efficient live trading, the creation of remote tellers, allowing personalized attention in a virtual way, without the client having to travel, or even an individual and more efficient data collection of each client, allowing to offer increasingly personalized and targeted services for each specific client.

In the world we live in nowadays, there is an increasing dependence on the network, both by companies and customers. Therefore, it becomes necessary to develop networks efficiently and promoting greater automation. In this aspect, 5G will play a key role, allowing the use of network slicing technology. This technology will make it possible to adapt the needs of each service, allowing a personalized configuration of the network aimed at different services. Comparing with previous technologies, 5G has created an ideal environment for the development of artificial intelligence, promoting the integration between technology and company structures.

Apart from this, nowadays, one of the most valuable resources is data. In this aspect, 5G will also play a crucial role, allowing an increase in data transmission and processing speed, maximizing the value of the information itself. Mobile payments will also undergo a revolution, allowing users to be constantly connected to the most varied services, being able to use them together with the most

advanced biometric technologies, which guarantee greater security of transactions (faces, fingerprints, voices, etc.).

5g and fintechs themselves will largely contribute to the development of commercial banks. Given the profound change in the sector, it is practically inevitable that commercial banks accelerate the development of financial technology, always bearing in mind that banks will always be different from fintechs, if not in terms of operating philosophy. That is why it is necessary for banks to adapt their own solutions and not limit themselves to using the same models used by fintechs, as these will hardly apply to their business models. According to AT&T and IDG (International Data Group), 81% of financial institutions have made some kind of technological change recently. This is because, with the growth in the use of mobile services, many customers are increasingly looking for innovative services that use the added value of new technologies, offering an increasingly personalized user experience.

Chapter 2 – Methodology

Research Context and Design

The target audience of this research are people living in Portugal, whether or not they are clients of fintechs. For the development of this project, I relied essentially on documentary research and questionnaires.

Initially, I carried out a research with the objective of theoretically supporting the research problem, starting by investigating issues related to fintechs in general and deepening in greater detail the fintech market in Portugal, going through issues such as customer journey and some relevant information about 5G and how this technology can contribute to the increasingly accelerated development of these services.

After the literature review process, and taking into account the still scarce amount of information and research on this topic, with a view to positively contributing to the increase of practical knowledge that we have in relation to the fintech market, a quantitative approach was used as methodology.

In an attempt to obtain a sample as representative as possible of the Portuguese market, I carried out a questionnaire that was available online, randomly and anonymously, which intended to analyze the point of view of both customers and those who chose never to use a fintech or simply do not know this type of services. In this way, I intend to compare the different perspectives and also analyze the differences between generations.

Data collection and treatment

An internet-based questionnaire composed mostly of close-ended questions was used for data collection. Data collection took place between September 1st and September 30th. The questionnaire was answered by 151 people, considering 142 responses as valid, taking into account that the rest were people who were living outside Portugal and, as such, did not meet the first condition of analysis, which consists precisely in analyzing the fintech market in Portugal.

Regarding the sample of this research, 52% were male and 48% were female. Regarding socio-demographic characteristics, 6% were under 20 years old, 35% were between 20 and 29 years old, 9% between 30 and 39 years old, 6% between 40 and 49 years old, 30% between 50 and the 59 and 13% were over 60 years of age. About academic qualifications, analyzing the highest degree completed, 5% had completed basic education, 26% had completed secondary education, 7% had a technical-professional course, 35% had a degree, 26% had a master's degree and 1% had a doctorate.

Chapter 3 – Results

In order to assess people's knowledge about fintechs, it was first assessed whether they knew the concept and used the service.

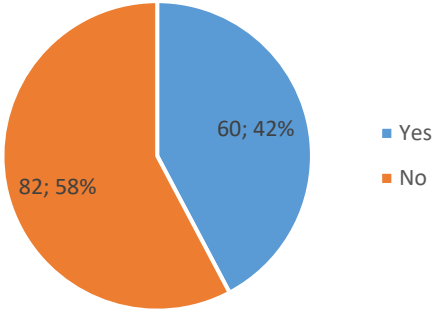


Figure 3.1: Number of people that know the concept of fintech

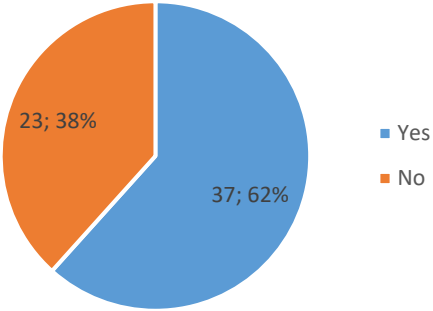


Figure 3.2: Number of people that know the concept of fintech and use the service

Through the analysis of figures 3.1 and 3.2, we can see that only 42% of respondents recognize the concept of the word fintech and that, of these, 62% are already users of this type of service on a daily basis.

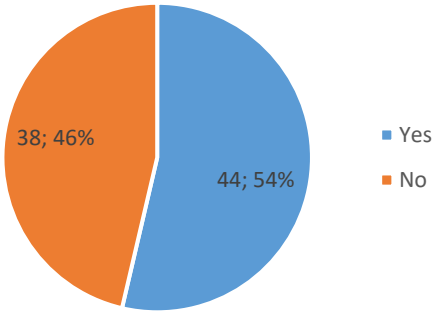


Figure 3.3: Number of people that do not know the concept of fintech but recognize companies like Revolut

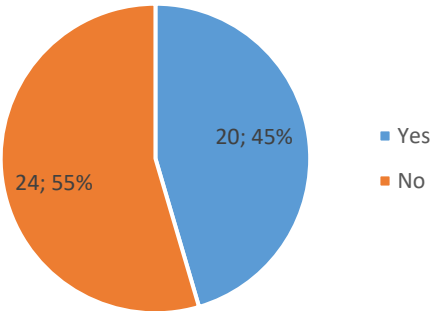


Figure 3.4: Number of people that do not know the concept, but use fintechs

A very interesting and even curious phenomenon that I was able to verify through this questionnaire is that in practice many people are unaware of the concept of the word fintech in practice but do know companies like Revolut or Lydia, that is, they know fintechs without knowing that they are in fact fintechs. Therefore, questioning if they know specific companies and saying that they are fintechs, 54% of the people who initially had answered that they did not know, after all they know fintechs, they were just unaware of the concept. And the most curious aspect is that, of these, 45% even use these

type of services. As such, I was able to verify that there is some degree of financial illiteracy with regard to these services, as after all 45% of the people who claimed not to know the concept of fintech, in reality are even customers of this type of service, without knowing that these were in fact fintechs.

However, if we only analyze those who claim not to know the concept of fintech, we find that there is a clear predominance of older generations. 78% of respondents who claim not to know the concept are over 50 years old, while in the 20 to 29 age range, for example, only 13% claim not to know the concept of fintech. On the other hand, in the case of people who claim to be unaware of the concept, when confronted with some examples of companies operating in this sector, younger generations recognize them much more than older ones. In the generation between 20 and 29 years old, of those who claimed to be unaware of the concept, 48% said they knew the companies mentioned (Revolut, for example), while in the generation over 60 years old, for example, only 2% recognized this company. Therefore, in younger generations, despite the clear illiteracy regarding the concept itself, many young people recognize the companies, they just do not associate them with the fintech concept, while older generations tend not to know so much about the fintech concept or even the companies themselves.

If we analyze only the respondents who claim to know the concept of fintech, when asked whether or not they are users of the services provided by these companies, we see that the percentage of respondents who claim to be a customer decreases as they age. In the range between 20 and 29 years old, 86% claim to be a customer, 67% in the range between 30 and 39, 50% between 40 and 49, 48% between 50 and 59 and only 40% above 60 years old.

After realizing whether or not the interviewees know the concept of fintech and whether they are users of it, we proceeded with the analysis in order to understand the reasons that led those who are not customers to never have tried this type of services. The responses were quite diverse and there is a clear differentiation between generations.

Of all respondents, no one pointed out compatibility with the devices they own as a justification for not using fintech services. Based on fully digital services and, as such, dependent on devices capable of processing them, this could be pointed out as a reason for never having tried these services, but it was not mentioned by any of the interviewees. On the other hand, only 1% said they had difficulties in subscribing to this type of services, which confirms the aforementioned point regarding the ease of access and the very reduced bureaucracy associated with it. The lack of face-to-face support was a reason given by 11% of respondents, and this reason only affects 13% of the younger generations, having been pointed out as a relevant factor by 88% of people over 50 years old. Lack of knowledge about the services provided by fintechs is a reason given by 27% of respondents, with the age group between 50 and 59 years old being the one who most mentioned this aspect. One of the most

publicized reasons I wanted to analyze was whether security would be a relevant factor in the decision-making process and, in fact, it was the second most mentioned reason by the interviewees. Around 30% of the interviewees mentioned this aspect as one of the main reasons for never having tried these services, and there is also a clear distinction between generations. Within this group of interviewees, 64% of the interviewees who mentioned the aspect of safety, 64% were over 50 years old, thus showing a greater distrust on the part of the older generations. Finally, the most mentioned factor was the lack of need. 32% of respondents stated that the fintech's services were not yet sufficiently differentiating from existing alternatives and, as such, they never felt the need to use this type of services. Here, moreover, the majority were over 50 years old (58% of respondents), while only around 30% of young people between 20 and 29 years old indicated this aspect as a relevant reason for never having become a customer.

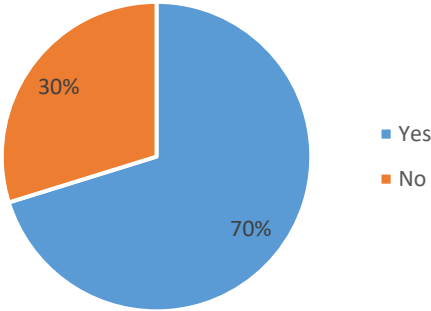


Figure 3.5: Number of people considering becoming a fintech client

Considering those who stated that they are not fintech customers, 70% consider becoming one in the future.

After this analysis, the research focused on trying to understand whether those who are not customers would see new technologies, namely 5G, as a differentiating factor for the future and whether these could solve some of the limitations that they pointed out as reasons for never having become customers. After describing some of the advantages of this technology, namely with regard to the possibility of offering increasingly personalized and real-time advice and customer support, together with low-latency data collection through artificial intelligence, increasing security of operations and fraud prevention, 74% of those interviewed said that, in fact, the revolution that this technology will bring to the sector would solve some of the limitations mentioned and, as such, could make them become customers in the future. This group was also asked if they considered that, in the future, fintechs could fully replace traditional banks, for example, and 64% said that this would not happen, but there is a curious phenomenon here, since 77% of the interviewees who stated that it would not

be possible were over 50 years of age, while in the group of those who stated that such a replacement could happen, 53% were between 20 and 29 years old.

Now focusing the analysis on those who claimed to be fintech customers, initially the objective was to understand what kind of services they used. Most respondents use the most common payment and transfer services (73%), followed by blockchain and cryptocurrency services (11%). The rest (loans and credits, insurtech, real estate, capital markets and wealth management and cybersecurity), if analyzed individually, show residual values. Afterwards, the interviewees were asked about the modality of their subscriptions. 75% stated that they only used free services and 25% used free services along with paid services. None of the interviewees claimed to only use paid services. In this regard, there was a curious phenomenon, as the percentage of users of paid services increases in older generations. In the age group between 20 and 29 years old, only 10% use paid services, leaving 17% between 30 and 39 years old, 33% between 40 and 49 years old and 53% in the age group above 50 years old.

When asked whether fintechs could, in the future, fully replace traditional banks, the results were practically the same as those reported by the group that is not a client of fintechs. In this case, 65% said that this would not be possible. We can conclude that the fact of being a customer of these services or not does not change the opinion as to the possibility of these services being able to fully replace traditional services. It was also questioned whether, before becoming a customer, they had already explored the potential of these services and 49% of respondents said that they had not and that, as such, they discovered these same potential through their daily use. A relevant aspect for the analysis was that 40% of customers stated that they had never seen any advertisement or publicity for this type of service before becoming a customer. It was also questioned whether, as users of the services, they had even considered using paid services or whether they would remain only with free versions. In this case, only 28% said they had thought about this aspect, and of these only 64% actually subscribed to a paid version.

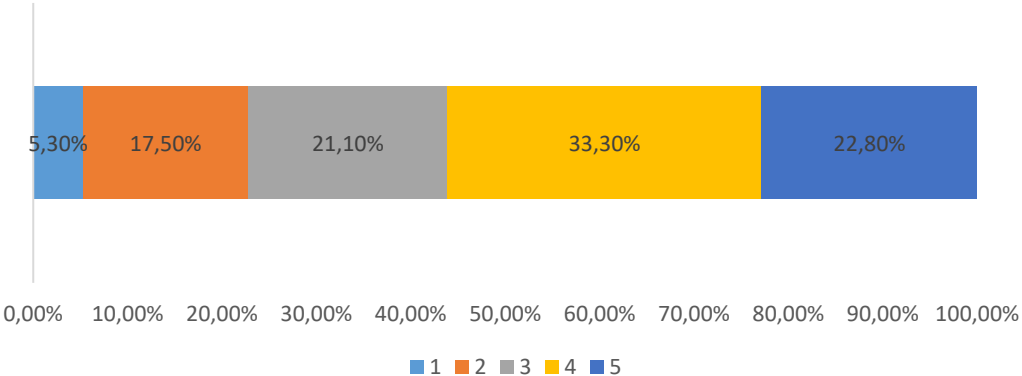


Figure 3.6: Level of use of the service provided by fintechs

Respondents were also asked about the degree of use they make of the services provided by fintechs, classifying it on a scale of 1 (rare) to 5 (very frequent). The results obtained are described in figure 3.6, with the majority of respondents at level 4 or 5 (56%). 88% of fintech customers said they were satisfied with the services and recommended them to family or friends. The same question about the potential of 5G was asked to this group, trying to understand whether it would positively impact their experience as service users and 88% of respondents said yes.

Finally, the analysis focused on the user experience in relation to several factors in which they were asked to classify them on a scale from 1 (not at all positive) to 5 (very positive).

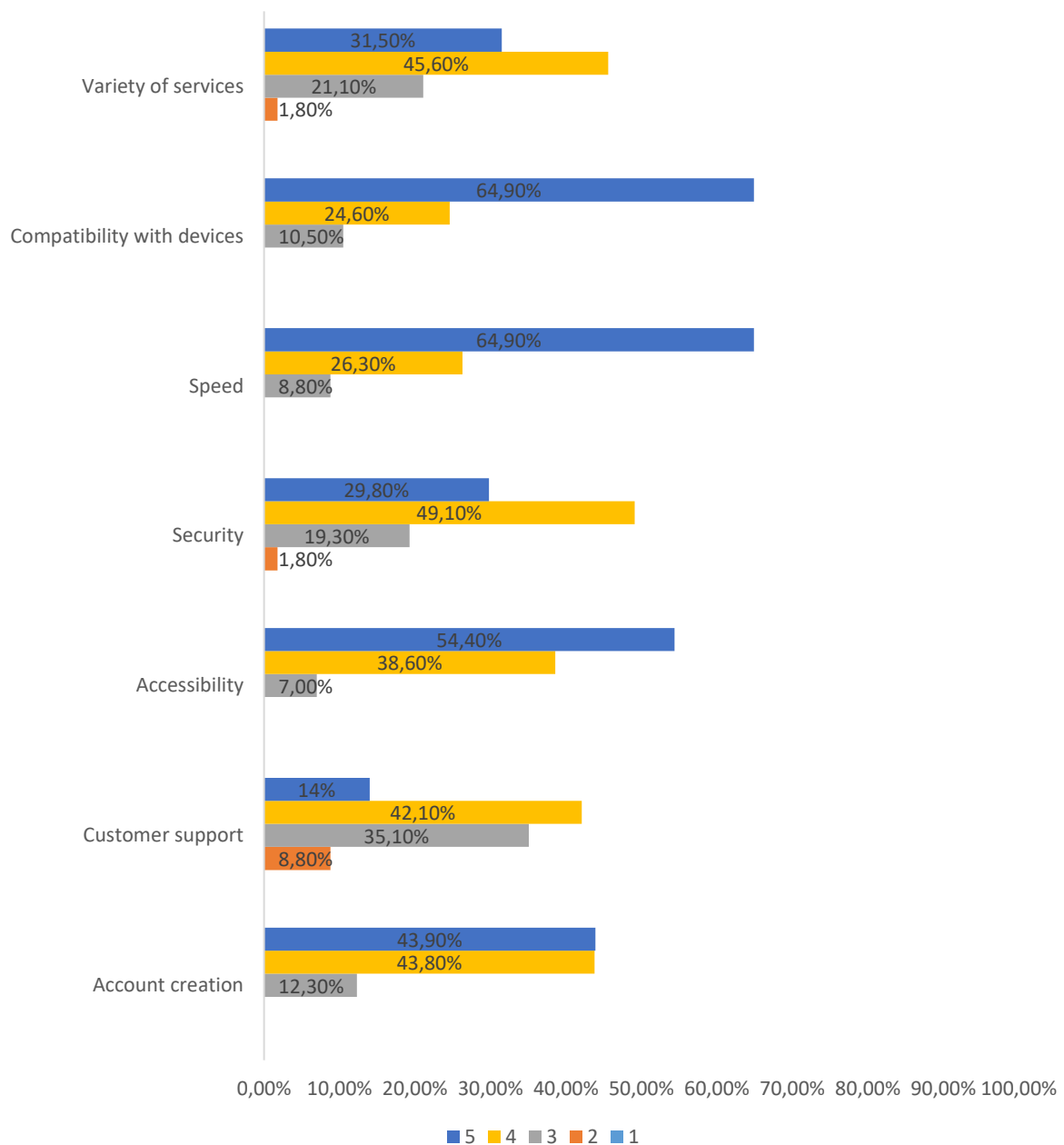


Figure 3.7: User experience satisfaction level

As we can see through the analysis of figure 3.7, the factors with the highest degree of satisfaction with regard to the experience of using fintechs are compatibility with devices, speed and accessibility. Factors such as security and customer support (highly pointed out as limitations by non-customers) are those that deserve greater attention from fintechs as points to improve in the user experience.

Chapter 4 – Conclusions

We live in an increasingly digital era in constant innovation, in the most diverse industries and sectors of activity. The banking sector is no exception. The present dissertation had as its main objective to characterize the fintech market in Portugal, to understand the reasons that lead people to become customers and also the limitations pointed out by those who chose never to become customers, deepening a little more the knowledge we have in specifically with current customers. Additionally, an attempt was made to clarify the impact that 5G could have on the development of this type of services and how this innovation would be recognized by current and potential customers. Through the data collected, it was also possible to carry out a generational comparison that allowed us to deepen our knowledge about this research problem, together with the previously carried out literature review.

As it was possible to verify through the analysis of the collected data and respective discussion, the term fintech is still not as recognized as would be expected. There is still a large proportion knowing some fintechs as companies, but not associating them with the fintech term, which reveals some financial illiteracy in this specific case, even having cases of customers who became customers without knowing that they were using fintech services. There is a clear generational difference in this same topic, with the term fintech being much more recognized by younger generations and fintechs themselves as companies being more recognized and used by these same younger generations, more aware of constant technological innovations and less concerned about issues such as safety or even the lack of face-to-face support, factors often referred to as limitations by older generations. However, these two topics should receive special attention from the companies themselves, as they were the main limitations pointed out by those who chose not to be customers, but also had the least positive score from current customers.

Even so, there is a clear openness to try these services in the future, especially when analyzing the added value that new technologies, namely 5G, can bring to these same services, despite the overwhelming majority considering that it will be very difficult for fintechs to fully replace the currently dominant traditional services.

It was also found that the tendency to adopt paid services is quite low, especially on the part of the younger generations, which could explain the fact that the vast majority of fintechs existing today have at least one free version, even with fewer resources, often enough for most users, leaving paid resources for very specific situations or audiences.

Study limitations

During the process of this research, obviously, some limitations emerged. Initially, with regard to the literature review, being a very recent topic, there is still not much information available, and even less a specific characterization of a given market or a generational comparison, which in practice made this research even more enriching due to the potential to increase available knowledge. The fact of focusing only on the Portuguese market may bring some limitations when it comes to extrapolating this information to other markets with different characteristics, socio-demographic and beyond.

Another limitation could be the sample, not very large, which meant that certain answers had some data without great relevance, most of which were excluded from the analysis and final conclusions.

Finally, there is a need to continue to investigate more and more on this subject, given its constant innovation and growth, which may cause the conclusions referred to change in a short period of time.

Further research recommendations

In order to further expand the existing knowledge on this research problem, it would be enriching to explore this theme in different markets, perhaps analyzing cultural differences between different countries, certain different demographic patterns and even different socio-economic contexts.

It would be interesting to conduct an analysis from the fintechs point of view, trying to understand the vision of organizations and their management teams, in order to understand whether it is aligned with customer expectations, in order to increasingly improve their experience of use.

Despite the conclusion drawn regarding the ability of fintechs to fully replace traditional services, it is undeniable that the emergence of these services also revolutionized the traditional sector itself, as such, it would be interesting to study the real impact on the traditional banking sector, for example, in order to understand how the daily lives of these companies have been and will continue to be affected.

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