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Is the long-term survival of financial institutions inextricably linked to the current rise of FinTech companies?

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ABSTRACT

A revolution in the financial industry is happening. The financial industry has been during a long time ruled by a few leaders. Technology is shaking the industry and revolutionizing the way people deal with financial services. Thousands of new entrants have emerged. Those new entrants, called FinTech companies, have quickly been adopted. The main reasons for this are the 2008-2009 financial crisis, new regulations, the fact that banks are technologically lagging behind and slow in implementing new technologies, enhanced customer expectations and investments in FinTech companies. FinTech companies can be classified into 4 main categories: the banking sector, insurance sector, asset and wealth management sector and lastly the RegTech sector. The confrontation between the old and new world raises the central question of the thesis « Is the long-term survival of financial institutions inextricably linked to the current rise of FinTech companies? ». Based on research papers and interviews, it has been demonstrated that the survival of FinTech companies depends on traditional banks and incumbents. The main reasons for this are that firstly, FinTechs' most important weaknesses match banks' core strengths. Secondly, FinTech companies would not be able to take over banks' core activities. Thirdly, banks benefit from internal resources to become self-disruptors. The failure or success among banks however depends on innovation, a threat for banks would be to not collaborate with a FinTech company. Three collaboration models exist: white labeling, acquisition and partnership however some integration problems might always arise. The most important ones are the banks' structures and systems.

Keywords: FinTech, innovation, collaboration

PREFACE

This thesis concludes my five years at university. Starting firstly at Saint-Louis in trilingual then moving to Louvain-la-Neuve to join the MSc in Business Engineering and CEMS MIM double degree. By being constantly surrounded by ambitious and hard-working CEMS students, I learned how to evolve in globalized markets that require entrepreneurs to take educated risks and to favor innovative strategies while remaining disciplined. Next, thanks to an internship in a FinTech company in London and an exchange semester in Stockholm I developed a strong interest in finance which will be useful for my professional career.

Writing this master thesis has not always been an easy task. It is for this reason that I would like to use the following paragraphs to thank anyone who has supported me throughout this journey.

First, I would like to thank my thesis supervisor, Bruno Colmant, for all his useful advice, his availability and support.

I also would like to thank Olivier de Groote, Hadi Kamouh, Jean-Paul Servais, Quentin Colmant, Jean-Louis Laurent Josi and Nikolai Hack who helped me to find answers to my questions and did not hesitate to give me some valuable tips.

I would like to thank my parents and family for their support, for giving me recommendations, for giving me feedback and for proofreading my thesis.

Lastly, I would like to thank my friends who encouraged me and proofread my thesis.

GLOSSARY

FinTech company: technologically enabled financial innovation that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services.

Collaboration: Is the action of working with someone in this case: a FinTech company or a traditional bank.

Innovation: The process of translating an idea or invention into a good or service that creates value or for which consumers will pay (Businessdictionary, 2019).

Sandbox: Testing ground for new business models that are not protected by current regulation, or supervised by regulatory institutions

Global adoption rate: Consumers using digital services on a regular basis. Regular being defined as the use of a FinTech service twice or more in the prior six months.

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I. Introduction

Financial and baking services exist for centuries. They have changed and evolved (Hobe, 2015). One of the most significant changes is happening now (Najera Alva, 2018). People are evolving with new technologies, leading them to be always connected and to have higher customer expectations. Those new technologies also change the traditional financial landscape (Kim, 2010).

Because of those changes in the financial landscape, a particular subject is now gaining importance namely, FinTech companies. FinTech companies are new entrants that are competing with well-established financial institutions (Skan, Dickerson, & Masood, 2015). They offer clients new innovative solutions based on new technologies. Their objective is to replace certain products offered by banks. For the moment, these FinTech companies are unbundling the financial industry by providing niche products. Even if most of those new entrants remain reasonably small for the moment, traditional financial institutions do not neglect them. Indeed, some FinTech companies have already partnered with banks (Ke, 2018). On top of this, investments in FinTech companies quadrupled in the last six years (KPMG, 2018).

People are becoming increasingly interested in the services offered by FinTech companies because they enable their clients to not use banks as an intermediary and to provide products and services previously not available or similar products and services with an enhanced customer experience. On top of this, products and services offered by FinTech companies are usually cheaper than the ones offered by banks (Blanc, 2017).

The research methodology adopted for the literature was first to carry out thorough upstream researches to get a full understanding of the FinTech as well as the Banking industry. The primary data collection points were official reports from banks and consultancy papers. Next, the literature has been written. To guarantee accuracy, interviews have been conducted with experts and my thesis supervisor has reviewed the literature.

This paper first gives a precise definition of what a FinTech company is (Financial Stability Board, 2017) and offers some numbers about their growth and investment activity and digs deeper in the type of people using FinTech solutions (EY, 2017).

The second part of the paper explains the history of the FinTech industry briefly and will be followed by the reasons that led to this FinTech trend. The reasons will be split into two categories: the internal and the external factors.

The fourth chapter will focus on the different sectors of the FinTech industry. Papers and researches classify the FinTech industry in many different ways. The goal of this section is to offer the readers a clear and comprehensive view of the industry. Four types of FinTech companies will be further explained: Fintech companies in the banking industry, insurance industry, asset and wealth management industry and regulatory industry.

The first chapters give the reader a good comprehension of the FinTech industry, which will be necessary to understand the following parts of the paper.

Next, we are getting to the heart of the matter, where we will answer the central question of our paper. The central question is « Is the long-term survival of financial institutions inextricably linked to the current rise of FinTech companies? » The reason we came up with this question is that a few years ago the financial landscape was characterized by a few big players while thousands of new entrants nowadays invade the financial industry. New entrants rely on the use of technology to shake the market. We are in the middle of a new era with a confrontation between the new and old world. This scenario would have never been imagined before (FirstCircle, 2019). On top of this, both banks and FinTech companies offer valuable advantages. Some experts believe that FinTech companies will be the leader in the financial industry in the upcoming years while others believe banks will maintain their position. Those are the elements that are at the origin of this problematic.

The answer to this question will be based on recognized books, research papers from consultancy companies, banks, and experts but also from interviews with people working at the FSMA, with a FinTech co-founder, with the CEO of an insurance company, bankers and with consultants from Deloitte. By having a critical mindset, listening to the opinion of experts and by being surrounded by my thesis supervisor, we will be able to answer the

central question of this thesis in the most precise way as possible and thus carrying out the intended purpose of this paper.

The first step to tackle this question is to make the reader aware of the FinTech's and bank's state of mind: Why banks believe they should put collaboration forward with FinTech companies and why FinTech companies think they should put collaboration forward with banks. This part also explains what banks and FinTech companies could pull from one another in a collaboration situation.

In the next step, we will diagnose if the future of banks depends on FinTech companies or vice versa. To answer this question, we will analyze and weight the arguments in favor of FinTech companies and banks. A more precise analysis will then be conducted on the five most important sectors of the FinTech industry today which are: payments, personal finance, lending, insurance, and investments. We will identify who benefits from a leading position and why should collaboration be put in place or not. The different collaboration models and the difficulties will also be described with some examples.

This finally leads us to the conclusion of the paper. The results of our research will be summarized, and we will have a critical review. Some futuristic scenarios of how the financial industry could look like in twenty years from now will be exposed. These different scenarios will be based on our reflection and will result from the researches and interviews conducted throughout this thesis. Finally, some guidelines will be given regarding some future studies.

The research will be based only on two actors inside the financial industry: the banks and the FinTech companies. We will not try to determine the impact of the GAFA companies on the financial sector. This will be however slightly explored in the limitations of the paper. Moreover, the paper will be focused on trends and analyses in the European market as the US market is developing differently and faster and that the Asian market is already very mature.

II. The emergence of FinTech companies

FinTech is a contraction of two words, “Financial” and “Technology” and is a term given to a business using technology and/or softwares in the financial industry. The Financial Stability Board[1] defines it as “technologically enabled financial innovation that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services.” FinTech companies want to change the way financial services have been offered in the past (Financial Stability Board, 2017).

Abraham Bettinger used the word "FinTech" for the first time in 1972 (Schueffel, 2016) its use has started to grow in 2015 and is nowadays looked up ten times more than in March 2014 (Figure 1). Bankers, entrepreneurs and anyone in the financial industry have for the moment only one word in mind “FinTech” (Novack & Schifrin, 2019).

Figure 1: Evolution in search for the word "FinTech" between the 23rd of March 2014 and 17 of March 2019 (Google Trends, 2019)

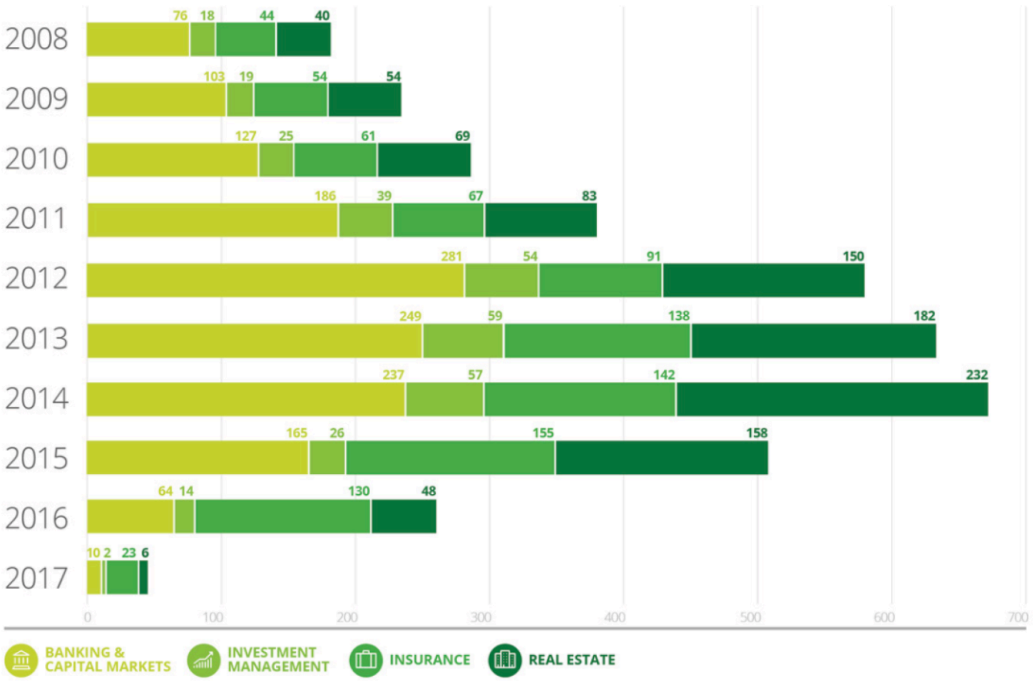
FinTech companies differentiate themselves from other financial services such as banks by providing more user-friendly, transparent and intuitive services through a mobile application or website. Most banks are lagging and have not explored those improvements yet (Springer, 2017).

[1] The Financial Stability Board (FSB) is an international body that monitors and makes recommendations about the global financial system (Financial Stability Board, 2019).

Constructing a single definition of "FinTech" that applies to all FinTech companies is extremely difficult. Even if some features can be identified in most FinTechs, they will not apply to all of them. For example, most FinTech companies are start-ups, but this is not true for all of them. Additionally, a lot of FinTech companies have been funded through crowdfunding and venture capital. Unfortunately, those features could not be applied to all FinTech firms even though they are an essential trait of the FinTech industry. (Springer, 2017).

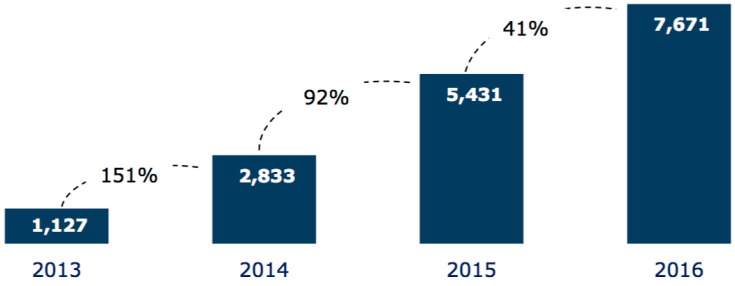
The number of FinTech companies has grown extremely fast since a few years especially after the crisis of 2008-2009. More than 12.000 FinTech companies coexist in 2019 (Statista, 2019a). A steady growth has been observed between 2008 and 2014 and more specifically from 2010 to 2014. In 2014, the FinTech industry reached a maximum of 668 FinTechs founded that year, most of them in the banking and real estate industry. A sharp decline has then been observed in 2017 (Figure 2). This drop occurred probably since the golden rush was over and that FinTech companies filled all the niches in the market. Year over year, the number of FinTech companies worldwide is still growing (Deloitte, 2017).

Figure 2: Number of FinTech companies founded by year (Deloitte, 2017)



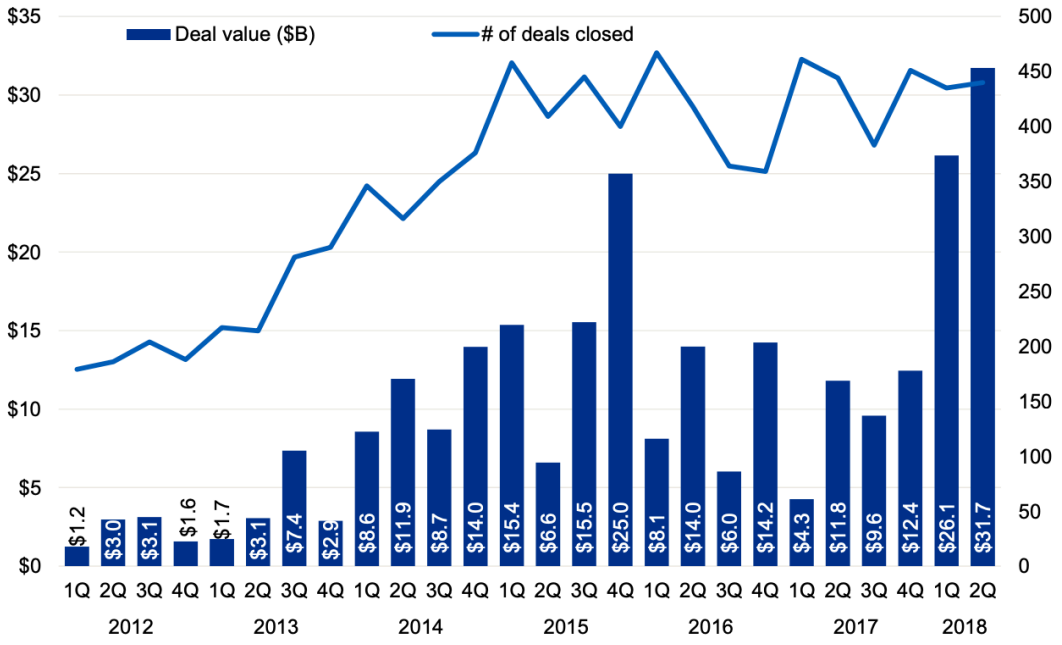
The market volume of the online alternative finance market has been growing significantly in Europe in recent years. Market volumes have increased by respectively 151%, 92% and 41% between 2013 and 2016 (Figure 3).

Figure 3:Market volumes in the online alternative finance market (Fraile Carmona, et al., 2018)



Regarding the investment activity, the deal value and the number of deals have been mainly growing since 2012 where around $10Bn were invested (KPMG, 2017b). The number of deals has been increasing until 2015 and has been flat since then while the total value of deals has been cyclical. A peak has been depicted in the last quarter of 2015 which has been followed by a 2-years decline ending with new record highs in 2018. By July 2018, $57.9Bn has already been invested in FinTech companies (Figure 4).

Figure 4:Global investment activity (VC, PE and M&A) in FinTech companies, 2012- June 2018 (KPMG, 2017b)



Globally, more and more people are using FinTech products and services. From an EY research, in 2015, **the global average adoption rate**[2] was 15.5% (Gulamhuseinwala, Hatch, & Lloyd, 2017) and in 2017, 33%. Those numbers show how much the FinTech popularity has grown. The adoption rate among countries, however, varies considerably. European countries tend to be on average or below average while countries such as India and China have adoption rates of respectively 52% and 69% (Gulamhuseinwala, Hatch, & Lloyd, 2017).

The most used FinTech services are money transfers and payments followed by insurance, savings & investments, borrowing, and financial planning. The first category is the most popular FinTech service used. Among all FinTech users, one person out of two uses a transfer or payment service provided by a FinTech company. Lastly, the users between 25 and 34 have the highest adoption rate followed by the 35-44 age bracket (Gulamhuseinwala, Hatch, & Lloyd, 2017).

[2] Consumers using digital services on a regular basis. Regular being defined as the use of a FinTech service twice or more in the prior six months (EY, 2017b).

III. The history of FinTech companies

Even if most people started talking about FinTech companies only a few years ago, FinTechs are not entirely new. The first FinTechs appeared in the 1950s with the creation of credit and debit cards. This new payment system replaced the fiduciary money people used. The upcoming service were ATMs that enabled people to not go to their bank anymore to withdraw money. Financial institutions improved customer services and at the same time decreased costs (Blanc, 2017).

In the 1970s Clearing House Interbank Payments System[3] started operating in banks which simplified and improved the interbank payments. Later, the electronic trading of securities appeared, SWIFT for better interbank communications, online checking account, and virtual banks also appeared (Arner, Nathan Barberis, & Buckley, 2015).

Nowadays, FinTech companies appear in all sectors of the banking industry. Banks used to have a monopoly on their products and services. FinTech companies are now becoming direct competitors (EY, 2017b).

[3] CHIPS is the largest private sector USD clearing system in the world, clearing and settling $1.5 trillion in domestic and international payments per day. CHIPS provides fast and final payments and the most efficient liquidity savings mechanism available today (The Clearing House, 2019).

IV. What has led to the trend of FinTech companies?

Technology can nowadays be used by anyone. Storage and connection costs have plunged over the last twenty years. On top of this, increasingly more people act digitally. By next year, 50% of the workforce will be millennials and 75% of the millennials are interested in new technologies (Deloitte, 2017).

The FinTech industry has grown at a fast pace for almost 10 years for many reasons. In the next paragraphs, the main reasons will be further explained. The reasons that have led to this growth will be split into two categories. On the one hand, external factors that created an opportunity for FinTech companies: the financial crisis of 2008-2009 and the regulatory compliance and on the other hand, the internal factors: urbanization and customer experience as well as technology.

1 External factors leading to the growth of FinTech companies

1.1 The financial crisis of 2008-2009

In 2007 and 2008 the stock market was about to crash and experience the worst recession since 1930 (France24, 2008). Some of the reasons for this crash were the US government policy which introduced the mortgage loans. Those were at first only designed for citizens meeting particular requirements. Later, the US government policy softened those requirements allowing low Americans to borrow money and have homeownership. Between 2001 and 2004 the interest rates have been lowered which encouraged even more people to borrow money. Banks, on the other hand, were looking to benefit from this situation by selling mortgage-backed securities to other banks. The demand for such increased but the demand was not infinite. They, therefore, decided to make subprime mortgages allowing people with no revenue and no guarantees to borrow money and to buy houses they could usually not afford. Those factors led to higher prices in real estate and finally to a housing bubble. At a certain point, people were not able to repay their loans leading to a drop in the price of the real estate. Other reasons for this crash were the false ratings assigned by rating agencies and the financial market structure (Bartmann, 2016).

People have scared during and after the financial crisis and some of them even lost a big part of their wealth (A. Sahlman, 2009). This situation resulted in the fact that a group of people

did not trust banks anymore and were looking for alternatives. Additionally, after the crisis banks were spending a lot of time in their recovery and new regulations while some other companies were focused on developing new business models and reshaping the financial sector by creating and integrating new technologies. Indeed, the shift in focus from banks has created an innovation vacuum while at the same time new products such as smartphones started to spread worldwide. FinTech companies have filled this gap created by the 2008 crisis (Hornuf & Haddad, 2016).

Some people, however, think that the crisis has not been a reason for the emergence of FinTech companies but rather that the crisis happened at the inflection point. As Quentin Colmant, co-founder of an InsurTech, Qure, said in an interview, « I am not sure that the 2008 crisis has brought FinTech companies […] the growth of FinTech came because of the maturity of informatics » (Colmant, 2019).

1.2 Regulatory compliance

New regulations have been introduced in recent years, and the European regulators with an open mind have taken into account the development of new technologies. Two important regulations have entered into force in 2018 which have enabled FinTech companies to gain from it, PSD2 and GDPR (EY, 2018).

Firstly, the second Payment Services Directive (PSD2) whose goal is to create a common area for all payment service providers while focusing on security and customer protection (PWC, 2018). In this way, merchant businesses will be able to retrieve customer bank data if prior permission has been given. This will allow the merchants to directly make the payment without having to redirect customers to payment services such as Visa (Botta, Digiacomo, Höll, & Oakes, 2018).

Secondly, GDPR, which aims at “simplifying the regulatory environment and giving citizens back control over their personal data” (EU Commission).

The rise of those regulations has given FinTech companies additional opportunities even if it might not always be self-evident. GDPR and PSD2 have the potential to simplify processes. Three benefits could be identified.

First, large and established financial organizations have a more significant client base and often do not efficiently manage data processing, new client's data will be stored in an ad-hoc manner while FinTech companies will be able to use more efficient data processing processes. (Don, 2018) Moreover, a study conducted by consultancy.uk on the GDPR compliance cost of the FTSE100 has shown that the cost of implementing GDPR increases with the number of employees and that this cost is the highest for the banking sector (Consultancy.uk, 2017).

Second, GDPR and the revised payment services directive (PSD2) want to accelerate the disruption of financial services. GDPR and PSD2 offer the possibility to make partnerships easier between established financial organizations and FinTech companies. This will foster collaboration between banks and FinTech companies (Don, 2018).

Third, all those new regulations have raised awareness about the importance of customer data. This gives FinTech companies a straight edge by showing people that privacy is embedded in their value proposition. Moreover, the controller in the case of a data breach will have 72 hours to investigate the violation and inform the supervisory authority while most businesses took 200 days to notify regulators. Any FinTech company that will be able to meet these requirements will capture benefits (Don, 2018).

Additionally, governments proposed new policies such as sandboxes[4] to lower entry barriers. Sandboxes are testing environments for new business models. The goal of those sandboxes is to create a regulatory environment that would be suitable for FinTech companies since the actual rigid regulations in the financial sector prevent businesses with new technologies to grow at a rapid pace (BBVA, 2017). Jean-Paul Servais, President of the FSMA, explained in an interview conducted with him that Sandboxes only apply to a small number of cases and that those do not provide a boost to most FinTech companies.

« Sandboxes are only applicable in a limited number of scenarios. Sandboxes might not provide a boost to most FinTech companies » (Servais, 2019). Jean-Paul Servais, President of the FSMA.

[4] Testing grounds for new business models that are not protected by current regulation, or supervised by regulatory institutions (BBVA, 2017).

As it will be further discussed in section 5.3.2.2 regulations also strengthen the bank's position compared to FinTech companies. Still, PSD2 and GDPR favor the development of FinTech companies.

2 Internal factors leading to the growth of FinTech companies

2.1 Technology

Banks are technologically lagging behind. FinTech companies are more agile and better grasp the technological evolution than banks (Browne, 2017). FinTech companies have therefore identified gaps they would be able to fill with new innovative solutions (FinTech Talents, 2017). Banks are using extremely old IT systems that allowed FinTech companies to find a place in the market. Quentin Colmant explained that « FinTech can exist because big banks live with old IT systems that they are not able to update because of the lack of competences » (Colmant, 2019).

« FinTech can exist because big banks live with old IT systems that they are not able to update because of the lack of competences ». Quentin Colmant, co-founder of Qure.

Next, new technologies are surging in all financial sectors. These new technologies are adopted by the start-up sector and are more flexible than old technologies. The use of them enables cost reduction, an easy scale-up for growing demand and better customer experience while improving information protection (BNY Mellon, 2015).

2.2 Urbanization and customer experience

Urbanization is the next important factor leading to the development of FinTech companies. Urbanization is at the origin of new data network infrastructures such as 3G and 4G leading to a connected world. This has been for example key in the development of FinTech companies in Africa where, Urbanization, has changed the face of the financial industry (Emerge85, 2018). Developers have been coding more than two million applications where about a thousand are related to financial services (EY, 2018). On top of this, smartphone penetration worldwide has been increasing (Statista, 2017). This new trend has created a willingness to stay connected and at the same time has turned the use of the smartphone in a multitasking device. Consequently, financial services have taken an inflection point towards mobile

banking leading to the rise of FinTech companies (EY, 2018).

FinTech companies have captured and are capturing this opportunity and benefit from the increase in demand for smartphones which enable companies to offer services that would previously be unimagined and realize personalized customer service. This demand for personalized services arose thanks to the BigTechs such as Google, Facebook, Amazon but also other companies such as Uber and Airbnb that offer personalized services and deliver excellent customer services (Capgemini, 2017). FinTech companies have consequently strongly focused on experience. Customers are now seeking for features that traditional banks do not offer; a 24/7 service, personalization interaction wherever and whenever they want, peer networks and instant gratification (J. Mehta, Bandyopadhyay, & Shah, 2015).

2.3 Speed of implementation

Furthermore, banks are slow at implementing new technologies which gives FinTech companies more time and a competitive edge (Saleh, et al., 2017).

The first reason for this is that banks do not grasp the benefits of digitalization. Indeed, in a survey conducted by BCG, 12 international institutions have been interviewed and not even half of the respondents understood the importance of digitalization (Saleh, et al., 2017).

Secondly, banks do not attract talented people who could help them in data analytics and digital customer experience. Expertise in technology is crucial to face the FinTech competition. Some banks are therefore unable to develop and deploy a new technological financial service that a FinTech would quickly put in place (Saleh, et al., 2017).

The old IT systems used by banks which make it very hard for banks to integrate new technologies is the last reason why banks are slow in implementing new technologies. Banks would spend most of their effort on implementing the latest technology in the old system. Using IT systems that are up to date would already help banks at achieving digital transformation. Moreover, only 20% of the tech expenditures are spent on developing new ideas, and 80% are spent on old IT systems to keep them running (Latham, 2015).

Other reasons for their slow pace is the resistance to change, weak guidance and bad decision

makings, legacy costs, poor coordination (Saleh, et al., 2017), and risk avoidance (Capgemini, 2017).

2.4 Venture Capital funding's

Notwithstanding, the venture capital fundings are an important reason having led to the FinTech hype. Public and/ or private investors create venture capital funds for new growth businesses. Venture capital funds provide capital to the company in exchange for equity (KPMG, 2018). Those investments are mostly high-risk investments (Business Dictionary). The fundings from VCs in FinTech companies have tremendously increased over the last few years jumping from $1.8B in 2010 to $27.4B in 2017 (consultancy.uk, 2018). Since 2014, Asia-Pacific, as well as Europe funding, has increased while the funding in North America is stabilizing for the last four years. Those numbers highlight how much FinTech companies have success among venture capitalists and give an idea of how they believe FinTech companies could reshape the financial landscape. However, due to the rise in popularity in FinTech companies, VCs have invested in a large group of companies, all of them might not have a robust and viable business (KPMG, 2018).

V. The sectors of the FinTech companies

The following figure shows a complete mapping of the FinTech industry with the most promising FinTech companies. As there is no precise classification of the FinTech sector, the goal of this figure (Figure 5) is to show that the structure that will be further explained (Figure 6) is reliable and that it does not neglect some relevant FinTech categories (Fraile Carmona, et al., 2018).

Figure 5: FinTech landscape mapping (CB Insights, 2018)

FinTech companies can be broken down into different categories. The goal of this section is to find the best way on how FinTech companies can be divided. The way FinTech companies have been classified is based on the different researches and interviews conducted throughout this thesis. We believe that the FinTech industry can be divided into four different categories based on the distinctive business models they focus on and the emergent technologies they use. FinTech companies can be developed in the banking sector, insurance sector, investment sector and security and compliance sector. Each category will be sub-divided in smaller

groups with each time a FinTech company as an example. The way it will be subdivided is shown in the next figure (Figure 6).

Figure 6: FinTech companies' classification

1 Banking

The first category in the FinTech industry is the banking sector. The banking sector has faced a steady growth in the number of companies founded between 2008 and 2012. Since then, the number of FinTech companies is still growing but at a slower pace (Deloitte, 2017).

Besides looking at the number of companies created in the FinTech sector, looking at the yearly funding and the types of funding sources gives an interesting inside on the maturity stage of the market. This will be analyzed in the following paragraph.

At first, a robust general growth in funding year over year has taken place between 2008 and 2016 jumping from $0.47 billion in 2008 to $17.71 billion in 2016. This exponential growth in funding might nevertheless be misleading since more money was injected into companies in a later stage than start-ups through second funding rounds for example. Moreover, from 2012 until now the number of companies created has been declining while the funding has increased from 2012 till 2016. This is an indicator that the market is maturing (Deloitte, 2017)

Next, the banking categories have not been equally funded. Deposits and lending, as well as payments, have benefited from larger funding volumes than banking operations, capital raising and financial management (Deloitte, 2017).

Venture capital remains the primary source of funding for FinTech companies. However other funding alternatives appear at later stages of the company's growth such as private equity and debt funding. Those latest funding alternatives are the second signal of a maturing market.

The banking sector can be subdivided into different focus areas:

- Payment, transfers and billing automation & streamlining
- Personal finance
- Lending.

1.1 Payment, transfers and billing automation & streamlining.

1.1.1 Payments

Traditional banks have dominated the global payment system for years. However, changes in regulations, technological innovation, and new customer preferences have enabled non-banks players to provide new payment methods. Those new services offer unique user experiences and have reinforced the non-cash payment trend especially for low amount transactions. Those new payment methods store valuable data from their clients making transactions (Ley, Foottit, & Honig, 2015).

The payments are considered as one of the most developed areas of the FinTech industry especially with the rise of technologies such as NFC that enable customers to pay with their phones. (KPMG, 2018). The mobile payment revenue is even expected to hit the one trillion dollars in revenue in 2019, which is twice as much as in 2015 (Statista, 2019b). People are expected to pay more and more with their phones in the next years and retailers will need to adapt.

Some examples of FinTech payment players are Ayden and Square.

Adyen is a payment platform solution allowing businesses to accept more than 250 different payment modes on any device. They offer three products namely online payments, points of

sale and marketplaces. Ayden business model is based on a payment fee charge (Ayden, 2018)

Square is a payment and transfer service that offers its customers the ability to transfer money through their mobile application and helps small businesses accepting payments anywhere and tracking sales. Square gets paid every time a transaction has been executed through its product, a percentage of the transaction, as well as a fixed fee (Square, 2018).

1.1.2 Transfers

Money transfers also account for one of the most essential areas in the FinTech industry. FinTech companies have been able to find a niche in this field by offering lower and more transparent fees (Judge, 2016), excluding intermediaries and lowering spreads. FinTech companies have cash almost all around the world because they can match one transfer with one or more opposite transfers while banks need to take money in one currency convert it into another one and then transfer it. The number of processes is reduced for FinTech companies allowing them to offer lower fees (Judge, 2016). In 2017, 600 billion dollars were sent through FinTech companies specialized in transfers. Year over year the transfer time is getting shorter, and the average cost of sending money is decreasing. In 2012 sending $200 would have cost around 9% while it only has been declining slightly since then (Figure 7). On top of this, the total share of remittances banks have, have been decreasing (Figure 8).

Notwithstanding, banks charge the highest percentage on transfers with on global average a cost of 7% while money transfer operators charge around 8% (Figure 7). Companies are fighting among each other's to develop and use the best technology to send money across borders. This stiff competition among those actors is driving prices down. Although the competition is fierce, some companies have been able to run faster than others (The World Bank, 2017).

Figure 7: Average Cost of Sending Remittances (The World Bank, 2017)

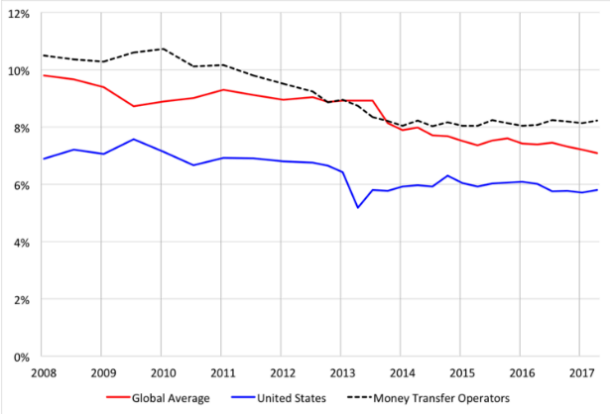
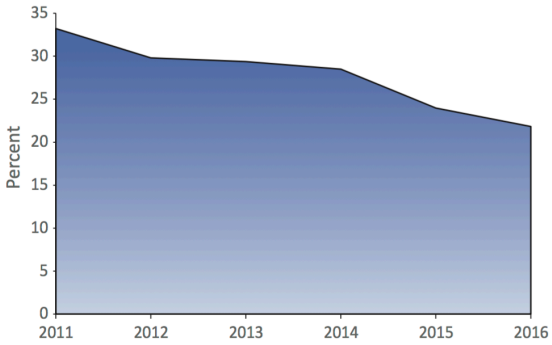


Figure 8: Bank's Share of Remittances (The World Bank, 2017)



TransferWise, which is a UK-based company founded in 2010 offers a transfer service across 750 currencies. Thanks to their local bank netting it enables them to send money internationally without crossing borders, leading to lower costs than traditional bank fees (TransferWise, 2018). The company is already valued at more than a billion dollars, and more than a billion dollars are transferred every month through their platform (Ainger, 2017).

WorldRemit is another UK transfer service company founded in 2010 (Abrams, 2017). Those are only two well-established companies out of a group of hundreds of companies.

However, the best brokers for large amounts to transfer might still be traditional brokers, but even in this field, FinTech companies exist. A start-up called currencytransfer.com has grasped the opportunity to create a business out of it by providing people with the best rates available from a group of selected brokers (Judge, 2016).

1.1.3 Billing automation

Electronic-invoicing or electronic-billing is the transfer of an electronic bill between suppliers and buyers (B2B or B2C). Electronic invoicing differs from traditional invoicing which is based on paper processes. The annual invoice and billing volume in 2016 was around 36 billion with an increase in e-invoicing and e-billing of respectively 23.44% and 33.13%. Notwithstanding, some institutions such as the European Commission would like to foster the use of e-invoicing and e-billing by removing barriers that hinder to the mass adoption of e-invoicing and e-billing. Moreover, they would like this method to be the most used method

for invoicing (ECB, 2016).
The first reason why billing automation has been developed is for time savings. It would take 60% to 80% less time than the traditional way of processing bills. Secondly, billing automation would lead to lower costs and eliminate errors. Lastly, billing automation could increase transparency. Larger companies tend to decentralize the invoices leading to a loss of transparency. E-invoicing would centralize invoices and increase transparency (Koch, 2017)

Examples of e-invoicing companies are Concur and Expensify.

Concur is an American company providing expense management processes as well as an automation process for travel expenses (Concur, 2018). Expensify is also an American company that also provides expense management (Expensify, 2018). Both companies are close competitors and only have small differences in pricing.

1.2 Personal Finance, online and mobile banking

1.2.1 Personal Finance

Personal finance refers to the way people manage their money such as the monitoring of spendings and savings.

Specific platforms as Mint offer users the possibility to visualize the expenses, income, saving and debts to be paid. Moreover, users will be able to know in which category the money has been spent for example restaurant and bars, transport, groceries, entertainment, etc. (Mint, 2018).
Other FinTech companies such as N26 offer personal finance as a part of their value proposition. Clients of this (German) bank will be able to visualize what they have on their account and statistics about their expenditures (N26, 2018). Savings are also seen as an attention point for personal finance. A mobile application such as Personal Capital helps people sticking to their budget and savings by setting targets. Additionally, this platform also allows people to visualize their cash flows and asset allocation (Personal Capital, 2018).

1.2.2 Online banking and mbile banking

Online and mobile banking enables clients of a bank to handle financial transactions through an online channel, computer or smartphone (Commonwealth Bank of Australia, 2018). Between 2013 and 2018 the mobile banking applications have skyrocketed (Bida, 2017). Several factors could explain this surge.

Firstly, the time spent on mobile is around 5 hours a day (Laurinavicius, 2018). People, therefore, expect their bank to be on their phone to meet customers' requirements and achieve customer satisfaction. Indeed, the younger generation already relies strongly on mobile application rather than physical stores. Moreover, customers are now looking for 24/7 services from their bank such as accessing their bank whenever and wherever they want (J. Mehta, Bandyopadhyay, & Shah, 2015). Lastly, after many years of poor customer services and innovation offered by traditional banks, customers are willing to try something different (J. Mehta, Bandyopadhyay, & Shah, 2015).

Examples of online mobile banking applications are Revolut and N26.

N26 offers current accounts, savings and investment products in more than 70 countries (N26, 2018) and Revolut offers pre-paid debit cards, currency money transfers, and currency and even cryptocurrency exchanges (Revolut, 2019).

Those mobile applications offer services that traditional banks propose additionally to other features. They provide the possibility for firstly monitor spending and savings as explained in the previous section. Furthermore, people can freeze their card, change their withdrawal and spending limits at any time and change their pin code. Another important feature offered by those mobile banks are the free or free-fee withdrawals depending on the bank (N26, 2018).

Each mobile bank offers of course slightly different features that others do not provide. Revolut, for example, does not have a full banking license but provides the best exchange rates when being abroad, offers the possibility to have different currency portfolio and the ability to switch for one currency to another for free. Lastly, Revolut provides payment splitting tools (Connington, 2018).

1.3 Lending

One of the first sectors that has been disrupted by the technology revolution is lending (Sharf, 2018)

This not surprising for two reasons since consumer debt in the United States on September 2017 was $3.8 trillion (Walker, 2017) and that the total household debt rose to 13.15 trillion dollars at the end of 2017 reaching an all-time high (Kim, 2018). Many FinTech companies, therefore, wanted to improve this.

In recent years, alternative lending platforms have seen exponential growth even if banks still manage the most significant part of lending (Jagtiani & Lemieux, 2017). FinTech companies in this sector have enabled people with no or little credit history to borrow money (Australian Small Business and Family Enterprise, 2018).

Two more specific areas have to be considered: the direct lending and the peer-to-peer lending which will both be explained in the next paragraphs.

1.3.1 Peer-to-peer lending

Peer-to-peer platforms (P2P) are bringing lenders and borrowers together without the intervention of a financial institution (Milne & Parboteeah, 2016). Two different categories of peer-to-peer lending can be distinguished namely consumer and business lending. P2P platforms and have seen great success in the last ten years for three main reasons. Firstly, the cost of lending money is lower. Secondly, the lending process has been simplified. Lastly, people who were rejected by traditional banks because of low credit scores have now been able to borrow money. Potential borrowers still need to meet specific criteria to be allowed to borrow money (Lust, 2016 - 2017).

The peer-to-peer platforms have emerged in 2006 but have only become more important in 2008 when banks have reinforced their lending requirements such as credit rating and credit history leading to the end of easy and cheap loans granted by traditional banks. The growth of peer-to-peer lending has continued to increase over the years from $3.2Bn lending volume in 2013 to $28.3Bn in 2015 (Derayah Financial, 2017).

Peer-to-peer platforms business models are solely based on fees when money is transferred from a lender to a borrower. This can happen at different moments: for the initial payment, late payments, defaults or recurring payments. Moreover, those lending platforms are not facing and assuming credit risks since their only function is to bring a borrower and a lender together (Derayah Financial, 2017).

An example of a consumer peer to peer lending platform is Zopa which has already lent for more than £3.34 billion to UK customers only since its start and has lent almost a billion pounds during the last few months (Zopa, 2018).

Distinctively, funding circle focuses on small businesses P2P lending and offers unsecured loans up to £500,000, a 1.9% rate per year, a lending decision in 24 hours and a borrowing period over six months to 5 years. Funding circle also offers direct lending (Funding Circle, 2018).

1.3.2 Direct lending

The goal of direct lending platforms is to provide further access to lending to people who have been denied from fair access to credit. The actual creditworthiness of non-conventional applicants will be evaluated through artificial intelligence. Direct lending platforms work in partnerships with other banks or lending institutions and are able to give in a few minutes the final result of their analysis which will then be transmitted (Mazzotti & Caminiti, Accenture, 2017).

Lending nowadays can be summarized as an information processing problem that would ideally suit artificial intelligence and more specifically machine learning. The core question to be analyzed is whether an individual is likely to default based on his creditworthiness. Artificial intelligence can process extensive data that humans would not be able to do in the same amount of time even if they would have the appropriate information. This is the reason why traditional banks only take a few parameters into account to determine the credit risk of an individual (Mazzotti & Caminiti, Accenture, 2017). Today, companies are looking too much more data than what traditional banks would use in the lending process (Cukier, 2018).

FinTech companies in this sector do not only look for financial metrics but also for the digital footprint of the person. The digital footprint can be analyzed because people (generally the middle class) use tablets and have a smartphone. Their attitudes and habits are then studied. Typically, machine learning will inspect social media use and geo-location (Walker, 2018). Geo-location provides a good insight into where the consumer spends time as well as his lifestyle. Geo-location would, for example, give information on the type of restaurants, hotels, and places an individual goes to. (Gandhi, 2015)

Social media is another treasure of information. In 2012, a billion monthly active users were using Facebook and 2.19 billion in the first quarter of 2018 (Statista, 2014). The data available on social media is therefore expanding and is easily accessible. Social media users share opinions, ideas, and information. More concretely social media gives information on whether someone is single, drinks alcohol, takes drugs, lives with his parents, religion, interests, etc. (Alloway, 2018). Based on the data set, machine learning has been able to group people in different categories for consumer lending. (Ntwiga & Weke, 2016)

Examples of such FinTech companies are Lenddo and Upstart.

Lenddo is a tech company based in Hong-Kong founded in 2011 (Crunchbase, 2019). Its goal is to grant the middle-class access to financial services. Their starting point is that the middle-class has a regular income but that it is for them difficult to have access to credit. They are therefore using machine learning to analyze customers' digital footprint and creditworthiness. The final results of the process are then shared with banks and lending institutions. Lenddo processes more than 10,000 applications every month (Lenddo, 2019).

Upstart is an American online connecting platform between individuals and banks that automates the loan process. Upstart, just as Lenddo takes non-traditional variables into account such as education, field of study and job history when determining the creditworthiness of an individual rather than only the FICO scores[5].

[5] The FICO score is score calculated on various factors: payment history, level of indebtedness, types of credit used, length of credit history and new credit accounts (UpStart, 2019).

1.3.3 Crowdfunding

Crowdfunding is a fund-raising method by which a company issues shares or equity to a large group of individuals through the internet. Crowdfunding has a lot of success; in 2015, crowdfunding platforms worldwide raised over $34 billion (UNDP, 2017). Crowdfunding enables companies to raise money rapidly and without the cumbersome processes and negotiations linked to traditional funding methods such as venture capital (Ahlers, Günther, Cumming, & Schweizer, 2017).

Four main types of crowdfunding platforms can be distinguished.

The first category is the **donation model** where people will not be honored. Then, **the lending model**, where people get returns when the loan is repaid with interests. The third category is the **reward-based** model where people contribute to a project but get a non-financial compensation such as product. The last model is the equity-based model (Branzov & Maneva, 2014). In this scenario, people invest money and expect a return on investment if the business starts to grow (Baeck, 2017). This new fund-raising method has multiple benefits. Companies that were unable to get financing, get a unique opportunity that is cheaper for start-ups and allows people to invest in businesses easily. Crowdfunding platforms need to be regulated but for the moment there are no strict regulations, and different crowdfunding platforms fall under various regulations (CGAP, 2017).

Kickstarter is an example of an American FinTech company in the crowdfunding sector. More than 145.000 projects such as movies and technology products have already been funded through this platform (Kickstarter, 2018).

2 Insurances

The second category in the FinTech industry is the insurance sector called “InsurTech”.

InsurTech stands for “Insurance Technology” and is considered as a part of the FinTech industry. InsurTech refers to the use of innovative technologies in the insurance sector with as a primary goal the increase in savings and efficiency of the traditional insurance business model (Braun & Schreiber, 2017).

Just like the banking industry, the insurance sector has faced strong funding growth in recent years from $140 million in funding in 2011 to $2.91 billion in funding in 2015 (KPMG, 2017b). Over the same period, the average investment in InsurTech companies has been multiplied by almost five from $5 million to $22 million (Catlin, Lorenz, Munstermann, & Olesen, 2017). The insurance sector has however known his peak in the number of companies created later than the banking sector. Indeed, the maximum number of FinTech companies in the banking sector was in 2012 and in 2015 for the insurance sector (KPMG, 2017b).

The reasons that led to the growth of InsurTech companies are the followings.

Firstly, the banking sector came to maturity a few years ago and has become an ever more competitive industry. This has led investors and entrepreneurs to look for other opportunities in the market. They have been focusing on other financial services to disrupt namely the insurance industry (Raskin, 2017).

Secondly, the insurance sector as the banking sector has benefited from significant investments especially between 2013 and 2017 (Raskin, 2017).

Thirdly, the amount of data, internet of things and artificial intelligence enable InsurTech companies to offer products and services that are less expensive, more suitable to customers and detect fraud (Raskin, 2017).

Furthermore, the time spent on smartphones and tablets is increasing, with an increase of 50% over the last three years (comScore’s 2016 Mobile app report). Mobile applications are therefore an excellent opportunity for insurances to enhance customer relationships, to

provide them useful information and real-time updates (Raskin, 2017)

Lastly, the insurance industry is extremely competitive, and many of them are looking to differentiate themselves and to meet customer expectations. Customers are looking for transparency, faster services, comparability, new experiences, and personalized services. One of their solutions to survive this shakeout in this industry is through collaboration in the use of new technologies and services offered by InsurTech companies (International Association of Insurance Supervisors, 2017).

The increase in new insurance companies drives innovation, brings fresh ideas and speeds processes. These start-ups are targeting different sub-sectors of the insurance space: peer-to-peer, comparison portals, digital brokers, insurance cross-sellers, on-demand insurance, digital insurance, big data analytics and internet of things (Braun & Schreiber, 2017).

2.1 Peer-to-Peer insurance

The first category is peer-to-peer (P2P) insurance. In this configuration, a small group of people with the same interests pool their money together and share a common risk. Different players cover different risks in this business space such as home insurance or car insurance. In this pool configuration, group-members use to know each other's or support similar causes which disincentives a fraudulent behavior. The P2P model differs from a traditional broker where the risk would not be shared among people. The P2P type of insurance bypasses the intermediaries such as brokers, is less expensive and is more flexible. At the end of the insurance period, the money available in the pool is then refunded to the group members. Some important players in this industry are Friendsurance and Lemonade (Saha, 2016).

Friendsurance is an Australian company founded in Germany; its goal is to create a platform of mutual support by building private insurance pools (Friendsurance, 2018).

Lemonade is an online American insurance company using AI for homeowners and renters created in 2015. Customers will not receive a bonus at the end of the year if they remain claimless, but the money will be transferred to a non-profit the client cares about (Lemonade, 2018).

2.2 Comparison portals

Comparison portals are the second category. Comparison portals allow customers to have more transparency enabling them to identify the best insurance policies quickly according to their needs. Comparison portals provide information about the different services providers and make the purchase decision easier. They provide customers with information about the cheapest quote, the service or product and other service providers (Atticus, 2014).

Simplyinsured is an example of a comparison portal for health insurance. They provide recommendations to the user based on the service he is looking for and makes buying insurances a simple process. Comparis, as a Swiss company, is another example of a comparison portal. It does not only focus on comparing insurances but also cars, banks, property and telecom rates (Comparis, 2018).

2.3 Digital Brokers

The goal of digital brokers in the insurance industry is to find an insurance policy that meets the needs of the clients with the use of new technologies.

Clients are expecting a 24/7 service from their brokers to contact them whenever and wherever they want. This trend has been earlier depicted in the banking industry. The same pattern is now appearing in the insurance industry, but the value of brokers remains a consistency across time. The technology is available, but client portals and mobile applications have not yet been developed among all insurers. New companies are therefore catching this opportunity to serve clients in a better way. Clients are looking for digital brokers for two reasons. Firstly, to communicate easily with their insurer. Secondly, to have the necessary information about their insurances on one single place usually on a mobile application (Kottmann & Dordrechter, 2017).

Embroker is an American company founded in 2015 (Crunchbase, 2018b) and helps businesses improving how they manage and buy coverage (Embroker, 2018). Knip is a mobile application and is a digital insurance broker. They enable their customers to visualize their insurances and their associated important information such as the payment date, the amount to be paid and the remaining length of the insurance period. Additionally, clients can

through their platform change their insurance policies, tariffs, and contracts (Knip, 2018).

2.4 Insurance cross sellers

Insurance cross sellers are the fourth category of InsurTechs.

Cross-selling is a sales technique to get a customer spend more by purchasing a product that is related to what is being bought already (Shopify, 2019). InsurTech companies apply the same method. Instead of offering a similar product, retailers suggest their clients purchasing an appropriate insurance. This is beneficial both for the client who will be able to buy an insurance without any paperwork and for the retailer who will make more revenues from selling the coverage. Cross-selling also has a broader definition which is allowing customers to buy insurances instantly (Braun & Schreiber, 2017).

An example of a company that fits the narrower definition of cross-selling insurance is Massup which is a German company. Massup works with retailers by providing their point of sales with insurances that match their products. On top of that, Massup takes care of payments and claims. Anyone opening a point a sale through this platform only focuses on selling his product (Massup, 2018).

Picsure is an InsurTech company that fits the second definition. They offer three different products using AI: object recognition, fraud detection, and ID-check. The first product, object recognition, provides cross-selling opportunities for insurers and gives people an easy tool to receive an insurance quote by taking a picture of an object (Picsure, 2018).

2.5 On-demand insurance

On-demand insurance is the fifth type of insurance that will be covered.

The emergence of technology and personalized services has driven companies to provide their customers with services that perfectly suit their needs. On-demand insurance allows people to cover risks at particular moments in time. Insurance clients do not want to pay for days when their asset is not used. For example, people do not expect to pay for insurance during the days they are not using their car. On-demand insurance would improve client satisfaction for three

reasons: lower costs, more transparency, and flexible service. On-demand insurance is not very popular yet since it does not even represent 1% of the total insurance market (Merrey & Kokins, 2017) but it is expecting to boom in the next years with a strong willingness of millennials to buy usage-based insurances (Braun & Schreiber, 2017). A small number of players already operate in this niche market such as Trov and Sure.

Trov is a company founded in 2012 and is the first on-demand insurance company for personal assets. They cover more than 20.000 different items, and its users can switch their insurance on or off from the Trov mobile application (Trov, 2018). Trov has already done a successful entry in Australia but also in the UK with a partnership with Axa (Williams-Grut, 2016) and has raised $45 million to enter the US market in 2017 (Sawers, 2017).

Sure is another example of on-demand insurance powered by artificial intelligence founded in 2014 that helps its users to find the best insurance that fits a client's lifestyle. Moreover, Sure is partnering with some well-known American insurance companies such as Nationwide and Assurant (Sureapp, 2018).

2.6 Digital Insurers

A Bain & Company survey from 2015 found out that insurers think they would be able to auto-underwrite a significant share of their business and especially in the property and casualty area. Moreover, insurers are already using technology in their daily operations such as purchase, inquiries and claim services (Bain & Company, 2015).

Digital insurers see further opportunities in this field and are trying to digitize the whole value chain of insurers leading to reduced costs and error rates for insurers which is sometimes up to 70% to 90% for certain forms (Bain & Company, 2015). Digital insurers would enhance customer experience and reduce the time for quote processing or claims management. The shift towards more automated processes will require a change in talent recruiting (Catlin, Hartman, Segev, & Tentis, 2015).

Pioneers in this field are Oscar and Ottonova.

Oscar is an American health digital insurer based in New-York providing individual health plans (Oscar, 2018) and other features such as direct appoint scheduling with one of their partners (Kliff, 2016).

Ottonova is a German private health digital insurance company founded in 2015 that enables its clients (with a minimum salary) to get private health insurance. Their service allows its users to sign contracts and select an insurance through their mobile application (Ottonova, 2018).

2.7 Big Data Analytics

Quickly retrieving relevant data is for insurers extremely difficult since data is often stored in a decentralized way. On that of that, running an analysis and reporting results in a short period is an additional difficulty for insurance companies. Insurers, for example, need to face clients claims daily and go through data to resolve them sometimes resulting in wrong decisions. This is one of the reasons why big data analytics is gaining importance in the insurance industry. Furthermore, 130,000 fraud cases have been detected in 2014 in the United Kingdom representing £1.3Bn. Using data analytics would reduce fraud. Fraud detection is a second driver for big data analytics (Cunningham & Mitchell, 2016). Data requires three components. Firstly, volume, without enough volume it would be impossible to for IT systems to generate relevant information. Next, data has to come from different sources and be quickly acquired by companies. (IBM, 2016)

InsurTech companies in this sector aim at helping insurance companies in extracting relevant data. GetMeIns is an InsurTech company using artificial intelligence and providing a new approach to fraud detection and fraud prediction by using military grade intelligence (Peverelli & de Feniks, 2018). The company is also specialized in cost assessment, claim automation leading to greater customer engagement (Getmeins, 2019).

2.8 Internet of Things

The internet of things is the network of interconnected devices such as phones, watches, cars, headphones, etc. that exchange data between themselves. The information that can be

extracted is then used to more precisely assess risks and adjust prices. The traditional approach uses obsolete data to determine a client's risk level (Morgan, 2014).

Four data sources are relevant to use for insurance companies.

Firstly, **wearables** such as watches and other devices that can give information such as heart rate and the number of steps walked. This information would then be used by health insurances to provide its client with a more suitable quote (EY, 2016b). Vitality is an example of a company that rewards its clients for being in good shape. Secondly, **data from connected cars** that give information on the driving style such as speed, braking, distance traveled and the time of the day people drive. In this way, insurance companies will reward safe drivers by lowering their premiums. An example of an auto insurer is Progressive (Greenough, 2015). Thirdly, **smart-home devices** give information on the security of the house, the average temperature, water consumption, etc. (EY, 2016b). Some companies in this sector such as Neos, provide on the top of the insurance, their clients with cameras and other devices to control their home from their phones to benefit from increased security (Neos, 2018). Lastly, **geographic information systems** which generate data such as the soil composition or topography through drone images (Braun & Schreiber, 2017).

3 FinTech propositions in asset and wealth management

The FinTech propositions in the asset and wealth management sector is the last category in the FinTech sector. Wealth and asset management is a financial service. The client's money is invested with as a final goal to make more money (or conserve depending on the client's willingness). PWC conducted a survey and uncovered that this sector is the most likely to be disrupted in the financial sector industry. (PWC, 2017)

Like the previous sectors, the asset management FinTech industry has surged in both funding and companies created between 2008 and 2013-2015 (KPMG, 2017).

Capgemini has identified what they call "moments-of-truth (MoT)" in the asset management proposition of FinTech companies. Those moments of truth can be defined as interactions consumers are looking for and impact their interactions with the company. Customers will show more loyalty towards a business when the moments of truth can be identified. Any company that will be able to identify and integrate the moments-of-truth in its value

proposition will have an edge on its competitors (Capgemini & LinkedIn, 2018). Other sources such as PWC have confirmed those findings.

The top five MoT in the asset management sector are; Consolidated view of all assets, personalized advice and data-driven recommendations, show services only relevant to customer behavior, an investment tracking and trading activity and a digital access to investment strategies researches and ideas (Capgemini & LinkedIn, 2017). Most FinTech companies in this field will capture most of them.

The asset management sector will be split into different categories: Robo advisers, digital brokers, and social trading.

3.1 Robo advisers

Robo advisers are automated digital investment platforms where money is automatically invested mostly in ETFs thanks to powerful algorithms. Robo advisers do not require human intervention (Hack, 2018).

Depending on the performance of the market, people feel joy or a sense of panic. Emotions impact the performance of investments. Indeed, the Cass Business School has shown that 1.2% is the annual performance forgone because of buying or selling at the wrong moment because of emotions. Computers might, therefore, take better decisions than humans (Barclays, 2016). An easy onboarding, a user-friendly mobile application or website, low costs, and excellent performances are some of the factors that led to the growing use in robo advisors. An additional factor is that there is no minimum deposit or at least of low minimum deposit compared to traditional financial advisors (Accenture, 2015b).

The type of people using robo advisers has changed over time. When the first robo advisors were launched after the 2008 crisis, more than half of its users were millennials. More recently a shift occurred, the majority of its users average the 40s (Blomquist & Thompson, 2017).

Robo advisers have evolved and their improvements are an additional pull factor leading to their growth and success. The first type of robo advisers delivered investment proposals but

did not invest, the customer then had to invest the money himself through his account. The robo advisor has later evolved and became able to execute orders, portfolios were manually adjusted, and portfolios were taking risks into account. The third wave of robo advisers then appeared. Rebalencements were then proposed thanks to algorithms. The last wave of robo advisers uses self-learning algorithms and makes rebalacements automatically (Deloitte, 2016b).

To better understand what robo advisers are and how they are different from other types of investment alternatives, a description of the investor categories will be drafted.

Three types of investors can be identified. First, **the Do-It-Yourself (DIY) investors**, who are people managing their portfolio and therefore make their investment researches and decisions. Those people manage their money through online brokers or banks at low costs. **Financial advisors** constitute the second category. This service is usually expensive, but customers benefit from the expertise of professionals. Their goal is to guide the client based on his preferences, needs, and goals. The last category are the **people investing through robo advisors**. In this scenario, there is no human intervention. A client input is needed as a first step to have an insight into his wealth and risk appetite (Hack, 2018).

Even though the robo advisor industry has not grasped a significant share of the assets under management worldwide yet (13% - $300 billion), several established institutes predict a $16 Trillion in Assets Under Management for robo advisors in 2025. The growing competition in the robo advising landscape has been depicted as one of the factors leading to the growth of the Assets under Management. FinTech companies are competing between themselves but are also competing with established financial institutions such as banks and hedge funds. Some institutions such as Deutsche Bank believe that robo advisers will need to shift their focus from the business-to-consumer market to the business-to-business market. This would be a win-win situation for both banks and robo advisors. Banks will be able to target the mass market and integrate professional wealth advice while robo advisers will benefit from more clients (Deutsche Bank, 2017).

Some well-established companies in that sector are Wealthify and Nutmeg. Small differences can be highlighted between those two companies in terms of fees and offers. Wealthify, for example, does not offer the possibility to open a SIPP portfolio (Wealthify, 2018).

Exo Investing is another example that would best fit the robo advisors category even if Exo Investing does not consider itself as a robo advisor. Exo cannot be compared with a regular robo advisor since it tries to capture the drawbacks of robo advisors such as the lack of personalization and the monthly or quarterly rebalancements (Hack, 2018). Exo takes into account the preferences of its customers and builds personalized portfolios for each of its clients. Moreover, Exo rebalances the portfolio every day depending on the market conditions (Exoinvesting, 2018).

3.2 Digital brokers

Digital brokers are the second category in the asset management sector. A digital broker is an online brokerage firm that offers its services to customers over the internet rather than face-to-face.

In the ten last years, the stock market has been mostly growing (Domm, 2018). The rise in the values of assets has encouraged people to invest and open brokerage accounts (Williams, 2017). Moreover, digital brokerage companies embrace digital technologies which give them an edge on the traditional brokers (Applied, 2016).

The reasons that led to the success of digital brokers are: The fact that traditional financial services are confronted with the changes in regulation such as the use of social media in financial services. Secondly that after the financial crisis, customers were looking for more transparency in the current market conditions such as data on their account, portfolio or market. Lastly that consumers are becoming more tech-savvy (Rooney, 2018). Traditional brokers mostly focused on building a website while the recent brokers caught the opportunity of the rising mobile adoption, offering their clients a mobile trading platform. This mobile trading trend has been confirmed in the following years with an increase in the number of customers using digital brokerage tools between 2012 and the third quarter of 2014 (Chipana & Michellod, 2017). The new entrants are differentiating themselves from traditional brokers by using social media as a communication and engagement tool, offering lower fees and providing useful data for investors such as investment ideas and updates. New online brokerages target both professional investors as individual investors by integrating a platform that offers different services depending on the investor type (Chipana & Michellod, 2017).

An example of a digital broker is Interactive Brokers. An American listed company (Bloomberg, 2018), offering an online trading platform for both professionals investors and individual investors. They offer a mobile and web trading platform (Interactive Brokers, 2019).

3.3 Social Trading

In recent years, it has become more accessible for people with capital to increase their potential return on investments. People with no or a little background in investments now have access to analyses published by professional investors and can copy the trades executed by them. The goal of social trading platforms is to create an online community for investors (Thangam, Natarajan, & Subbarao, 2014). Those platforms do not only give advises but also provide easy access to investing. A new user can be registered as a follower or as a trader. Traders will be rewarded based on their pieces of advice and their performances (Ammann & Schaub, 2016).
Various benefits can be derived from social trading.

Firstly, for beginners who do not have much experience, it allows them to start trading while not spending much time on doing their researches. Moreover, it gives beginners but also more experienced traders the opportunity to learn from others who publish their investment analyses. Notwithstanding, professional investors or traders do also benefit from being a member of a social trading community (Thangam, Natarajan, & Subbarao, 2014). Traders get additional income based on their performance and the number of followers they have, fostering them to share the best investment pieces of advice. Lastly, traders might also become renown (Ayondo, 2017).

The world leading platform in social trading is Etoro with over 6 million users. Their vision is “opening the global markets for everyone to trade and investing simply and transparently” (Etoro, 2017). Other examples of such platforms are IG, Ayondo, and TradingView.

4 Regtech

RegTech is the fourth dimension and stands for “Regulatory Technology”. The goal of this section is to make readers aware of this dimension but this section will however not be developed in detail since it is outside the scope of this thesis. The goal of RegTech is to use technology to address regulatory challenges (Deloitte, 2016a).

RegTech arose after the financial crisis due to the increasing complexity in compliance and its high costs. Companies in this sector focus more precisely on developing compliance solutions in a particular field. Some RegTech companies foresee potential issues by for example analyzing unusual trading behaviors (Graham, 2017). Other companies try to prevent fraud, answer risk management needs, develop cybersecurity, etc. (Deloitte, 2016a).

VI. Banks and FinTech companies, a survival of the fittest?

1 Methodology

The goal of this section is to answer the central question of our research, « Is the long-term survival of financial institutions inextricably linked to the current rise of FinTech companies? ».

To answer this question, we will first make a distinction between the **well-established FinTech companies** such as N26 or Revolut and all the **smaller and less established FinTech companies** that constitute more than 99% of all the FinTech companies (Kamouh, 2019). The FinTech companies we are dealing with to tackle this question are the ones in the second category.

The analysis will be made in different steps. The first section explains what is the relationship between banks and FinTech companies for the moment and what are the expectations from banks in the future.

The second part explains the reasoning why banks believe they should put collaboration forward with FinTech companies and why FinTech companies think they should put collaboration forward with banks. Both players have reasons to believe that they could be in a weak position. This discrepancy explains why we came up with the central question mentioned above to try to understand which player would tend to be forced to collaborate to guarantee its survival. In this section, first, the banking industry will be analyzed followed by the FinTech industry. For both sides, we will try to understand why they would be uncomfortably positioned compared to the other, why collaboration should be a priority and lastly what would be the opportunities from collaboration. The goal of the first section is not to prove who has the leadership position but rather to oppose the two points of view so that the reader has a full understanding of the situation.

In the third section, we will try to figure out which of the players benefits from a leading position in the market and whether the future of FinTech companies depends on banks or vice versa. To answer this question, interviews will be conducted with banks such as Degroof Petercam, FinTech companies such as Qured and Exo Investing and, the CEO of an insurance

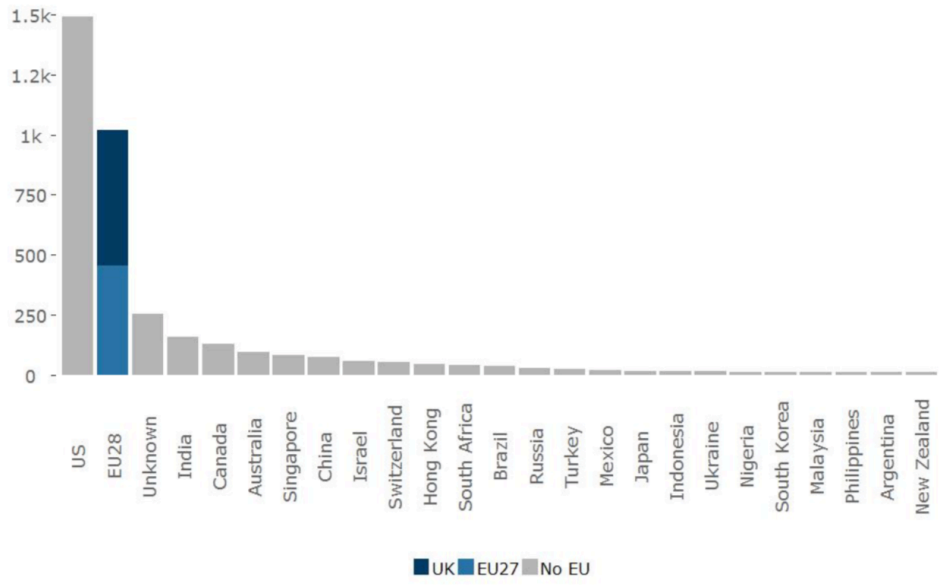
company (Oman Insurances), the president from the FSMA and consultants from Deloitte. On top of that, information will be retrieved from consultancy and bank reports. We will then deep dive in the main categories of the FinTech industry and analyze more precisely who benefits from a leading position and for what specific reasons.

Next, models for collaboration will be explored as well as the difficulties that can be encountered during and/or after collaboration. Lastly, some real-life examples of successful partnerships between banks and FinTech companies will be exposed.

2 Banks on the path to collaboration and integration?

FinTech companies are invading the market with hundreds of new products and are dealing with a massive wave of competition (Figure 9). Probably only a few will be able to scale significantly. Traditional banks are leveraging new technologies putting pressure on FinTech companies besides banks core strengths (BBVA, 2016). While banks are wondering what the best path forward is.

Figure 9: Number of FinTech companies by country or region (Crunchbase, 2018a)



Interestingly, a survey conducted by Capgemini shows that 75% of FinTech companies have as first goal collaboration with traditional financial institutions while only 18% have as primary goal competition without collaboration. 5.5% of the respondents also said that collaboration with another FinTech company was their primary goal. From this first interesting fact, we could ask ourselves whether banks are really in danger. A possible interpretation of those numbers is that most FinTech companies believe that their best way for them to grow, is in the hands of banks (Kopp, 2018).

Other surveys have shown that most (above 85%) traditional financial institutions believe that their business is at risk within the next five years because of new products and services launched by FinTech companies. More precisely, banks believe that consumers are the most likely to switch to FinTech companies for payment and money transfers solutions followed by personal loans and personal finance, traditional deposits and savings accounts, insurance and wealth management (PWC, 2017). Olivier de Groote has however denied this in an interview, he believes that banks do not see their business at risk within the next five years.

« I do not observe this, banks are not afraid of FinTechs » (de Groote, 2019). Olivier de Groote, EMEA Financial Industry Service Co-leader at Deloitte.

Traditional financial institutions have realized that FinTech companies offer products and services that clients are looking for. Banks have therefore adapted and have started to partner with FinTech companies to integrate innovation. A survey conducted by PWC showed that there is a growing trend in collaboration between banks and FinTech companies. In 2016, 32% of traditional financial institutions were collaborating with at least one FinTech; in 2017 the number jumped to 45% with huge variations across countries. Belgium is, for example, one of the countries with the highest percentage in collaboration with FinTech companies with 69% (PWC, 2017). Banks are even expecting to increase collaboration with FinTech companies. On average 82% of banks are planning to do so. Innovation would then be outsourced and would allow banks to come up with products and services faster than by developing the product themselves (PWC, 2017).

3 Analysis of the industry environment

The following paragraphs explain why banks and why FinTech companies believe they would not be in the leading position. This will be explained from the banking point of view followed by the FinTech point of view.

3.1 The banking industry

3.1.1 Banks are poorly positioned

The banking sector is under pressure for a few years; FinTech companies could be a threat. Business models and strategies need to be redefined (Wyman, 2014). The factors that have led to this situation are the followings.

Firstly, **FinTech companies have developed new business models** like explained in the previous sections and offer fast services with enhanced customer experiences. On top of this, their services are transparent and low-priced. FinTech companies focus mainly on products and services which are the high-profit segments banks offer, leaving banks with the less profitable services. Moreover, FinTech companies also benefit from the low switching cost between banks and FinTech companies (Capgemini & LinkedIn, 2018). FinTech firms can reach other markets easier thanks to lower costs structures while it would be much harder for banks to do so (Marous, 2018).

FinTech companies are at the origin of smaller margins for banks. Indeed, in terms of portfolio management, banks face competition from robo advisers. In terms of deposit and savings accounts, they face competition from Unicorns in this field such as N26, Revolut, and Monzo. (Bofondi & Gobb, 2018). From a 2016 survey from PWC, 62% of banks believe that FinTech companies put pressure on margins. FinTech companies use online platforms that enable them to reduce infrastructure costs (PWC, 2016b).

Next, **the services offered by FinTech companies are often personalized**. Investment platforms, for example, provide personalized portfolios based on customer's cash-flows, risk appetite and preferences (Exoinvesting, 2018).

Lastly, **the improvements in information and communication have led to more data storage, faster processing and transfers, and more data availability**. FinTech companies have leveraged these developments in the services they offer which are the ones banks have been offering since the start (He, et al., 2017). Those improvements can unbundle the banking products and services.

3.1.2 Why banks should put collaboration with FinTech companies as a priority

Firstly, after the 2008-2009 crisis,

- **New regulations and constraints were imposed which increased banks' costs.**
- **Banks had to cut costs to face the growing competition** (Figure 2) from FinTech companies (BNY Mellon, 2015).

This combination was not favorable for banks.

It is precisely for this reason that the capital market's ROE has fallen between 2009 and 2016 with a drop from 17% to 6.3% (EY, 2016a). From another research from EY, revenues should grow by 15%, and costs drop by 13.7% to reach a 12% ROE which would be a sustainable ROE for banks (EY, 2017b). Innovation becomes mandatory for traditional financial services but is difficult to implement through organic growth, engaging with FinTech companies could be a solution to the problem.

Secondly, **competing with FinTech companies for whom it is much easier to disrupt and gain market share might be non-profitable for traditional banks** (EY, 2017b).
Thirdly, **the banking sector costs are still 25% higher than before the financial crisis** ten years ago even though a lot of efforts have been put into place to reduce them. The main reason for this is the outdated IT infrastructure used by traditional banks (EY, 2017b).

Additionally, **half of the workforce in 2020 would be composed millennials**, a generation that has grown up in a digital landscape and is familiar with new technologies. Delivering them enhanced customer value through new experiences will be at the core of business models. Traditional banks will be required to use up-to-date technologies, collaborating with FinTech companies would, therefore, be a priority (Brack, 2012).

Lastly, **the FinTech space is expanding briskly**. Some prominent FinTech companies are already merging with banks reducing the number of unique opportunities for them. A threat for banks would be another bank collaborating with a FinTech company and being able to leverage benefits (Dunkley, 2016).

3.1.3 What opportunities for collaboration are possible for banks

One of the most cited benefits in partnering with a FinTech company from a survey of Mayer Brown is **cost reduction**. Depending on the partnership, cost reduction can be achieved in different fields: A reduction in labor cost thanks to automation (Tung, 2017). This can be achieved by partnering with a FinTech company that replaces human capital. A robo adviser would typically replace fund managers and traders and an automated chat-box would replace customer relationships managers. A reduction in innovation costs (KPMG, 2017a) and maintenance costs of old IT systems can also be achieved (Mayer Brown, 2016).

The second reason why banks should collaborate with FinTech companies is for **faster innovation**. The speed at which FinTech companies and banks are evolving and adapting to the market conditions is far different. Banks are for the moment losing momentum while FinTech firms are acquiring market shares. A collaboration with a FinTech company would be an excellent remedy (Wolfson, 2017). Additionally, innovation goes hand in hand with **new products** that banks have not deployed yet or at least an improvement in the value proposition. Innovation also refreshes the branding without taking any risk in product development. Indeed, partnerships enable banks to boost their customer engagement and offer services that banks would have been unable to deploy at the same speed (Marous, 2018).

The third reason is that **traditional banks are using the long-established point of contact to meet their customers physically; this is not lined with today's expectations**. Customers, as explained previously, are looking for new experiences and enhanced customer services. The flowering of the banking sector can be pursued by offering clients user-friendly mobile applications and a 24/7 service to foster their interactions by finding the right partnership (Accenture, 2017)

Furthermore, partnering with a FinTech company can bring **new skills** for both the bank and the FinTech employees. FinTech companies use an agile methodology which most banks do not and use more soft-skills. Employees in a FinTech company are more likely to work on

multidisciplinary projects. Banks, at the contrary, focus more on hard skills. Bank's employees will, therefore, be able to develop new competencies by working in an agile environment (Magee, 2018).

Next, on the one hand, as it will be further explained the IT system used by banks might be a threat. On the other hand, partnering with a FinTech could also **improve a traditional bank's IT system**. Banks are for the moment developing or renewing IT systems to suit the current technological landscape better but at a certain cost. Collaborating with a FinTech firm that already has the up-to-date IT structures might be less expensive and enhance the digital experience (Accenture, 2017), allowing banks to focus on the banking space and the FinTech company to focus on the technology (O'Brien, 2014).

Furthermore, legacy players lack skills in data handling. Banks often deal with many data sets and are unable to deal with them and on top of that address their difficulties in recruiting data scientists. **Partnering with a FinTech company would help banks to integrate the data in their processes and to make use of it**. This is especially true for lending platforms that can process information and deduce the creditworthiness of an individual in a few minutes (Accenture, 2017).

Lastly, banks could also benefit from **additional clients,** which like the previous opportunities, leads to more significant revenue streams. Private banks could, for example, cater to low-income customers. On top of that, a more substantial customer base might decrease a bank's customer acquisition cost. Banks can reach additional customers by providing the value-added service of the FinTech company (Mayer Brown, 2016).

3.2 FinTech industry

The previous section explained why banks would be poorly positioned, what elements in the financial industry would force them to collaborate as well as what they could earn from working with a FinTech company. The same analysis will now be conducted from the FinTech point of view.

3.2.1 FinTech companies are poorly positioned

FinTech companies are in a difficult situation, they face **hundreds of similar competitors** and are competing with well-established financial institutions from which they need to attract clients (Fraile Carmona, et al., 2018). Moreover, they **are not considered as a major player**

in the market for the moment even though new players constitute 20% (Fintechnews Switzerland, 2018) of the total number of players in Europe. Next, FinTech companies face **difficulties in scaling up**. Banks can develop focus areas to overcome the intense competition of FinTech companies and have more budget for investments than FinTech companies. By focusing more on digital transformation, banks would be able to live better with competition. Next, by finding the right talents and being able to recruit them, banks could focus on innovation (Kumar Gnanmote, 2016). Lastly, FinTech companies often **do not have enough capital to develop their products further** (PWC, 2017).

3.2.2 Why FinTech companies should put collaboration with banks as a priority

The first reason why FinTech companies should collaborate with banks is that they **often only rely on one product**. Indeed, while banks offer a multitude of services and products. Banks are able to develop a view on a client's situation and to come up with tailored solutions to meet the client's needs. FinTech companies even if they develop a product with superior value for the client are not able to get the full financial insight into a client's situation (Rohner, 2016).

The next important topic is compliance. Some people believe that regulations are a reason to put collaboration forward while others believe that regulations should not be considered as a reason to collaborate. Olivier de Groote confirmed this by saying that Deloitte does not know how regulations will play in the future (de Groote, 2019). FinTech companies in Europe benefit in the meantime from a lack of regulations. Indeed, 31% of FinTech companies are not subject to a regulatory regime under EU or national law (EBA, 2017). There should however be a right trade-off between competition and financial stability. In a paper written by M. Navaretti, M. Calzolari, and M. Pozzolo, they explain that a too light regulatory approach may lead to the expansion of shadow banking, risky banking activities and finial crises (Navaretti, Cazolari, & Pozzolo, 2017). For the moment, all the aspects of services supplied by FinTech companies are not covered by the EU legislation because of the new types of products and services offered by those companies.
Moreover, the current regulation is more oriented towards institutions rather than activities (Bofondi & Gobbi, 2017). The path forward in Europe is to have the same rules based on the services provided and not on who is providing the service (Demertzis, Merler, & Wolff,

2018). A different regulation is applicable for a specific activity. A certain directive would for example be applied for lending while another would be used for payments for example.
Two opposing points of view need to be highlighted. One approach suggests that regulations would lead to collaboration between banks and FinTech companies and the other approach suggests the opposite.

On the one hand, regulations might lead to collaboration between banks and FinTech companies. New changes in the financial ecosystem always lead to unintentional problems. The changes in the financial landscape have outpaced the changes in regulations. Regulators are therefore lagging behind and struggling to put in place new regulations for FinTech companies. For the moment **FinTech companies encounter problems while navigating through the regulatory mandates that vary from country to country**. The CEO of N26 explained in an interview that « Regulations across geographies are somewhat different […] we want to make sure that we are fully compliant with regulations, so our users' money is safe and secure, and they're protected against fraud. » (Kopp, 2017). This shows that even for big successful FinTech companies, compliance remains a challenging issue. Moreover, **most FinTech companies do not consider themselves as a fully-fledged financial service provider** (University of Oxford, 2017). This is a limiting factor (Rohner, 2016). FinTech companies are focused on creating disruptive financial solutions by focusing on the client's needs. This, however, creates some issues from a regulatory perspective. Indeed, the line between a FinTech company and a traditional financial institution is not clear anymore. In the future, the definitions of FinTech companies and banks might be more closely aligned. A lot of FinTech companies that did not consider themselves as traditional banks are now faced with two possible solutions. The first one being, to meet the regulatory requirements of financial institutions. Indeed, the European Central Bank will require FinTech companies to apply for the banking license. This could increase the market shares of FinTech companies. The second one being to partner with an existing bank (Primeaux, 2017). FinTech companies could be discouraged from entrepreneurship firstly because of both the cost and time of being compliant with regulations and secondly because of the consequences of not being compliant with the regulations (Treleaven, 2015).

On the other hand, regulations might not be a reason to put collaboration forward. Regulators want to find an equilibrium between stability and efficiency (University of Oxford, 2017). They try to put in place regulatory changes that would favor the further development of

FinTech companies. Two important changes for FinTech companies are: The Financial Innovation Act and the Regulatory Sandboxes.
The Financial Innovation Act encourages federal agencies to implement « Innovation offices » which would be used to seek new financial technologies and the regulations to oversee them. FinTech companies will be able to work together with those offices when they face regulatory challenges during their development (Gardner, 2016).

Regulatory sandboxes enable companies to test products and services with flexibility and exemptions from specific regulations. « Sandboxes are however never free; there are always regulations to respect. In the case of InsurTech companies, for example, they still need to have an insurance license » (Colmant, 2019). Sandboxes still directly benefit FinTech companies by reducing time and costs and by making sure that the development of the new products is in line with regulations (EY, 2017a). This initiative can be used first as an exchange of information between the FinTech company the supervisor where risks and opportunities are identified and consequently leading to changes in regulation if useful. Secondly, this initiative can be seen as an accelerator to test new technologies (Mansilla-Fernandez, 2018).
From this point of view, where FinTech companies would benefit from support, regulations are not considered as a reason to put collaboration forward.

The last important argument for putting collaboration forward is that **banks benefit from trust, scale, and alchemy**. A majority believes that banks might not be needed anymore in a few years since technology would have replaced the core products of the banks. This is called "jumping to conclusions". Indeed, banks do not only offer products such as loans or deposit accounts but also trust and scale (Dickens, 2018). FinTech firms have still a long way to go to build trust. Trust is tough to build as it is emotional and the product is digital (Asad-Syed, 2017). People are familiar with how their banks work and often have long-term relationships with the bank. Bankers have licenses, faces, and histories while start-ups have the technology (Galarza, 2017).

3.2.3 What opportunities for collaboration are possible for FinTech companies?

Banks have captured over decades a considerable number of customers. Those clients have been loyal over many years thanks to relationships that were built through friendly services. Customers might be doubtful on the product offered by FinTech companies even if they are better answering the customer's needs (Meyerowitz Singh, 2018). **Partnering with a bank would increase the FinTech's customer base** enabling FinTech firms to have better visibility, enhance customers trust and decrease the customer's acquisition cost (Hack, 2018).

Additionally, FinTech companies have less capital than banks. FinTech companies besides growing and acquiring new clients, need to have a long-term view and invest in genuinely revolutionary technologies such as artificial intelligence. This is for most FinTech companies relatively tricky for two reasons firstly venture capital firms have invested in these start-ups and anticipate to have a quick return on investment and secondly, FinTech companies are limited in the capital they have. **A collaboration with a bank would help FinTech companies to focus on the long-term and invest in new technologies** (Mishra, 2016).

The brand name of the bank could be another driver in collaboration with banks (the brand name could for certain people such as millennials be an inhibiter). FinTech companies use to be less known by people. Banks, on the other hand, are established for a longer time and are benefit from a well-known brand. The credibility of FinTech companies can be boosted by joining forces with a bank (EY, 2017b).

Furthermore, **banks are used to regulations issues** while FinTech companies might struggle with it. As explained previously, FinTech companies are not considered as banks. Making the necessary regulatory changes to be considered as a bank is a heavy task; partnering with a bank would be an easy solution. Moreover, making mistakes can be costly; therefore navigating through this financial area will be safer by finding the right partner (Hickson, 2018). Indeed, banks have dealt with regulatory issues for years and are better aware of the implications of regulatory compliance than FinTech companies. FinTech companies could, therefore, benefit from this by partnering up with a bank (PYMNTS, 2018).

Risk management is another field where banks are performing better than FinTech companies. As previously explained, since many FinTech companies are funded by venture

capital, the venture capital firm asks for a rapid return on investment. FinTech companies will, as a result, take more risks to increase the number of customers and increase revenues. Lending platforms would, for example, give easier leading access to people with low creditworthiness. Managing risks and meanwhile satisfying venture capital firms is challenging, by building up a partnership with a bank, FinTech companies would learn from banks and manage risks more effectively (Hickson, 2018).

4 Banks in the leading position

4.1 Analysis of banks' core strengths

FinTech companies and banks both have reasons to put collaboration forward. As previously discussed, banks could benefit from cost reduction, innovation, gaining momentum and market share, new skills. Banks would also better meet customer expectations. FinTech companies would benefit from easier access to capital, more clients, less compliance work and better risk management. Mutual benefits do exist which suggests that collaboration would be a win-win situation for both entities. Those factors might however not necessarily lead to collaboration. It might be easier for banks having investment capabilities to host solutions in-house than for a FinTech company to become a bank.

From the different interviews conducted as well as from the different papers, it seems that the future of the vast majority of FinTech companies depends on banks. When weighing the different arguments of why banks or FinTech companies are poorly positioned, why they should collaborate and what are the opportunities from collaboration it was unanimous from the experts in the industry that the balance was in favor of banks.

Traditional financial institutions have the resources to overcome competition. They can become self-disruptors by putting innovation as a priority. However, from a survey conducted by PWC, only slightly more than half of the respondents agreed with this statement. The power and resources banks have, however, seems to be often forgotten which might explain why so many traditional financial firms fear FinTech companies. On top of this, banks actually know the customer retention points, the most cited are: ease of use and intuition, 24/7 availability and faster service and banks also know in which technological sphere they should invest which are: data analytics, mobile and artificial intelligence (PWC,2017).

On top of this, FinTech companies probably will not succeed in taking over the core functions of banks. FinTech companies are however good at finding new ways to do "old things" thanks to technology. FinTechs provide the same products and services banks offer but in an unbundled way. As an example, crowdfunding platforms that FinTechs offer work by matching savings with loans and investments thanks to huge amounts of data. Banks, on the other hand, do not use big data but rather relationships. It is important to have in mind that the bank's value chain is based on many different services and activities while FinTech companies further develop one of these services in an unbundled way. The risk for banks is that FinTech companies develop services that are the most profitable ones for banks. **In the banking sector however, bundling is a strength**. On the one hand, if FinTech companies want to compete with banks on the long-term, they will on top of having the banking license, need to group different services. On the other hand, if FinTech companies want to assure their survival without taking too many risks, they can integrate their service(s) with those of other banks. From this perspective, FinTech companies do not benefit from strong competitive advantages (Navaretti, Cazolari & Pozzolo, 2018).

4.2 Analysis of banks' core activities

Another way to have a better sense of whether banks or FinTechs have more power on one another is **to analyze the different core activities of a bank and to assess whether FinTech companies would be better at fulfilling them**.
Three core activities can be distinguished: transmuting the characteristics of financial assets and liabilities, payment services, information processing and collection (G. Navaretti, G. Cazolari & A. Pozzolo, 2018).

The first activity consists of using deposits to grant loans and manage credit and liquidity risks. The question to raise is « Are FinTech companies able to provide liquidities? ». The answer is twofold. Yes, FinTech companies can provide liquidities by raising funds and would then theoretically be in the same situation as a bank. No, FinTech companies can actually not provide this service as this service requires a banking license most FinTech companies do not have. FinTech companies, unlike banks, would have to keep 100% of their funds in reserve with on top of this probably accounts exposed to greater risks because of more flexible or lack of regulation for FinTech companies. Lastly, bank clients also benefit from deposit insurances. The first activity puts banks in a favorable position.

The second activity consists of payment services. These include the different types of instruments to provide liquidity (ATMs for example) and the supply of the payment services. The new payment services that seem to be innovative actually are only simplifying the way to transfer money. Various innovative payment providers have emerged however their viability in the long-run can be put into question. Indeed, for what reason would banks not be able to develop the same service based on this technology? For the moment, banks are lagging behind because of old IT systems, lack of talents in data analytics and new technologies and because banks do not always grasp the importance of digitalization. A convergence in technology is however expected as longs as technological adoption is fast enough (G. Navaretti, G. Cazolari & A. Pozzolo, 2018).

The third activity is information processing which is mostly used for the screening and monitoring of borrowers and the development of diversified portfolios with the right risk-return ratio. To gauge whether FinTech companies would be able to do this task better than banks it is important to understand that FinTech companies do not process the data in the same way as banks are doing. Indeed, FinTech companies use big data, machine learning and benefit from standardization while banks rather use personal data. Masses of information are centered and past information is used to predict future trends in just a few seconds. It seems that FinTech companies would actually be able to perform better than banks in this field. Some questions can however be raised. Firstly, to make use of big data and machine learning, huge amounts of data are needed. FinTech companies might in the first instance suffer from small data sets. Secondly, private information is also needed they, therefore, become shared and public while this could have important implications in terms of privacy. The ones who will be able to hold private information will benefit from a competitive advantage. Whether FinTech will be able to hold private information is nowadays unclear. The third question that can be raised is in what proportion hard data will take over on soft data (G. Navaretti, G. Cazolari & A. Pozzolo, 2018).

By analyzing the three core activities of the banking sector it seems for various reasons that it is unlikely that FinTech companies would be able to take over the role of banks.

« No FinTech has the real core banking competences » (de Groote, 2019). Olivier de Groote, EMEA Financial Industry Service Co-leader at Deloitte.

Having a deeper look at opportunities that can be grasped from collaboration as well as banks and FinTech weaknesses shows that banks benefit from a leading position by following this analysis.

Table 1: Summary table of the collaboration opportunities

Opportunities from a collaboration with a FinTech company	Opportunities from a collaboration with a Bank
Enhanced customer experience	Long term focus
Cost reduction	Broader customer base
Faster innovation	Lower costs
Mobile UX design	Recognition
New skills (Agile) & products	Compliance
IT system improvement	Risk management
Better data handling	Access to capital

The previous table summarizes the opportunities from collaboration (Table 1). FinTech companies offer undeniable opportunities such as cost reduction, better adaptation to clients' needs (Fraile Carmona, et al., 2018). Banks also offer some valuable opportunities such as a broad client base, compliance and access to capital. From the previous sections, the main limiting factors for FinTech companies have been identified: small customer base, lack of customer trust**,** poor experience with regulations and risk management, lack of product variety and capital and that most FinTech companies do not have a banking license. The main limiting factor for banks on the other hand, is the increase in competition from FinTech companies which are constrained by some important factors just explained. **What is important to note is that the most important weaknesses of FinTech companies perfectly match banks' strength. From this perspective, banks benefit from a leading position** (Table 2).

Table 2: Summary table weaknesses of FinTech companies versus banks' strengths

FinTech weaknesses	Banks' strengths
Lack of customer trust	Recognition & Reputation
Small customer base	Broader customer base
Lack of capital	Access to capital
Poor experience with regulations and risk management	Compliance and Risk management expertise
Small product variety	Full set of banking products

5 Category Analysis

The previous sections explained that in general banks benefit from a strong position in the market. The goal of this section is to analyze whether this true in each of the main industries described in chapter four. Those industries have completely changed during the last decade, the first objective is therefore to identify the elements that led to changes. Then, some findings of what has shaped the sector will be given as well as what is the relationship between banks and FinTech companies and who benefits from a leading position.

5.1 Payments

The payment industry has changed over the last years. In recent years, mobile payments such as Apple Pay and seamless payments such as on Airbnb impacted the industry. The payment industry is considered as the most advanced one in the FinTech industry (Kamouh, 2019).

Payments shifted from cash to non-cash payments because of the growing trend of online sales that have been growing at a rapid pace for a decade. Amazon, for example, accounted for 53% of the e-commerce growth in the United-States in 2016 (Slice Intelligence, 2017). The second reason is because of mobile connectivity. The consequence is that payment businesses face increasing pressure on their margins (NBB, 2018). Revenues from credit cards are decreasing since the emergence of online lenders that provide low interest rates (Simons, 2019). On top of that, the fees are almost non-existent anymore, the speed of payment schemes has dramatically improved and new foreign exchange solutions offer the opportunity to people to exchange one currency into another currency at almost zero cost (Revolut, 2019). Those factors explain the pressure banks are facing.

For the moment, **non-traditional payment services suffer from a limited adoption rate**. People do not want to pay for switching costs for only a small added value (EY, 2017b). Furthermore, not a lot of vendors allow their customers to pay with mobile banking apps.

From an interview with Olivier Simons, Senior Consultant at Deloitte, he explained what Deloitte believes would be the impact of those changes on FinTech companies and banks. He believes that banks and FinTech companies in this sector have to partner (Simons, 2019) to minimize losses and to monetize data as margins become too small (World Economic Forum, 2017)

5.2 Personal Finance

Just as the payment sector, the personal finance sector has also changed. FinTech companies settled the customer expectations for banks (Bean, 2018). Banks do not longer have the choice to meet those standards. The factors that impacted the industry were the emergence of virtual banks and mobile applications from banks (Orange, 2019). Here are some discoveries.

Firstly, the bank's business models face the risk of being disrupted by new banking platforms. FinTech companies use new technologies that enable the emergence of such platforms and more competition has led to a decrease in margins (NBB, 2018). Banks are therefore forced to find new solutions (Simons, 2019). Secondly, people have new expectations regarding their personal finance because people tend to use their smartphones for any possible service and are daily confronted with mobile applications such as Uber that offer a unique customer experience. People expect the same kind of mobile experience from their bank (BNY Mellon, 2015). Lastly, as within the payment industry, customers do not migrate a lot to new online and mobile banks for the moment (de Groote, 2019).

From the same interview with Olivier Simons, he explained that Fintech companies and banks would as in the payment industry need to partner (Simons, 2019) to fill the gap but not for the same reasons (World Economic Forum, 2017). From the bank point of view, because large FinTech companies such as N26 take over a significant part of their customers or to offer clients a platform they were looking for without changing bank. From the FinTech point of

view, because clients still expect to have a physical presence in a bank and because of a poor migration from traditional bank accounts to new personal finance systems (Kamouh, 2019).

5.3 Lending

Two main trends have influenced the lending industry. The first being the peer-to-peer lending and the second one being automation processes in the lending process. Some underbanked people now have the opportunity to make credits at an even lower cost than before. Here are some findings about this industry.

First, the new lending techniques appeared thanks to new sources of data and consequently more data availability. Secondly, lending procedures are much shorter and are only taking a few minutes. Banks try to upgrade their services, but this has a certain cost and takes time to put in place. Partnering with FinTech companies would be cost saving. Thirdly, FinTech companies suffer from high acquisition costs per customer. Moreover, banks have access to low-cost deposits while FinTech companies suffer from higher costs since they rely mostly on private investors.

In the lending industry, two scenarios can be identified. In the first scenario, FinTech companies might be forced to apply for the banking license to have access to low-cost funding and have funding stability. In the second scenario, FinTech companies and banks collaborate. FinTech companies will have funding stability and a broad customer base while banks would benefit from up-to-date lending platforms clients are looking for (World Economic Forum, 2017)

5.4 Insurances

The value chain of the insurance industry is under pressure. On top of this, connectivity enables people to manage risks from their smartphones. Those are the two main changes in the industry. As in the previous sections, some findings will be given as the underlying reasons for collaboration or not between Insutech companies and traditional insurance companies.

The insurance industry is being unbundled leading to additional new players. Moreover, people are looking for on-demand insurance that perfectly fits their needs. InsurTech companies offer now extremely agile insurances. Big insurers, therefore, face difficulties with

their “one size fits all” approach. In a discussion with the CEO of Oman Insurances, he explained that he did not agree with this. He believes that insurance companies do not face a huge vague of new competition since big insurance companies benefit from the value chain, funds, regulation and risk management expertise and their well-established position in the market (Laurent Josi, 2019).

« Insurance companies are not threatened by InsurTech companies » (Laurent Josi, 2019). Jean-Louis Laurent Josi, CEO of Oman Insurances.

The modularity in the industry allows insurance companies to find the best InsurTech companies with whom to collaborate with to fight competition effectively. The insurance industry is therefore in a sense close to the financial sector where banks can also overcome competition by finding the right collaborations (World Economic Forum, 2017).

5.5 Investments

The investment sector is affected by the rise of robo advisers and the rise of big data analytics. The reasons for this will be further explained as well as the impact it has on banks and FinTech companies.

First, people want to be much more engaged regarding their investments. One of the reasons is the financial crisis of 2008-2009. Secondly, robo advisers have guaranteed benefits within a 95% chance interval; this gives them more trust in their investments. Next, the rise of robo advisers leads to smaller margins forcing banks to automize their investments. Lower margins also force FinTech companies to find economies of scale. Collaboration is for them a priority. This is also the opinion of Nikolai Hack, the COO of a robo advising FinTech company (Hack, 2018, 06 20)

FinTech companies in this industry are forced to find partnerships to make profits and do not benefit from strong competitive advantages compared to banks. Banks, on the other hand, have the choice to either collaborate with FinTech companies or to differentiate themselves by finding new investment strategies (World Economic Forum, 2017).

For all the different categories, FinTech companies are recommended to find the right partnership but the reasons to collaborate vary from one sector to another.

6 Innovation is key

From the previous section, it seems that banks benefit from a stronger position in the market compared to FinTech companies. Jean-Paul Servais confirmed this in an interview and explained that FinTech companies are not considered as competitors but as enablers.

« FinTech companies are not considered as competitors but rather as enablers» (Servais, 2019). Jean-Paul Servais, President at the FSMA.

This, however, does not mean that banks should underestimate FinTech companies; **innovation has to be a priority for banks** (Kamouh, 2019). Moreover, this also does not mean that FinTech companies do not play an important role. Indeed, as Quentin Colmant said during the interview:

« It is however important to keep in mind that the biggest threat for banks is not to collaborate and to miss opportunities » (Colmant, 2019). Quentin Colmant, co-founder of Qure.

Even if banks benefit from the leading position in the financial industry, banks are still competing among each other. The failure or the success among banks will be determined by how they handle their principal asset – their customers - who have new and high expectations (BBVA, 2017).

« The only way for banks to differentiate themselves is by the customer experience» (Kamouh, 2019). Hadi Kamouh, CMO at Degroof Petercam.

This can be done in several ways but depends on FinTech companies as the future financial landscape will be shaped by what FinTech companies are doing now (Gellis, 2014). **Either by launching in-house solutions or by collaborating with existing FinTech companies** (Friedman & Canaam, 2018). As Olivier de Groote said during an interview, FinTech companies are a supermarket for banks.

« FinTech companies are like a supermarket for banks » (de Groote, 2019). Olivier de Groote, EMEA Financial Industry Service Co-leader at Deloitte.

Banks are now going forward with "Beyond Banking". They are offering other services to their clients through their platform by partnering with FinTech companies as banks become a commodity (Kamouh, 2019).

In both scenarios, FinTech companies have a direct impact on the financial landscape innovation. The main difference between the scenarios is the speed of implementation which is faster in the second scenario. Moreover, with the second scenario, banks also attract new talents. In each scenario, banks would benefit from new products, cost reduction and enhanced customer service (PWC, 2017). The benefits have been explained previously in more detail in section 5.3.1.3.

7 Models for collaboration

A collaboration between banks and FinTech firms could bring mutual benefits despite some difficulties or threats. FinTech companies and banks still need to agree on the collaboration model. The three most common models are white labeling, acquisition, and partnership (Figure 10).

7.1 White Labelling

The first model for collaboration is white labeling. White labeling in the case of FinTech and bank collaboration is when a FinTech company sells its product to a financial institution that will use its product but under the bank's brand. It does not make a difference for the customer, he will be still using the same product but from the firm that purchased the technology. Both the FinTech company and the purchaser would benefit from this deal. The purchaser would enjoy the use of a cutting-edge technology while the FinTech company would broaden its customer base and focus its efforts on delivering its product to other companies. The FinTech company will however still be in charge of updating the service to remain competitive and retain its clients (Bömer & Maxin, 2018).

7.2 Acquisition

The second collaboration model is acquiring a FinTech company (Ancri, 2016). This model is easier and faster than developing integrated in-house solutions. This strategy is however not the preferred one although we can observe that some banks are taking stakes in FinTech firms. This solution, however, goes hand in hand with some limitations such as integration costs, cultural fit, and retention of talents (Riemer, et al., 2017). Olivier de Groote believes that partnering would be a better way forward than acquiring a FinTech company.

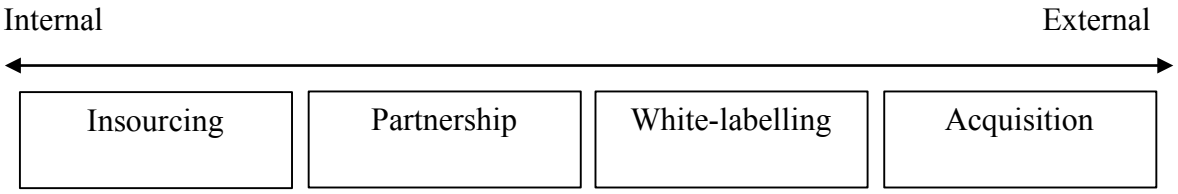
« Acquiring a FinTech is not always a good idea, it's sometimes better to partner with a FinTech to avoid integration problems » (de Groote, 2019) Olivier de Groote, EMEA Financial Industry Service Co-leader at Deloitte.

7.3 Partnership

Partnering is the last collaboration model. In the finance landscape, this is called « Fintegration » and is « The process whereby traditional financial institutions partner with FinTech companies in order to gain the ability to integrate innovative solutions within their enterprises » (KPMG, 2017). This last collaboration model is close to the acquisition. The difference is that the FinTech company will not be integrated into the bank's system (Makouh, 2019). More and more partnerships are taking place and the trend is expected to grow in the future. Partnerships use fewer resources, allows a faster speed to market and is a cheap option. Lastly, it addresses the problem of a lack of entrepreneurial and innovative talent in the company. Partnering is often not used as a method to avoid competition. Most players in the market do not partner with their competitors but rather with technology giants, FinTech companies and scale players (KPMG, 2017).

Other engagement models do exist but are less preferred by both FinTechs and banks. Those models include full-outsourcing and stand-alone in-house solutions for example.

Figure 10: Summary of collaboration models



8 Difficulties, concerns, or threats

The banking sector could benefit from the FinTech sector as explained previously. However, some difficulties in integration with other companies might always arise.

Firstly, **banks are not performing well when it comes to innovation** compared to the overall market. The global banking sector lags behind by 10% to 15% compared with a generic all companies index (C. Skinner, 2015). The FinTech companies at the contrary have a different innovation culture. The structure of banks and FinTechs differs. For example, banks often use complex bureaucracies while FinTech companies use flat structures. From a survey, 56% of the respondents (banks) admitted that to improve collaboration with FinTech companies, they should change their organization culture (Accenture, 2015a). On top of this, many FinTech companies are playing in the actual financial landscape, making it difficult for banks to identify the real benefits of FinTech companies. FinTech companies should better differentiate their services and clarify their benefits. Matching two different cultures and choosing the right partnership for a bank might, therefore, be challenging (Kamouh, 2019).

Secondly, **traditional banks have a lack of agility**. This has been discerned as the most important factor in an unwillingness to partner with FinTech firms. Agility is part of the culture of the company. For a company to be agile, it will need to change the whole organization mindset, which asks for a lot of effort. Besides changing the mentality of the company, agility requires different organizational structures to implement cross-functional teams, training, and investments. ING, however, has been working on this for a few years and said and believes it is only possible to read the full benefits of it if the method is applied throughout the organization (C. Gascoigne, 2017).

The IT compatibility of the banking sector is the third difficulty faced by the banking sector. The core banking system (CBS) is the root of every process in a bank and serves as the

IT platform where new updates are being operated. This system was introduced in the 1970s and has been appropriate until the recent advancements in technology leading to complications in the equipment of new functions within the system. Banks have tried to renew their IT systems but only with a success rate of 30% of in the CBS replacements. Nonetheless, the banking sector awareness has matured and created APIs. An API allows to integrate the technology of a bank within the technology of a FinTech company (M. Heidmann, 2010). The different interviews confirmed that the IT compatibility is at the origin of integration difficulties.

Shared investment is the fourth threat and is one of the concerns that has been raised by the CEO of N26. He believes that ultimately, the FinTech with whom the partnership has been done will focus on its product and that the bank will only focus on specific products too. The CEO of N26 believes that it will become difficult to clearly state who owns the customers and who owns the trust of the customer (Capgemini & LinkedIn, 2018).

Lastly, Quentin Colmant explained that from his point of view, what makes it difficult for FinTech companies to build a collaboration is **the process** to go along. In the case of a collaboration with a big bank, they first need to accept the FinTech. The FinTech, therefore, needs to be compliant, fill questionnaires, succeed in security tests, etc. This takes a lot of time and often daunts banks and FinTech companies.

« Making a collaboration is a long and tedious process » (Colmant, 2019). Quentin Colmant, co-founder of Qure.

VII. Conclusion

The objective behind this conclusion is to highlight the most important aspects of our research. Those were based on interviews and research papers and articles published by banks and consultancy companies. The conclusion will be broken down in three sections. First the limitations of the paper, then, we will summarize and highlight the most noteworthy takeaways based on the researches. Finally, we will explore some future researches.

1 Limitations

The answers that have been provided rest on interviews, research papers and articles. The interviews are based on a sample of people from different fields namely the banking, insurance, and FinTech industry and consultants as well as regulatory agents. We have not been able to conduct interviews with people from other sectors such as Venture Capitalists and Private Equity Funds who also have knowledge about the FinTech industry. Moreover, this thesis is based on European sources. The answer to the question may vary from one region to another. We, therefore, invite readers to have a critical mindset when reading the paper.

The research papers and articles have been either written by recognized authors in the financial industry field or by renown consultancy companies or banks. These papers and articles, face the same limitation as interviews as those are also European and therefore may show a different opinion than the ones in America or Asia. Among all the European papers and articles that have been published, it would be possible but unlikely that other articles, some maybe published in a different period, would call into question the arguments and the final answer of the paper. If this is the case, we will bear the responsibility. We strongly insist that the methodology, as well as the sources used, have been chosen with caution it would, for this reason, be highly unlikely that other papers would call into question the final answer.

This paper only focuses on the relationship and the competition between banks and FinTech companies. BigTech companies such as Google, Facebook or Amazon also play an essential role in the financial sector. Big-Tech companies have some competitive advantages. Firstly, those are companies that have the most information about every customer they have. The knowledge they have can be used within the financial sphere by for example assessing credit

risks. Next, Big-Tech firms benefit from substantial customer bases and thanks to their customer-centric approach they can exploit much more information about their clients than banks do. Thirdly, such companies are used to work with vast amounts of data. Lastly, they benefit from liquidities. Those resources can be used to expand the business in the financial area (Panetta, 2018). The goal of the thesis was not to explore how BigTech companies would impact the financial sector. We want to make the reader aware that BigTech companies do play a role in the industry and to keep this in mind but that BigTech companies are not within the scope of the research.

2 Results

From the different interviews conducted and from the papers written by banks, consultancy firms and specialists, we believe we can give a satisfactory answer to the central question which was: « Is the long-term survival of financial institutions inextricably linked to the current rise of FinTech companies? ».

To tackle this question, we first gave the reader some background about what FinTech companies are. A precise definition has been given as well as some numbers about their growth, investment activities, and adoption rate. Those numbers highlight the importance of FinTech companies in today's financial industry.

Next, to understand the factors that drove the emergence of the FinTech landscape, we first provided the reader with the history of FinTech companies. Then, we identified the internal and external factors that led to the FinTech trend. Most people consider the financial crisis as an essential trigger as well as the emergence of the PSD2 and GDPR. Not to mention, we identified urbanization as a crucial leading factor. Urbanization is at the origin of new data network infrastructures such as 3G and 4G leading to a connected world which goes hand in hand with the rise in demand for user-friendly, transparent and intuitive services through a mobile application or website. Lastly, FinTech companies better grasp the technological evolution. FinTech companies have identified gaps they would be able to fill thanks to new technologies. Finally, the speed of implementation and funding were also considered as important factors in the emergence of FinTech companies.

Furthermore, as the classification of FinTech companies varies widely from one research to another, we proposed to divide the FinTech industry into four main categories based on the underlying business model and the emergent technology. The main branches of the FinTech landscape are the banking sector, insurance sector, investment sector and security and compliance sector. Each category has then been sub-divided in smaller groups. This division has then be used to answer the central question of the thesis.

The fifth chapter tackled the core of the question. From the different researches and interviews conducted we concluded that the survival of FinTech companies depends on banks. It is indeed not necessary for banks to collaborate with FinTech companies to guarantee their survival. It is, however, crucial for FinTech companies to partner with traditional financial institutions to ensure their long-term survival. The main reasons are that most FinTech products and services depend on products and services delivered by banks; traditional financial institutions have the resources to overcome competition and can be self-disruptors; in the banking sector bundling different activities is a strength. FinTech companies often focus on one product or service and FinTech companies are not able to replace the core banking activities.

The main categories of the FinTech industry have then been further explored namely the payment, personal finance, lending, insurance, and investment industry. We identified the most probable future relationship between the FinTech company and bank or insurance company and underlying reasons for a potential collaboration.
In the **payment industry**, smaller margins trigger banks and FinTech companies to collaborate. Moreover, new sources of revenues need to be found to minimize losses; data monetization has been identified as a solution.
In the **personal finance industry**, as in the payment industry, a collaboration would be necessary but not for the same reasons the main reason for banks was to attract customers and a physical presence for FinTech companies.
In the **lending industry**, two scenarios have been identified. In the first scenario, FinTech companies are forced to have a banking license. In the second scenario, FinTech companies and banks collaborate so that FinTech companies benefit from funding stability and a broad customer base and banks benefit from an innovative lending platform.
In the **insurance industry**, we found out that the unbundling of the different activities allows insurance companies to find the best InsurTech to partner with. This view was however not

shared with everyone. Some believe that InsurTech companies do not constitute a threat or an incentive for collaboration.

Lastly, we analyzed the **investment industry**. We found out that banks in this sector benefit from a leading position and can either collaborate or can find new investment strategies. FinTech companies without banks would not be able (in most cases) to scale their product.

However, this did not mean that the banks and FinTech companies should not collaborate. FinTech companies constitute a solution and accelerator to some challenges. Indeed, as explained banks and FinTech companies could benefit from each other's strengths.

Moreover, customers play a central role. The failure or the success of a bank will be determined by how they handle their principal asset – their customers - who are increasingly connected and expect user-friendly, fast and innovative solutions (BBVA, 2017). This can be done in several ways but depends on FinTech companies. Two options have been drawn. Either by launching in-house solutions and by fostering innovation or by collaborating with existing FinTech companies (Friedman & Canaam, 2018). Collaboration would be a win-win situation. On the one hand, banks would benefit from: cost reduction, faster innovation, enhanced customer service, new skills, and new products. On the other hand, FinTech companies would benefit from additional customers, access to capital, bank's brand name, risk and compliance management.

3 Own reflection

Based on the different interviews conducted, and researches read we have developed scenarios of how the future financial landscape could look like in a ten to twenty years perspective (Figure 11).

From the previous sections, it has been demonstrated that banks benefit from a stronger position than FinTech companies and that the future of FinTech companies depends on banks. The most likely scenario would in our opinion, therefore, be a scenario where banks play a leading role in the financial industry. Two different scenarios could then take place within this perspective.

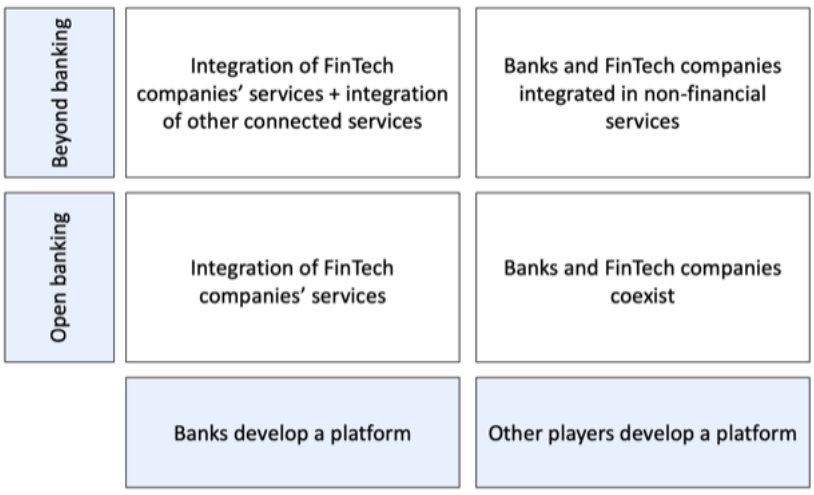
First, a scenario where banks would be able to develop a platform and connect the services they have developed internally and the services offered by third parties. Those services can be integrated through APIs, which as explained in the previous section, enables to incorporate

the technology of a FinTech company within the bank (M. Heidmann, 2010). An example is the ING – Scalable Capital deal. ING is the famous Dutch bank, and Scalable Capital is an online wealth management platform. This now allows ING to provide this service to its clients (only in Germany for the moment) (ING, 2017).

The second scenario is a more advanced one. M. Kamouh explained that some banks focus on beyond banking (Kamouh, 2019). The platform created by banks in this view does integrate not only banking services but also other connected services (Accenture, 2016). A concrete example of this is Citi Bank that launched and integrated on its mobile application a biking platform in New-York City (Citibikes, 2018).

Another possible scenario is a situation in which banks do not create a platform. Two possibilities within this scenario do exist. The first one in which FinTech companies and banks coexist in the industry and in which clients pick up the bank or FinTech company they prefer for each service. A client could choose for N26 for his bank account, TransferWise for money transfers, Lenddo for lendings and Exo Investing as its investment platform. The second possibility is that banks and FinTech companies get integrated into different non-financial services. MasterCard would, for example, be embedded in the travel mobile application of the City of London.

Figure 11: Future scenarios of the financial industry



The scenarios that have been developed are in line with the answer to the central question of the thesis that the future of FinTech companies depends on banks. The first scenario would be in line with the collaboration model and with integrated in-house solutions, and banks would

then benefit from opportunities offered by FinTech companies (Table 1) such as faster innovation, better customer experience and cost reduction. The most likely scenario would also be in line with the analysis made in section 5.5 where it has been demonstrated that for all the different FinTech industries a partnership between FinTech companies and banks would be recommended for FinTech companies.

4 Future research

This thesis has allowed readers to better understand the relationship between banks and FinTech companies and has provided a good foundation for anyone wishing to conduct more in-depth research. FinTech companies are forcing banks to innovate leading to collaborations and in-house innovations. Nevertheless, we believe that even more changes will flow into the financial markets as BigTech companies, which have not been covered in this paper, constitute a major threat for both banks and FinTech companies. I would recommend future researches to concentrate on whether the survival of banks depends on BigTech companies or vice versa.

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