

Louvain School of Management

An investigation of the low penetration rate of FinTech challengers in Belgium

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Introduction

Financial technology, or FinTech, is recognized as one of the most important innovations in the financial industry and is constantly evolving, promising to reshape the financial industry by cutting costs, improving the quality of financial services, and creating a more diverse and stable financial landscape. According to PwC (2016), 83% of financial institutions believe that various aspects of their business are at risk to fintech startups, showing how disruptive the FinTech revolution is.

My internship last year fuelled my interest for the topic of FinTech, and I wanted to discover more about this disruption that has made the financial industry so innovative and fast-paced those last few years. I therefore decided to work on this subject for my master thesis in order to strengthen my own knowledge of the topic in general and try to understand the FinTech landscape and trends in Belgium.

Problematic: research question and scope

A recent study by the consulting firm E&Y (2019) in 27 countries shows an average consumer adoption rate for FinTech of 64 percent. Belgium ranks within the bottom 3 with an adoption rate of 42 percent.

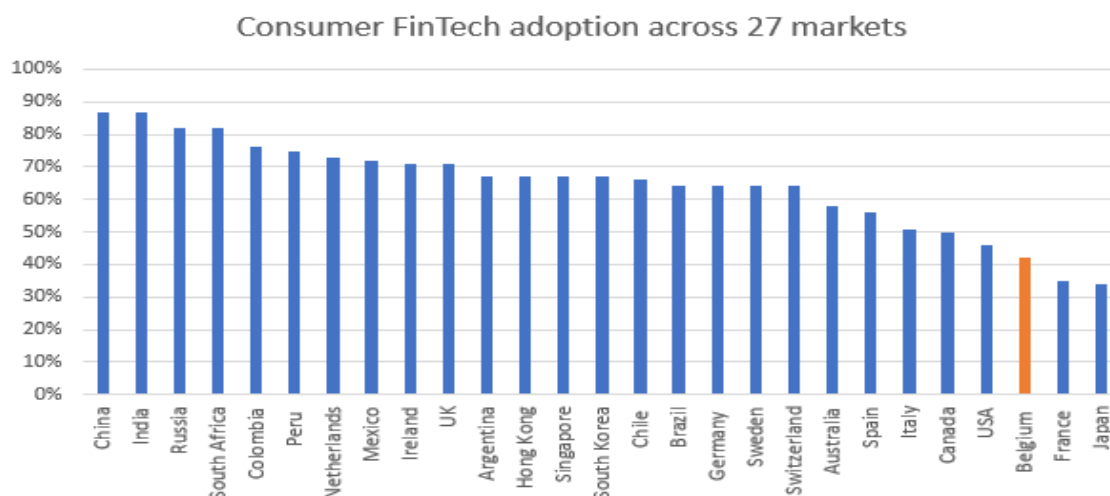


Figure 1 (EY, 2019)

The initial question that was guiding my research was therefore why the adoption of FinTech by the Belgian population was so low. Some resources treating of the development of FinTech in Belgium were already available, but they approached it from a supply side. However, very few data were available regarding the demand, and such data is in my opinion very important and complementary to data on offering in order to understand the adoption behaviour of the population and the general development of FinTech in the country. The goal of my thesis is therefore to explain the low adoption rate of FinTech in Belgium by providing a comprehensive view of both the offering and the demand.

As exposed later in this paper, there is no single official definition of FinTech, and the scope of this word can be huge if you consider the vaguest definitions. The next step was therefore to determine the scope of FinTech for my research. I decided to only focus on the adoption of FinTech products and services which are not being offered by traditional banks, also known as the incumbents of the financial services industry. Including FinTech services offered by banks in the scope would have made it less relevant, as a significant amount of people are using a mobile banking app (which can be considered as FinTech), but way less people are using apps provided by pure fintech startups. I will therefore investigate the low adoption rate of FinTech services provided by what we call the challengers. Those challengers include pure fintech startups like N26 and Revolut but also Tech companies like Apple and Google trying to develop their own Fintech offering. However, the other components of the FinTech ecosystem will also be studied in order to have a better understanding of the FinTech trends and dynamics in the country and the place of challengers in the ecosystem.

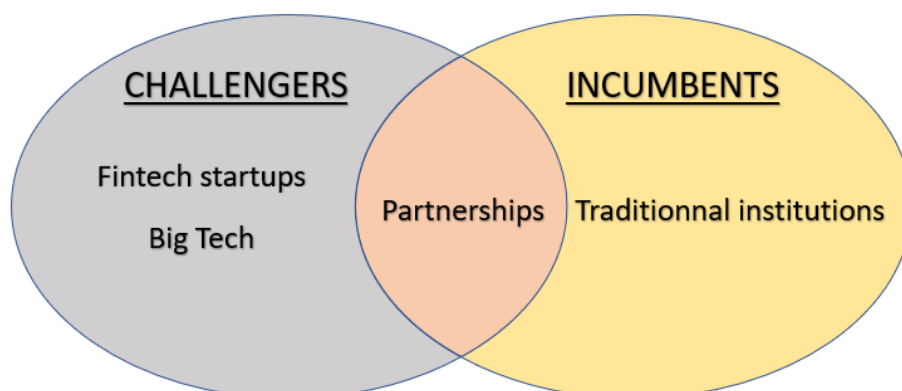


Figure 2: FinTech Ecosystem

1. Theoretical background and general introduction of FinTech

1.1 Definition

The term “fintech” is a contraction of “financial technology”. According to Arner et al. (2015), this term was first mentioned in the early 1990s by Citicorp’s chairman John Reed in the context of a newly founded “Smart Card Forum” consortium (Puschmann, 2017) which at that time attracted about 30 dues-payers, including leaders from financial services and high technology. This project was initiated by Citigroup to facilitate technological cooperation efforts, fostering a language of cooperation between companies and across industries (Kutler, 1993).

However, the term Fintech was already used as early as 1972. In a scholarly article written by Mr. Abraham Leon Bettinger, Vice President of the bank Manufacturers Hanover Trust, where he was detailing models on how he had analysed and solved daily banking problems encountered at his bank (Schueffel, 2016), the following definition is being provided: “FINTECH is an acronym which stands for financial technology, combining bank expertise with modern management science techniques and the computer” (Bettinger, 1972, p.62). Even if an early citation of Bettinger’s work by Warschauer (1974) proves that this paper was noticed by other authors, it is still likely that the undertakers of the FinTech project at Citigroup were not aware of Bettinger’s research and used the identical term by coincidence (Schueffel, 2016). This is therefore considered as the pioneer definition of FinTech. Nowadays, the term is mainly being used in 2 different ways, namely FinTech and fintech startups. Both are being defined in the literature.

1.1.1 FinTech

Despite the fact that it has been used in the literature for a long time, and more recently by a lot of major financial institutions like the International Monetary Fund, there is currently no official single definition for the word “FinTech”.

Patrick Schueffel (2016) attempted to establish a scientific definition of FinTech by reviewing more than 200 scholarly articles referencing the term FinTech and covering a period of more than 40 years. The claim of his research is that no one single definition of FinTech exists. A few authors characterize FinTech as innovative and personalized financial services and products (Chuen and Teo 2015; Dany et al. 2016; Dietz et al. 2015). Others describe it as a process. In their research on the evolution of FinTech, Arner et al. (2015) describe the development of FinTech as an ongoing process “during which finance and technology have evolved together”. This process led to numerous incremental and radical innovations, such as Internet banking, mobile payments, crowdfunding, peer-to-peer lending, Robo-Advisory, online identification, etc. (Schueffel, 2016). FinTech is sometimes also being described as a solution. Thomas Puschman (2017) claims that FinTech encompasses innovative financial solutions enabled by technology. Gulamhuseinwala et al. (2015) as well as Drummer et al. (2016) relate FinTech to business models. Finally, some authors such as Kim et al. (2016) consider FinTech as an entire sector. Literature seems to establish a consensus about the enabler and objectives of FinTech, respectively technology and enhancing financial services, but there is no common definition of the essence and nature itself of FinTech.

The main takeaway of Schueffel’s paper is that FinTech is an elusive concept and is associated with definitional problems. He concludes his work by proposing a definition of FinTech based on the most often mentioned commonalities of the scholarly definitions:

“FinTech is a new financial industry that applies technology to improve financial activities.”
(Schueffel, 2016)

Recently, the Financial Stability Board (FSB) created a definition of FinTech that has also been used by the International Monetary Fund (IMF) and the Basel Committee on Banking Supervision (BCBS) (International Monetary Fund, 2018; BCBS, 2018). This probably makes it the most recognized definition nowadays:

“FinTech is the technology-enabled innovation in financial services that could result in new business models, applications, processes or products with an associated material effect on the provision of financial services.” (FSB, 2017)

When I will use the word “FinTech” throughout my thesis, it will refer to this definition.

1.1.2 Fintech startups

Recently, there has been a new use of the term to refer to start-ups and scaleups offering new financial solutions thanks to development in specific technologies. In this case, fintech rather refers to a type of company.

Gimpel & al (2018) describe fintech start-ups as newly established businesses that offer financial services based on FinTech. These startups have driven major innovations in the areas of payment, lending, crowdfunding, wealth management capital market, and insurances by incurring lower operating costs, targeting more niche markets, and providing more personalized services than traditional financial firms (Lee and Shin, 2018).

Today, fintech start-ups cover many consumer-facing elements of the financial value chain. Indeed, most fintech start-ups address one particular financial service such as money transfer or trading. Those companies are driving the phenomenon of unbundling financial services, which has been disruptive for banks (Walchek, 2015). The ability to unbundle services is one of the major drivers of growth in the FinTech sector (Lee and Shin, 2018): consumers, rather than relying on a single financial institution for their financial needs, are picking and choosing services they would like from a variety of fintech companies. In the past, customers had to turn to a big traditional bank that could provide top-to-bottom financial services (checking accounts, insurance, home loans, and wealth management). Because of the high barriers to entry that the financial industry traditionally had (regulatory burden, capital requirements, etc.), traditional banks were able to cross-sell to their clients heavily. This could have a negative impact on customer service levels and pricing power, as it became difficult for a client with a large and complex set of products and long-standing relationships to change provider (Ketabchi, 2019). However, nowadays, fintech startups are taking control of every individualized aspect of people's finances (Walchek, 2015). The drivers of this disruption were probably the coincidence in timing of a large-scale financial crash and a surge of technological advancements (Ketabchi, 2019). This crash suddenly caused the whole industry to suffer from a bad reputation, and with the sharp advancements that technology was experiencing at that time, many were encouraged to seek for alternatives. Disruptive companies began to identify parts of the bank's value chain that offered poor user experience and innovated upon them thanks to technology (Ketabchi, 2019).

As exposed by EY (2019), fintech startups either disrupted services that have traditionally been offered by incumbents (ex: automobile insurance) by enhancing capabilities, convenience, or lower prices, or invented services that did not exist before but are now possible thanks to technology and alternative business models (ex: peer-to-peer lending, mobile phone payments). Those fintech firms tend to be more agile, innovate faster, and be more radical in their approach to innovation (Brandl and Hornuf, 2020). Indeed, it is more difficult for traditional banks to adapt to some of the new technological developments due to compliance obligations with extensive regulatory requirements (Hornuf & al, 2020).

According to Dapp (2014), those fintech startups are typically non-financial businesses such as technology-driven companies. In order to offer services that require a full banking license, which some fintech companies like Revolut or N26 do own, or to leverage the regulatory and risk management experience and capabilities of traditional financial institutions, some fintech start-ups collaborate with those institutions (Dany & al, 2016).

As exposed by EY (2019), some of those fintech challengers are looking less like start-ups nowadays but more like professionally managed companies with broad operational capabilities, a global reach and a full suite of products. Indeed, many of these companies have successfully been through several rounds of fund-raising, allowing them to increase their size and influence.

When I will use the word “fintech startup” or “fintech company” throughout my thesis, it will refer to those recent entrepreneurial and innovative organizations offering financial services based on FinTech.

1.2 Figures and Trends

FinTech has registered an impressive growth over the last couple of years. The global FinTech market was worth \$127.66 billion in 2018 and is predicted to climb up to \$309.98 billion in 2022, representing a 25% annual growth rate. Out of \$254 billion invested in venture capital globally in 2018, FinTech accounted for \$128 billion, which is nearly half (Ketabchi, 2019).

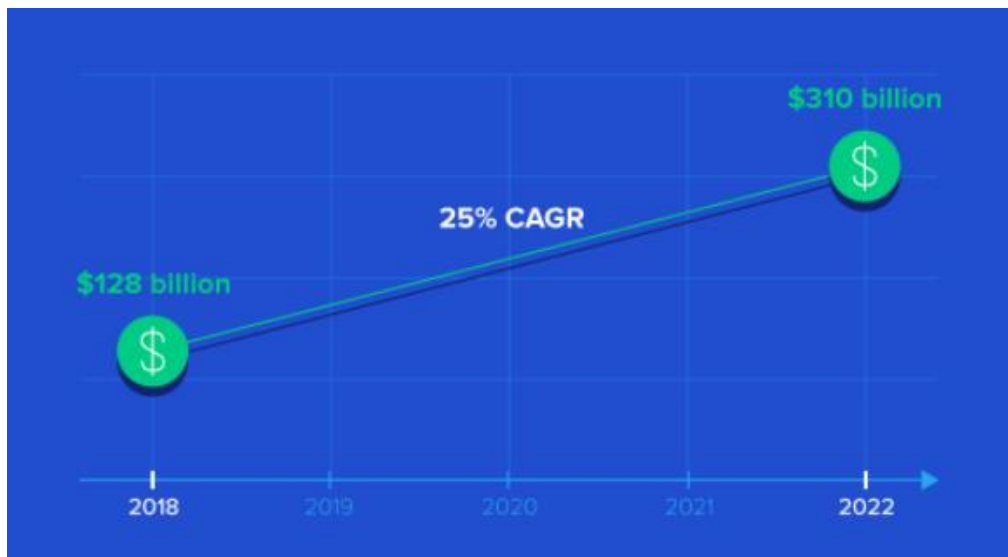


Figure 3: Global investment into FinTech (Ketabchi, 2019)

Although the share of revenues generated by FinTech remains relatively small (9%) in comparison to the whole financial sector (IMF, 2019), FinTech accounted for 19% of the whole financial industry regarding IPO valuations in 2019, with a total valuation of approximately USD 17 billion (Hazevoets, 2020).

The growing presence and innovations of technology-driven firms that offer financial services has led to increasing pressure on traditional banks to modernize their core business activities and services (Hornuf & al, 2020). Various sector experts have predicted FinTech to alter the industry dynamics, causing changes in the competitive structure and ecosystem of financial services (Deloitte, 2016). Hence, every financial firm needs to build capabilities or invest in FinTech in order to stay competitive (Lee and Shin, 2018). For example, many banks tackle the challenges of digitalization by cooperating with fintech firms that offer novel service packages (Hornuf & al, 2020). This can be done through strategic alliances or through fintech incubators or accelerators to enable innovation while maintaining a certain amount of control. Furthermore, according to PWC (2016) no type of financial services provider will be spared by this disruption as FinTech will bring change to all types of banks, asset and wealth managers, fund and payment providers, brokers, exchanges, insurers alike.

1.3 FinTech classification

In the context of their research on the taxonomy of FinTech, Fabozzi and Imerman (2020), count 8 different areas of FinTech. EY (2019), proposes a typology based on five categories and so does the IMF, but with major differences. As it is the case with the definition of FinTech, there is no clear consensus on how to classify FinTech products and services (Hazevoets, 2020), but here are a few of the most recognized FinTech categories:

a) Online banking

Also called digital banking, internet banking or web banking, online banking was used to refer to the possibility for traditional banking institutions to offer their customers the opportunity to perform banking activities through internet platforms or mobiles applications. Most banks offer those online services nowadays (BCBS, 2018).

However, recently, we have assisted to the emergence of new companies providing “internet-only” services. Those are commonly called neo-banks, digital banks, or online banks. N26 and Revolut are examples of those new competitors.

b) Mobile payments

Mobile payments are regulated transactions taking place through mobile devices. Those are made possible by banks directly or by Payment Service Provider companies (PSP) (ex: PayPal) connecting to multiple acquiring banks, payments, and cards networks to help merchants in the accepting of payments, in the context of eCommerce websites for example. New PSP competitors include Stripe, Square and Adyen. Those payment service providers are processing payments from various classical channels (credit and debit cards for example), but also innovative ones such as payment applications which are also driven by FinTech like Google Pay, Apple Pay, Venmo and Skrill. This category also includes in-store phone payments, peer to peer payments, online foreign exchange, and overseas remittance (EY, 2017).

The recent PSD2 has allowed third party-payment providers to further develop within the FinTech ecosystem.

c) Capital Raising and Lending Services

With the FinTech revolution came some major innovations like online lenders, P2P lending platforms and equity crowdfunding platforms. Those enable individuals or companies to obtain financial resources from fintech firms or directly from other individuals, cutting out the financial institution as the middleman. Online lenders like Rocket Mortgage use proprietary technology, machine learning algorithms, and Big Data analytics to identify potential borrowers, evaluate their risk, and then set the terms of the loan, allowing consumers to obtain a mortgage online for example (Fabozzi & Imerman, 2020). P2P Lenders like Zopa match borrowers who need funding with “peer lenders” with individual investors looking for alternative places to invest. Equity crowdfunding is the equity equivalent to P2P lending.

d) Digital wealth management

We have witnessed considerable technological innovation and disruptions in the wealth management industry those recent years. Some examples include the emergence of robo-advisors that generate investment advice and portfolio allocations with nearly no human intervention (Imerman & Fabozzi, 2020). We can also mention electronic trading, also called E-Trading or online trading, that describes trading methods based on virtual trading platforms or marketplaces. Key innovators in this category include Betterment and Wealthfront, the market leaders in robo-advisory, and Robinhood, a well-known trading and investing app.

e) Personal finance

Personal finance is another major category of FinTech. It includes tools and apps that can offer consumers advice and help with financial planning and budgeting. Companies like Mint help consumers create budgets, others like Level Money help consumers save.

f) Insurance

Insurtech is often described as a category within FinTech. In a similar way to FinTech, InsurTech refers to the application of technological innovation to the insurance industry. It includes online insurances like Lemonade, collaborative insurances, or online comparators (Ehrentraud et al., 2020).

1.4 FinTech Hubs/ leaders worldwide

Recently, the global consulting firm Ernst & Young (2017) analysed the quality of FinTech ecosystems based on four areas: talent, capital, policy, and demand. According to this analysis, the rapid growth of the UK FinTech industry is linked to the high quality of its FinTech ecosystem, which is being described as the best one among global FinTech hubs. California ranks at the top in the level of capital thanks to the abundant venture capital markets located in Silicon Valley while the UK ranks third. However, the latter largely outweighs other FinTech hubs in terms of its quality of government policy, including regulatory regimes, government programs, and taxation policy. London is internationally renowned for having implemented the first FinTech regulatory sandbox in the world (BCBS, 2018).

Region	Rank: talent	Rank: capital	Rank: policy	Rank: demand	Rank: global
UK	2	3	1	3	1
California	1	1	6	2	2
New York	3	2	7	1	3
Singapore	4	7	2	6	4
Germany	6	4	5	5	5
Australia	5	5	3	7	6
Hong Kong	7	6	4	4	7

Table 1: most developed FinTech hubs worldwide (EY,2017)

Other institutions have produced different rankings. A study conducted by Deloitte (2017) ranks the UK as the number one place in the European Union to flourish as a fintech start-up, but third when it comes to worldwide hubs. Findexable (2020) does not consider either that UK is the leading FinTech country in the world, ranking it second, behind the United States.

Globally, three quarters of the total global funds raised for FinTech IPOs and half of global FinTech venture capital have been generated in the US historically (IMF, 2019). Other important FinTech clusters include Zurich (Deloitte, 2017), Los Angeles, Bangalore, Boston, Mumbai Sao Paulo and Lithuania (Findexable, 2020). As exposed by Findexable (2020) those FinTech hubs are not necessarily major financial centres, as 8 of the world's 20 most important financial centres do not feature in the top 20 FinTech hubs.

2. FinTech offering in Belgium

2.1 FinTech ecosystem

2.1.1 Main actors of the ecosystem

As mentioned earlier in this paper, the theoretical definition of FinTech has a very large scope and can be considered as vague, as it could correspond to many different things in practice:

“FinTech is the technology-enabled innovation in financial services that could result in new business models, applications, processes or products with an associated material effect on the provision of financial services.” (FSB, 2017)

The goal of this section is to have a better understanding of the forms that FinTech can take in practice and present concrete examples of those forms applied to the Belgian FinTech ecosystem. This ecosystem can be divided in 2 main groups of actors: The incumbents, which are the leaders of the financial services industry, and the challengers, which are not the market leaders but are generally trying to bring change into the industry. The goal of this thesis is precisely to study the adoption of services offered by those challengers. However, it is thoroughly important to have a good global overview of the ecosystem in order to understand the place of challengers within it.

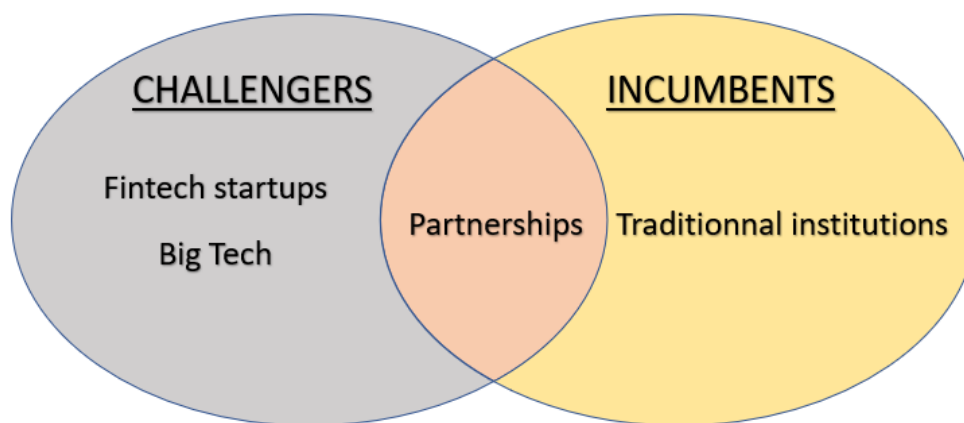


Figure 2: FinTech ecosystem

a) Fintech startups

The first practical form of FinTech is being described in the definition of fintech startup within one of the above sections of this paper: startups who are driving major innovations in the different areas of the financial services landscape, thanks to technology.

This category can be divided into two different parts, namely Belgian FinTech players and international FinTech players operating in Belgium. Over the past few years, a significant number of fintech companies have been created in the country. Initiatives like the non-profit organisation “FinTech Belgium” have been built to develop the FinTech ecosystem in Belgium and to promote Brussels as a new FinTech centre (International Comparative Legal Guides, 2020). According to FinTech Belgium, there were nearly a hundred fintech start-ups active in Belgium (Doucet, 2018). The mapping below shows an overview of the Belgian FinTech startup ecosystem.

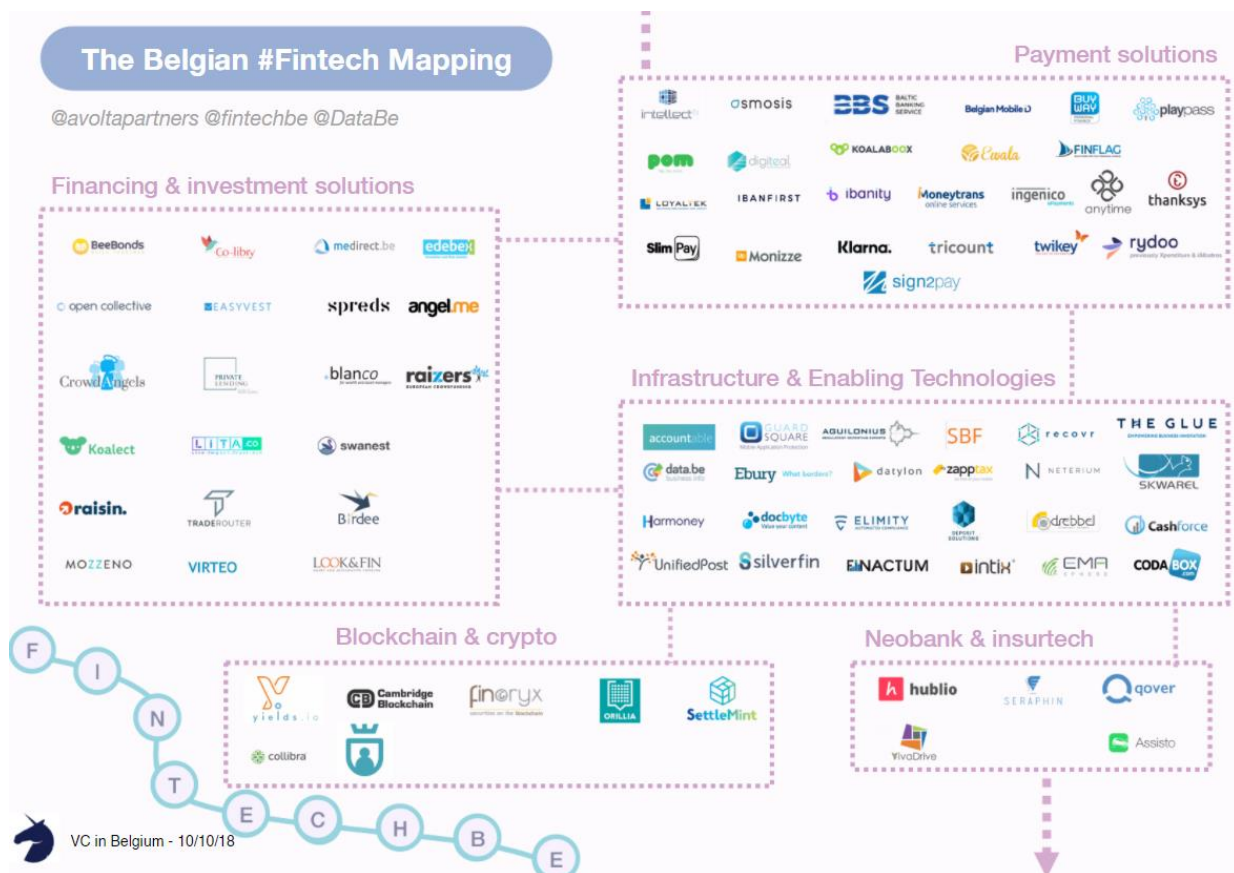


Figure 3: Belgian fintech startups mapping (Avolta Partners, 2018)

Concerning tech in general, we can consider that Belgium has a vibrant startup ecosystem for its size, similarly to countries like Sweden (Red Herring, 2018). Even though the main European tech hubs are considered to be the UK, Germany, France, smaller destinations like Belgium are showing strong growth in this sector. In 2016, Belgium was among the top 10 countries with the fastest-growing technology companies in Europe, the Middle East, and Africa (EMEA) during the past four years with 22 companies, according to the 2016 Technology Fast 500™ from Deloitte (2021). The fact that Belgium is separated into Wallonia and Flanders has created a tech industry which is not only centred on one hub (i.e., Brussels). For example, Ghent has also become a fairly important hub and is the home of a few well-known startups. The same applies to Antwerp and Leuven.

However, the Belgian tech industry has a particular characteristic: three quarters of the country's startups are B2B, which is one of the highest ratios in Europe (Red Herring, 2018). This also seems to apply to Fintech, with 68% of Belgian Fintech startups being positioned in the B2B segment (Avolta Partners, 2018). There is a large number of fintech SaaS (software-as-a-service), supplying analytics and dashboard tools for example. With 11% of Belgian fintech startups operating in B2C (Avolta Partners, 2018), it seems like there is a lack of fintech startups aimed directly at consumers in Belgium.

The second part consists of international fintech companies that do have a presence in Belgium. The biggest B2C fintech companies in Europe include the neobanks N26, Revolut and Starling Bank, the payment solution company Klarna, the online money transfer firms TransferWise (which recently became Wise) and many more. The table below shows the 8 most valued European fintech companies as of January 2021. One should not look at the valuations but rather at the company names, as those valuations are constantly increasing. For example, very recently, the Swedish Fintech Klarna has become Europe's most valuable startup, thanks to a \$1 bn private funding round, bringing its valuation to \$31 bn, a number which is comparable to major financial institutions such as Credit Suisse and Barclays (Reuters, 2021).

Ranking	Name	Valuation	Country	Sector
1	Adyen	65,2 bn	Netherlands	Payment
2	Checkout.com	15 bn	United Kingdom	Payment
3	Klarna	10,6 bn	Sweden	Payment
4	Greensill	6 bn	United Kingdom	Fundings
5	Trustly	5,9 bn	Sweden	Payment
6	Revolut	5,5 bn	United Kingdom	Neobank
7	Transferwise (Wise)	5 bn	United Kingdom	Payment
8	N26	3,5 bn	Berlin	Neobank

Table 2: Most valued European fintech companies as of January 2021 (Fintechlabs, 2021)

b) FinTech offering by incumbents

The second type of FinTech refers to FinTech offering by traditional banks. Indeed, digital tools provided by traditional banks (like mobile banking apps), can be considered as FinTech, as defined by the FSB. More advanced than a simple mobile banking app, BNP Paribas Fortis launched in 2013 its own neobank called Hello Bank. Hello bank is a 100% digital bank that was launched by BNP Paribas Fortis in order to attract young customers and benefit from a first-mover advantage against international neobanks like N26 and Revolut (BusinessAM, 2020).

Later in this paper, the fintech offering of traditional banks will be studied through their mobile banking app.

c) Partnerships between challengers and incumbents

The third form of Fintech is also being provided by traditional banks, but through partnerships with fintech startups.

As exposed by PWC (2021), the large Belgian universal banks have significantly stepped-up partnership activity in recent years. In order to add value for their clients and ensure long-term viability, banks are building partnerships, with fintech startups among other, so that they are able to improve their product or service offering or to access new technology.

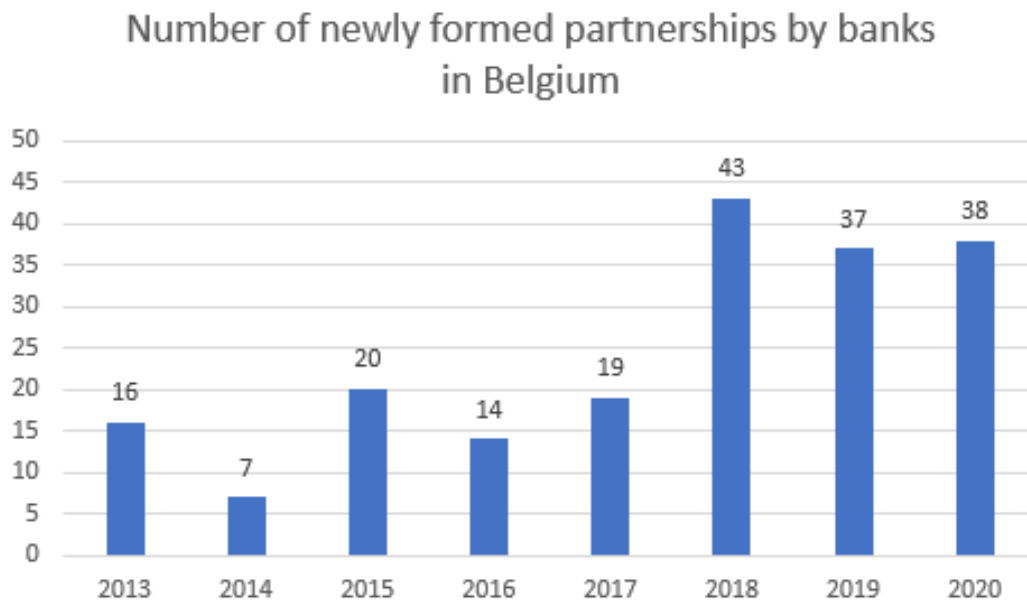


Figure 4 (PWC, 2021)

In 2017, AXA Belgium built a digital tool guiding clients in the building and management of their assets towards retirement thanks to a collaboration with the fintech startup Gambit.

We can also mention the partnership between BNP Paribas fortis and the fintech startup GuiSquare in order to distribute the digital tool for personal and family wealth management called PaxFamilia (BNP Paribas Fortis, 2018).

d) Big tech players developing their own FinTech offering

The last category of FinTech includes FinTech products and services offered by big technology companies who do already have an existing customer base in the country thanks to other product and services, as opposed to fintech startups. The main actors in this category are Google and Apple, with their respective payment solutions Google Pay and Apple pay. Such technology allows, by linking a bank card to the application developed by the company, to pay directly with one's phone online and in physical stores. Those solutions are compatible with a few Belgian banks like BNP Paribas and KBC. Apple Pay was launched in Belgium in November 2018, and at the beginning of 2020 it had an estimated customer base of 240 000 people in the country, registering a 85% growth (Business AM, 2020a).

2.1.2 Drivers of the FinTech startup ecosystem

When it comes to fintech startups, there are a few main factors that can have a significant impact on whether or not a given market is going to be a good breeding ground for those startups. The framework that will be used to study the Belgian Fintech startup ecosystem will be the one proposed by EY (2017) which takes into account talents, capital, regulations and demand. Demand will not be covered within this section as it will be the object of a practical research.

2.1.2.1 Talents

Haddad & Hornuf (2018), EY (2017) and Flanagan et al. (2017) claim that the labour force, and more particularly the talents availability and pipeline, is a very important attribute of a well-functioning FinTech ecosystem.

According to Flanagan et al. (2017) and EY (2017), 3 types of talents are critical for the success of FinTech: Technical or digital talents, financial services talents, and entrepreneurial talents. As exposed by EY (2017) and confirmed by Arnold (2018) regarding Dublin's buzzing FinTech ecosystem, proximity to global tech giants is an important driver for the availability of tech talents. Proximity to global financial institutions plays a similar role for the availability of financial services talents. The availability of entrepreneurial talents is mostly determined by cultural factors, like California's case shows, with its vibrant entrepreneurial culture enabled by a network of investors, academia mentors and tech companies (EY, 2017).

As exposed by EY (2017), building a healthy talent pipeline is crucial in order to improve the access to talents in the future. This pipeline can be built domestically through promoting Science, Technology, Engineering, Mathematics (STEM) fields in universities, and supporting FinTech education with apprenticeships and sponsored work placements with industry organizations, teaching students the skills required for starting, growing, or joining a startup (Flanagan et al., 2017). The pipeline can also be built internationally by introducing immigration process reforms to make it easier for foreign entrepreneurs to enter and contribute to the growth of the FinTech Ecosystem. For example, as exposed by EY (2017), California and Singapore currently own 2 of the healthiest talent pipelines in the world, and

both developed it in different ways, with a domestic focus for California and international focus for Singapore.

As already mentioned, the availability of technical talents tends to be driven by the proximity of tech companies. In comparison to neighbouring countries, Belgium is not a particularly attractive location for big tech companies due to its small and complex market (EY, 2017). However, the city of Brussels hosts several global financial players such as SWIFT, Euroclear and the European head office of MasterCard. The Belgian capital therefore provides a large pool of talent in financial services, but mainly B2B services.

Regarding education of tech talents, with Imec and KULeuven, the country hosts two of the continent's top nine universities for tech spinouts (Red Herring, 2016). Other universities are launching training programs to cultivate talent in the digital field. Examples include bachelors and masters research programs at the faculty of Bioscience Engineering of Ghent University, ICT research programs at Hasselt University's Expertise Center for Digital Media and others (Mittal, 2019).

Compared to other countries, what seems to be one of Belgium's main problem when it comes to talent, is that the country scores extremely low on entrepreneurial activity (the country ranks 51st out of 62 in a study by the Global Entrepreneurship Monitor). Even though the workforce in Belgium presents set of skills correlated with a strong financial market, people tend to stay within big corporations and very few are starting their own company after school. Due to the fact that Belgium has always been at the forefront of innovative technologies applied to the financial system, some incumbent financial services companies and institutions do possess the right FinTech talents, but the fear of those people to jump into entrepreneurship is a major challenge to foster FinTech development (EY, 2016).

2.1.2.2 Capital

Concerning capital, EY (2017) claims that access to funding at all stages of a fintech startup's development is crucial to help it grow and that investment activity can also help to increase the profile of the sector as a whole, attracting further investment and spurring sector growth. Haddad & Hornuf (2018) confirm this statement by demonstrating that a country would witness more Fintech startup formations if venture capital is readily available.

We can distinguish 3 types of capital: Seed capital is used to finance initial start-up activities for fintech startups and generally by angel investors, accelerator and incubator programmes. Growth capital is typically provided by VC funds and corporate venture. Listed capital is the access for more mature fintech companies to public market investors. In their research on FinTech Venture Capital, Cumming and Schwienbacher (2016) show that FinTech venture capital investments are relatively more common in countries with weaker regulatory enforcement and without a major financial centre after the financial crisis. They also demonstrate that boom in FinTech investments is more pronounced for smaller private limited partnerships venture capitalists that likely have less experience with previous VC booms and busts. Through a study analysing the determinants of Fintech funding between 2008 and 2018 in 76 countries, Giaquinto & Bortoluzzo (2020) conclude that both country-specific determinants (GDP growth, economic freedom, financial development, R&D expenditures) and company-specific determinants (FinTech category) have a significant impact on FinTech funding.

As shown in the figure below, total FinTech investments in Belgium have been relatively low those last few years compared to neighbouring countries:

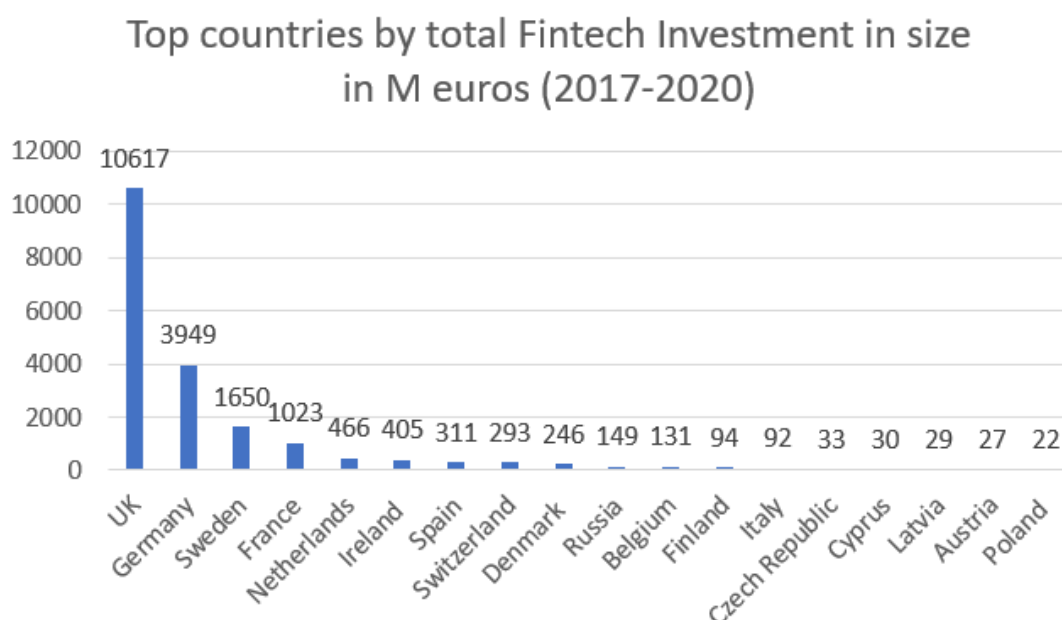


Figure 5: Top countries by total FinTech Investment in size (Tech.eu, 2021)

Belgium ranks 9th in Europe regarding the total investment in seed capital (less than €750K) for FinTech (Olivier, 2018). In Belgium, FinTech is mainly funded by VC capital. The Belgian VC market has registered strong growth recently, from €348m in 2015 up to €745m in 2019 (Statista, 2020). Prior to 2015, the country was lagging its peers in Europe regarding funding, but has made up for it since (EY,2016). However, it was proved that most of this capital was attributed to early funding stages, but that finding funding for later stages (after seed and early stage) is a lot more challenging, leading to what we can call a “funding gap”.

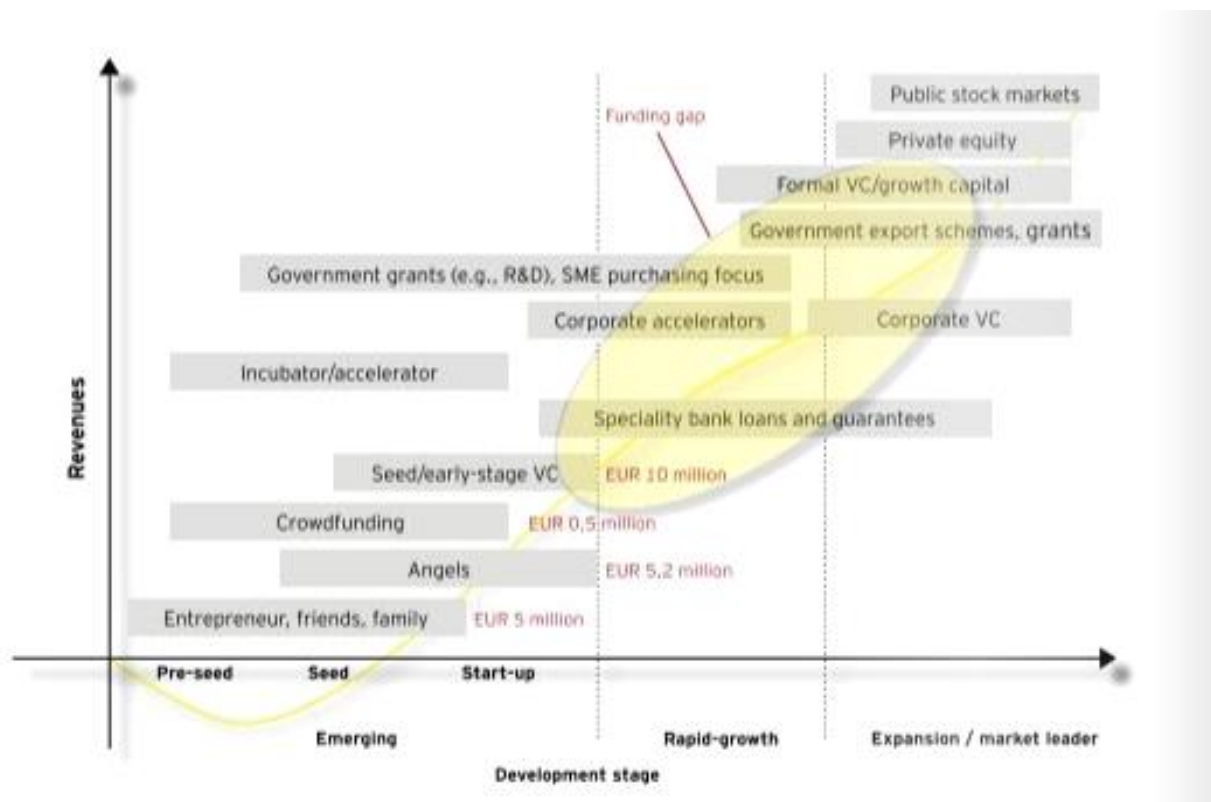


Figure 6: funding gap in Belgium (EY, 2016)

52% of investments are coming from outside of Belgium, and 73% of investments are done by VCs (public funds like The Belgian Federal Investment Fund represents 12% of the market) (Avolta Partners, 2018). However, Belgian VC investments per capita is lower than its neighbouring countries in 2017: €24 for Belgium against €34 for Germany, €37 for the Netherlands, €36 for France, and €109 for the U. K (Olivier, 2018).

When looking at the investments made by the 30 most active Belgian investors, it can be observed that IoT, deeptech and FinTech are trending sectors. It also appears that startups focused on FinTech, deeptech and health tend to raise higher amounts of money than in other

sectors and they also do it faster (Avolta Partners, 2018). One of the funds that focus the most on financial technology in Belgium is called Smartfin capital.

Even though Belgians have approximately €261 bn on saving accounts, there are only few private investors in Belgian Fintech (Febelfin, 2017). Jurgen Ingels and Michel Akkermans are examples of such private investors.

2.1.2.3 Policy/Regulations

According to EY (2017), a progressive FinTech policy regime can be instrumental in order to foster innovation and support entrepreneurs, removing barriers to innovation and discouraging compliance costs.

In the process of regulating innovation, regulators have the difficult but important task of balancing conflicting priorities such as market growth and competition with the integrity, safety and stability of the financial system. To achieve this balance, regulators have to define how non-traditional financial service providers fit within the existing regulatory structures (AFI, 2020).

Traditionally, supervisory responsibilities for FinTech tend to follow the framework and mandates already in place for financial sector supervision (IMF, 2019). Therefore, in order to embrace FinTech, countries need to continuously reassess the appropriateness of their current structures and readjusting them as needed to meet the challenges of FinTech. Today, it is considered that it exists three main FinTech development facilitators: regulatory sandboxes, innovation hubs, and accelerators (Ehrentraud et al., 2020).

The purpose of a **regulatory sandbox** is to adapt compliance with strict financial regulations to the growth and pace of the most innovative companies (BBVA, 2020). In other words, a sandbox is a testing ground for new business models that are not protected by current regulation or supervised by regulatory institutions. In the UK, a place known for its strong institutional commitment to FinTech, the Financial Conduct Authority (FCA), which is the British market regulator, has been implementing regulatory sandboxes since early 2017. Due to such initiatives, the FCA is considered as the most progressive regulatory body globally (EY, 2017).

Innovation hubs are a second type of innovation facilitators. Innovation hubs aim at supporting, advising or guiding regulated or unregulated innovative firms in navigating the regulatory framework (BCBS, 2018). This can range from hosting and attending industry events to informal assistance in preparing and making an application for authorisation or new products. This also benefits the supervisors that are able to better understand the FinTech regulatory challenges thanks to those hubs. This can help reduce uncertainty about financial regulation, such as licensing expectations (Taylor et al., 2019).

FinTech **Accelerators**, also called incubators or innovation labs, form another group of FinTech development facilitators. They are fixed-term programs run by central banks, supervisory agencies or experienced private sector actors in which selected FinTech providers develop a product, solution or explore new technological opportunities under the close supervision of the organizers (BCBS, 2018).

In Belgium specifically, the supervision of the financial sector is shared by the National Bank of Belgium and the Financial Markets and Services Authority (International Comparative Legal Guides, 2021). In 2016, Those regulators have jointly established a FinTech Portal as a point of contact for companies with new business models, aiming to foster dialogue between fintech companies, incumbents, and the regulators. The portal can for example be used by fintech startups to ask for assistance from the regulator to better understand the applicable regulatory framework. Regulators also accept to organise informal meetings with fintech startups in order to discuss their project. Licence applications, meetings and contacts can be held in English, Dutch or French, which fosters the dialogue with foreign fintech startups and entrepreneurs (The Legal 500 Country Comparative Guides, 2021).

Unfortunately, such initiative is still “weak” if we compare it with ones implemented in other countries and that have achieved to foster innovation on the financial services industry, such as the UK with its famous regulatory sandbox. Indeed, policies such as the one implemented in Belgium are a great way to promote innovation in the FinTech scene but are not actively pushing for the disruption of retail banking in Belgium (S&P Global, 2020).

2.1.3 A zoom on Belgian traditional banks

2.1.3.1 Link with FinTech development

According to LSE Capstone Team's research (2020), FinTech development is negatively associated with a strong traditional banking sector. In many studies, this strength of the traditional banking sector materializes in the total number of bank branches. This hypothesis is invalidated by Haddad and Hornuf (2018) whose model to predict the number of fintech start-up formation in a given country does not include the number of commercial bank branches, even though this factor was closely considered by the researchers. However, it is shown by several studies that in emerging countries particularly, the weak presence of traditional banks in rural areas has been a driver for FinTech development: FinTech is proposed to expand access to financial services among rural communities with fewer bank branches (Demirguc-Kunt & Klapper, 2012; Board of Governors of the Federal Reserve System, 2016). This is part of the financial inclusion phenomenon. We can mention M-Pesa, a mobile money transfer service launched in 2007 driving financial inclusion in rural and urban areas of emerging countries such as Kenya, Tanzania and Afghanistan by providing money transfer services, local payments and international remittance services easily with a mobile device (Donovan, 2012). The Geographic and physical presence of traditional banks is not the only element to take into account. As exposed by Claessens & al (2018) in their study on the FinTech credit markets around the world, the competitiveness of the traditional banks significantly impacts the size of an economy's FinTech credit market. In this case, if traditional banks demand high margins on their credits, or if platforms are able to better assess borrower information or reach customers than those banks, this can drive alternative sources of credit like FinTech credit. This is an example for FinTech related to credit, but competitiveness of traditional banks also plays a role in the development of other areas of FinTech. For example, neobanks have emerged partly because of the slowness of traditional banks to respond to evolving customer preferences (Odell, 2020). If traditional banks were as competitive as neobanks in term of digital offering and customer experience, then those neobanks would probably have never emerged.

2.1.3.2 Attitude of Belgian consumers towards banking

Belgian customers are considered as agile and tech-savvy, and the digital banking adoption rate is increasing consequently. The online banking penetration in Belgium is on the higher end of the EU spectrum and has been constantly improving across all age groups those last few years. Incumbents are in a good position to capitalize on this trend because their current mobile offering is usually very developed and well-received (S&P Global, 2020).

Internet banking penetration by country (2019, 2010)

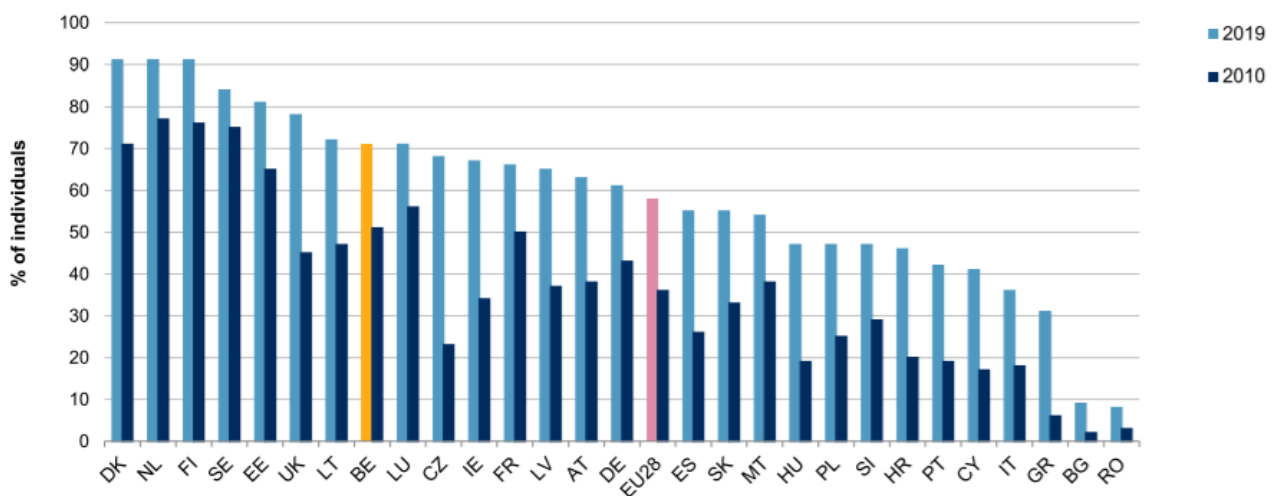


Figure 7: internet banking penetration by country (S&P Global, 2020)

2.1.3.3 FinTech propositions from incumbents

The banking industry is relatively stable in Belgium. The market remains dominated by 4 main banks who together own approximately 85% of the market: KBC Group, ING Belgium, Belfius Bank and BNP Paribas Fortis. Furthermore, compared to other countries, the level of profitability in the sector is comfortable (S&P Global, 2020). Those 2 elements have allowed Belgium's largest banks to embrace digital innovation quite early, making them first movers regarding the digital transformation wave in the country (S&P Global, 2020). This is shown by their strong FinTech offering, embodied through their mobile banking apps.

The table shown in appendix (appendix 1) presents the functionalities offered by the mobile applications of the 4 main Belgian banks. It shows that even if some basic features (accounts overview, transfers, etc.) are being offered by all 4 banks, some more digitally advanced and

innovative functionalities (investments, insurance, etc.) are able to differentiate those 4 banks. A study by Sia Partners (2020), ranks the 50 best mobile banking apps in Europe taking customer experience and functionalities into account, and Belfius and KBC both make it to the top 5. Indeed those 2 banks even shadow one of FinTech's mastodons, N26, which is really remarkable. Only Revolut, another FinTech mastodon, manages to do better than Belfius in Europe. This is the result of a massive investment (100 million euros) by Belfius which started in 2016 in order to take full advantage of what the telephone represents in our daily lives and to be the leader in mobile banking (Thomas, 2016). "Who needs fintech when you can get everything from your regular bank?" asks Geert Van Mol, Chief digital Officer at Belfius Bank & Insurance (World of Analytics, 2017). They have over a million mobile users who connect on their mobile banking app once a day on average and seem to be happy doing so if we go by the satisfaction score of 99%.

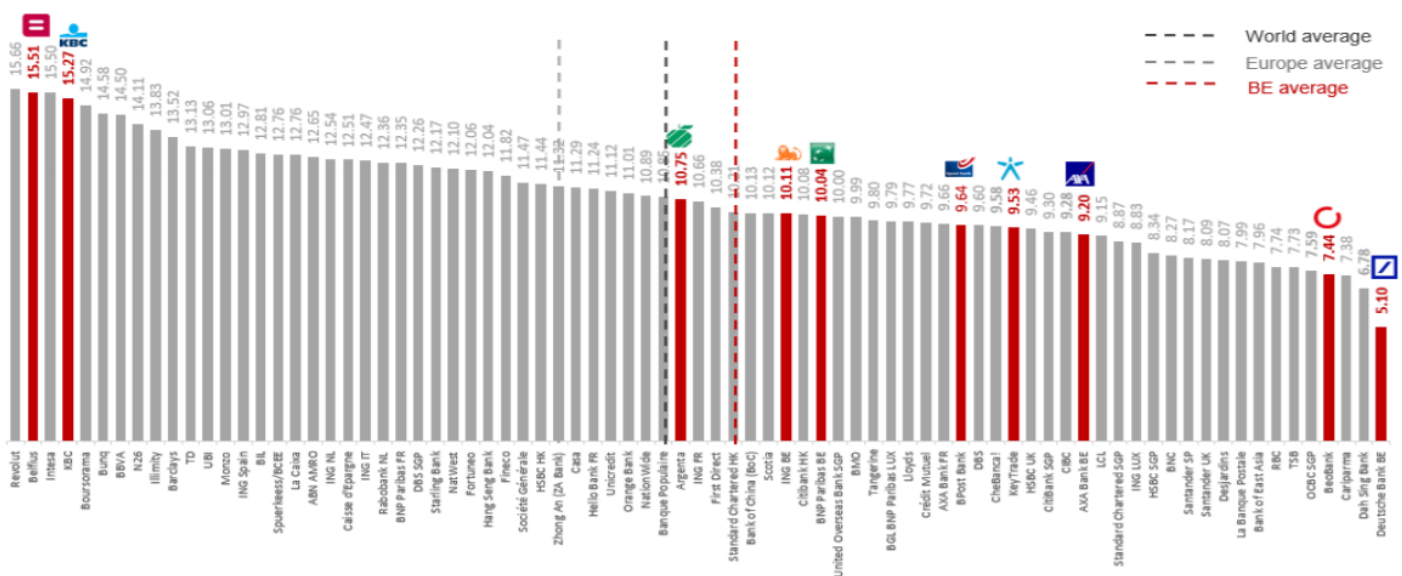


Figure 8: ranking of the best European mobile banking apps (Sia Partners, 2020)

However, it seems like there are important discrepancies between the app offering of the 4 main Belgian banks in terms of innovation and digitalisation. Indeed, Belfius and KBC, can be considered as advanced in this field with innovative functionalities such as contactless smartphone payments directly integrated into their app, buying and selling investment products (Belfius), withdrawing money with a phone, parking without a ticket (KBC), and many

more, BNP Paribas Fortis and ING only provide an array of traditional mobile banking services. In that same study from Sia Partners (2020), those banks respectively rank 27th and 28th with ratings of 9,97 and 9,9 out of 20.

The study also shows that even though Belgium falls behind Europe in term of mobile banking with an average score of 9,5 out of 20 against 11,3, the 4 main banks are above this Belgian average, and all are fostering partnerships with innovative fintech startups in order to enhance the mobile banking experience of their customers and better address their needs. Even though BNP Paribas Fortis and ING are behind the European average, the initiatives they are taking (a partnership with Tink, a well-established and renowned Swedish fintech company, for BNP, and a FinTech accelerator for ING) show that they to want to take action regarding FinTech innovation. Furthermore, things are constantly changing regarding those applications. For example, BNP Paribas released a new version of its app in January 2021. Overall, concerning everyday banking activities, Belgian banks seem to be well-prepared to resist the assault of the new generation of digital challengers.

2.1.3.4 Interbank collaboration

Digital partnerships among large banks are very pronounced in Belgium and create major barriers to entry for potential disruptors. One such example is the widespread use of the Bancontact payment scheme, which was founded in 1978 by three banks to set up payment infrastructure. Bancontact only exists in Belgium and uses debit cards from the country's banks to pay for goods purchased either online or in a brick-and-mortar store. In 2006, Belgian banks had the intention to retire Bancontact and adopt the international Maestro/Mastercard scheme. However, this led to protests by Belgian merchants, who anticipated higher costs (S&P Global, 2020). This led to Bancontact being retained in Belgium (Deloitte, 2021). In 2019, 1.6 billion transactions were made using this payment scheme, making up 81% of all transactions processed in the country. Moreover, many shops only accept Bancontact as a means of payment by card because it is cheaper than competing payment schemes, so a card with only an international payment circuit can often be refused (Deloitte, 2021).

Payconiq was founded in 2015 by ING and was first launched in the city of Leuven as a payment application based on SEPA Credit Transfer. KBC was the first other bank to join, and within a few years, BNP Paribas Fortis, Belfius and Axa bank Belgium also became shareholders Payconiq. In 2018, Bancontact and Payconiq merged, becoming a market leader in mobile payments in Belgium. Today, most Belgians use its solutions for everyday operations, because the Payconiq application centralizes the user's bank cards, enables customers to use mobile phones for payment online or in stores, and also allows users to pay back individuals easily (S&P Global, 2020).

Even though it is also being used out of banking, another example of interbank cooperation is Itsme, an electronic identification solution. Here again, the solution is owned by a consortium leading Belgian banks but also mobile network operators.

Another example of interbank collaboration in Belgium is Isabel Group, which can be considered as the oldest Belgian fintech company. It was founded in 1995 by Belgium's four major banks (ING, KCB, Belfius and BNP Paribas Fortis)

Isabel's first product was a B2B multi-banking platform allowing companies to connect with all the different banks hosting their accounts. Over time, Isabel Group developed into a multipurpose ecosystem, offering a wide range of B2B solutions (Deloitte, 2021).

Overall, Belgium ranks 3rd in number of active interbank ecosystems in Europe, with 14 initiatives in 6 domains. Only Italy and Poland manage to do better with respectively 19 and 15 initiatives (Deloitte, 2021).

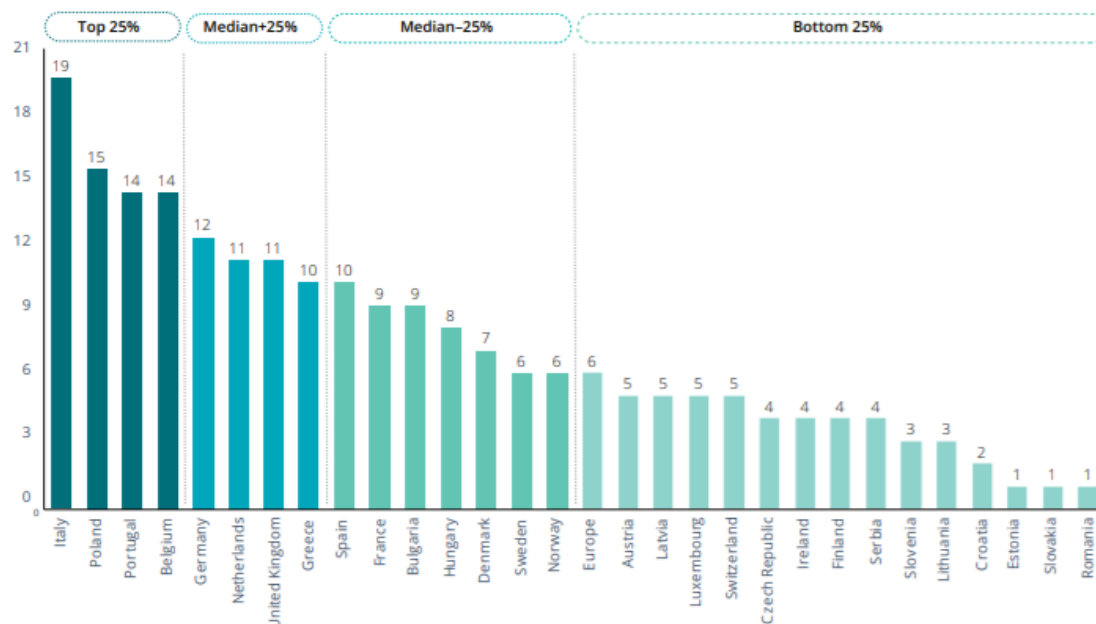


Figure 9: ranking of European countries in number of active interbank ecosystems (Deloitte, 2021)

Such collaborations create a domestic competitive advantage and barriers to entry for international challengers wanting to penetrate the financial services industry in Belgium.

Domain	Cooperations
Financial markets & securities	Centre for exchange and clearing, euroclear
Payments and cash	Isabel, Europay, Jofico, Batopin, Bancontact, Swift
Identity	Belgian mobile, Itsme
Compliance	Kube
Value-added services	Joyn, Zoomit
Mobile payments	Payconiq
Other	Febelfin Academy

Table 3: Active interbank ecosystems in Belgium (Deloitte, 2021)

Belgian banks seem to have grasped that today's digitisation combined with changing customer needs and the arrival of new competitive players mean that they must find ways to remain innovative, inclusive, sustainable and customer centric. Those interbank partnerships are a viable way to achieve these goals.

2.2 Case study: comparison of the offering of a large neobank and two traditional Belgian banks

2.2.1 Introduction

In order to understand the low adoption of FinTech services offered by challengers in Belgium, it is important to understand what the added value of such services for Belgian consumers is compared to the ones offered by traditional banks. We will use an example based on neobanks, because this is one of the FinTech categories that is the most adopted worldwide, and also has a fairly important materiality in Belgium (200 000 customers combined for Revolut and N26).

Before making the comparison, it is important to mention that if people use neobanks, it is generally not as their main bank. Indeed, people tend to have their main account in a traditional bank in order to benefit from the full range of services that those generally provide and because they are generally perceived as safer to store large amounts of money. Then they might have a secondary account in a neobank, with small amounts of money on it, in order to benefit from a more digitally advanced offering (Business Insider, 2019). One has the cost advantage, the other has the range of services and expertise. The neo-bank will therefore hardly become the first consumer bank (L'Echo, 2021).

Internet only banks have become very common in countries such as the United Kingdom, Germany and the Netherlands, but have only appeared in Belgium more recently. N26 and Revolut, which are the two highest valued digital banks in Europe and among the 10 highest valued fintech companies (Penn, 2020), do offer their services in Belgium since 2016 and 2018 respectively. Both have now acquired a customer base of more than 100 000 users. An honourable but still relative performance since this number represents less than 1% of the 17 million traditional current accounts in our country (Samois, 2020).

2.2.2 Comparison table

For our comparison, we will only look at the basic offering of the biggest neobank in Europe, Revolut, and the 2 banks with the largest customer base in Belgium, BNP Paribas Fortis and KBC Bank. Regarding BNP Paribas Fortis, we will take a closer look at Hellobank, which is their 100% online bank and can therefore be considered as a neobank.

	Revolut	BNP Paribas Fortis (Hello Bank)	KBC Bank
Opening and holding costs	- Free current account+ 1 prepaid MasterCard debit card (freight fee: 5,99 €)	- Free current account +Free Bancontact/Maestro debit card	- Free current account+ - Free Bancontact/Maestro debit card
Withdrawal fees	- No fees in Eurozone 200€ free/ month then 2% of the withdrawal amount (interbank margin) outside Eurozone	- No fees in Eurozone 2,86 € + 0,3% of the withdrawn amount + 1,63% changing margin outside Eurozone	- Withdrawal at a competitor's ATM: 0,5 € otherwise free in the Eurozone - Between 4 and 16% depending on the amount outside Eurozone
Sending Money abroad	Interbank changing rate in 30 currencies	- No fees in Eurozone 1,21€+1,21% outside Eurozone	- No fees in Eurozone - Processing charge+exchange rate difference outside Eurozone
Payment fees	No fees whatever the currency	- Free in the Eurozone 1,21% of the amount + changing margin= 1,63%€ outside Eurozone	- Free in the Eurozone - Between 2 and 4% depending on the amount outside Eurozone
Contactless payment	yes	yes	yes
Digital offering: Mobile app rating	Ranked best mobile banking app in Europe	Worst rated banking app in Belgium (IOS)	Ranked 4th best mobile banking app in Europe
investments	Buy and sell stocks and crypto	visualize and analyse stocks portfolio	View your investments

Table 4: comparison of the offerings of Revolut, Hello Bank and CBC (Hello Bank, CBC, comparatif compte bancaire, 2021)

2.2.3 Analysis

2.2.3.1 Incentives to use neobanks in Belgium

Looking at the table above, what would be the incentive to use a current account at Revolut rather than Hello Bank or KBC Bank? It looks like the main advantages are related to cross-border operations: indeed, Revolut is a lot more competitive when it comes to withdrawals, transfer and payment fees in other currencies.

So why would a Belgian who is not travelling or executing international operations adopt Revolut? Probably for the quality of its digital offering, embodied by the mobile app. Indeed, Revolut is very advanced in this regard with a mobile app allowing to break down spendings very accurately, invest in cryptocurrencies, or buy various types of insurances. But if you are already a client at Belfius and KBC, whose mobile apps are both ranked in the top 5 in Europe, the incentives in this regard are probably not strong enough to make you adopt a neobank. If you are a client at BNP Paribas Fortis (or Hello Bank), which seems to be lagging behind regarding the quality of its mobile app, then the incentives are a bit more important. But for an average Belgian, is it worth giving its trust to a non-traditional institution just to benefit from a better digital offering? It probably depends on how valuable this digital offering is for you and the level of trust you give to those neobanks, and both those elements are very likely to be determined by your age. Furthermore, if you want to open an account in a 100% online bank, you might as well choose Hello bank rather than Revolut as it has the support of an established group, creating a sense of security. Being the Belgian market leader, BNP Paribas Fortis has the means to attract young people to Hello Bank through large campaigns. International neobanks do not have this marketing power in Belgium (Business AM, 2020).

It is also important to mention the fact that people tend to prefer to have bank accounts in multiple banks to make it more convenient for them to manage their personal finances.

2.2.3.2 Added value of neobanks in Belgium vs in France

Let us compare France and Belgium regarding the adoption of the main international neobanks:

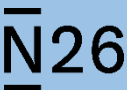
	Belgium	France
	100 000 customers (0,009 % of population)	1,4 million customers (0.022% of population)
	100 000 customers (0,009 % of population)	More than 1 000 000 customers (0,015 % of population)
	More than 15 000 customers (0,0013 % of population)	200 000 customers (0,003% of population)

Table 5: comparison of the customer base of 3 large international neobanks in Belgium and France (iGeneration, Les Echos, Les Numériques, S&P Global, 2020).

N26 and Revolut respectively have a customer base of 10 and 5 million clients globally. Together, they only represent 1% of all current accounts opened in Belgium. But what is important to notice is that for an equivalent population base with internet access, both N26 and Revolut have approximately 2 times fewer customers in Belgium than in France (S&P Global, 2020).

What could be the reasons for this difference in adoption between the two neighbouring countries? Here are a few hypotheses:

Opening and holding an account is a lot more expensive in France than in Belgium. Indeed, bank charges for consumers in Belgium are among the lowest in Europe. Unlike some of its neighbours such as France, Belgium already has quite a few free current accounts. Only two banks out of 14 charge a monthly account maintenance fee (S&P Global, 2020). According to the SPF Economie, a current account in Belgium costs on average 50 euros per household. According to the French comparison site Panorabanques.com, the average cost in France is 194,30 euros per household, which is fairly consequent difference. So that is a first incentive to open a current account in a neobank in France and this incentive does not apply to Belgium.

Also, according to the study on European mobile banking apps by Sia Partners (2020), mobile apps from traditional French banks tend to be less digitally advanced than Belgian ones. Indeed, only Boursorama manages to make it to the top 15 (it ranks 5th) whereas the Belgian banks KBC and Belfius both make it to the top 5. Neobanks are most of the time very competitive in terms of digital offerings and provide services and functionalities that

incumbents are generally not able to provide. However, this disruptive effect in relation to the other players on the Belgian market seems to be weaker than in others like France. Indeed, traditional Belgian banks seem to have questioned their historical models and practices in order to become more competitive in terms of customer experience, digitalisation of offers and digital functionalities (Sia Partners, 2020). For example, one of the key differentiators in the favour of neobanks is the almost instantaneous account opening. Established banks are generally not able to offer this perk as they are accustomed to applying regulatory requirements more strictly and often have to deal with poorly optimized information systems and organizational models (Sia Partners, 2020). However, Belfius and Bpost Bank are offering access immediately after the subscription validation is complete. The relatively poor performance of neobanks within our borders would therefore partly be explained by the efforts made by the dominant players in the sector in terms of digitisation and mobile banking. Neo-banks only have a small disruptive effect in terms of digital proposal due to those efforts from the incumbents.

Furthermore, the Bancontact payment scheme in Belgium sometimes prevents to pay with a Mastercard or Visa at small merchants, making it a handicap for neobanks like Revolut and N26. Bunq is the only neobank that allows you to choose between a Maestro card (Bancontact compatible) and a Mastercard.

Due to all the reasons listed above, the Belgian market appears to be less favourable to the development of neo-banks.

2.2.3.1 Conclusion

The rise of mobile channels has been successfully embraced by Belgian banks. They managed to take the edge over neobanks which have a low penetration rate in the country. When looking at mobile applications download statistics, we can observe that the main mobile applications of the four large traditional banks are all part of the top 10 of the finance category for both the Apple and Google, while no neobank app has managed to even figure in the top 25 as of August 2020 (S&P Global, 2020).

2.3 Critical analysis and conclusion

There are a few elements that could make Belgium a better breeding ground for fintech startups, like for example having more entrepreneurial talents in the field of finance and regulations that are actively pushing for the disruption of financial services. However, the relatively high number of fintech startups shows that those two elements are probably not the most crucial in order to foster the Belgian FinTech ecosystem. The hurdle seems to be to bring those startups to a scale-up stage. One of the main reasons for this is the lack of capital available at later stages of startups development. Indeed, studies showed that it is fairly easy to get capital at early stages (seed and Series A capital) but harder at later ones (Series B+).

Another important element to consider is that most Belgian fintech startups are operating in B2B. This is something that applies to the general tech startup ecosystem in Belgium, as the country is a small but very complex market with different regions, languages and cultures. The offering of services directly aimed at consumers from Belgian fintech startups is therefore fairly low. Furthermore, the small size and complexity of the market when compared to neighbouring countries like France, Germany or the U.K, restricts its attractiveness for international players, meaning that the offering from international B2C fintech startups is not as developed as in other countries.

All of those elements have contributed to a strong dominance of traditional banks in the Belgian FinTech ecosystem when it comes to B2C. Some of those banks have managed to develop a very strong FinTech offering and consequent barriers to entry, with the likes of the Bancontact payment scheme, for challengers wanting to build or increase this influence within the FinTech ecosystem.

3. FinTech demand in Belgium

3.1 Drivers of FinTech demand: literature

The goal of this section is to describe the different theories, models and frameworks that aim to explain the adoption of FinTech. We will cover the Technology Acceptance Model and its extensions, as well as the Benefit-Risk framework.

3.1.1 Technology Acceptance Model (TAM)

User acceptance remains a barrier to the success of new information technologies (IT) (Alsajjan and Dennis, 2010). The technology Acceptance Model, or TAM (Davis, 1989), has been one of the most influential models of technology acceptance. This model, which is proposed from the perspective of behavioural science, integrates expectation theory and self-efficacy theory, and is mainly used to study the behavioural intentions of individuals to use technology (Hu et al, 2019). It identifies two primary factors influencing an individual's intention to use new technology: perceived ease of use and perceived usefulness. Indeed, Davis (1989) argues that people adopt an application primarily because of the functions it performs and secondarily because of the ease or difficulty associated with making the system perform these functions (Alsajjan and Dennis, 2010). Previous research has confirmed that TAM is a valid model and represents an important theoretical framework to explain and predict technology acceptance behaviour of individuals (Wu and Zhang, 2014, Al-Gahtani, 2016, Lee et al., 2014).

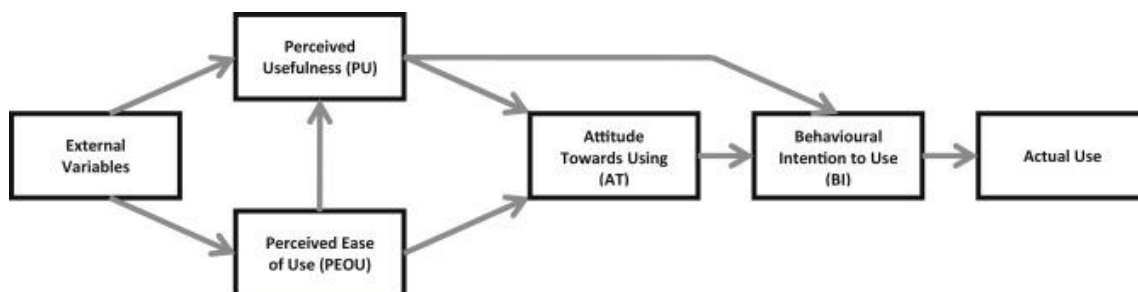


Fig. 10: Technology Acceptance Model (Davis, Bagozzi & Warshaw, 1989, p. 985)

The arrows in the model show the effect of one variable on another. Perceived usefulness is the first fundamental component of the TAM. It is defined as the degree to which a person believes that using a particular system would enhance his or her job performance (Davis, 1989). Perceived ease of use is the second fundamental construct of the TAM. Even if potential users consider that a given application is useful, they may, at the same time, hold the belief that the system is too hard to use and that the performance benefits of usage are being outweighed by the effort of using the application (Davis, 1989). Perceived ease of use refers to the degree to which a person believes that using a particular system would be free of effort (Davis, 1989). Davis suggests that perceived ease of use may actually be a causal antecedent to perceived usefulness, rather than a parallel, direct determinant of system usage. It is important to emphasize that perceived ease of use and usefulness are based on people's subjective appraisal and do not necessarily reflect objective reality. Therefore, even if an application would objectively improve performance, if users do not perceive it as useful, they will most likely not use it (Alavi and Henderson, 1981).

Because the Technology Acceptance Model does a good job at explaining consumer's willingness to adopt information technology and can be specified and improved according to the specific situation, it has become one of the most used models in the field of information technology adoption (Hu & al, 2019). Some researchers have developed context-specific determinants to the two TAM dimensions (Venkatesh and Balash, 2008) or added new dimensions supplementary to perceived usefulness and perceived ease of use, resulting in the creation of so-called extended Technology Acceptance Models. We can mention Karahanna and Straub (1999) for electronic communication systems and Koufaris (2002) for e-commerce. Those bring considerable value by theorizing richly about the specific IT artifact and identifying determinants that are specific to the type of technology being studied (Venkatesh and Balash, 2008). General extensions of the TAM model know as TAM 2 and TAM 3 were also developed by identifying and theorizing about the general determinants of perceived usefulness and perceived ease of use (Venkatesh and Balash, 2008).

3.1.1.1 Application of the TAM to banking and FinTech

The essence of FinTech services is to apply the new generation of information technology tools to financial innovation. The TAM therefore has a strong adaptability in a research over FinTech adoption. Several recent studies have adopted this model to study the acceptance of various FinTech services, such as mobile payments, digital insurance, and mobile commerce (Kim et al. 2016).

a) Perceived Usefulness (PU)

In the banking industry, many studies have included the construct of perceived usefulness as an influential factor of technology adoption. Akturan and Tezcan (2012) indicate that that perceived usefulness, directly affect attitudes towards mobile banking, and that attitude is the major determinant of mobile banking adoption intention. Research indicates that PU influences customers' internet banking acceptance (Alsajjan and Dennis, 2010) and usage intention toward mobile financial services (Hanafizadeh et al., 2014). Hu & al. (2019) claim that perceived usefulness has a positive influence on the adoption of FinTech services.

b) Perceived ease of use (PEU)

Hanafizadeh et al (2014) and Mohammadi (2015) found empirical support for the effect of PEU on customers' mobile banking adoption. However, Oliveira et al. (2014) and Chong et al. (2010) found inconsistent results and suggested that perceived ease of use is not significantly associated with customers' intention to use mobile banking services. In a similar way, Hu & al. (2019) claim that perceived ease of use does not affect users' attitudes toward the adoption regarding FinTech services.

3.1.1.2 Application of the extended TAM to banking and FinTech

Various authors have developed extended TAM's in order to better explain the acceptance of FinTech than with the perceived usefulness and perceived ease of use only. Indeed, various studies (Li, 2013; Hu et al., 2019; Aldás-Manzano et al., 2009; Mangin et al., 2014; Wang et al., 2003) argue that consumer comfort alone is unable to fully explain the rising popularity of

new technologies and services in the financial industry. These studies propose extending the TAM using, among others, measures of perceived risk and perceived credibility or trust to capture consumers' security and privacy concerns related to digital banking activities (Jünger & Mietzner, 2019).

a) Trust

McKnight et al., (2011) defined technology trust as an individual's willingness to depend on technology based on the positive characteristics of the technology and its ability to perform its intended tasks.

Trust has always been a focus of research when it comes to adoption and is often used as another important determinant to attract users besides perceived ease of use and perceived usefulness. The role of trust in the adoption of FinTech is important due to the sensitivity of the data involved in the service (Hu et al., 2019). Key areas of concern other than data privacy which appear to drive distrust of FinTech are fear of the unknown, which means that most consumers trust traditional financial companies far more, and the fear that technology is moving too fast to regulate it efficiently (Wilde, 2020). Hu & al (2019) claim that trust has a positive impact on the adoption of FinTech services and that determinants of trust in the context of FinTech include government support, brand image and perceived risk. In the context of their study on the adoption of mobile banking especially, Chong et al. (2010) find that trust is positively associated with the intention to use online banking services.

b) Government support

According to Tornatzky and Klein (1982), Jaruwachirathanakul and Fink (2005), and Tan and Teo (2000), government support is a crucial driver of online banking adoption. Hu & al (2019) are extending those findings to the adoption of FinTech services in general, claiming that government support has a significantly positive influence on the adoption of FinTech services, through a direct effect but also a non-direct impact on trust which in turn has a positive impact on the adoption of the service. This support can materialize in different ways: encouraging and promoting the usage of Fintech services, supporting FinTech with infrastructure investments, or developing effective regulations in order to improve users' confidence in

FinTech services (Chong et al., 2010). Because the government has good credibility, it can increase the credibility and reliability of FinTech products or services by undertaking such actions.

c) Perceived risk

Perceived risk could be described as consumer's perception about the uncertainty of outcomes which mainly concerns the research and the choice of information of a product or service before making any purchasing decision (Cox, 1967). As described by Ryu (2018), there are four different components of perceived risk in the context of FinTech: financial, legal, security and operational risks.

Kesharwani and Singh Bish (2012), reveals that perceived risk has a negative impact on behavioural intention of internet banking adoption in India. According to Hu & al (2019), perceived risk of FinTech services has a substantial role in reducing the level of trust in services. As trust actively guides users to engage with FinTech services, companies providing FinTech services need to adopt measures to reduce the perceived risk users are facing to strengthen trust, so that it will increase users' willingness to adopt the products or services (Hu & al., 2019). Keong et al. (2020) confirm that perceived risk negatively impacts the adoption intentions of FinTech.

d) Brand image

Brand image is related to the consumers' use of the brand to reflect their symbolic meaning of consumption and identity in self-expression (Lau and Phau, 2007). In other words, it is as a unique bundle of associations and beliefs held by consumers about a specific brand. Brand image is believed to have a significantly positive impact on the adoption of FinTech services (Hu et al., 2019; Chuang & al., 2016). This impact is direct but also indirect through a direct effect on trust while trust has a positive impact on the adoption of FinTech services.

e) User innovativeness

User innovativeness can be defined as the degree of early adoption of a certain innovation by individuals or in other words, the degree of an individual's propensity to try and adopt new products or services or new technologies (Hu & al, 2019). Early adopters are the individuals who are interested in taking a risk and adopting new technologies or services. Oppositely, late adopters are people who tend to be more sceptical and reserved about the adoption of new technologies or services (Ryu, 2018). As the financial sector has specific characteristics like the enhanced need for trust in financial transactions and vendors, distinctions between early and late adopters in financial sector have more impact than in other sectors (Ryu, 2018). According to Hu & al (2019), user innovativeness has a significantly positive impact on the adoption of FinTech services.

3.1.2 Benefit-Risk framework

The benefit-risk framework is based on the net valence framework of Peter and Tapey (1975) which states that consumers will consider the positive and negative attributes of a product and make a decision to maximize net valence. Numerous researchers have studied the decision-making process to adopt or use an IT service based on the benefit-risk framework. We can mention Kim & al (2008) and their model about e-commerce purchasing intentions, Benlian and Hess (2011) and their study on the adoption of software as a service (SaaS) and Farivar and Yuan (2014) and their research on users' social network adoption behaviour.

3.1.2.1 Benefit-Risk framework applied to FinTech

Lee (2009) studied the impact of perceived benefits and risk on the adoption of mobile banking and the results show that this model has got a good explanatory and predicting power of customer's intentions to use mobile banking services. Liu & al (2012) also used the risk-benefit framework to investigate the mobile payment adoption. According to them, perceived benefits and risks are both equally considered by consumers to evaluate the perceived value of adoption decision. Ryu (2018) applied the risk-benefit framework to the adoption of FinTech in general and claims that both perceived risks and benefits significantly influence the FinTech continuance intention.

a) Perceived benefits

Ryu (2018) applied the risk-benefit framework to the adoption of Fintech in general in order to understand the influence of perceived risks and benefits on the FinTech continuance intention. In this study, perceived benefits include 3 different benefit categories: economic benefit, seamless transaction and convenience.

- **Economic benefits** include cost reduction and financial gains from FinTech transactions. Some FinTech applications like mobile remittance and P2P lending provide lower transaction costs than traditional financial services providers by directly providing standardized services on a mobile channel removing intermediation (Mackenzie, 2015) or by using a match-making platform that benefits from a lower overhead cost so that lenders receive a higher return while borrowers pay a lower interest rate (Ryu, 2018).
- **Seamless transaction** refers to the fact that fintech companies have the ability to develop product and services that provide transaction-related benefits (money transferring, buying, investing, lending) that can compete against traditional financial institutions (Ryu, 2018). It therefore allows the user to perform simple and speedy transactions on cost effective platforms.
- **Convenience** is related to the portability and immediate accessibility of FinTech services. Users benefit from an enhanced convenience and efficiency thanks to mobile services (Ryu, 2018).

As a result of this study, Ryu (2018) claims that both perceived benefits and risks influenced the FinTech continuance intention, but that perceived benefit had a much stronger impact on FinTech usage decision than the perceived risk. Among the three factors of perceived benefit, convenience was the most significant one affecting the perceived benefit. This implies FinTech users would perceive FinTech usage primarily as a convenience enabling a flexible and mobile access to financial transactions.

b) Perceived risk

Lee (2009) studied the impact of perceived benefits and risk on the adoption of mobile banking. Perceived risks included security and privacy, financial, social, time and convenience, and performance risks. An important insight of this study is that although both perceived benefit and risk have a significant influence on intention, perceived risk is a more influential factor. This is contradictory to Ryu (2018)'s findings, but the scope of the study is not identical, as Lee focused on mobile banking only whereas Ryu studied FinTech in general. This implies that controlling the risk of online banking is more important than providing benefits. However, giving access to a risk-free online transaction environment is a lot more difficult than providing benefits to customers (Lee, 2009).

Ryu (2018) identifies 4 different types of risks related to the adoption of FinTech:

- **Financial risk** refers to the potential for financial loss in a financial transaction involving FinTech.
- **Legal risk** designates an unclear legal status and lack of universal regulations of FinTech.
- **Security risk** is related to the potential loss due to fraud or a hacker which compromises the security of financial transactions in FinTech.
- **Operational risk** refers to all potential losses from inadequate or failed internal processes, employees, and systems in Fintech companies. The lack of operational skills of a fintech company could cause system or transaction problems resulting in the distrust of users.

According to Ryu (2018), out of those 4 major risks related to FinTech continuance intention, legal risk is the most important one. This is contradictory to the result of previous studies showing that financial risk is the most significant risk when it comes to the adoption of mobile banking and mobile payments (Luo et al., 2010; Liu et al., 2012). Legal risk being perceived as the most important risk suggests that reforming the regulations and strengthening the security of financial transactions could consequently drive the adoption of FinTech.

c) *Moderating effect: user type*

Ryu (2018) claims that the user type (early or late adopter) has got a moderating effect on the perceived risks and benefits of using FinTech. The early adopters consider legal risk as the most negative factor, while the late adopters are most concerned about security risk. As early adopters tend to have preliminary knowledge about the FinTech ecosystem, they might consider regulation as the key barrier to using FinTech. However, the late adopters might consider security as the most prominent risk because they are not aware of the specific legal environment of the FinTech business (Ryu, 2018). Regarding perceived benefits, the effect of the economic benefit was the lowest among the three benefits in the early adopters category, whereas it was the most important positive factor in late adopters. For early adopters, the key benefit of using FinTech was not to have economic gains, but to benefit from seamless transactions, while the late adopters primarily expect more financial gains through the use of FinTech (Ryu, 2018).

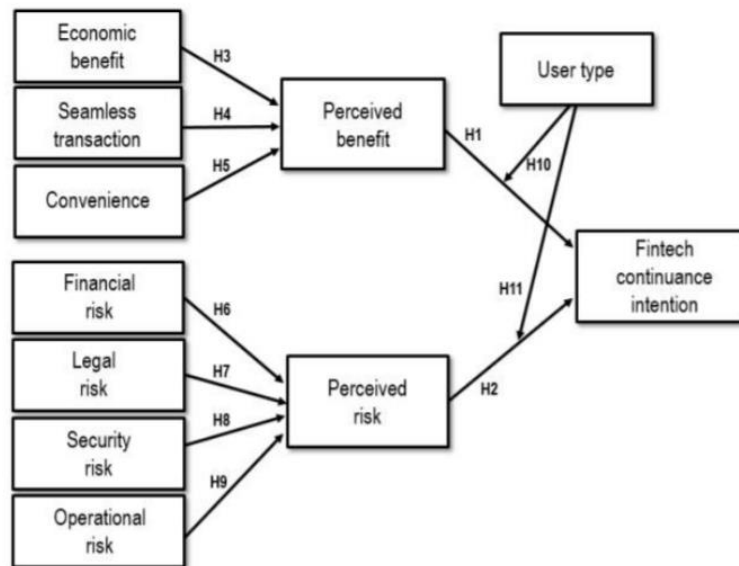


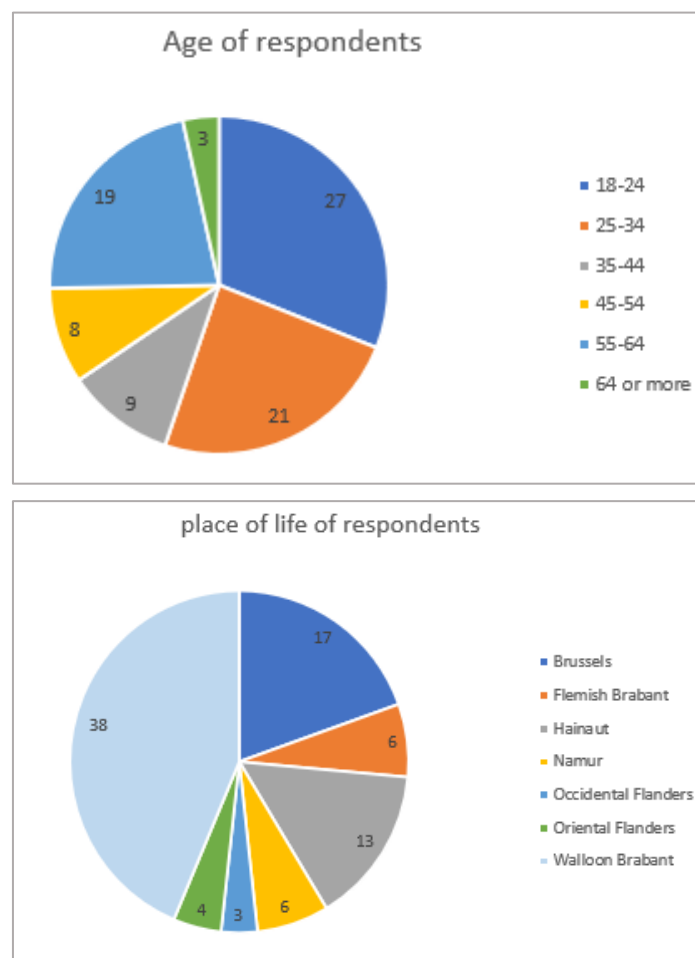
Fig. 11: Benefit-Risk framework for the continuous use of Fintech (Ryu, 1989, p. 9).

3.2 Population survey

3.2.1 Methodology

The goal of this section is to understand the perception and the demand of Belgian consumers towards FinTech services offered by challengers and identify some trends in the adoption behaviours. The choice of using a survey rather than individual interviews to collect insights about FinTech usage by Belgian consumers comes from the willingness of reaching more people in order to have a better overall view of the perception of the average Belgian rather than deeper insights on the adoption behaviours of a few individuals.

90 people responded to the survey, which was mainly shared through the social networks Facebook and LinkedIn. However, those methods led to the respondents sharing a lot of characteristics (age, education), so other ways of sharing the survey (direct messaging or calls) were used in order to get a sample that would be as representative as possible of the Belgian population. Still, there are significant discrepancies in the number of respondents from different age groups or regions. This will be addressed in the limits section of my thesis.



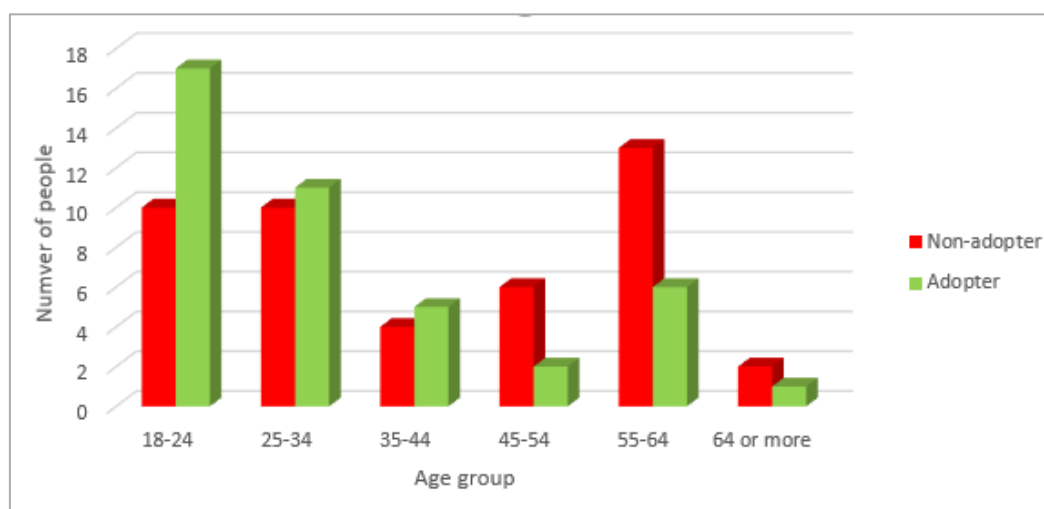
The survey itself, which can be found in appendix, includes 27 questions, 17 of which are in the form of a Likert scale. A few open questions were also included for the purpose of collecting deeper insights. The questions were written using information gathered from the literature about the adoption of FinTech services.

In the section below can be found an analysis of the results provided by the survey. For the sake of lightness of writing, the term FinTech services, will only refer to FinTech services offered by challengers and not traditional banks.

3.2.2 Analysis

3.2.2.1 Adoption and usage of FinTech services

Regarding the general adoption of FinTech services by challengers, 48 % of respondents are users of such services. By analysing the answers in different age group, it seems like there is a correlation between the age and the propensity to use FinTech services. Indeed, there is a 62% adoption rate for the 18-24, 52% for the 25-34, 44% for the 35-44, 25% for the 45-54, 22% for the 55-64 and 33% for the +64 (there were however only 3 respondents in this last category, which means that the percentage might not be representative of the real adoption rate). This does not come as a surprise as the younger population is more likely to understand what FinTech is and adopt it. Indeed, millennials tend to dislike services offered by traditional banks, to use more internet and mobile banking and to be more excited about new financial services offered by companies like Google, Amazon and Apple (CBInsights, 2019).



However, even though the 18-24 is the age group with the most adopters, the age group with the most frequent users are the 25-34, with 33% using such services a few times a week and 19 % using them less than once a week, against respectively 19 and 37% for the 18-24.

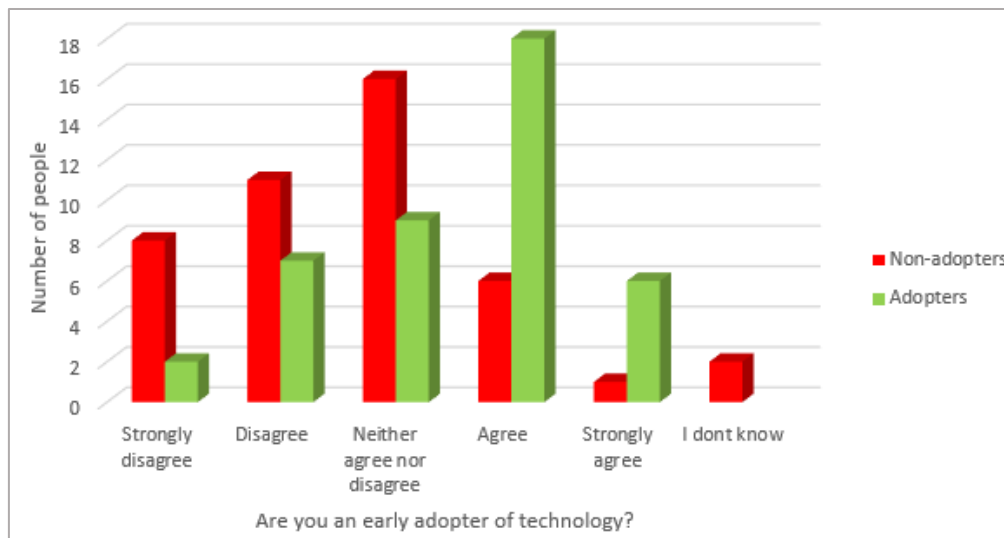
There is a significant difference in FinTech usage between both genders: 38% of female respondents are using them against 57% of males. This is consistent with a study of the Bank for International Settlements (2021) on FinTech adoption in 28 countries which claims that there is a significant gender gap in the usage of FinTech.

When looking at which services are being used, we can observe that there is not much diversity:

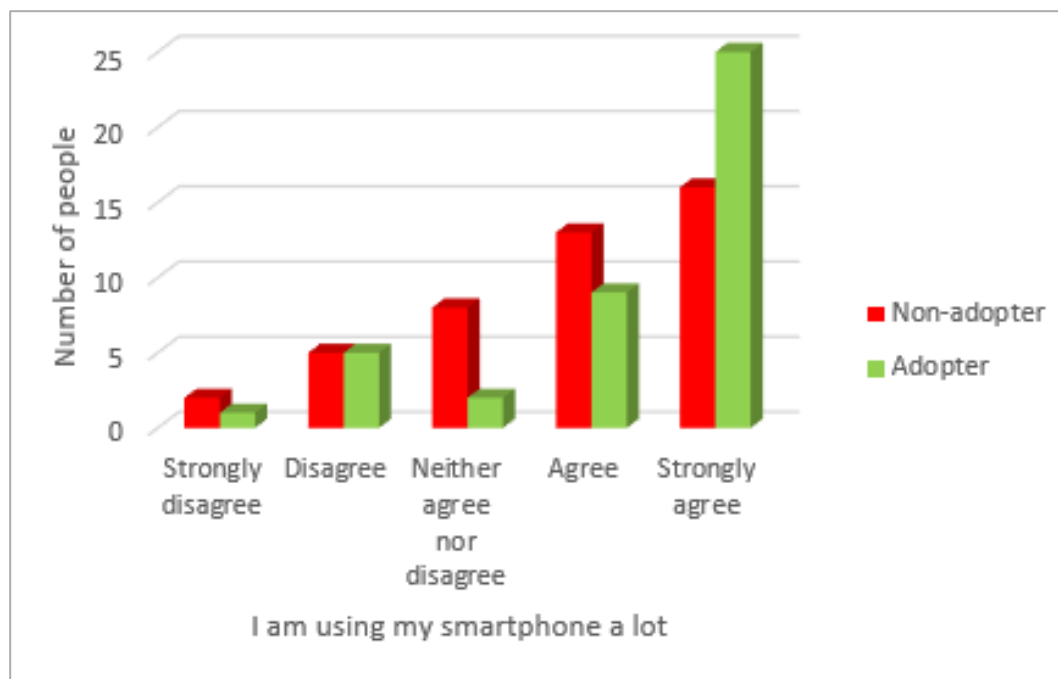
FinTech service	Number of users
Paypal	21
Payconiq	14
Revolut	5
Apple Pay	4
Google Pay	3
N26	3
Wise	2
Degiro	1
Cake	1

Payment services are by far the most used FinTech services by the respondents. Among the 44 FinTech adopters in the sample, nearly half (21) are using Paypal. A few respondents are also neobank customers, but the other categories of FinTech like investments are largely underrepresented. Only one respondent claimed to use services from a FinTech company in the investment category (Degiro), and the same applies regarding the personal finances category (Cake).

As shown by this graph, those services tend to be more adopted by people who describe themselves as early adopters of technology. 78% of those early adopters are below 44.



Another trend showed in the survey was that usage of FinTech service seems to be correlated with smartphone usage, as shown by the graph below. EY (2016), claims that FinTech usage in Belgium is strongly correlated with the usage of other online services which are commonly used on mobile phones, such as Twitter and Spotify.



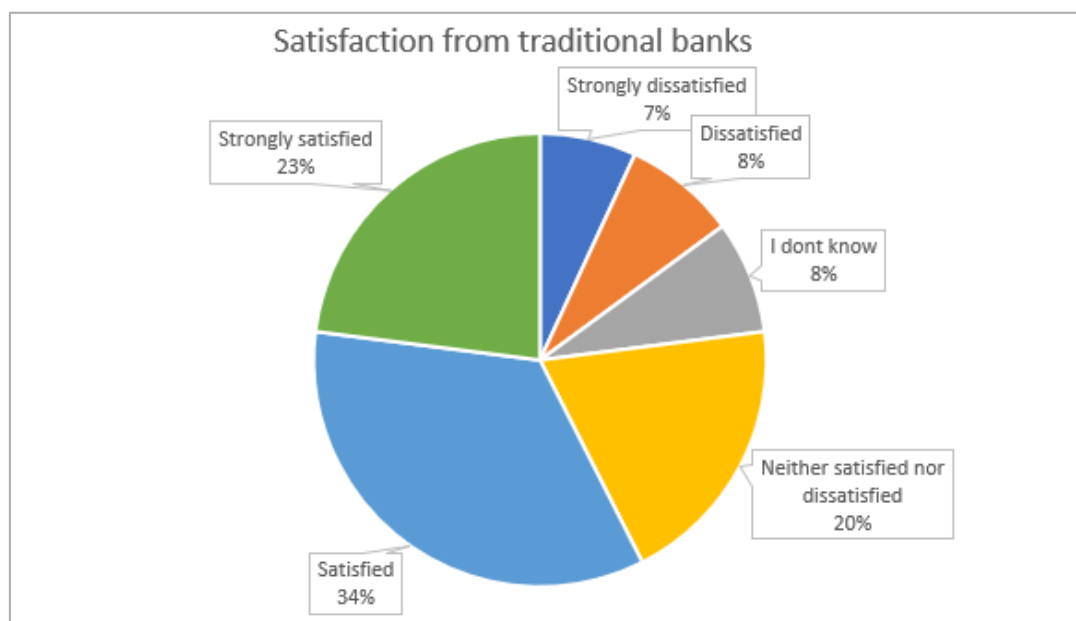
The survey also showed that there was a general lack of awareness around FinTech, as 65% of the respondents had never heard of this word before and only 31% had an approximate idea of what FinTech was. This awareness tends to decrease with the age of the respondent.

When asked the main reason why they do not use FinTech services, a lot of non-adopters (32%) mention the fact that they were not aware of such services, making it the most frequent answer to this question. 13% claim that they do not feel the need to use those, 11% say that the services provided by their traditional bank are sufficient, and 11% state that they do have trust issues with FinTech services. Other group of answers that were not representing a substantial percentage included, for example, laziness or using the same bank as the parents.

Reason for not adopting Fintech services	Percentage of non-adopters
Lack of awareness	32%
No need felt	13%
Satisfaction from traditional bank	11%
Fear/ distrust	11%
Others	33%

3.2.2.2 Satisfaction from traditional banks

When asked if they are satisfied with the digital offering of their bank, here is what the respondents answered:



Only 15 percent of respondents are dissatisfied or strongly dissatisfied with the digital offering of their bank. This confirms what was shown in the literature about the strength of Belgian banks in terms of digital. What is quite surprising is that this percentage is not that different within adopters and non-adopters. Indeed, we could expect FinTech adopters to be more dissatisfied with the digital services of their bank, but it is not the case as only 13% of them are (against 17% for the non-adopters). This means that dissatisfaction from the digital offering of banks does not seem to be a reason to adopt FinTech services. Another surprising element is that dissatisfaction towards digital services of traditional banks is not especially higher in the younger age groups. Indeed, you could expect that younger generations, who are more tech-savvy, would be more demanding regarding the digital offering of their bank, and more easily dissatisfied.

Age group	18-24	25-34	35-44	45-44	55-64
Percentage dissatisfied or strongly dissatisfied	15%	20%	22%	13%	16%

3.2.2.3 Perceived usefulness and perceived ease of use

Perceived usefulness and perceived ease of use are, according to the Technology Acceptance Model (Davis, 1989) two primary factors influencing an individual's intention to use new technology. Regarding perceived usefulness, 47% of respondents think that FinTech services are useful. Only 7% think they are not, and 46% are neutral or do not have an opinion on the question. When analysing perceived usefulness by adopters and non-adopters, this factor indeed tends to be a strong predictor of adoption, as claimed by the Technology Acceptance Model. 81% of FinTech adopters think that FinTech services are useful, against only 16% for non-adopters.

	General	Adopters	Non-adopters
FinTech services are useful	47%	81%	16%
Neutral/no opinion	46%	14%	75%
FinTech services are not useful	7%	5%	9%

The results about perceived ease of use are fairly similar:

	General	Adopters	Non-adopters
FinTech services are easy to use	41%	76%	9%
Neutral/no opinion	51%	17%	82%
FinTech services are not easy to use	8%	7%	9%

Those 2 factors indeed seem to be good predictors of FinTech adoption, as most adopters tend to find FinTech services useful and easy to use. Among the non-adopters, most respondents do not have an opinion or are neutral about usefulness and ease of use. The exact percentage of respondents among non-adopters who do not have an opinion are 42% for perceived usefulness and 53% for ease of use. This shows that among the non-adopters of FinTech services, a vast majority of the respondents have probably not even tried such services once.

3.2.2.4 Perceived benefits

Ryu (2018) identifies 3 perceived benefits related to the use of FinTech services: Convenience, seamless transaction and economic benefits. The tables below summarize the answers respondents when asked about those benefits:

	General	Adopters	Non-adopters
FinTech services are convenient	59%	90%	29%
Neutral/no opinion	35%	5%	64%
FinTech services are not convenient	6%	5%	7%

	General	Adopters	Non-adopters
FinTech services benefit from seamless transaction	56%	90%	25%
Neutral/no opinion	39%	5%	71%
FinTech services do not benefit from seamless transaction	5%	5%	4%

	General	Adopters	Non-adopters
FinTech services provide economic benefits	38%	55%	22%
Neutral/no opinion	56%	40%	71%
FinTech services do not provide economic benefits	6%	5%	7%

The fact that most non-adopters are neutral or do not have opinions about benefits of FinTech shows once again that the awareness about those FinTech services is very low and that those non-adopters have probably never tried such services. Convenience and seamless transaction are the most valued benefits by the respondents.

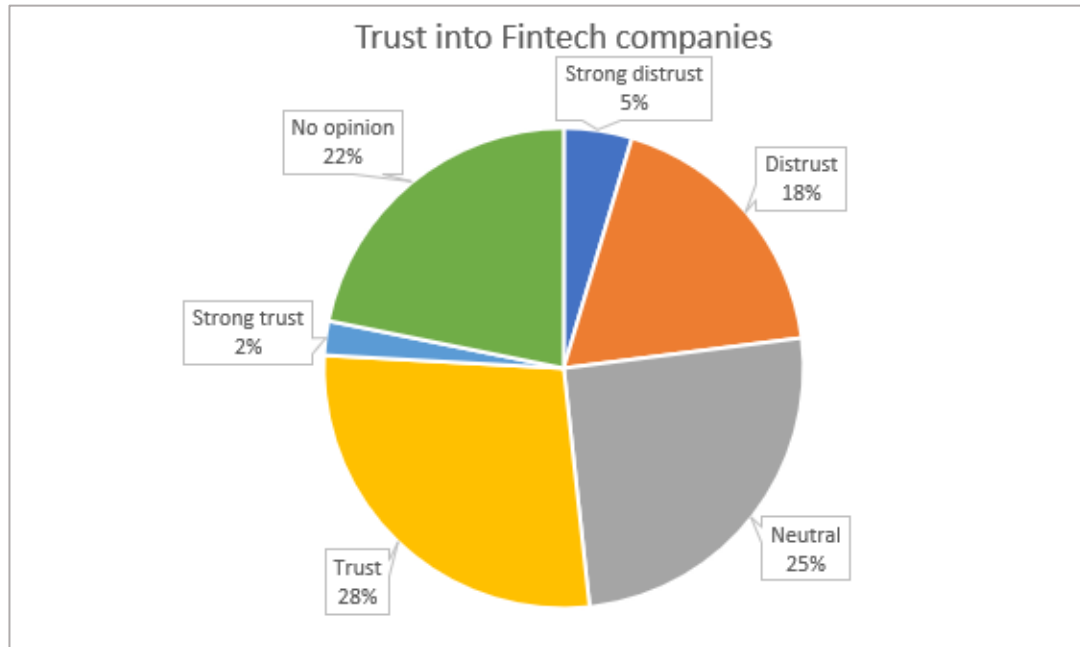
If we only look at the answers from the adopters of such services and segment them by age group, we can see that seamless transaction is the benefit that is being the most frequently mentioned in the younger age groups, whereas it is a mix of seamless transaction and convenience for the older ones. Financial benefit is the least frequently mentioned benefit within all the age groups.

Type of benefit	18-24 (adopters)	25-34 (adopters)	35-44 (adopters)	45-54 (adopters)	55-64 (adopters)
convenience	94%	72%	100%	100%	100%
Seamless transaction	100%	82%	100%	100%	66%
Financial	58%	45%	80%	50%	50%

3.2.2.5 Trust and brand image

As pointed out in the literature, trust has always been an important dimension to consider when studying adoption, even more when technology is involved. When asked about their trust in fintech companies, answers of the respondents show multiple things: First, the fact that nearly 50% of the respondents do not have an opinion on the question or are neutral shows once again this general lack of awareness and knowledge about FinTech in Belgium. Second, people do not have strong opinions about the level of trust they can put into those

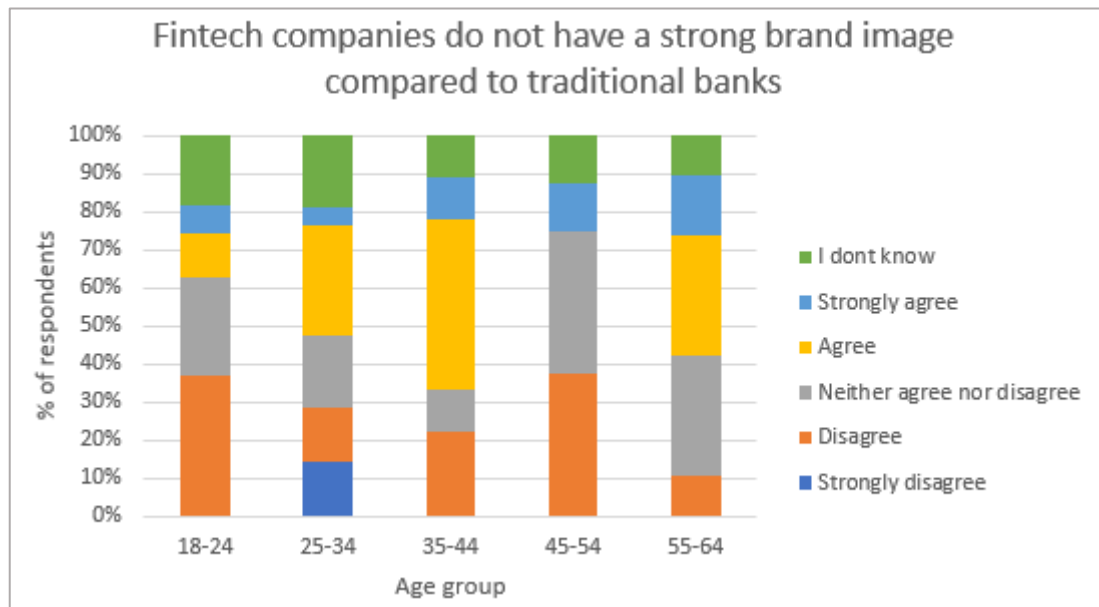
companies, as strong trust or distrust only represent 7% of the answers. Third, in general, respondents tend to trust FinTech more than they distrust it.



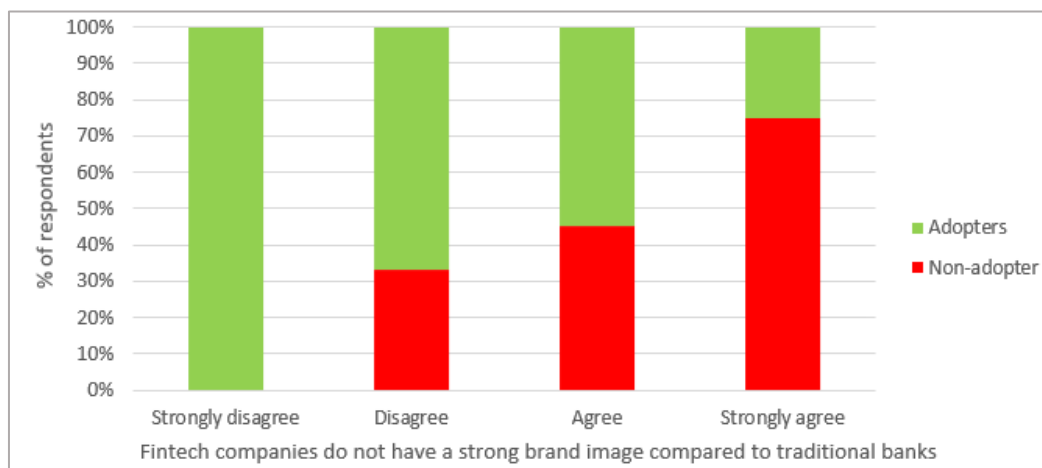
However, this level of trust might not be representative of the global population as the sample of my survey contains more people in the 18-24 age group than in any other group. As exposed by Forbes (2017), millennials are generally more aware of potential security risks when it comes to security, but they are less likely to be concerned by them. This is confirmed by the survey, as the group with the highest level of trust are the 18-24 with 40% of respondents having trust or strong trust in FinTech services. Only 19% of respondents in this age group claim that they distrust FinTech services. Above 55 years old, only 14% of respondents have trust in FinTech services whereas 50% distrust or strongly distrust it. As mentioned in the literature, determinants of trust in the context of FinTech include government support, brand image and perceived risk (Hu & al., 2019).

Regarding government support, 21% of respondents share the opinion that the government is not supporting FinTech enough, but most respondents do not have an opinion on that matter (34%). As for the brand image, 31% of respondents disagree with the statement that fintech companies do not have a strong brand image compared to banks, whereas 32% agree or strongly agree with it. When analysing those answers per age group, it seems like the

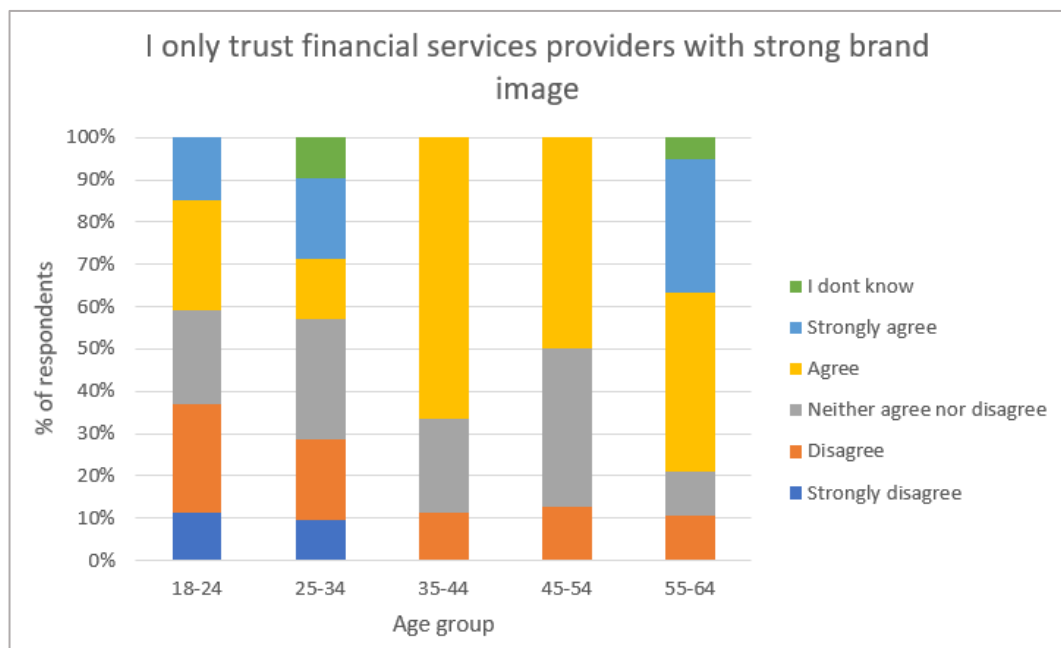
perception that fintech challengers do have a strong brand image decrease with the age. 37% of the respondents aged between 18 and 24 thinks that fintech companies have a strong brand image. This number decreases to 22% for the 35-44, and 10% for the 55-54.



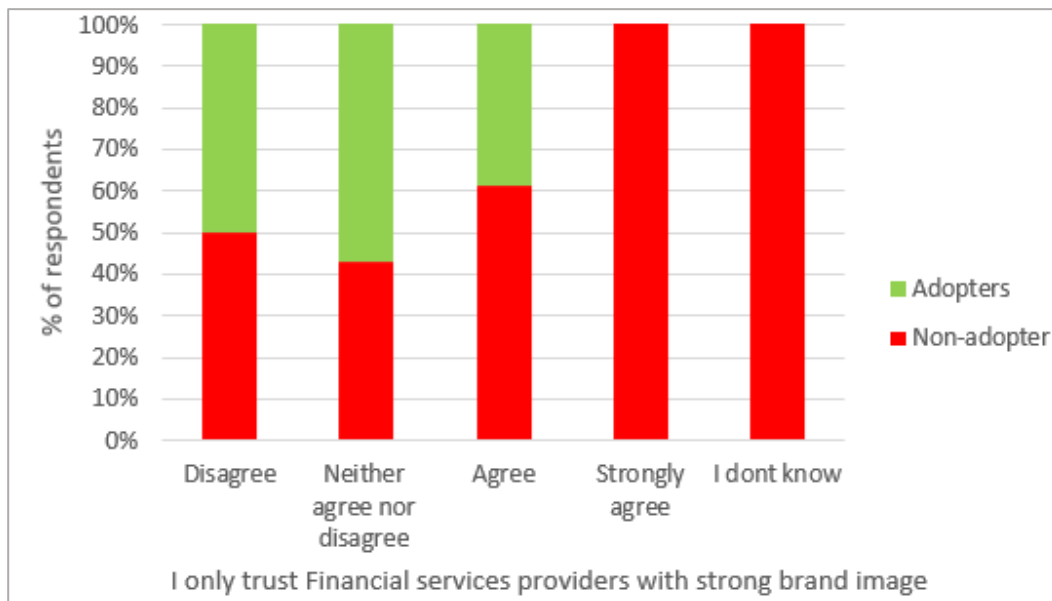
It seems like the perception of the brand image has a significant impact on the adoption, as 70% of the respondents who think that fintech companies have a strong brand image are adopters of FinTech services. Among respondents who think that fintech companies do not have a strong brand image, 46% are adopters.



Indeed, when in front of the statement “I only trust financial services provider with strong brand image”, 49% agree or strongly agree, 26% are neutral or do not know, and only 21% disagree or strongly disagree. When segmenting the answers by age group, we can see that brand image tends to take more importance in the older age groups. Indeed, between the age of 18 and 34, only 38% of respondents claim that they only trust financial services providers with a strong brand image. Between the age of 34 and 64, this percentage increases to 67.

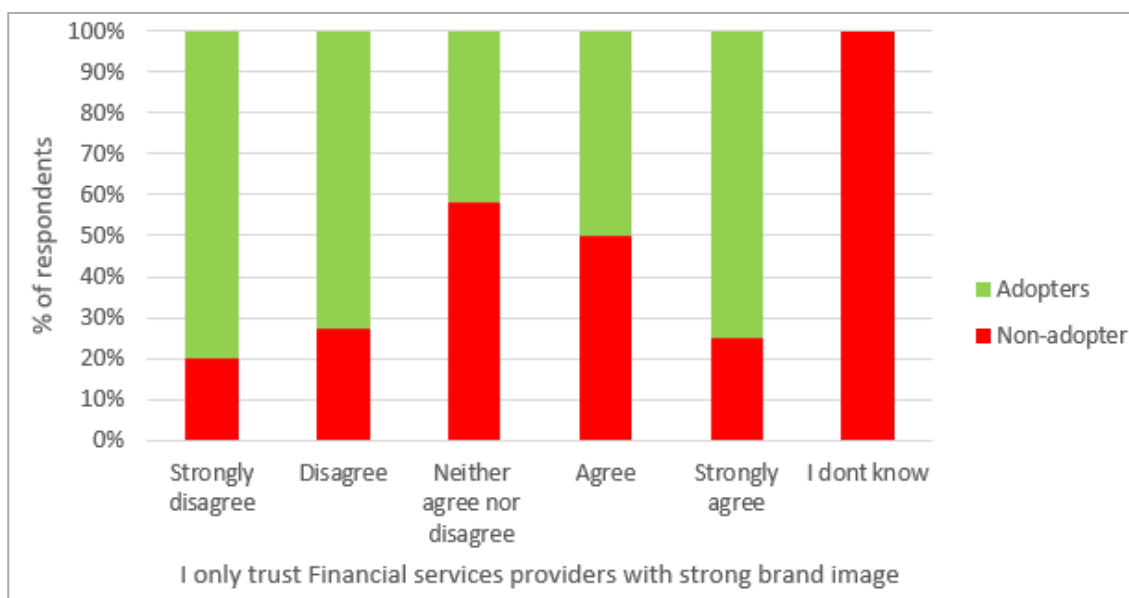


Combining the analysis of this question with the last one, we can see that fintech companies have a strong brand image among the young generations, for which brand image is not especially the most important criteria. Fintech companies did not manage to convey a strong brand image to the generations for which it is more important, the older ones. In the 35-64 age group, the more people only trust financial services providers with strong brand image, the less they tend to adopt FinTech services.



(35-64 years old)

This trend does not apply to the respondents aged between 18 and 35 as they tend to perceive that fintech companies have a strong brand image compared to the 35-64.



(18-34 years old)

3.2.2.6 Perceived risks

When looking at the 4 different components of perceived risk in the context of FinTech, it appears that legal risk is the risk that concern respondents the most with 25% of them finding

that legal status and regulations of FinTech are rather unclear. However, they are nearly equally concerned about financial risk (24%) and security risk (23%). When only looking at the answers from non-adopters of FinTech services we can see that quite logically, the percentage of respondents which are concerned is higher for the 4 types of risks, and the risk perceived as the most prominent is financial risk with 31% of respondents afraid of incurring a money loss in a transaction involving FinTech.

Type of risk	% of respondents concerned	% of non-adopters concerned
Financial	24%	31%
Legal	25%	27%
Security	23%	27%
Operational	14%	22%

When only looking at the answers from non-adopters in order to try to understand what risks could restrain them from adopting such services, and segmenting them per age group, a few things can be noticed. Firstly, all 4 types of risks are increasingly being mentioned with the age. When looking at the answers from non-adopters within the 18-24 age group, we can see that a weak percentage of them are being concerned by the different types of risks, compared to the non-adopters within the 55-64 age group. This means that the different types of risks are probably not the reason why younger generations are not adopting FinTech services, whereas it could be a more significant element for the older generations. The most frequently mentioned risks between the age of 45 and 64 are financial and legal risk, but security risk is important as well.

Type of risk	18-24 (non-adopters)	25-34 (non-adopters)	35-44 (non-adopters)	45-54 (non-adopters)	55-64 (non-adopters)
Financial	10%	20%	25%	16%	61%
Legal	10%	20%	25%	33%	46%
Security	30%	20%	25%	33%	31%
Operational	20%	20%	25%	17%	31%

3.2.2.7 Summary of the main insights

The survey reflects an adoption rate of FinTech services offered by challengers of 48%. Most people who don't use FinTech actually do so because they are not aware of such services. Even

if older generations appear to be more concerned by risks than younger ones, those risks do not seem to be the main reason not to adopt FinTech services. The other main reason for people not to adopt FinTech services is because they do not feel the need to do so, mainly because their traditional banks is providing them all the services that they need. The few FinTech services that are being used are being provided by large fintech companies mainly in the payment but also online banking categories. Indeed, the penetration rate of services offered by smaller fintech companies and in other categories is extremely low.

The perception of various elements related to fintech companies varies consequently with the age. Younger Belgians, who tend to be earlier adopters of technologies and heavier smartphone users, are more likely to use such services. They acknowledge the strong brand image of some fintech companies, mostly trust them, and appreciate the fact that FinTech services allow them to perform operations normally handled by traditional banks in a speed and cost-effective manner. Older generations are generally not aware of such services and are therefore less likely to adopt it. It is important for them that their financial services provider has a strong brand image, but they think that fintech companies do not have this strong brand image. They acknowledge and value the convenience of FinTech services, but they are also concerned with risks, especially financial risk (risk of losing money in a transaction involving FinTech services).

4. Conclusion

4.1 Why is the adoption rate of FinTech services offered by challengers low in Belgium

By analysing both the supply and demand side of Fintech services in Belgium we now have a better understanding of the drivers of the low adoption rate of FinTech services from challengers. The literature review and consumer survey have both shown that incumbents are clearly the main actors of the B2C FinTech ecosystem and the FinTech offering that they are providing to their existing clients makes it hard for the challengers to generate some demand. In the literature, we have seen the very developed collaboration between incumbents have created major barrier to entries for international challengers, the most significant example being the Bancontact payment scheme. Also, the small size and complexity of the market, makes it more interesting for fintech startups to prioritize neighbouring countries or operate in B2B, which has allowed Belgian banks to buy some time and develop their strong FinTech offerings.

This was reflected in the survey with a high rate of satisfaction from Belgian consumers when it comes to their financial services provider, meaning that the demand for FinTech services offered by challengers is relatively low. Indeed, a significant part of the population is not even aware of the services offered by fintech challengers because the incumbents have become such an important part of the FinTech ecosystem. The older generations tend not to trust fintech challengers, because they are concerned with the different types of risks associated with them, and they perceive their brand image as weak, resulting in a very low adoption rate. On the other hand, there is a significant adoption rate within younger age groups, who acknowledge some important benefits of services offered by FinTech and perceive it as less risky, meaning that even if harder than in other markets, it is still possible for fintech challengers to bring added value to the personal finances of the Belgian population.

4.3 Implications for fintech challengers aiming to enter or develop in the Belgian market:

a) Raising awareness:

A trend that the survey clearly showed is that people in Belgium tend to lack knowledge about FinTech or they are not even aware of FinTech services offered by challengers. Indeed, a majority of the non-adopters had no opinion about the different benefits and risk that FinTech involves, which means that they have probably never tried or even heard of those services. This might be caused by the very strong presence of traditional banks which, thanks to advanced digital offerings, interesting prices, and valuable partnerships, manage to satisfy most of their clients and do not let a lot of opportunities for challengers to “steal” those clients. Still, a significant amount of people is using such services in Belgium and are acknowledging their benefits, meaning that there are opportunities for such companies in the market.

Content marketing can be a way to build this awareness. Providing informative and high-quality content that answers questions and explains how the company addresses customer’s pain points. As the financial services industry is a very complex and constantly changing industry, it is crucial to design some content that is providing some easy-to understand explanations on what FinTech is and how it can solve problems for customers, in order to build this awareness.

b) Know your target audience:

What the survey showed is that the perception of various elements related to FinTech changes depending on the age of the audience. Fintech challengers should therefore be aware of those differences and integrate them into their marketing, communication and product strategy.

Younger generations are heavy smartphone users and tend to be early adopters of new technologies. Those tend to adopt FinTech services more easily than older generations. They have more trust in fintech challengers than their elders. Even if brand image is not such an important factor in the adoption decision, those young generations perceive that fintech companies have a strong brand image compared to the older ones. They do not perceive FinTech services as involving a lot of risks, and the most important benefit for them is the

seamless transaction provided by FinTech. Therefore, if your target customers are those younger generations, the focus should be on the benefits you can provide them. Providing products and services that enable to perform transactions and operations that are normally being handled by banks in a speedy and cost-effective manner and communicating efficiently about those benefits is important if you want to attract a young customer base.

Older generations are more distrustful of fintech challengers. Brand image is very important for them to build trust, and they generally do not perceive brand image of fintech companies as strong. They perceive that FinTech services involve a certain degree of risk (especially financial and legal), and the most recognized benefit of FinTech services for them is the convenience.

In order to convert those older customers, fintech challengers should focus on building trust. As opposed to when dealing with the younger generations, The emphasis will rather be on the communication and marketing than on the product or service itself. Developing brand and reducing the perceived risk with an effective communication and marketing strategy will help building this trust and it will attract more customers from those generations. Of course, communicating about the benefits, like convenience, is important as well.

c) Know your competition:

As exposed in the literature, the main competitors of fintech challengers in Belgium are not each other's, but rather the main traditional banks. Indeed, the disruption that those challengers are bringing to the market is not as important as in others due to the very competitive offering of traditional banks. It is therefore crucial to understand what the strengths of those traditional institutions are and rather than trying to compete with those strengths and do better than them, focus on areas where challengers do have the edge over incumbents. If we take the example of neobanks, their traditional selling points in most markets are their very low prices, and the quality of their mobile banking app. However, as exposed before, traditional banks in Belgium are very competitive regarding those elements, which means that doing marketing and communicating about those attributes will not be very effective for fintech challengers. Therefore, they should identify what they are able to provide and that incumbents are not and start doing more communication and marketing about those

elements. For example, for the neobank Revolut, it might be more important to communicate on the fact that you can buy and sell cryptocurrencies through their app, rather than on the gratuity of their accounts. Those neobanks should not only try to desperately compete on the same attributes as traditional banks, but rather differentiate from them where possible. Indeed, the survey showed that most Belgian citizens are satisfied with the services provided by their bank. This means that improving the quality of those services, which is already a very hard task, will not push towards the adoption of FinTech services, but the offering of different services might.

5. Limits and further research

The main limitations of this thesis are related to the survey. Firstly, it is very likely that the percentage of FinTech adopters in the sample is more important than in the general population. Approximately a 100 people have responded to it, but it is very likely that it has reached at least 10 times more people in total. Among the people who were reached by the survey, it is very likely that a lot of them did not answer because they had no idea what FinTech was. It is indeed easier to answer a survey about something you are familiar with. Secondly, it is also likely that the respondents of the survey are more representative of a certain population rather than the general Belgian population. As a matter of fact, it is easier to collect answers from people who are part of your close social circles rather than complete strangers. This results in a certain bias as the sample will mostly be representative of those social circles. For example, my sample includes a lot of university students, and their view on FinTech might be completely different than the one of the “average” Belgian. Thirdly, collecting more answers could have only been beneficial in order to make the sample more representative of the Belgian population.

Another limit is that this paper only does not provide a dynamic view of FinTech. It just shows a snapshot of the current ecosystem which does not provide an understanding of how this ecosystem developed and how it might develop in the future. Indeed, FinTech is a very dynamic topic and studying it with a static approach might not provide all the required insights to thoroughly understand the subject. The dynamic evolution of the Belgian FinTech ecosystem, and its likely future development could be the subject of a further study on the topic.

Another further research that could be valuable would be to study if this low penetration of fintech challengers and the prominence of traditional banks is something positive for the Belgian consumers, and if not, what initiatives can be taken to incentivize more competition in the Belgian financial services industry to make the consumers better off.

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Appendix

1) Tables and figures

	Mobile banking app analysis	Fintech partnerships
	- summary of all accounts (also from other banks), and cards - classic banking operations (transfers, direct debit) - contactless payment with smartphone not directly integrated in the app, but via apple pay, google pay and Payconiq - Zoomit - Apply for a credit card or a prepaid payment card - visualize and analyse your investment portfolios. Performing manipulations (buying and selling of securities) requires the web version of the application. - Consult your insurance	- Partnership with the Swedish B2B fintech Tink in order to integrate its technology to the BNP easy banking app
	- Consult the balance and history of accounts and credit cards - shopping on the Internet without a card reader with Mobile Pay. Simply by using a QR code. - contactless smartphone payment with Payconiq app directly integrated to KBC app - Withdraw money using smartphone with Mobile Cash. - Pay bills simply by photographing them. - open a savings account - apply for a prepaid card - checking your vacation insurance - changing card limits - consult and pay your insurance bills and Zoomit - start saving for your pension - check your credit card transactions - open a rental guarantee savings account - pay for parking lot with the 4411 application - park without a ticket (partnership with Q park) - easily rent a shared bike - easily order Sodexo service vouchers. - the KBC app provides non-customers with an array of services beyond the usual account management and transactional options.	- In 2017 KBC launched a call for partnerships with fintechs in order to broaden and strengthen its third-party financial and non-financial services for its app.

	Mobile banking app analysis	Fintech partnerships
	- consult the balance and history of accounts and credit cards - make transfers, also with Zoomit - ask Siri to make transfers - apply for a Mastercard - adjust credit card limit - consult insurance overview and take out assistance and travel insurance - make a simulation and apply for credit for your house, car or other projects - open a savings or pension savings account - consult the investment overview, receive personalized advice, sell and buy investment products - make an appointment with a Belfius consultant - contactless smartphone payment directly through the app (you just need a NFC android phone and the Belfius app) - pay or receive money via a QR code - pay the bill in stores with the Payconiq by Bancontact app directly linked to the Belfius Mobile app.	- Signed a partnership with Accenture to develop technology solutions (in areas such as payment services, financial applications for smartphones or automated financial services). The objective of the two partners is to test the ideas to determine, within a few weeks, whether they can lead to concrete and credible solutions and, in the process, give rise to the creation of 'FinTech' start-ups. The companies created will eventually benefit, in order to develop, from an infrastructure.
	- summary of all accounts and cards - classic banking operations (transfers, direct debit) - consult and pay your invoices via Zoomit - monitor your investments - make an appointment for personalized advice - contactless smartphone payment with Payconiq (directly integrated in the ING smart banking app)	- ING labs (formerly FinTech village): FinTech accelerator in order to benefit from innovative ideas to better address the need for their customers - ING Ventures, launched in 2017, is a €300 million fund focused on fintech investing. It has invested in or partnered with a total of 115 start-ups over the last three years. In some instances, ING has built strategic partnerships with the companies they invested in. An example is the automated online lending platform Kabbag.

Appendix 1: comparison of the 4 main Belgian bank's mobile banking apps (Belfius, KBC, ING, 2021)

2) Consumer survey

Hi, thanks a lot for taking the next 6 minutes to help me for my thesis :) The goal of my research is to study the adoption of financial services provided by " FinTech companies" by belgian consumers. In this context, FinTech companies can be described as companies that are offering financial services (banking, lending, investment, payments, personal finance, etc.) fully digitally. Even if those companies offer financial services, they are not

traditional banks like ING, KBC, BNP or Belfius. Examples of famous FinTech companies or services include N26, Revolut, Apple and Google Pay, Payconiq, Paypal and Klarna, but there are many more. Any service or app that you are using to manage your finances and that is not offered by a traditional bank can be considered as a FinTech service.

1) Have you heard of the word "FinTech" before?

- ☐ Yes
- ☐ No

2) If yes, did you have an approximate idea of what FinTech was?

- ☐ Yes
- ☐ No
- ☐ I had never heard of this word before

3) Do you use financial services provided by FinTech companies? (companies that are not traditional banks)

- ☐ Yes
- ☐ No

4) If yes, which ones?

.....

5) At which frequency?

- ☐ Every day or nearly everyday
- ☐ A few times a week
- ☐ Less than once a week
- ☐ I don't use Fintech services

6) Can you shortly describe the main reasons why you use (if you use any) or don't use (if you don't use any) FinTech services? (you can answer in French or Dutch if easier for you)

.....

7) Do you agree/disagree with the following statements?

	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE (NEUTRAL)	AGREE	STRONGLY AGREE	I DON'T KNOW
I am using my smartphone a lot (screentime, number of apps, etc.)	☐	☐	☐	☐	☐	☐
I would describe myself as an early adopter of new technologies	☐	☐	☐	☐	☐	☐
I think that fintech services are useful	☐	☐	☐	☐	☐	☐
Fintech services are easy to use	☐	☐	☐	☐	☐	☐
I trust fintech services, there is no risk associated to using them	☐	☐	☐	☐	☐	☐
I am afraid that i can lose my money in a transaction that is handled by a fintech company	☐	☐	☐	☐	☐	☐
I think that legal status and regulations of fintech companies are very unclear	☐	☐	☐	☐	☐	☐
I think that fintech services are not secured enough (risks of hacking or fraud)	☐	☐	☐	☐	☐	☐
I think that fintech companies lack some technical skills which could result in some transaction problems	☐	☐	☐	☐	☐	☐
I only trust financial services providers with strong brand image	☐	☐	☐	☐	☐	☐
I dont think that fintech companies have a strong brand image compared to traditionnal banks	☐	☐	☐	☐	☐	☐

	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE (NEUTRAL)	AGREE	STRONGLY AGREE	I DON'T KNOW
Fintech services are convenient (portability , immediate accessibility...)	☐	☐	☐	☐	☐	☐
Services provided by fintech companies (money transferring, buying, investing, ...)Can compete with those offered by traditionnal banks	☐	☐	☐	☐	☐	☐
Fintech services provide some economic benefits (cost savings related to transactions for example)	☐	☐	☐	☐	☐	☐
I dont see any added value in using fintech services as my bank is offering me all that i need	☐	☐	☐	☐	☐	☐
Government does not show enough support towards fintech services (promotion, investments)	☐	☐	☐	☐	☐	☐
I am entirely satisfied with the digital offering of my bank (i.e., Mobile app)	☐	☐	☐	☐	☐	☐

8) What is your email address? (Fill it in if you agree to eventually be contacted for a further interview later on, depending on the results of the survey)

.....

9) What is your gender?

- ☐ Male
- ☐ Female
- ☐ I prefer not to disclose it

10) How old are you?

- ☐ 18-24
- ☐ 25-34
- ☐ 35-44
- ☐ 45-54
- ☐ 55-64
- ☐ 64 or more

11) Where in Belgium do you live?

- ☐ Brussels
- ☐ Walloon Brabant
- ☐ Namur
- ☐ Hainaut
- ☐ Liège
- ☐ Luxembourg
- ☐ Flemish Brabant
- ☐ Antwerp
- ☐ Occidental Flanders
- ☐ Oriental Flanders