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**HOW FINTECH INDUSTRY IS CHANGING THE WORLD**

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**ABSTRACT**

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<p>This thesis researched the innovative edges of the Fintech (financial technology). Fintech has been rapidly penetrating the financial markets by filling in the gaps left by the existing financial institutions and significantly improving the user experience. Firstly, the research briefly described the historical evolution of Fintech. In the subsequent sections, the paper aimed to demonstrate the innovative changes from Fintech in different areas, including the online banking and the payment process for both private and corporate customers. Additionally, the research also identified Fintech's success factors and its real-life applications. Based on which, the study analyzed its disruptive effects on the financial sector, the adaption process of the financial institutions as well as the potential to develop the financial technology in the future.</p> <p>The research topics have been studied both theoretically and empirically by validating the hypotheses against various credible data sources to provide the various insightful perspectives. The research also focused on the complexity of the digital service transformation in the Fintech era. Specifically, the research topics of the study addressed the challenges from the financial institutions' point of view, their initiatives to move along with the competition and the widely accepted approach to cope with the Fintech explosion. The primary source of the exemplary data has recently been collected by major financial market research corporations such as PwS, Capgemini and KPMG.</p> <p>The results of the research evidently confirmed the significantly growing roles of Fintech in the modern economics and suggested the checkpoints for digitizing the existing business culture. It has been exceptionally challenging for the financial institutions to adapt the new technological advancements; thus the paper also demonstrated the alternatives for innovating the aging business operations while minimizing risks at the same time.</p>		

**Keywords:** Bank, blockchain, digital, finance, Fintech, investment, online, payment service, peer-to-peer, third party integration.

**ABSTRACT**  
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## 1 INTRODUCTION

Traditional banks have been playing the key roles in the financial world. However, the rapid technological development has evolved the world economic to shift to the digital channels gradually. The disrupted financial markets have rapidly been transformed by the financial technology (Fintech) companies (Skan, Dickerson & Masood 2015). The innovated financial technology has created various business models as well as new customer needs. They affect different aspects of the economics, including the payment services, the banking industry and the financial regulations (Salmony 2014). New electronic services have increasingly been introduced to the markets which filled the gaps of the financial markets. The new solutions aimed to provide the customers with ease of use, high transaction speed and a wide choice of service providers. Following the introduction of the World Wide Web, the financial sector has gradually been digitized, with the introduction of the online payment gateway PayPal, or the digital currency BitCoin (Gonzalez 2004).

The research method used in this thesis utilized both the literature study and the empirical research using credible data sources, such as the financial reports and expert analysis. The literature study focused on the conceptual theories as well as the historical facts and figures. On the other hand, the empirical study analyzed the recent figures which were collected by financial research agencies. The primary purpose of the empirical study was to validate and verify the literature reviews.

This paper aimed to evaluate the evolution of the Fintech. The second chapter described the literature concept of Fintech and its types. Chapter 3 demonstrated the evolution of Fintech, starting from the historical foundation to the modern development. Subsequently, chapter 4 described the changes introduced by Fintech to the loan and payment process. Based on which, the affected customer behaviors were analyzed in chapter 5. Similarly, chapter 6 researched the effects of Fintech on traditional financial institutions, including the challenges against them, the adaption process and the collaboration of the two. Finally, the last chapter presented the research result as well as the discussion of the research methodology.

## **2 LITERATURE REVIEW**

### **2.1 What is Fintech**

Fintech stands for Financial Technology which refers to companies whose business financial services are mostly based on the technology platform to innovate products and perform financial services more efficiently. In other words, Fintech is an emerging type of financial services in the 21st century that some start-up companies are trying to change the form of the traditional transaction into new, modern and more effective methods by applying high-tech devices in financial sectors such as mobile payments, money transfers, loans, fundraising and even asset management. Some examples of technology being applied to the financial transactions are peer-to-peer payment technology, peer-to-peer lending, mobile banking, digital wallets and Blockchain, which aim to bring further benefits and high efficiency for the financial transactions as well as help to reduce costs for customers. (Investopedia)

### **2.2 Types of Fintech companies**

According to Accenture, financial technology companies can be classified into two major categories that are Competitive Fintech Ventures and Collaborative Fintech Ventures. In the latest report in 2016, Accenture explains that the Competitive Fintech Companies are those who will cause direct obstacles as well as create challenges for the financial services organizations. These companies have achieved a lot of success over the years by focusing mainly on providing new experiences and benefits to their customers through technology products instead of targeting at high profits. For example, the professional business strategies with the preferred price offered by eToro aim at supporting, advising and providing optimal solutions for the retail investors. Moreover, the card service has also been upgraded and developed by Square to maximize benefits for micro merchants. (Accenture 2016.)

On the other hand, Accenture also does not forget to emphasize the importance of Collaborative Fintech Companies in driving the evolution of the financial institutions. In fact, the Collaborative Fintech Ventures consider the existing financial institutions as their potential customers. Therefore, they always try to cooperate, support, and provide solutions to improve the position and the interests of these financial institutions in the market. To illustrate, the Collaborative Fintech Firms help the financial institutions to innovate their products and services as well as break their traditional business model

to bring a new and more sustainable development in the future. Besides that, they also help financial institutions optimize their existing enterprise, minimize costs and simplify procedures as well as everyday financial services through the innovation and the application of the high-tech products. (Accenture 2016.)

### **3 THE EVOLUTION OF FINTECH**

#### **3.1 The history of Fintech**

Today, there are many people who are using new technology products for their financial transactions and management such as smartphone payment, online banking, online trading websites, and other forms of purchase payments automatically through the network. However, most of them are unaware of the origin of these ideas, or, more precisely, are completely unknown or heard about Fintech, except for investors or individuals who specialize in the financial sector. The fact shows that the occurrence of Fintech has completely changed the lives and created a great turning point in the relationship of human and financial transactions such as loans and lines of credit. However, Fintech is not mentioned as a new product of the recent technology since it has existed for a long time. People are just continuing to use and improve it parallel with the development of technology for the purpose of creating the innovation and revolutionizing the traditional financial industry. (The Economist 2015.)

##### **3.1.1 In the early years**

The invention of the printing press allowing countries to print paper currency was one of the evidence for the first appearance of financial technology. However, in 1866, people saw more clearly the presence of financial technology through the invention of the telegraph and the successful establishment of the first cable line trans-Atlantic, which it was a prelude to the globalization of the world financial system. Furthermore, the Telegraph in 1918 played a very important role and indispensable in the operation of the Fedwire Funds Service because it was used to perform money transfers between banks together. Thus, money transfers through telegraph was a very popular application for the financial industry in this period, and it still continued to grow until the early 1970s. (Zerucha 2016.)

##### **3.1.2 In the modern time**

After the development of the telegraph, a series of new technology products were developed and released on the market with the aim of primarily supporting the financial sector. One of the typical products of financial technology in this period was the credit card invented by Diners Club in 1950. The



emergence and success of the credit cards continued to pave the way for the formation of many other new technology products such as ATMs in 1960 which allowed people to withdraw their money directly from the ATM instead of going to the banks. However, at this moment, the banks still held an important and essential role in performing most of the financial transactions. The technology products seemed insufficient to serve, support and replace all the role of banking as well as bring the best help for the financial market. Therefore, the improvement and the continuous development of new technology products were extremely necessary to create the innovation for the global financial industry. (Zerucha 2016.)

At the end of 1960, the first electronic system called Quoton, which was shaped like the large computer screens, was created with the mission to support brokers and announce the pricing of the stock market. In 1966, with the purpose of creating a premise and framework for the long-term development of financial technology in the future, global Telex network was launched and widely disseminated to the public. After that, the appearance of the Clearing House Interbank Payment System has contributed greatly in supporting the implementation of payment transactions in the US dollar between the banks around the world. In 1970, the first electronic stock trading was established and put into operation. Moreover, to support the storage of a large amount of data in a safe and optimal way, mainframe computers were installed in most of the financial institutions in the 1980s. (Zerucha 2016.)

Although this is the time that most of the technology applications were widely used in all banks, financial headquarters, trading centers and offices, technology was still only considered as a useful support tool behind the scene for the financial industry. For those outside the industry, they were mostly unaware of its presence until the E-Trade Model was announced to the public in 1982. The incredible success of the E-Trade Model has enhanced the importance and necessity of technology to the global financial industry. However, the booming evolution of Fintech was truly facilitated by the evolving Internet technology in the 1990s. To illustrate, the development of the Internet has led to the advent of the first online stockbroker services in the world aimed at supporting the implementation of the E-commerce model. Some first Fintech companies were appeared. The banks then also wanted to catch up with this development trend by continuing to innovate and apply the technology to their financial transactions. The idea of online banking, therefore, has been formed and announced widely to their clients. (Zerucha 2016.)

### 3.1.3 In the digital age

According to Desai (2015), 2000 was the year that marked the turning point for the incredible development of the Internet. It was because the Internet was able to connect and be widely used in most countries around the world, and so it obviously became an invaluable support tool for the ongoing development of Fintech. For instance, there was a lot of Fintech's infrastructure with sophisticated functions and high advanced applications, have been invented and widely used in many financial areas such as financial management risk, cash management, data analysis systems, and automated online trading systems. This remarkable progress of the Internet has made a precondition for the introduction of a lot of Fintech companies in many years later. (Desai 2015.)

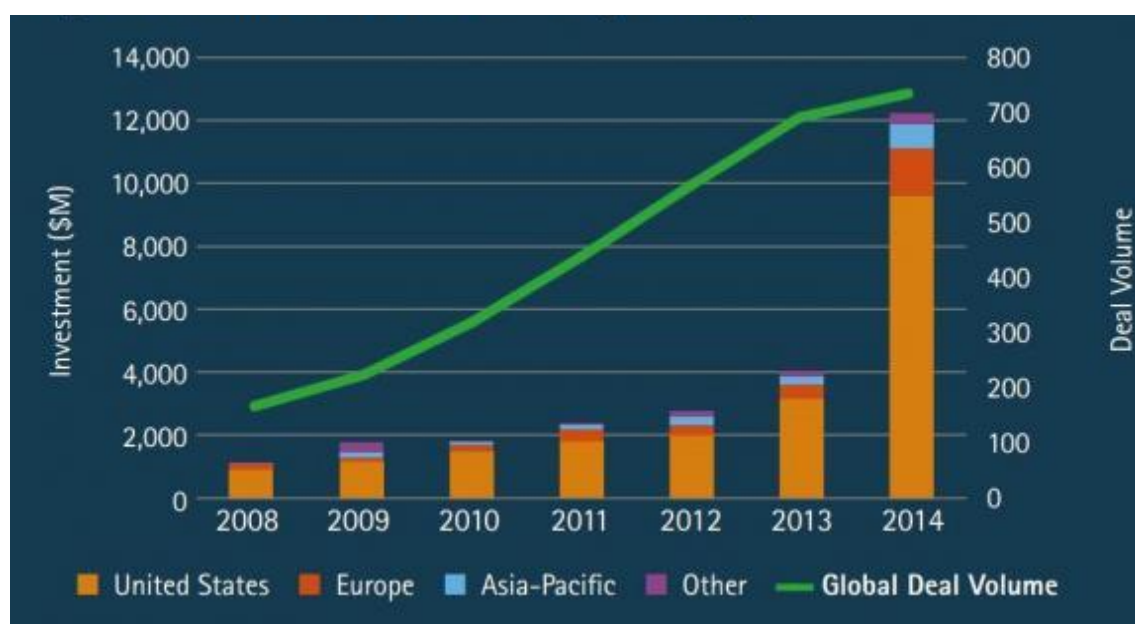
On the other hand, Fintech also contributed to creating a new face for the global financial sector and offered many new improvements to solve the problems and obstacles that customers often faced in their financial transactions. PayPal was one of the typical examples of the financial technology. It was one of the companies at the forefront of innovation, changing the form of transaction and money management through online trading and payment service instead of having to go to the bank. Another example marked the growth of Fintech was the emergence of e-commerce platform named eBay. It was a website that allows the customers to purchase a wide range of products through a variety of stores available on this website and quickly make the secure payments via the network. Besides that, they could also create their trading markets or even can hold some auctions to sell their products at better prices. Therefore, it was considered as a major shift in financial technology in this digital era. (Desai 2015.)

After that, go along with the rapid growth of mobile technology, the financial transaction was continued to optimize and simplified by using the financial support applications through smartphones. For example, instead of to the bank to transfer the money, they can make the transaction quickly through online banking application on the mobile devices. This operation can help the customers minimize the transaction costs as the recipients can receive money immediately without having to wait too long as well as save time for the customers. Then, the Robot advisers were invented with the purpose to support and provide necessary information for the customers quickly while reducing workforce costs and costs the customers have to pay for hiring private consultants. New financing channels and fundraising sites were opened and widely used with a variety of different forms to offer more online services with greater benefits for the customers such as online lending, online crediting, online payment and online

funding. At the result, the existence and continuous development of Fintech have caused huge pressure and challenges for the traditional banks. (Desai 2015.)

### 3.2 Current development of Fintech industry

Fintech has surprised the global financial market as well as the traditional banks since it consecutively achieved the incredible growth and acquired many great achievements in recent years. The graph 1 shows the total worldwide investment in Fintech firms from 2008 to 2014. Based on the graph 1, it is obvious to see that there was a significant increase in the global investment in financial technology firms between 2008 and 2014. To illustrate, there was just over 1200 million USD invested in the Fintech companies and around 160 deals closed in 2008. However, five years later, the amount of money invested in the financial technology firms grew dramatically to approximately 4000 million USD in 2013 which increased by nearly 300% compared to the amount obtained in 2008. United States was the most attractive investment destination in the world which the amount of money invested in Fintech firms was approximately 3400 million USD, accounting for over three-quarters of the total financial technology investments worldwide in 2013. Whereas Europe just gained nearly 400 million USD, Asia, and some other places received only 200 million USD.

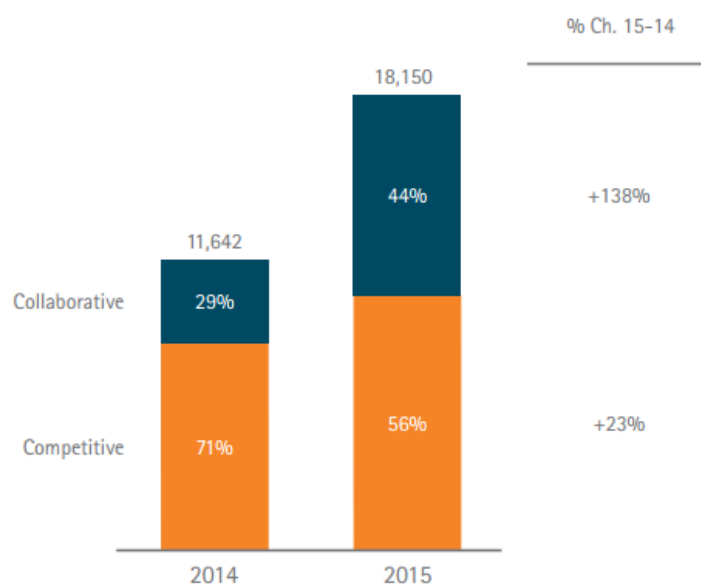


GRAPH 1. Global Financial Technology Investment Trends from 2008 to 2014 (adapted from Accenture and CB Insights 2014)

However, the most astounding growth of Fintech is in 2014, when the amount of money invested in financial technology companies rose three times compared to 2013 and grew over ten times compared to 2008. The US still experienced the highest growth rate, with the increase of 188,24 % to nearly 9800 million USD in 2014. Whereas, Europe achieved the highest growth rate in 2014 with the growth of over 214% to approximately 1500 million USD in which the lion's share of the total investment took place in The UK and Ireland that accounted for over 40% (Accenture 2015). Besides that, the number of completed transactions worldwide also grew by more than 4.6 times from 160 deals closed in 2008 to more than 740 deals closed in 2014.

In 2015, Fintech still continued to develop and became one of the sectors attracting the most investment in the world. The statistics from Accenture analysis on CB Insight data indicates that the worldwide financial technology investment rose 82%, from more than 12200 million USD in 2014 to over 22260 million USD in 2015. The US remained the world's leading position in the number of investments in the financial technology with more than 40% increase in 2015. Besides that, Europe also marked a boom when the amount of money invested in Fintech companies grew by approximately two times between 2014 and 2015, and the deal closed rose more than 50%. For Asia-Pacific region, the amount invested in financial technology firms went up rapidly to over 4000 million USD in 2015 with the increase nearly four times compared to 2014. The majority of this growth was contributed by China, with more than 1950 million USD and India with nearly 1650 million USD. (Accenture 2016.)

Moreover, in the article "The fintech revolution" (2015), Desai emphasis that 2015 was the year that marked the incredible development of some leading companies in the financial technology sector such as PayPal, First Data, WorldPay and Square as they have successfully achieved multi-billion USD market capitalizations. In recent times, there have been over 20 Fintech companies gain the value more than 1 billion USD on the global financial market (Desai 2015). The latest report from Accenture in April 2016 shows that the global investment in the financial technology firms will continue to grow rapidly in the coming years. To elaborate, there was a sharp increase in the total global investments in the financial technology ventures, with more than 5.2 billion USD being invested in the Fintech companies, in the first quarter of 2016. This figure increased by more than 65% over the same period in 2015. Particularly, Richard Lumb\_CEO of Accenture emphasizes that, since 2016 Fintech will create an industrial revolution, in which products and services will be upgraded and innovated to maximize the interests of customers, at the same time, step up the cooperation links between the digital companies and the traditional financial service (Accenture 2016). Thus, this will contribute to attract and entice the larger investments for the financial technology companies.



GRAPH 2. Collaborative Fintech Investments & Competitive Fintech Investments from 2014 to 2015 (adapted from Accenture 2016)

For the Collaborative Fintech Investment and Competitive Fintech Investment, based on the graph 2, in 2014, more than 70% of total global investment in the financial technology industry fell into the Competitive Fintech Companies, while the level of investment in the Collaborative Fintech Firms accounted approximately 30% in the total global investment. However, last year, many financial institutions, as well as the investors, seemed to realize the importance of the Collaborative Fintech Companies in promoting the long-term growth and the innovation in financial transactions. Therefore, in 2015, there were lots of investment funds poured into the Collaborative Fintech Companies with the desire of having a long-term cooperation with this industry to create competitive advantages in the financial market. To elaborate, the amount invested in the Collaborative Fintech Firms grew by nearly 140%, accounting for approximately 45% of the global financial technology investment in 2015. On the other hand, the level of investment into the Competitive Fintech Firms just went up slightly by nearly 24% and accounted for more than half of total global investment last year. This indicates that the current investment trend of investors and the financial institutions is gradually shifting from competition into collaboration to create a favorable environment for long-term sustainable growth and relentless innovation to meet the needs of the market.

## **4 FINTECH CHANGES THE FINANCIAL WORLD**

### **4.1 Lending**

Perhaps, the biggest change that Fintech brought to the global economy was the outstanding innovation in the field of lending (Conner 2013). Traditionally, only banks were allowed to perform lending transactions with individuals or business organizations (Kuznetsov 2016). Therefore, to be able to borrow money from the banks, individuals and businesses would have to implement all the requirements necessary for the loans including business papers, property to be mortgaged, proof of ability to pay the loans in the future, and other related documents. The banks made money by charging monthly interest rates from their customer loans in which the lending interest was usually lower than the interest rate on banking deposit (Kuznetsov 2016).

However, the process of lending from the banks was relatively complex and difficult for most individuals and business organizations. Especially in the case of individuals or small firms with low credit ratings or no collateral, the chances that they could borrow money from banks were extremely low (Conner 2013). Therefore, this has caused a lot of obstacles and difficulties for organizations as well as individuals in raising capital for investment and for doing business. In order to solve these problems, Fintech industry has launched many technology applications and financial support services with the purpose of creating a new lending market, which will address all difficulties, support and meet most of the consumers' needs.

#### **4.1.1 New lending models**

The first breakthrough for the lending market was the introduction of Peer to Peer Lending (P2P) Model. P2P can be seen as a new generation of fundraising model that is formed based on the link between many computer systems via networks with the high-security levels. Through which, many lenders can raise money to finance loans for many borrowers, and the borrowers can easily apply for the loans by filling the online loan applications without providing other relevant documents as well as mortgaging their assets. Furthermore, in P2P lending model, a borrower can borrow money from many different lenders with the lower interest rate than the banks. Conversely, a lender can also be a creditor of many other borrowers if he wants to diversify his investments by investing in various lending funds

which the interests obtained are much more than the deposit interests in the banks. (Milne & Parboteeah 2016.)

Two companies that are very successful in the field of P2P lending are Lending Club and Prosper as they use technology to operate a credit marketplace that provides low-cost lending services with a higher chance to obtain the loans for the customers than borrowing money from the banks (Williams 2015). Two companies are very similar regarding operation that they both provide low-cost lending services for the customers with loans up to 35000 USD (Williams 2015). However, they also have some key differences, which the borrowers should carefully explore and be aware of before making the lending decisions. Thus, the table 1 below will analyze the key similarities and differences between Lending Club and Prosper in terms of lending aspects.

TABLE 1. The similarities and differences between Lending Club and Prosper

	Lending Club	Prosper
<b>Similarities</b>	<ul style="list-style-type: none"> <li>• <b>Offering personal loans with very low-interest rates:</b> the borrower can apply for a loan with the amount from 2000 USD to 35000 USD. He just needs to fill some basic information such as his age, employment, income and the amount he wants to borrow in the application form and then the company will check his credit score history in order to accept this application. After the application is accepted, it will be opened to investors (lenders) to fund the loan and then this loan will be transferred directly to the borrower's account. The borrower has to pay his loan plus interest within the next three to five years. (Malik &amp; Iyengar 2015.)</li> <li>• <b>Providing bigger loans with better rates for better applications:</b> Both Lending Club and Prosper will offer lower interests rate and accept the applications with bigger loans for the borrowers who have good credit scores. In contrast, for those who have bad credit histories, they may receive the applications declined or just can get the smaller loans than what they really need. (Malik &amp; Iyengar 2015.)</li> </ul>	

(continues)

TABLE 1. (continues)

	<ul style="list-style-type: none"> <li>• <b>Taking 5% fee from the borrowers:</b> Ordinarily, the borrowers are required to pay a fee for the company (Lending Club and Prosper) if they want to take out the loans. This fee may vary depending on different cases but for most loans the fee that the borrowers need to pay is 5% of the loan amount. (Bank 2016.)</li> <li>• <b>Loans will be funded from different lenders:</b> The main characteristic of P2P model is the loans will not be financed by the banks, instead they come from different investors across the country. Lending Club and Prosper act as intermediaries to help the borrowers organize the funding and transfer money from their bank account to the borrowers' accounts. Conversely, when the loan repayment, the money will be transferred to the accounts of the lenders. (Bank 2016.)</li> </ul>	
<b>Differences</b>	<ul style="list-style-type: none"> <li>• <b>Offering lower rates:</b> For example: loan 2000 USD in 3 years _ rate 6.49% (June 2016).</li> <li>• <b>Providing faster loans:</b> Usually take 2 days to get the loan</li> <li>• <b>Charging higher fees:</b> Although both Lending Club and Prosper generally require the borrowers to pay the fee that is 5% of the loan. However, The Lending Club usually charge 6% of the loan (Lending Club 2014).</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Offering higher rates:</b> For example: loan 2000 USD in 3 years _ rate 8.51% (June 2016)</li> <li>• <b>Providing slower loans:</b> Usually take at least 3 days to get the loan</li> <li>• <b>Charging lower fees:</b> Prosper usually charges 5% of the loan as a closing fee to take out the loan (Issa 2014).</li> </ul>

(continues)



TABLE 1. (continues)

	<ul style="list-style-type: none"> <li>• <b>Having more open states:</b> For example: Lending Club offers the loans to new investors in most states in the US. They also offer joint loans which people want to apply the loan with others such as your spouse to enhance the chances of being approved. (Lending Club 2014.)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Having less open states:</b> For example: People living in Maine or North Dakota cannot obtain a loan via Prosper (Bank 2016).</li> </ul>
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In the article “This is how a new crop of companies are trying to reinvent banking” (2015), Peter Renton \_ the founder of global P2P conference LendIt stresses that the biggest advantage that this model brings to people is the simplification of the lending process. P2P makes the lending easier, simpler and more effective for the customers than spending so much time and effort on waiting for the consent of the banks for their loans. Thus, for the global financial market, P2P is truly a remarkable invention that it does not only eliminate the barriers, constraints and human pressures on borrowing money, but also brings outstanding features with more benefits for people and the businesses.

#### 4.1.2 Expansion into unique financial products

The advent of P2P model has truly broken the traditional form of lending in the financial market. However, the Fintech companies will not be satisfied to stop there; they want to continue improving and expanding the scope of this model's activities even further. Other companies such as SoFi and Earnest have already jumped into the marketplace with student loan financing and consolidation as well as personal loans and mortgages (Neuman 2015).

Earnest is an online lending company that utilizes technology to provide the loans to small businesses, individuals who have short credit histories or low incomes, and especially support for students' loans. The typical difference of this company is that instead of strictly concentrating on the credit score and income of the borrowers. Earnest utilizes computer software and their sophisticated algorithms that use between 80,000 to 100,000 data points to assess the borrowers' information such as their education,

employment, and financial profile to determine whether a customer qualifies for a loan and to give him the loan with a little to no credit history. The main goal of Earnest is to build a new banking system for future generations, which it can provide the credit with lower costs and lower rates than the banks for qualified people particularly for younger generation like students. To achieve this goal, this company has established new product\_ Earnest's student loan refinancing, which will support the financial burden for the students including college students and graduates at very low costs and with the payment deadline from 5 to 20 years. Its key advantage is a high level of flexibility which the borrowers can switch between variable to fixed interest rates without any charges, and they also can customize the length of their loan down to the month. Earnest company will not charge any fees for making extra payments or prepayment. (Shin 2015.)

In addition, SoFi can be considered as the biggest lender in the industry of refinancing student loans since this company has refinanced more than 5 billion USD in the student loans. The benefits of using Sofi's student loan refinancing are the lower interest rates compared to other rival companies and the job-related benefits it offers. In fact, according to Clements (2016), at this moment, SoFi is the only lender who offers some of the lowest rates of refinancing student loans in the market, which the "fixed APRs range from 3.50% – 7.74%, and variable APRs range from 2.23% – 6.03%". This company also charges no origination fee, no prepayment fee, and no balance transfer fee. However, while Earnest does not care much about the credit history and the low income of the borrower, SoFi is fairly strict in the lending conditions as they target on the borrowers with good jobs, good income, and good credit history. Besides that, unlike Earnest, the borrower must be a college graduate to be able to refinance with SoFi. Moreover, SoFi has many staffs specializing in career counseling which is always willing to help the customers practice job-hunting skills, improve job application process or help them to develop a specific plan to negotiate higher salaries with their companies. Furthermore, besides the refinancing loan for students, Sofi also offers personal loans, mortgages, and loans for parents who want to borrow to help pay for their child's college. (Mcgurran & Nykeil 2016.)

#### **4.1.3 Faster approvals and funding**

One special change that helps Fintech companies create more competitive advantages in the financial market is that they offer faster services in a loan application, approval and funding for the customers compared to the traditional banks. The customers and the business organizations can borrow short-

term funds in a simple and faster way without many administrative procedures through many options such as OnDeck Capital, Kabbage, and PayPal Working Capital. (Neuman 2015.)

Firstly, according to Prakash (2016), OnDeck is considered as the best short term loan provider for the small businesses because it allows the small and medium businesses to be able to borrow the loans with the maximum limit of 500000 USD during the term of 3 to 36 months. The borrower can easily complete the loan application online which requires some basic information such as social security number, business tax ID and three months of credit card statements or bank statements, via OnDeck's official website or the smartphones in at least 10 minutes. A special thing is no collateral is required when applying for the loans at OnDeck (Nicastro 2016). The results will be noticed to the borrowers very quickly after a few minutes and, if the loan applications are approved, the borrowers will receive the loans as fast as 24 hours or typically in a few days (Nicastro 2016). Although OnDeck does not demand too much in the conditions for getting a loan, the company needs to have one year of history and can generate more than 100000 USD per year, or at least have the owner's business credit score over 500 points to successfully obtain the loan (Prakash 2016).

It is easy to realize that the most attractive thing of OnDeck Capital is the ability to offer the loans for the businesses up to 500000 USD. However, not so many firms can meet the requirement of having the annual sales over 100000 USD. Thus, for some small businesses with annual profit less than 100000 USD or a minimum of 50000 USD, they may consider borrowing through Kabbage. Kabbage is an online Fintech company based in Atlanta that allows the customers and the small businesses can borrow money quickly only within seven minutes via an automated lending system connected to all available data (Nicastro 2016). The more information people connect with Kabbage, the cheaper cost it is going to be. Thus, it may be accurate when Peter Renton\_ the founder of global peer-to-peer conference LendIt observes that Kabbage is the most innovative business lender in the world (Williams 2015).

Moreover, go along with the development of OnDeck Capital and Kabbage, PayPal Working Capital is known as the cheapest and the most flexible lending option in the marketplace today for the small business organizations (Brown 2014). The amount of money the businesses will pay back their loans completely depends on the number of sales they achieve every day through PayPal. In other words, instead of making weekly or monthly payments for PayPal, the firms have to pay back their loans on a fixed percentage of daily sales in PayPal (Brown 2014). For example, the firms will have to pay more if they sell more goods today, or they will pay less if there are fewer goods sold tomorrow. Despite the

cheapest service offered for the customers, the amount of money PayPal Working Capital can lend to the businesses is much lower than Kabbage and OnDeck and is calculated based on the annual PayPal sales of each business. The requirement for borrowing money in PayPal Working Capital is that the business must make a profit of at least of 20000 USD annually via PayPal and the amount can be borrowed for a maximum of 15% of total annual sales (Conner 2013). In conclusion, PayPal Working Capital can be less expensive than other two options, but it requires people to be one of the PayPal's merchants (Prakash 2016).

#### **4.1.4 Utilizing massive data**

Unlike many traditional financial institutions, the Fintech companies use a massive number of data from online sites to analyze the ability to pay debts of the borrowers, instead of requiring the customers to provide a wide range of financial documentation, personal income, and collateral. For example, through the buying and selling data on eBay and PayPal, the lending companies can determine the number of sales or turnover which the borrowers have achieved and then based on this data; they can make the appropriate loan decisions for the borrowers. (Williams 2015.)

However, at present, the Fintech companies have incorporated dozens of sources from UPS data, Amazon, QuickBooks, Yodlee, Yelp, and Facebook to maximize the customer's data source available to help them be able to analyze more thoroughly and efficiently the creditworthiness and the repayment capacity of the borrower (Williams 2015). For instance, Kabbage is one of the Fintech companies which does not follow the P2P lending model, but it is still beating the banks in lending by using a range of available data more intelligently and more effectively to offer the faster loans for their customers (Meola 2016). It would be a good option for small online businesses, which cannot afford to meet the strict loan requirements of other lenders. With Kabbage, the business can get the loans up to 100000 USD almost immediately after completing the simple loan application online (Meola 2016). Kabbage utilizes the data from different channels which the borrower may use for running their business such as eBay, Yahoo, Amazon, and QuickBooks to examine how likely the borrower can pay back his loan and make the decision (Meola 2016).

Additionally, Fundation is also a lending company that can provide the loans only in 3 days after the analysis of its customers' data (Fox 2015). In fact, Brook (2016) mentions that the company has its application software to automatically access the data from other various sources such as credit, public-

record, and government database sources to determine whether the borrower can be a suitable candidate for the loan. It can provide the loans up 500000 USD for business expansion loans and 150000 USD for working capital, however, the borrowers have to pay an origination fee of up to 3% of their loans and need to complete the complex application than comparable lenders (Brooks 2016).

## **4.2 Payment**

Fintech companies had truly created a new breakthrough in the payment transaction when it launched a series of applications and online financial services with many different forms of payment in accordance with the objectives and the needs of consumers (Parker 2016). Instead of going to the banks to perform all payment transactions, today, with the development of Fintech products, customers can comfortably perform all their payments whenever and wherever they want in a simple and faster way through many online financial services.

### **4.2.1 Peer-to-peer online payment**

Peer-to-peer payment model can be described briefly as the new form of payment that helps the counterparties transfer money from their bank accounts to others' bank accounts anywhere and anytime through the Internet or the smartphones having the network connection (Broom 2015). P2P payment performs all the transaction electronically, which it will automatically connect the buyers and the sellers together without the need of the third party. Therefore the cost of using this kind of payment is much lower than the traditional one. Furthermore, the biggest benefit this model brings to the consumers is that it minimizes the cumbersome procedures in the process of writing and mailing a check or transferring physical cash via the traditional banks, simultaneously maximize the consumers' benefits such as the speed, convenience, and simplicity. (Broom 2015.)

Some successful P2P payment providers are listed below:

- Venmo is a free smartphone application which uses P2P payment model to perform the financial transactions such as receiving money, making payments or transferring on the request from friends or family within one business day. Both the sender and the receiver must be the Venmo users and their bank accounts, their debit cards or credit cards need to be connected in order to

perform the transactions. If the users choose to connect their credit cards or debit card issued by smaller banks or credit union, they need to pay 3% of the fee for the everyday transaction at Venmo. However, most of the debit cards connected with Venmo will not be charged this fee if the users connect their bank account information. The money sent through Venmo will be saved in the “Venmo balance” and can be transferred to the users’ bank accounts at any time. Besides that, the limited amount transferred every week is 299 USD, but the users can also send the amount up to 2,999 USD if they verify their identities by linking their Facebook accounts, birthdays or last four digits of your SSN. The major limitation of Venmo is that it is only available for the US citizens, and thus if the customers in the US want to transfer money across border, they should select other P2P payment options like PayPal. (Yu 2016.)

- PayPal is a company which operates in the field of electronic commerce, specializing in providing the payment services and money transfer through the Internet. Like Venmo, the financial transaction is made via PayPal quickly and simply by using PayPal mobile application which needs to directly be connected to the user's bank debit cards or credit cards. However, the cost to implement the transactions through PayPal is the most expensive compared to other rival companies. For example, while Google Wallet does not charge any fee when using the debit cards and credit cards, the PayPal users have to pay 2.9% plus extra 30 cents on top of that for the money sent from both debit and credit cards. In contrast, with a verified account, PayPal allows the users to make the transaction with no limit and send up to 10000 USD in a single transaction. The money in the PayPal balance will be directly transferred to the users’ banks account if they allow to do it in the application setting. The difference which makes PayPal become one of the largest online payment processors in the world is that it is available worldwide in over 200 markets and 26 currencies as well as it eliminates the need to have any extra accounts. Besides that, after cooperating with Ebay, PayPal has become a form of payment accepted in all online merchants across the Internet. (Looper 2016.)
- Go along with PayPal and Venmo; Square Cash is a free mobile application established by Square corporation which allows the users to transfer money to other people through emails without knowing the senders' bank account numbers as well as the receiver’s bank account numbers. The users do not need to create an account to use Square Cash. Instead, this application needs to be integrated with their emails in order to perform the transaction. The transfer limit via Square Cash is 2,500 USD per week. When requesting for money, the user will email the person who owes him money, enter the amount that is owed in the subject field and after

that CC this email to 'request@square.com'. Both the sender and the receiver will need to offer their banking information after receiving the email, and the payment transaction will be completed within two days. The same with Venmo, Square Cash also charge 3% credit fee and no fee for debit cards. Square Cash also available for business usage but the businesses have to pay from 1.5% to 2.75% fee to receive the payments. The limitation of this service are that it is only available in most of the United States and the service can only be used with credit and debit cards. (Lieber 2014.)

#### **4.2.2 Mobile wallets**

The mobile wallet is a digital wallet which uses technology to store the digitized valuables such as the debit cards or credit cards that allow the customers to make in-store payments quickly and securely (Parker 2016). The key purposes for inventing this payment method are to completely replace the physical wallets which people always carry in their pockets, enhance the convenience, speed and secure for the users as well as try to build the cashless society in the future (Anonymous 2014). The mobile wallets utilize Near Field Communication (NFC) which is a type of radio frequency identification technology, to transmit the payment information from a mobile device to a payment terminal when they are close together in order to make the payment (Investopedia).

To be able to use this high-tech payment method, the customer first needs to download the provider's corresponding mobile wallet application on his smartphone and then store the information of his credit or debit cards to a digital account which is directly connected to the downloaded mobile wallet app. After that, the customer can make the in-store payment simply by holding the phone over the store's NFC reader. NFC does not only help the mobile wallet accept the contactless payment, but also help the payment process become much faster, just in few seconds, compared to other payment forms like paying by debit cards or cash. Furthermore, it is also more convenient and secure for the customers as they do not need to carry around the physical wallets and can avoid losing cash or bank cards. Square is a typical company that offers square contactless and chip reader to help the small businesses to be able to accept the payments through the mobile wallets. (Parker 2016.)

Apple Pay is one of the forms of mobile payment that uses digital services to change the way people shop. It can also be seen as an electronic wallet of the new era of Apple using via Apple tech products such as the iPhone 6, iPhone 6s, iPhone SE, iPad Air 2, iPad Mini 3 and later (Apple Pay 2015). Apple

Pay stores all the personal payment data of the customers such as debit cards and credit cards into an electronic wallet, which allows the customers to pay for their expenditures or shopping costs at the store checkouts simply and quickly through the Apple smartphones or Apple Watch (Gamble 2015). It takes only a few seconds to complete the payment transactions after the customer putting his Phone or Apple Watch over the stores' payment reader while keeping his finger on the Touch ID button to confirm the payment. (Seitz 2014.)

Android Pay is a mobile wallet developed by Google for Android devices running version 4.4 or later. Like Apple Pay, this app also utilizes NFC technology to enable the customer paying for his purchases quickly by unlocking his phones and then placing it near the payment reader without opening the app. However, with the purchase of 30 pounds, the customer can make the payment simply without unlocking the phone. At this moment, Android Pay is only available to use in the US and the UK. (Lora 2016.)

Samsung pay is a new payment platform designed only for the latest Galaxy devices such as Galaxy S6, S6 edge or Galaxy S7 to generate the better way for the customers to pay for their purchases just simply by waving their Samsung devices near the payment reader. Unlike Apple Pay and Android Pay, Samsung Pay offers more than just NFC as it also develops a new mobile wallet technology named Magnetic Strip Technology (MST) that allows the payment performed with non-NFC terminals. With this big difference, Samsung Pay can cover a lot of payment terminals as well as can be used at over 30 million merchant location around the world. (Cipriani 2015.)

As a result, smartphones have become a useful tool for supporting the payments via the network and probably shortly; it will be upgraded more to be able to completely replace credits cards and cash in all the payment transactions as well as able to build a cashless society for younger generations.

### **4.2.3 Cryptocurrency**

According to Maese (2016), Cryptocurrency is a form of electronic money that can be used to perform the financial transactions such as the payment or money transfer between the users through the computers. Bitcoin is a typical example of the digital currency born in 2009, which allows the users to make the trading for goods and services with the vendors who accept Bitcoins as their payments (Carrick 2016). Bitcoin is not subject to the control or assistance by anyone, and so, all the Bitcoin transac-



tions will be implemented independently (Bitcoin 2014). The customers, therefore, only need to pay very little money for the transaction costs or even sometimes, there is no fee for making the transactions with Bitcoin.

Furthermore, according to Franco (2014), using the digital currency can also help reduce the collapse risk and inflation risk for the country. In fact, Inflation is always a matter of concern in every country especially when all currencies are being increasingly devalued than before. That is because the country governments are continuing to print more money (Franco 2014). The use of Bitcoin can gradually eliminate the inflation risk as it is designed to be finite. There are only 21 million Bitcoins being issued, and the number of Bitcoins released will be reduced more in the future (Franco 2014). Additionally, Bitcoin is a global virtual currency, which is not regulated by the government and so it has very low collapse risk (Carrick 2016).

Furthermore, using Bitcoin can also increase the safety, simplicity, quickness and efficiency in performing the financial transaction for the consumers. For example, From the seller's perspective, Bitcoin is a very good option because if the payment is made via PayPal, the buyer can claim his money back at any time, while Bitcoin does not allow the buyer to take the money back if the seller has already received it. From the buyer' perspective, Bitcoin makes the transactions simpler and quicker as it uses P2P payment model rather than other intermediaries. (Carrick 2016.)

#### **4.2.4 Blockchain**

The most profound change in the global payment was the appearance of Blockchain, which is known as a data structure that allows users to create a digital book for their transactions and share it widely through a distribution network of computers (Rometty 2016). With the blockchain, the manipulation of the ledger will be done safely without the need of any intermediary agencies. Moreover, after the data is written to the blockchain ledger, it is very difficult to change, add information or even impossible to remove the data out of the blockchain ledger. It is because when someone wants to add more information to the blockchain ledger, immediately, this software will perform a series of algorithms to evaluate and verify the accuracy of the transaction being proposed and submit the information to all the parties involved in using the software. (Blockchain 2016.)

Moreover, adding information is approved only if most of the parties involved in the blockchain click the agree button indicating that this transaction is valid. Furthermore, a typical feature of the blockchain is that it will record all the activities and make the records public to any party who is using this software instead of maintaining a private database of the records as the traditional banks. Besides that, the blockchain also plays a direct role as a trusted middleman between the parties in the transactions instead of receiving the support of other intermediary agencies. Consequently, the transactions implemented in the blockchain software will be faster, easier and cheaper than the transactions done in the current banking system. (Scheibach 2016.)

### **4.3 Investment and Saving**

#### **4.3.1 Crowdfunding**

Go along with the development of the lending and payment, the financial technology has also brought a lot of innovation in the field of investment for the global financial market. Crowdfunding was one of the most significant changes in the recent years. The crowdfunding is a form of online peer-to-peer fundraising that allows the users to mobilize the funds from various individuals like family, friends, customers or investors through social media or social networking sites by the ways of lending money or buying stakes in projects or companies (Conrad 2012). The benefits of using crowdfunding platform are that the users can easily set up the online fundraising, market their projects or products quickly and get useful feedback on the project simultaneously (Augustine 2015).

In fact, with numerous competitors in the current market, it would be very difficult for the start-up companies to obtain enough investments needed to develop their ideas and bring them to life. Crowdfunding is the optimal and saving choice for these companies because it not only can provide the way for the companies to market their ideas attractively but also help to limit the cost, which the companies have to pay if they want to hire a support company behind them like FinLeap (Conrad 2012). Besides that, the crowdfunding is also a solid base of capital for the start-up companies since it does not limit the number of projects in which the investors can finance (Augustine 2015). Thus, the companies can raise funds quickly and effectively from various investors in the market.

TABLE 2. The comparison of four crowdfunding platforms: Kickstarter, Indiegogo, GoFundMe, and RocketHub

	<b>Kickstarter</b>	<b>Indiegogo</b>	<b>GoFundMe</b>	<b>RocketHub</b>
<b>Monthly Traffic Estimate</b>	> 5 million visitors.	> 900 thousands visitors.	> 2 million visitors.	> 30 thousands visitors.
<b>Funding</b>	The project must achieve the goal to receive the fund.	Project can receive the fund even it cannot achieve the goal	Project can receive the fund even it cannot achieve the goal	The project can receive the fund even it cannot achieve the goal.
<b>Fees</b>	Free to sign up, 5% fee to funds raised + payment processing fee.	Free to sign up, 4% fee to funds if the project reaches its goal, 9% fee to funds if it does not, + 3% credit card processing + 25 USD wire fee for non-US campaign	Free to sign up. 7.9% + \$0.30 per donation, or 9.25% total fee for non-profit projects.	Free to sign up. 4% fee to funds if the project reaches its goal, or 8% fee to funds if it does not, + 4% credit card processing fee.
<b>Categories</b>	Art, Comics, Dance, Design, Fashion, Film, Food, Games, Music, Photography, Publishing, Technology, and Theatre.	Animals, Art, Comic, Community, Dance, Design, Education, Environment, Fashion, Film, Food, Gaming, Health, Music, Photography, Politics, Religion, Small Business, Sports, Theater,	National News & Events, Accidents & Emergencies, Animals & Pets, Babies, Kids, Family, Business, Celebrations, Community, Competitions, Creative Arts, Dreams, Education, Funerals,	Art, Business, Science, and Social.

(continues)

TABLE 2. (continues)

		Transmedia, Video, and Writing.	Medical, Missions, Charities, Sports, Travel, Volunteer, and Weddings.	
<b>Project Duration</b>	30 – 60 days.	Up to 40 days.	No deadlines unless people choose an All-or-Nothing campaign.	30 – 75 days.

Kickstarter can be seen as the biggest and most popular fundraising platform in the market for innovative projects in some specific areas such as film, music, art, design, technology, etc. The fund generated from Kickstarter entirely come from the public, and it means that the public and their money are what turn the creative ideas and projects into reality. Kickstarter is not only the right place for creative individuals with great ideas, but also for those who want to be on the hottest crowdfunding platform. That is because from its founding to the present, it has helped over 100000 creative projects funded, raised more than 2 billion USD from over 11 million people, received 5.5 million estimated visitors each month. Especially it can generate the funds up to 10 million USD for the top projects in the fields of Music and Technology. Kickstarter seems to be a great platform for fundraising, but not all the projects can be accepted unless they meet all the Kickstarter's project guidelines. Additionally, unlike other crowdfunding platforms listed in Table 2, Kickstarter has only one special rule 'All or Nothing', which the individuals will not receive any funds for implementing their projects unless they can achieve their funding goals by the deadline, usually from 30 to 60 days. The purpose of creating this rule is that Kickstarter wants to avoid unwanted risks occurring when the projects are implementing without having enough money and have to stick trying to raise fund from other investors. (Bose 2013.)

Like Kickstarter, Indiegogo is also a very well-known crowdfunding site which allows people to raise funds for their ideas or projects. However, instead of concentrating primarily on promoting creative ideas, Indiegogo supports a wider range of project categories to choose from, especially it allows the fundraising for charity and start-up businesses. It also works on a rewards-based system, which requires the individuals to offer the gifts or the rewards for those who are willing to help and invest in

their projects. The main advantage of this site is the ability to provide more options for the individuals to choose between the flexible or fixed goals with their projects when fundraising. To illustrate, with the flexible goals, the creators can keep any funds sponsored from the public whether they achieve the project's goals or not. However, in case the projects do not reach the goals, they need to ensure that there will still be the rewards for the backers. In contrast, choosing the fixed goals only allow them to gain the funds if their projects reach the goals before the deadline. Moreover, both options require the creators to pay fees for Indiegogo such as 4% of the funds raised if the projects reach the goals or 9% of the funds raised if the projects fail to achieve the goals. Despite having fewer visitors compared to Kickstarter, Indiegogo is well-known in the market with the ability to generate huge funds for both profits or non-profit projects, including many top projects receiving the funding around 10 million USD. (Taylor 2013.)

GoFundMe is known as the personal online crowdfunding website, which allows people to raise funds for various purposes in their lives such as organizing events or celebrations, paying school fees or medical expenses and helping some emergencies situations including accidents and illnesses. The website works through the connection with some social networking sites like Facebook and Twitter in order to help campaigners easily connect and solicit the donations from friends, families and other interested persons. Unlike Indiegogo and Kickstarter, GoFundMe does not require the campaigners to offer the rewards for the backers, but in the case, they promise to offer something to the backers, they should make sure to fulfill them even if the full goals is not met. Besides that, GoFundMe also allows the campaigners to keep all the sponsored funds regardless of whether they have the ability to meet the goals. (Garland 2016.)

RocketHub is an online fundraising platform which has no limit to the reasons that people need to raise funds and only concentrates on funding for the ideas or projects in four main fields including art, business, science, and social. With this crowdfunding platform, people can keep any funds they receive from the investors or donors even if they do not achieve the projects' goals since it does not follow an all-or-nothing model like Kickstarter. People also have to pay the fees for RocketHub including 4% fee if the projects achieve the goals or 8% fee if it does not reach the goals and 4% credit card processing. One attractive thing about this site is that it is capable of providing a unique experience, more opportunities to raise funds as well as a broader network of partners, investors and donors because of its links and cooperation with A&E\_ an American media company that owns a large group of television channels in the US. (Taylor 2013.)

In brief, crowdfunding is not only a great way to help the inventors, the startups or the businesses to finance their projects but also an effective way to help them validate their ideas, test their projects gather opinions, market their products, find the potential customers as well as attract the investors. There are numerous crowdfunding websites available in the market. Thus people need to analysis the differences between each site and consider carefully before selecting the appropriate platforms for their projects. Besides that, the key to succeeding with crowdfunding platform is that people should try to attract as many investors as possible to be able to earn the amount of money needed for a certain period before actually implementing their projects to restrict the unwanted risks occurring.

On the other hand, retail investment is also experiencing a period of innovation as it does not only focus on investing in high-tech products, but also try to minimize the transaction costs for the customers. For example, Lander (2016) indicates that "Motif allows investment in asset classes like cyber security, cloud computing or even 3-D printing." While SigFig focuses on adjusting the portfolio to make it more balanced and diverse at a much lower cost than before for the investors (Horton 2014). Moreover, Horton also emphasis that the investors do not have to pay commission fees when investing in publicly traded companies or exchange-traded funds registered on US exchanges. In addition, Kapitall attempts to create the conditions that allow investors can interact and share ideas with other investors, at the same time they can also test the investment risk through the virtual cash portfolio (Neuman 2015).

#### 4.3.2 New budgeting apps

The utilities and outstanding features of smart phones can be considered as the catalyst for the Fintech companies to create a new wave of high-tech applications, which can help change the dire savings situation of the young generation (Maurer 2015). Over the last few years, the Fintech companies have developed a variety of budgeting applications that is capable of helping the users control their daily finance as well as assisting them to implement the personal savings more effectively without the need for constant monitoring and adjustment (Maurer 2015). The budgeting apps are divided into two categories as follows:

- **Virtual Savings Jars:** This type of application was designed to assist the users in completing their saving goals by organizing their finance more scientifically and effectively. This platform utilizes the high-tech software to track the income, categorize the expenses (fixed costs or vari-

able costs) and update spendable cash after every transaction in order to manage the spending and inform the users exactly how much money they have left or can afford to spend each day. One special feature of this platform is that it will establish the efficient saving plans for each user based on their financial conditions and their saving goals. To illustrate, after being linked to the users' bank accounts or credit cards, this platform will classify all the transactions and the amount of money that the users have in their current accounts in four main categories including income, bills, savings and spendable. The users need to inform the platform about their income, bills and how much money they want to save for a specific period such as a month, three months, six months or 1 years. Then, the platform will take out the desired savings amount from the users' spendable income and put it in the digital saving accounts. Furthermore, after analyzing all the numbers, it also presents the users with their "Spendable," which indicate how much cash available for the users to spend each day or each month to achieve their saving targets. The remaining amount that has not been used by the end of the month will also be transferred automatically to the saving accounts. (Augustine 2015.)

Level Money is an outstanding example in this field. It is a free money management application aimed at eliminating people's need for old-fashioned budgeting by managing money and showing people how much money they have left to spend daily or monthly. To illustrate, instead of spending time every day to monitor their finance and trying to set limits on what people can and can't afford to curb excessive spending, Level Money makes it easier for the users to spend. It always updates the user' spendable account automatically after making a purchase, receiving the salaries or paying the bills. Then, it continues to perform all the calculations to let them know exactly the amount they can spend every day to successfully achieve their saving targets rather than the amount they can not spend. Another well-known budgeting app is Digit, which can be seen as an automated way to save money regardless of income. Digit app analyses the users' daily history of financial transactions including income and spending as well as assesses the spending habits in order to find the opportunities to save money for the users. It creates the saving habits of the users by automatically transferring a small sum from their bank account to the secure digital saving account managed by Digit during a specific period such as every 2 or 3 days. The transferred amount will vary depending on the financial status and the spending habits of each user, but it will never be more than they can afford. (Maurer 2015.)

- **Virtual Ledgers:** Unlike virtual savings jars, this platform was designed to assist the users to boost their savings by smoothing their income and spending. Even is a typical example in this field, which its purpose is to against the income fluctuation rather analyzing the users' daily financial transactions to help to promote the savings. To make sure that each customer will get consistent money every payday, Even first will calculate the average paycheck of the user and then automatically deposit some extra money in his account to make up the difference without interest and deadline to pay back whenever he gets paid less than his average. The amount, which Even offers him to make up for the difference in his salary, needs to payback, but only when he gets paid more than his average and only the surplus will be taken out to ensure that he always can keep his average salary. This app is only free for those whose employees have already covered the cost. Otherwise, it will charge the users 3 USD per week. (Augustine 2015.)

In brief, all the online budgeting applications were created with the sole purpose to promote and support the users in savings by reinforcing the positive habits and helping them more confidence in controlling their finance. Those applications mainly target on the young people whose financial needs are relatively simple or who are having the difficulties in managing their finance and spending reasonably to be able to save money. Furthermore, it is also suitable for those who usually experience the income fluctuation like temporary workers.

#### 4.3.3 The automated portfolio management apps

Many years ago, the portfolio management through the bank may hinder the investment of the investors since the annual cost they have to pay for the bank is quite high from 1 to 3 % (Maurer 2015). However, in an era where the digital industry is developing strongly as today, this problem could be solved by the new automated portfolio management applications.

The automated portfolio management applications established by the financial technology companies use computerized algorithms to assess the risk profiles of the investors after they provided sufficient information about the age and the expected retirement time for these applications. Then, these apps will base on the analyzed results of the risk level to determine how to distribute and manage the investors' assets in the most possible effective and optimal ways for the investors. Besides that, the major competitive advantages of the portfolio management apps are that these apps offer the lower fees and



lower minimum investments for the customers. For instance, Acorns and Betterment are those asset management platforms which are entirely targeted at the investors who do not have a large amount of money for making the investments via the banks or other fund management companies. These investors mostly do not care much about the fine details of their investment and also do not necessary to interact with the financial advisers. Therefore, the automated portfolio management apps would be the most optimal choice to help them build the good portfolios which are suitable with their current assets and help perform the efficient investments at a much lower cost than the banks. (Augustine 2015.)

Robot-advisor is one of the most remarkable improvement in the investment field, which was invented to replace the old traditional methods taken by human to help save time and reduce workforce as well as assist the investors to manage their investment portfolio more effectively at lower costs than the banks, usually from 0.25 to 0.35 % (Accenture). It also works based on a series of pre-programmed algorithms, which performs the online asset management function and automatic investment advisory function for the customers without the help of the counselors. To be able to mentor the investment for the customer. The robot-advisor first requires the customer to register his online platform with his personal information as well as answer some questions designed to assess and classify the risk for each specific customer. After having completed the risk's analysis, it then continues to compute a diversified low-cost exchange-traded fund (ETFs) based portfolio. According to Kuznetsov (2016), " ETFs (exchange-traded funds) are investment funds that track the performance of an underlying basket of securities, such as the FTSE100 UK stocks index". The robot will perform the investment if the customer is satisfied with the portfolio given by the robot and willing to accept the risks that are predicted to be able to occur with this investment. Moreover, the customer's portfolio will be adjusted and regularly rebalanced by the robot- advisor to adapt the market changes. In conclusion, with a much lower cost compared to the financial adviser or the fund management companies, the robot-advisor is becoming increasingly popular with many customers, especially for those who prefer to use smartphones to do everything online or those who prefer a hands-off approach to long-term investing. (Business Insider 2016.)

#### **4.3.4 Expert advises on financial planning at a lower price**

Go along with the emergence of the automated portfolio management apps; other Fintech companies have also developed the applications that concentrate mainly on supporting the customers who prefer getting the professional guidance and advice from the financial experts via more complex financial

planning but do not have the abilities to pay for the high fees. The target customers of these apps are mainly the initial investors who want to self-control over their portfolios.

LearnVest is a financial planning website, which helps the users take better control of their personal finance, manage and plan their investment portfolio more flexibly and efficiently with the help of the professional financial planners. Its mission is to offer a low-cost, accessible and objective plan for the users' financial operations. Therefore, LearnVest application is free for everyone and the users just need to pay an affordable fee for the advisory service taken by LearnVest's professional financial planners. The fee for selecting the LearnVest financial advisory service is significantly lower than face-to-face consulting service offered by the traditional companies, usually around 20 USD per month. When the users select the advisory service via LearnVest, the remote personal financial planners will help them establish the financial goals in line with the purpose for which they want to concentrate including spending, investing, and budgeting. Then, the remote personal financial planners will give them advice on making plans and try to keep them on track to achieve the final goals. One typical difference between LearnVest and the portfolio management apps is that instead of automatically creating the investment portfolios and making the asset allocations for the users, LearnVest requires the users to do these things by themselves based on the expert advice. Thus, the users can monitor, control, adjust and manage all their financial activities. (Nath 2015.)

Another similar application is Personal Capital, which is an investment advisory platform providing both online financial advisor and personal wealth management services for the users to help them build a better money management experience, keep track on their spending and net worth, create budgets, make the investment portfolios and manage their cash flow more effectively. This app utilizes the pie charts to indicate about the users' spending habits classified into categories and bar graphs to let them know how their income stacks up against their expenses. Although utilizing the automated software programs allows Personal Capital to charge the users much lower fees than other traditional wealth management organizations, the fees in which the users have to pay for using Personal Capital Advisor is still slightly higher than other similar apps like LearnVest. It mostly depends on the percentage of assets managed, wealth management fees, trade costs, and custody costs. Besides that, the users also have to link a minimum of 100000 USD in assets with Personal Capital to be able to use the advisory service and get a first free meeting with the personal financial advisors. The typical customers for this app are the elderly with an average age of 45 years old. (Fontinelle 2015.)

#### 4.4 Personal Finance

Personal finance has achieved the significant improvements in recent times with the huge support and investments from the financial technology companies. The Fintech companies want to make personal finance smarter, easier to manage, more transparent, more useful, more versatile and more affordable for the consumers (Maurer 2015).

Mint.com is an online site providing financial management services free of charge to the consumers in Canada and the US (Business Insider 2016). Through this website, the individual can easily manage, monitor and check their financial information and transactions through a single user interface. More specifically, Mint will first ask the users the permission to connect with all their financial account to see the whole big picture of their personal finance including income, spending, loans, funding, investments, and mortgages. After that, it will let the users know about their financial situations and about what they have already been doing with their money. It also monitors every daily transaction done in the user's' accounts, checks their credit scores, helps them create the budgets based on their income and spending, alerts the upcoming bills and also can suggest other financial products or services with higher interest rates for the users. Despite being linked directly to the user's' banking accounts, Mint has no permission to anything with their money except seeing all the information in the accounts. Thus, the consumers do not need to worry when using this app because nonetheless it only acts as a daily financial tracker tool. (Fontinelle 2015.)

On the other hand, BillGuard app is also one of the popular personal financial support tools in the recent market. However, instead of managing and keeping track on the customer's daily finances, it concentrates totally on ensuring personal financial security for the clients by scanning the credit or debit cards via its mobile or website application (Fontinelle 2015). All the transaction done with the user's credit cards will appear on the BillGuard's user interface according to the pre-set time such as seven days, 30 days, 90 days or all time (Groenfeldt 2014). After that, BillGuard will analyze the information and provide the users the result of how many transactions are OK and how many are questionable. It will alert the customers if there are the appearance of frauds, mistakes or errors happened to their credit cards (Groenfeldt 2014). Despite the limitation in support services compared to Mint as it cannot be able to offer the whole picture of the user's financial situations, its only mission is to try to detect and

eliminate the errors, unwanted or fraudulent charges. Therefore, this fraud protection application can be the best option for those who do not have the checking habit on their daily credit card transactions.

Another option supporting for managing the personal finance, which can be considered as a pretty big competitor to Mint.com, is HelloWallet. It is a software application using via the computers or smartphones, which is designed in the US with the aim to support the individuals in making the decision for using their money wisely and accurately in order to meet their initial financial goals (Sharf 2015). Since its main purpose is to become the best personal financial tool for the customers in the marketplace, so it tried to create a more diverse range of services offered for its customers to be able to differentiate itself from other similar competitors. For example, according to HelloWallet, "members are provided with customized financial plans, 24/7 personal money-management and monitoring, and an individualized bank shopper service, which searches through 130,000 bank products to find better prices." It wants to provide the users the positive and wider outlook of their finance by offering the users the daily tips such as how they can adjust their spending to achieve the saving targets or how they can maintain the financial health of their wallets rather than just only tracking on their daily finance. One special feature of this app is that it can notify the users about the amount money they have spent and the amount they have left to spend in each specific location by allowing the app know about their locations through the GPS service (Anonymous 2010). Additionally, Anonymous (2010) also points out that HelloWallet is also capable of detecting the financial threats to the users as well as identifying the possible opportunities for savings through the analysis of their financial histories and daily habits in or to help them improve the financial situations and avoid unwanted costs.

Moreover, unlike the three platforms above focused on catering the customers ranging from students to adults, PlayMoolah is a type of online finance targeted primarily at children from 6 to 12 years old. Its purpose is to help young people build a relationship with money by creating a platform for healthy fun between children and their parents to exchange ideas and communicate about money (PlayMoolah). PlayMoolah provides financial knowledge, education and instructions on how to manage money for children through the design of technology products based on actual savings behaviors. It wants to inspire real-world actions, build solid knowledge foundation, give skills needed for financial literacy and good real-world savings behavior for young generation from their childhood about five important aspects of money management including earning, spending, saving, donating and investing by playing various games. The PlayMoolah's membership cost is approximately 70 USD a year, and this platform is suitable for children from 6 years old and above. (Kosta 2012.)

## **5 FINTECH CHANGES THE CUSTOMERS**

Fintech has truly built a new appearance for the financial world after the global economic crisis in 2008 (The Economist 2015). In fact, it has not only created the positive influences and innovations for the businesses but also completely changed the way people handle the money. More precisely, consumers are the most beneficiary from the rapid development of the Fintech industry (Rometty 2016).

### **5.1 Using digital banks**

Obviously, the traditional banks have always kept the most important role in the financial world (Salmony 2014). However, with the incredible growth of the technology as today, the world economy has been gradually switching to the digital channels (The Economist 2015). Therefore, it requires all segments of the economy to create the significant changes in order to survive and adapt to the market changes. Previously, every transaction related to the finance including depositing, sending, paying and investing all required the customers to present in the banks to perform the transactions with banking staffs (Landers 2016). This process not only took lots of time and effort from the customers but also incurred the additional costs for each transaction. Thanks to the development of the technology, the banks have been able to develop the new online banking systems that helped partly solve the previous problems and bring more benefits for the customers.

Today, instead of having to take a lot of time waiting for the implementation of financial transactions in the banks, people just need to perform these transactions quickly, simply and efficiently through the online banking systems. In fact, the online banking system can replace most of the role of a real bank in the implementation of daily financial transactions such as account opening, investment, money transfer and payments (Landers 2016). With a smartphone or computer having the network connection, people can simply perform their everyday financial transactions whenever and wherever they want with the lower cost services than the transactions done by the banking staffs (PR Newswirte 2016).

## **5.2 Making payments through the smartphones**

In the busy society as today, the consumers always want to simplify their daily financial transaction to the lowest level in order to save time and efforts but still can ensure the necessary safety and security. The financial transactions in recent years have gone through many positive changes in the form of payment for the customer as many countries have started changing to perform non-cash transactions (Desai 2015). One of the popular traditional payment methods for the cashless transaction is debit cards or credit cards. From many consumers' point of views, payment done by credit cards can make them pleased despite always being attached to the control of the banks. In contrast, the global financial crisis in 2008 has pointed out the hidden face of the traditional bank, especially the empty promises and the dishonesty. Besides that, using credit cards cannot meet all the consumers' requirements and meet the demand for the minimalist in financing activities because they still have to carry many credit cards in their wallets and need to take it out every time they pay the bills. As a result, lots of consumers have been waiting for a new financial solution that can optimize their benefits as well as meet the urgent needs in the industrialization era. (Kuznetsov 2016.)

Understand the needs of the consumers, the Fintech companies has developed a new payment approach called Mobile Wallet, which aimed at simplifying the form of transactions as well as maximizing the utility for customers (Seitz 2014). The smartphones will play a significant role in this innovation because it is a connected tool to storage the users' financial information and replace the physical credit cards and cash for making the everyday payments (Parker 2016). The Mobile Wallet available in the market are Apple Pay, Pay Android, or Samsung Pay. To use these apps, the customer's credit or debit cards first need to be scanned through these applications to store the data into the system; then, they can simplify the payment transactions by opening the phone and put it over store's NFC reader (Molvig 2012). Consequently, using Mobile Wallet can enhance the convenience, speed and secure for the users as they do not need to carry around the physical wallets and can avoid losing cash or bank cards. Shortly, Fintech industry will continue to develop and expand the mobile payment services in order to achieve the goal of creating a cashless society in the future (Anonymous 2014).

## **5.3 Borrowing money from peers**

After incurring heavy losses from the global economic crisis in 2008, the financial institutions and banks have become more difficult in lending, in which the customers have a low credit rating or no

collateral assets, are almost impossible to borrow money from banks (Kuznetsov 2016). Besides that, the procedures for borrowing money also become more complex and difficult since the banks want to ensure the affordability of the borrowers (Lending Club 2014). Therefore, it has caused a lot of obstacles and difficulties for people to obtain a bank loan.

Quickly seizing this opportunity, a new form of online lending \_ Peer to Peer was created which supposed to meet all the needs of the customers. Through Peer to Peer lending, people can easily achieve the desired loans from different lenders such as friends, families, colleagues or other individuals on the system without going through the complicated administrative procedures. Additionally, P2P also helps the customers to save money, time and effort as it offers the lowers interest rates and faster approvals for the customers compared to the bank loans. Above all, it is a great assistance model for those who need the money but is unable to be approved for the loan at the bank. (Malik & Iyengar 2015.)

For the personal business beginners, particularly those who have no business experience, low credit ratings, and no collaterals, they can borrow short-term funds in a simple and faster way without many administrative procedures through many options such as OnDeck Capital, Kabbage, and PayPal Working Capital. The customer just needs to fill in the loan application online, answer some simple questions, write the amount he wants to borrow and send it to the system. The approvals will be sent to him very quickly just after a few minutes for the small loans. The maximum amount of loan will depend on each platform, but some sites can allow the customers lend up to 500000 USD. Thus, the customers can easily have the money to start their businesses without facing the difficulties in getting loans in the banks. (Prakash 2016.)

#### **5.4 Performing online international transfers**

In the past, international money transfers were usually done only in two ways such as bank transfer or transfer via the remittance corporations. For both methods, the customers had to pay a very high transaction fees and wait a long time for seeing money in the receivers' accounts. For instance, previously the customer always had to go to the bank to make the international transfer and needed to pay approximately 30 pounds to perform an international payment as little as 10 pounds in a British bank (Anonymous 2014). Despite the expensive costs, it still took at least some days for the receivers to receive the money via the bank. On the other hand, other people often chose to send money through transfer operator services like the Western Union or Money Gram, which were well-known for the abilities to

transfer money to almost anywhere in the world. The transfer operator service would be a good option for the customers in the case that the receivers did not have the bank accounts and they need to physical cash immediately. However, there was the risk that the receivers can lose their money when their wallets were stolen. Furthermore, the cost for worldwide delivery via the money operators was also very expensive, which was usually more than 5% of the transfer amount and the currency exchange rates were always lower than the current exchange rate in the market (Independent 2015.)

However, nowadays, the customers have more various options to choose for making the international money transfer since the Fintech companies have launched many new international money transfer services such as WorldRemit, Azimo, PayPal and TransferWise via the network at a lower cost and lower time consuming than the previous services (Independent 2015). For example, via PayPal, the customers can send the money to many people around the world if they all have the PayPal accounts just by typing the receivers' emails and the amounts they want to send. The receivers can see the money appeared in their PayPal accounts just in few minutes (Looper 2016). Moreover, people can also send money online for friends or families living abroad conveniently and rapidly through the WorldRemit or Azimo by using computer, smartphone or tablet (Smale 2014). The key advantages of these online services are that they offer a very low-cost service than other competitors and also allow the customers to pre-check the fees before making the transaction (Smale 2014). Consequently, the international money transfer will never be as simple as it is today.



## 6 FINTECH FIRMS AND TRADITIONAL BANKS

### 6.1 How does Fintech challenge the traditional banks?

Since their introduction, Fintech has rapidly gained its ground, attracting almost \$10 billion investment by 2015 (Accenture 2016). What Fintech had to offer has posed great challenges for the traditional banking industry. Fintech solutions have been actively filling the gaps left between the existing financial institutions by offering low-cost, modern and highly effective solutions (Dunkley 2016). In other words, they offer the customers to carry out their financial operations quickly when requiring minimal resources. In certain areas, Fintech solutions could offer the same services with just half the price (Noonan 2016). The new market entrants could pose the greatest risks even to those existing businesses aiming for the low-cost market (Arnold 2015).

Additionally, they are providing better user experience. Their services are faster and more user-friendly, which allow them to penetrate the markets with the highest speed, especially for young customers (M2 Communications 2016). For instance, they offer the flexibility to handle multiple financial products electronically in one place, which is an exceptionally attractive selling point even to the most traditional customers (Wisniewski 2016). Taking the retail banking case as an example, the paperwork required to secure a loan would take over a day; and the processing would require another six weeks. Despite the long processing time, the final decisions have typically been unfavorable to the customers, especially after the financial crisis. There is evidently no solution from the traditional banks to solve those issues; however, a young Fintech startup named as FundThrough has offered a new loan model which could significantly simplify the process and increase the probability of the successful transactions. They have provided a digital platform on which the potential borrowers and lenders could be connected without major efforts (Hemmadi 2015).

On the other hand, the banks have to operate their slowly aging system with outdated technology. Furthermore, the banks have built a solid foundation for their operations with large daily traffic, which makes the innovation an exceptionally challenging process. In some cases, banks had to develop new modern services based on the legacy infrastructure by poorly integrating third-party solutions. In addition to the aging infrastructure, the cultural change is an even more complicated process. Similar to any form of innovation, there has always been internal resistance to changes, which eventually hindered the innovation process. In the case of the financial sector, the evolutions often resulted in an

inevitable regulatory penalty and business losses. Especially for the major banks, most of their business processes have been standardized, which restricts their flexibility and made innovation an expensive process. (Conrad 2016.)

Despite improving their performance globally, the banks have not gained the equivalent improvements from the prospective customer transactions. The World Retail Banking Report 2016 has collected the user experience feedbacks from 16000 customers from 32 countries. This report stated that the banks almost scored an extra 3 points in the Global Capgemini's Customer Experience Index; however, only one sixth of the research participants thought that they would utilize an additional service of the bank. On the contrary, almost 65% of the surveyed customers have been utilizing Fintech solutions, and they were more willing to invite new users to the Fintech services than their banks. Additionally, the Fintech firms have gradually been catching up with the banks in term of customer trusts, which almost reached 90% in all regions. (M2 Communications 2016.)

According to a recent study conducted by The Banker (2015), all of the bank managements were aware of the Fintech challenges as they were gradually reshaping the financial markets. PwC (2016) also released a report claiming that over 80% of the respondents realized the risks of Fintech imposing on their business, 95% of which was from the banking and payment industry (M2 Presswire 2016). The user experience has been dominating the customer decisions on the service providers, which even further declined the loyal customer advantage of the traditional banks. By 2016, it is evident that the customers have been continuously seeking for new user-friendly financial service providers offering the cutting edge technologies (Business Wire 2016).

All major banking transactions have been increasingly digitized and the dominating market roles have been shifting to the electronic payments, the mobile services, and the blockchains. However, most banks have been facing the crucial problem of not getting the knowledge on how to react to the situation, despite reaching for help from major consulting organizations, which were also taking significant losses from this Fintech explosion (Skinner 2015). In addition to the new Fintech market players, the banks also need to be cautious of the other tech giants, which have been rapidly reshaping the financial sector according to their own strategies. For instance, Google and Amazon have introduced the Android Pay and Mobile Payments Wild Card respectively, which creates the seamless customer payment experience. On the other hand, Google has been well known for actively investing in small Fintech startups to extend their digital service portfolio. Thus, the banks need to take considerable efforts to innovate themselves so as not to be left behind. (Schaus 2016.)

## 6.2 How are banks reacting against the Fintech revolution?

As Fintech has been significantly innovating the technological businesses, the finance industry had to evolve to adapt similarly to other business sectors. By 2016, over 30% of the British customers have at least once utilized the Fintech products (PR Newswire 2016). The Fintech usage has been forecast to expand even further, which poses major challenges to the traditional banking sector. In fact, they were considered to have fallen behind the Fintech. Thus, the banks need to engage more actively following the Fintech movement to avoid long-term consequences in the next decades (Wilding 2016). Some of the banks have taken their initiatives against the Fintech rivals by forming the cooperation with each other in the form of the financial alliance or the joint venture marketplace lender (PR Newswire 2016).

Firstly, the banks need to consolidate and enhance their competitive edges, which consist of their various intellectual property. Banks tend to organize the startup accelerator and business incubator events, which publicly expose their internal knowledge to external Fintech competitors. This has greatly contributed to the rapid growth of Fintech industries, which at the same time helped Fintech to keep pace with the originators gradually. The business situation has been reshaped, which put the banks alongside with Fintech. Thus, it is important for the banks to co-exist with Fintech without actively flourishing the Fintech competitors. On the other hand, the banks could utilize their crucial advantages over the Fintech competitors, including the existing customer base, the capital, and the trusted brand. The banks could retain their intellectual property and at the same time, leverage their competitive advantages to distinguishably move ahead of the Fintech development. (Wilding 2016.)

Aside from stopping intellectual leakage, the banks need to steadily innovate their operations in order to lead the competition. Due to their well-established business, any failed attempt to innovation would incur more significant loss compared to other Fintech startups. For instance, the approach to completely digitize the banking services may cost the banks a significant portion of the customer base who prefer the conventional banking operations. In other words, the banks should not rush to radically innovate their operations. Instead, they could align themselves with the younger competitors by conducting researches on the customer behaviors and the processes to minimize the risk of failures. The banks should enforce the internal innovation by encouraging the creativity of the internal workforce. This movement would potentially improve the bank's competitiveness as well as the working environment, which reduces the risk of losing loyal employees to other competitors. Additionally, traditional banks have established a solid foundation allowing them to quickly solidify the business values, which significantly reduces the risks associated with experimental innovation. On the contrary, the

Fintech startups are much slower in this aspect, and they are often at risk because of their smaller business organizations and neglectable loyal client base. Most of the Fintech newcomers are greatly dependent on the external funding, which exposes them to much greater risks in case of innovation failures. From another perspective, the traditional banks also need to consider the smaller competing retailing banks, which are called as the challenger banks. These banks are better established than the Fintech startups, but not as good as the traditional banks in term of the capital and the customer base. They act as an intermediate medium between the two bigger players, as there is a high possibility of knowledge dispersion originating from their frequent career changes. (Wilding 2016.)

The next decade would shift the banking industry accordingly to the new technological advancement. Thus, it is crucial for the banks to start innovating themselves or they will gradually lose a great portion of their customers to the other challenger banks and the Fintech competitors. Despite various competitive strategy, there have been still major barriers which prevented the banks from directly compete against the agile Fintech rivals, which suggested that collaboration could be a more effective alternative (Lumb 2016).

### **6.3 The fusion of Fintech and banking**

The introduction of new key players in the markets would frequently intensify the competitions for market shares. However, the situation is not black and white in case of the financial sector and the Fintech companies. There have been various researches claiming that it is an extraordinarily challenging process for banks to innovate themselves and directly compete against Fintech. Thus the most appropriate response action would be to swiftly gain the innovation through collaboration. (Tah 2016.)

There has been evidently more and more close collaboration between the two industries (Icar 2016). Over 65% of the bank, managements concurred that they need to become partners with the Fintech companies in various forms, such as the partnership collaboration, the investment or the acquisition of the Fintech firms (M2 Communications 2016). In fact, banks and Fintech firms could complement each other's strength by collaboratively improving the financial customer experience and creating mutual benefits (Dunkley 2016). For instance, Western Union has adapted to the Fintech wave by investing in the Digital Currency Group to promote the services concerning the electronic money and blockchain capabilities, which allowed leverage the market penetration (Crosman 2016).

The main focus of the Fintech startups has initially been on the payments and the retailing banking sector, which are expected to yield the most profits. The strength of these newcomers originated from their new business models and innovative solutions which are rapidly gaining the awareness of the consumers. On the other hand, the traditional banks have been dominating this area for a long time, which gives them a solid business foundation with the greater credibility and the customer base. They have the adequate resources as well as a great need for innovation to adapt with the technological advancement. Thus, this creates the collaboration opportunity for the banks to evaluate and test the innovative solutions from the Fintech companies. This allows the traditional banks to offer new digital services with better cross-selling values, lower costs and the greater long-term development opportunities (Icar 2016). Evidently, the banks have been actively creating the collaboration with the Fintech companies, which accounted for almost 45% of the growth investment in 2015. This new collaboration ground has been led by various major banks, such as the Spanish largest financial institution, Banco Santander, which has raised \$135 million for a Fintech startup called Kabbage. This movement aimed to improve the speed of the lending process for small to medium-size business (Lumb 2016).

However, it is challenging for the two competitors to start founding their own collaboration models as the banks are not actively approaching the integration processes. The most common use integration model has been executed as the two business partners through certain agreements. In this case, the bank will set up an agreement to acquire or collaboratively contribute to the developed solutions from the Fintech companies. This agreement will play a major role in the future development of the Fintech firms. In the case of retail banking and payment, the Discover Financial Services have become a partner with PayPal, which allow the bank's customers to make payment using their PayPal accounts. In term of Fintech firm acquisition, an exclusive agreement which transfers the solution ownership to the bank would limit the growth of the Fintech company as they will be restraint from operating in other markets or with other banks. One of the most notable examples of this collaboration model involves the founding of the Matchi ecosystem, which consists of various international banks and Fintech companies such as CitiBank and CaixaBank (Icar 2016). A study conducted by KPMG concluded that the major incumbents have already been involving in the operations of various Fintech companies and this trend will continue into the next 3 to 5 years. (Dunkley 2016.)

Another form of collaboration involves the organizing of the start-up incubator events. In this model, the banks will sponsor the programs and at the same time, gain the benefits based on the agreed terms, such as from the developed solutions. There have been various incubator programmes based on this model such as the Fintech Innovation Lab, the Innotribe@SIBOS, and the Startupbootcamp. The bank

can also buy the services offered by the Fintech companies. This model allows the banks to co-develop the solutions with minimal risks. One of the most common approaches is to through white labeling, in which the banks implement a purchased Fintech product and label the solution under their own brands. Exclusively, the banks could completely integrate the Fintech products into their business by funding the product development or by acquiring the Fintech companies. However, this approach would involve greater risks from various sources such as the capital, the business culture or the focus dispersion; thus it is the least commonly used model. (Icar 2016.)

On the other hand, the banks could choose to establish the internal research facilities to develop their own Fintech projects (Dunkley 2016). For instance, the Deutsche Bank has founded the DB Global Technology in Silicon Valley, which collaborates with the University of North Carolina. The CapitalOne has also established three Innovation Labs in different American cities (Icar 2016). In April 2015, The Canadian Imperial Bank of Commerce founded their first innovation lab (Hemmadi 2015).

The collaboration models evidently create new opportunities for the banks. However, there are various issues with implementing the models. They mostly originate from the digital security and the differences in the operations between the banks and the Fintech firms, such as the business models, the organizational model, and the company culture. Furthermore, the legal regulations are often confusing or insufficient for this emerging industry, which may cause certain operational issues for the collaboration process. Despite the challenges, a recent study conducted by PwC stated that over 60% of the financial organizations were positive that over 60% of their customers would adapt the mobile financial services. Thus, the financial industry will eventually shift their focus to the user experience based on applied digital technology, communication, and personalized services, which requires the utmost attention of the financial organizations to actively adapt the innovative Fintech products with the well-founded traditional banking. (Icar 2016.)

## 7 CONCLUSION AND DISCUSSION

The evolution of the digital technology has significantly changed the world in the past decades. More and more digital services are being developed every day, which has gradually changed the customer behavior and replaced the traditional business models. The movement has applied to various industries, especially the financial sector. It has also been shifting towards the digital services since the introduction of the Fintech. By utilizing the technology advancement, Fintech has facilitated various financial services with better user experience and lower cost. This technological sector, despite being recently developed, has founded its solid ground for building the future financial products. The evolution of Fintech has created a multidisciplinary industry which has certainly transformed the financial sector. This has evidently resulted in significant challenges for the traditional banking and payment system; however, at the same time greatly enhance the flexibility and usability of the financial services. The following competitions have set a new goal for the development of the financial world.

This thesis has studied both theoretically and empirically various aspects of the Fintech evolution. It has covered various topics from both the customer and the competitor's point of view. The primary purpose was to identify and analyze the evolution of Fintech from the financial sector's point of view. In specific, the main topics consist of the background information of Fintech and its effects on the various areas of the financial sector, including the business models, financial processes, payment methods, adaption, challenges, and recommendations. The results of the research clearly stated that Fintech is playing the key roles in the continuous economic development. In order for the conventional businesses to coexist with Fintech, they need to be flexible and rapidly adapting the new technology. This has become an integrated operation of the financial institutions in the digital age. In fact, it is compulsory for the businesses to iteratively innovate themselves in order to boost the competitiveness. This process is proven to be exceptionally challenging; however, it provides the business with a solid foundation for long-term development.

Despite the multi-perspective analysis approach, the thesis focuses on the global level of the Fintech evolution. The scope of the thesis research area could be narrowed down to certain financial components in a region, such as the electronic payment and the potential of the new currency. Further research could also be conducted on the impact and acceptance rate of Fintech in certain regions, such as the Single European Payment Area (SEPA) countries or other undeveloped territories.

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