Chapter 1 Introduction

1.1 Background of the Study

Financial technology (Fintech) is the new technology and innovation that aims to compete with traditional financial methods in the delivery of financial services. Fintech is a new industry that uses technology to improve activities in finance ((Sanicola & Lenny, 2017). The use of smartphones for mobile banking, investing services and cryptocurrency are examples of technologies aiming to make financial services more accessible to the general public. Financial technology companies consist of both startups and established financial and technology companies trying to replace or enhance the usage of financial services provided by existing financial companies. Since the birth of the modern financial industry, every major technological revolution in the field of science and technology has been accompanied by the participation of the financial industry and technological change, in turn, has profoundly affected the business state of finance. Finance as a non-physical and completely digitized way of trading, the technological change will be more effective for its promotion (Konsbruck Robert Lee, n.d.). At present, Fintech is widely applied to payment clearing, contract of loan, wealth management, retail banking, insurance, and transaction and it will become the mainstream trend of the financial industry in the future. Cloud computing, big data, block-chain and artificial intelligence technologies are the mainstream technologies for the development of Fintech have also been actively applied in the financial field (Reuben Jackson, 2018), and their application scenarios have also continued with rich, making the efficiency of related financial services constantly improving.

Fintech as a both “new” and “old” term, it originated from the information technology revolution in the 1950s in the United States as an important subject was valued by the scientific and financial circles (Desai, 2015). But it really caught on since 2015 mainly because of the

simultaneous outbreak of many internet finance companies at that time, which had an intense impact on the market. As a result of the combination of financial services and information technology, the development of Fintech can be divided into three stages according to the time dimension, namely, Fintech 1.0, 2.0 and 3.0 (Douglas W. Arner, 2016). Combined with the timeline of science and technology development, each stage has its own unique features. After the financial phase 1.0, one-stop financial technology services will greatly enhance the efficiency of financial institutions (Harland Clarke, 2010).

Fintech 1.0 (1950s-2013) is also known as traditional financial technology. The first stage of Fintech development was before 2013. Prior to this, although finance and technologies were closely integrated, their application was not as widespread as today. In the financial sector: After 2013, many Internet financial institutions started to explode, including online loan companies, tripartite payment companies, crowdfunding, portal financing, etc. 2013 was also widely recognized as the first year of internet finance. In science and technology field: technology revolutions such as mobile internet, big data and cloud computing which have profoundly influenced our lives are also in the ascendant.

The characteristics of Fintech 1.0 were represented by traditional IT software and hardware technology and characterized by the use of IT technology in traditional financial institutions. At this stage, leading technology does not lead to a big pioneering advantages, but it brought great convenience to life. As John Maynard Keynes (1920) noted that the residents of London could order all kinds of products as they might see fit, and reasonably expected the products to be able to advance delivery, any enterprise in the world adventured their wealth and natural resource by the same way without any extortion or trouble (P.5).

Fintech 2.0 is also known as Social Fintech, or socialized financial technology, roughly from 2013 to 2020. This phase is driven by three forces and can be explained by three words:

Socialize - During the period of Fintech1.0, although the technology was closely related to finance, it was more used by traditional financial institutions (Douglas W. Arner, Jànos Barberis, & Ross P. Buckley, 2017).Even though banks launched online banking, but high using frequency was not existed. With the advent of the mobile Internet, Fintech is being widely applied today, and one of the clearest manifestation is that there is no need to carry wallet when someone go out.

Financial - Around 2013, the forms of informal finance broke out at the same time, including P2P, financial management, crowdfunding, tripartite payment, consumer finance. The outbreak of informal finance also popularized a financial concept for the public. In addition, to the traditional bank's savings and loans, there are diversified investment and financing channels.

Technology - Here, in fact, a small-scale innovation taking place in the technology field, social progress is driven by three technology forces, simultaneously: MT (mobile technology), CT (cloud technology), DT (data technology) (Kathryn Moyle, 2010).With the explosion of mobile Internet finance, mobile phones have become another organ of the human body, making it possible to obtain full data of big data and make loans without face to face can be realized. Cloud computing greatly reduces the cost of enterprise founded. The elastic cloud computing[1] also greatly reduces the expenses required for peak hour traffic calculation and standing traffic calculation, and effectively expands the service capabilities of financial enterprises and upstream and downstream service enterprises, making the business an index Level growth is possible.

[1] Elastic Cloud Computing: in cloud computing, elasticity is defined as "the degree to which a system is able to adapt to workload changes by provisioning and de-provisioning resources in an autonomic manner, such that at each point in time the available resources match the current demand as closely as possible"

Fintech 3.0 is also known as Intelligent Fintech, or intelligent financial technology, at that time, a new wave between the tech industry and financial industry will be set off. Specifically, in terms of finance: With the reform of the state financial system and the improving financial supervision, the operation of the financial industry will be dominated by licenses. In terms of technology: 5G, IOT, AI, and block-chain will run rampant when the infrastructure is completed (Paul Schulte & Gavin Liu, 2017). 5G is the foundation of IOT and the block-chain, when 5G is mature, many of the things that now require a lot of synchronous transmission of data in real time can be realized and the perfection of IOT will greatly promote the efficiency of the whole supply chain. In supply chain finance, business flow, logistics, information flow and capital flow can be combined. As a new type of dis-intermediation technology, the block-chain will greatly change the way of operation of financial institutions as intermediaries (Alex Tapscott & Don Tapscott, 2017).

The development of Fintech in China can be traced back to the beginning of the 21st century, driven by the Internet and digital technologies, traditional financial institutions began to build their own IT systems. In 2004, Fintech stared to spill over into non-core financial services, and permeated into core financial services in 2007. In June 13, 2013, Alipay combined Celestial fund jointly launched the Yu Ebao, Yu Ebao is a kind of financial value-added service on Alipay platform, users can transfer balance from Alipay account to Yu Ebao, is recognized that is seen as a particular fund to buy financial products, to obtain a relatively high income, but also the fund in Yu Ebao is readily available for online shopping and Alipay transfer and so on. This simple Internet financial model is highly welcomed in China because of its more than 10 times higher rates compared with the Saving Bank interest rates. Yu Ebao has attracted more than 400 billion with more than 61 million users by March 15, 2014. The emergence of Alipay and Yu Ebao, marking the financial technology in China's financial sector is widely recognized.

Based on the market activity, China's Fintech development experienced six different periods.

Exploration period (2004-2008) - During this period, the emergence of the Internet and digital technology led to the acceleration of some basic financial services (Thomas, 2014). Driven by the demand of work efficiency, traditional financial institutions began to set up their own IT systems, which became the most primitive origin of China's Fintech. Third-party payment first emerged in 2004 meant that Fintech from the background support position, toward the front end (Jin Huang, 2017). In 2007, the first online loan platform PPdai.com was established, and e-commerce platforms and Banks tried to jointly issue a loan. This has become a landmark event in the history of China's Fintech and at this point, Fintech has truly penetrated into the core business of finance.

Market star-up period (2009-2012) - In 2009, the birth of bitcoin was the combination of finance and technology, which marked the development of financial science and technology into a new stage (Daniel Folkinshteyn, Mark Lennon & Tim Reilly, 2015). In May 2011, the People' Republic Bank of China (PBOC) issued the first payment license, which brought third-party payment into the regulatory system (Li Wen, 2009).In July, the first crowdfunding platform was launched in China. In May 2012, the PBOC initiated "the practice of encouraging and guiding private capital into the banking sector", marked the official opening of private banks, and the testing for QR code payment was successful at the same year. With this, China's Fintech has entered the stage of rapid development.

Fast development period (2013- 2015H1) - In June 2013, the launch of Yu Ebao brought great shock to traditional finance, and therefore various funds and insurance companies launched a large-scale Internet-based strategy. In 2014, 1633 new P2P platforms were set up throughout the year, reaching the peak over the years. Equity financing in the Internet finance industry has grown explosively, reaching rmb142bn, with year-on-year growth of 695.38%. In March 2015, the government work report re-mentioned the issue of "promoting the healthy development of Internet

finance. And the industrial and commercial bank of China issued the "E-ICBC" to launch the Internet transformation. During this period, the status of Fintech enterprises with experience and technological advantages has been promoted unprecedentedly.

Modest adjustment period (2015H2-2016) - The disadvantage of China's financial industry was that it focused on the financial business itself, but the development mode of Internet ecology made it difficult for independent professional institutions to survive. In view of these shortcomings, relevant policies and solutions have been proposed. In July 2015, the PBOC issued a guideline on promoting the healthy development of Internet finance. In December, with respect to the supervision method of third-party payment and online loans were introduced successively.

Redevelopment period (2017-) - In July 2017, the PBOC established the institute of digital currency. It is a research institution specialized in the technology and application of digital currency by the PBOC and its research areas include digital currency, financial technology etc. That means PBOC became the first central bank to issue digital currency and carry out real applications worldwide.

The top 100 global Fintech released by Klynveld Peat Marwick Goerdeler (KPMG) indicated that among the top 10 companies, five Chinese companies account for half of the total. In particular, the top 3 companies were all Chinese companies (2017). Among them, Ant Financial has become a typical representative of global financial technology companies relying on its outstanding technical advantages and financial sales service model. Zhong an Insurance ranked second with a superior insurance technical ecosystem and high-speed business development. Qudian relied on massive online lending business, ranking third on the list. The above three companies reflect the leading development trend of China's Fintech industry in the world. For Chinese Fintech companies, the technical field that they provide support for the financial industry can be divided into five categories: cloud computing, big data, block chain, artificial intelligence and biometric identification technology. Financial technology enterprises can be divided into five

categories according to the specific areas that it provides to support for the financial industry: customer service, risk control, marketing, investment and payment, etc. China's Fintech focuses on the field of payments, cloud computing, dig data, block-chain and AI technologies. China is the world leader in Fintech. In some financial technology sectors, such as digital payments, China ranks forefront of the world. In the area of payment, enterprises are mainly based on big data and artificial intelligence technology, by applying intelligent recognition technology such as face recognition and fingerprint recognition to the playing field to realize innovative development of payment technology. The following analysis of Chapter 2 is based on the current status and major achievements of above areas.

1.2 Statement of Problem

However, the disruption from the technology revolution has changed competition logic and patterns in many industries, resulted in intense price war and loss of market share and customers. "Winner-take –all" mind-set is becoming a trend increasingly in innovative Fintech firms and financial enterprises (PricewaterhouseCoopers [PwC], 2017). For some special financial sector, such as payment sector, the above phenomenon is particularly evident. A market research report pointed out that Ant financial accounted 51% market share in China's Fintech applied field (Mancy Sun, Piyush Mubayi, Tian Lu & Stanley Tian, 2017) , and Alipay as one of the branches of Ant financial, accounted for more than a quarter of Ant's total revenue which can be regarded as main dominator of China's mobile payment area. Conversely, those small tech enterprises and financial institutions are unable to undertake fierce competition, resulted in loss of customers and market share. Another problem are deficient regulators and regulations focusing on Fintech applied to the financial industry, many illegal fund-raising activities have been packaged as financial innovation releasing to the public. The Global Fintech Survey China Summary (2017) released by PwC noted that new business model (crowdfunding, P2P lending), data storage, privacy and protection, and AML (anti-money laundering/KYC (Know Your Customer) were supposed to main obstacles to

Fintech and finance innovation. Moreover, problems such as disclosure of personal information is also rising during the application of Fintech technologies, which seriously threatens the privacy security of consumers.

In response to the above problems, this paper proposes several measures to mitigate some or all of the problems noted above. For those participants of Fintech applied, encourage them exploit new areas of Fintech (artificial intelligence, and block chain). National encourages innovative development policies can stimulate the development of small tech business in this area. Also perfect regulatory platforms and control regulations should be taken to prevent illegal financial activities.

1.3 Objective of the Study

To help readers fully understand the development and application of Fintech in China, in the following analysis, a questionnaire survey will be conducted on the application of Fintech applied in the financial industry. The questionnaire survey aims to make more respondents understand what Fintech is as well as the basic content of Fintech. And in the course of the development of Fintech, what opportunities and challenges will be presented to Chinese financial companies and financial institutions, and how financial institutions respond to the challenges arising from Fintech development. In this article, Excel and chart data analysis would be served as a main analytical process in this paper.

The objectives of this paper is also trying to clearly identify the main segments of Fintech industry, and find out how technologies-related applied in the financial industry in China, how it works, simultaneously. Moreover, to discover the relationship between Fintech and financial service is essential. Finally, summarizing the current status and put forward relevant suggestions to solve problems.

1.4 Significance of the Study

The financial services sector has been going through a transitional period as it adapts to new consumer trends that demand more accessibility and streamlined transactions. Today, consumers expect to be able to pay bills, get loans, receive financial advice, and manage their money themselves online, primarily through SaaS cloud solutions and applications. The significance of Fintech applied in financial industry emphasize the role of financial innovation, which can be considered a new means that involves the reduction of financial risk and costs or the instrument that meets the needs of financial innovation development. The purpose of this paper is to try to describe the current situation of Fintech applied in China's financial sectors based on different Fintech segments and explicate the impacts from Fintech applied to financial industry. In analyzing the current situations and problems, summarize and integrate the findings of the growing literature on Fintech-related to support further study of this paper. Also a goal of this paper is to help readers to more understand the Fintech development and how it affects financial sectors and what kinds of measures should be taken to prevent the risk from it.

1.5 Limitations of the Study

This study has several limitations in the analytical process. Firstly, the range of study only focus on China's Fintech development and application while some of the European countries and the United States have been in a relatively advanced stage and Fintech across emerging markets in ASEAN countries noted by Banco Bilbao Vizcaya Argentaria Research (BBVA) in 2017. Meanwhile, Fintech-related literatures are limited to written in Chinese and parts in English where there were centered on this area. Additionally, in this paper, the impacts of Fintech applied only focus on the financial industry. Moreover, the methodologies used in this study are qualitative research approach, questionnaire survey and relevant chart analysis. There is a possibility of invalid data during the survey, and in the chart analysis, some of the data comes from second-hand data.

The rest of the data are based on the existing secondary data, and there may be slight deviations from the actual data. However, the subjects of the questionnaire survey are almost limited to Chinese while others respondents are not familiar with the situation of Fintech applied in China, also, there is likely to receive invalid feedback during the questionnaire.