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**Master's Thesis of Jing YANG**

**Analysis of the development of the  
fintech industry in China  
: by applying two dimensions of Digital Finance  
Cube**

**중국 핀테크 산업 발전 분석  
: 디지털 금융 큐브의 두 가지 측면의 접근으로**

**August 2020**

**Graduate School of International Studies  
Seoul National University  
International Area Studies Major**

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# **Analysis of the development of the fintech industry in China**

**: by applying two dimensions of Digital Finance Cube**

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**August 2020**

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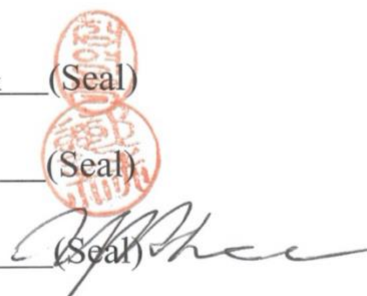
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# Abstract

While the traditional financial service industry in China continues to expand, it is outmatched by the growth of the fintech sector. Compared to other leading fintech regions, China has gone through a different path in its fintech development. As of now, it is one of the biggest fintech markets in terms of value size, volume and service varieties. In this paper, I will apply two dimensions, namely, the dimension of *Digital Finance Business Functions* and the dimension of *Digital Finance Institutions*, of *Digital Finance Cube* (DFC model, 2017) to analyze the development of the fintech industry in China and make an assessment of its current state. In the original model, there are three dimensions, including *Digital Finance Business Functions*, *Digital Finance Institutions* and *Digital Finance Technologies and Technological Concepts*. In this paper, the sub-cube “*Digital Money*” of *Digital Finance Business Functions* dimension and the dimension of *Digital Finance Technologies and Technological Concepts* have not been applied. After applying the redefined DFC model, I also outline the development stages of the fintech market in China. At the end of the paper, I will discuss the future research directions of using DFC model on analyzing fintech industries.



**Keyword:** China's fintech industry, Digital Finance Cube, Chinese fintech firms, Digital Finance Institutions, Digital financing, Digital payments

**Student Number:** 2014 – 24352



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# **I. Introduction**

Fintech is defined as a ‘technologically enabled innovation in financial services that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services.’<sup>1</sup> by the Financial Stability Board. Due to the advancement of technologies, fintech has been expanding rapidly in terms of financing, investments, digital money, payments, insurances, and financial advice. From the perspective of the financial ecosystem, fintech has increased financial inclusion in both China and around the world. It has even penetrated areas in which the brick and mortar could not reach. In terms of financial services, fintech has transformed the way people perceive and execute financial activities. Not only Fintech does provide more options and possibilities, it has also lowered transaction costs while increasing efficiency. Fintech is considered a disruptive innovation that has reduced businesses’ volume of traditional financial services. With

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<sup>1</sup>“Monitoring of FinTech” Accessed January 24<sup>th</sup>, 2020. <https://www.fsb.org/work-of-the-fsb/policy-development/additional-policy-areas/monitoring-of-fintech/>



advancements in technology, there has been an ongoing debate on whether we will become a cashless society in which banks disappear altogether.

By 2022, the global financial service industry is expected to reach \$26.5 trillion with a CAGR of 6%<sup>2</sup>. As of the first two quarters in 2019, 48 fintech unicorns<sup>3</sup> are collectively worth \$186 billion, accounting over 1% of the global financial industry<sup>4</sup>. In 2019, fintech sector received \$55.3 billion in investment. China alone comprised almost half these investment deals, with the greatest amount of funding going Ant Financial, an investment firm that is famous for managing the world's biggest money market fund and for its mobile payment service- Alipay<sup>5</sup>. There were 8,775 financial technology (fintech) startups in the America as of February 2020, making it the region with the most fintech startups globally. Compared to the rest of the world, there were 7,385 similar startups in Europe, the Middle East, and Africa,

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<sup>2</sup> <https://www.marketscreener.com/INDUSTRIAL-AND-COMMERCIAL-6499173/news/2019-Global-Financial-Services-Market-Research-Reports-Industry-Analysis-28976337/>

<sup>3</sup> A 'unicorn' is defined as a company worth at least \$1 billion in valuation.

<sup>4</sup> <https://www.cbinsights.com/research/report/fintech-trends-q2-2019/>

<sup>5</sup> <https://newsroom.accenture.com/news/global-fintech-investments-surged-in-2018-with-investments-in-china-taking-the-lead-accenture-analysis-finds-uk-gains-sharply-despite-brexit-doubts.htm>



followed by 4,765 in Asia Pacific region<sup>6</sup>. According to the fintech adoption rate published by Ernst & Young in 2019<sup>7</sup>, 96% of the world's consumers are aware of at least one fintech service and 64% have used at least one or more fintech platforms. The usage adoption rate has gone up 33% compared to 2017. 60% of consumers prefer to take advantage of the financial services provided by financial institutions through a single platform. A quarter of the world's SMEs have switched to fintech for core corporate financing services, such as banking, financing and financial management. China accounted for the world's highest fintech adoption rate, 87%, due to its high subscription of mobile data and the usage of mobile devices. Though the United States has the highest number of fintech startups, its adoption rate is only 46%. Japan is at the bottom of the list with only a 34% fintech adoption rate.

In China, 61% of SMEs have adopted at least one fintech service, compared to 28% of SMEs in North America (23% of which is made up by the United States), 27.7% in Europe, and less than 5% in ROW<sup>8</sup>. The world's

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<sup>6</sup> <https://www.statista.com/statistics/893954/number-fintech-startups-by-region/>

<sup>7</sup> See *Global FinTech Adoption Index 2019*, [https://assets.ey.com/content/dam/ey-sites/ey-com/en\\_gl/topics/banking-and-capital-markets/ey-global-fintech-adoption-index.pdf](https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/banking-and-capital-markets/ey-global-fintech-adoption-index.pdf)

<sup>8</sup> *Peer to Peer (P2P) Lending Market by Business (Alternate marketplace lending, Traditional lending), User (Small business loans, Consumer credit loans, Real estate loans,*



largest fintech company is also in China-Ant Finance- which is estimated to be worth \$75 billion<sup>9</sup>. The Chinese fintech industry supposedly developed and thrived due to the underserved financial markets that lacked ties to banking legacies. Chen (2016) argued that the fintech was able to develop due to the fact that existing demand could not be met; therefore, these new services were put in place to satisfy the needs of the population<sup>10</sup>. Chen (2016) describes this phenomenon as *senarioritization*.

By using the redefined Digital Finance Cube model, this paper conducts qualitative research on the current fintech development in China. In chapter one (Introduction), I define fintech's role on a global scale and discuss its relevance to the fintech industry. Moreover, I updated readers on the current state of both the global and Chinese fintech market. I then move on to describe the significance of the Chinese fintech market within a more global context. At the same time, I give reasons to why this paper's focus is on China as opposed to some of the other nations that utilize Fintech. In Chapter two

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*Student loans) And Segment Forecasts, 2017-2026*<https://www.reportsanddata.com/report-detail/peer-to-peer-p2p-lending-market>

<sup>9</sup> *The World's Top 10 FinTech Companies*, <https://www.investopedia.com/tech/worlds-top-10-fintech-companies-baba/>

<sup>10</sup> Chen, Long. "From Fintech to Finlife: The Case of Fintech Development in China." *China Economic Journal: Internet Finance in China* 9.3 (2016): 225-39. Web.



(Methodology), I will introduce the concept of the Digital Finance Cube model (DFC)<sup>11</sup> and explain each of its dimensions. I will give reasons why one should adopt DFC as a methodology to study the fintech market in China as well as to what extent it applies. In chapter three (The Application of DFC model on Chinese Fintech Indicators), I will detail the reasoning behind the selected fintech indicators and apply each of two dimensions. In section four (Analysis of DFC Application on Chinese Fintech Markets), I will interpret the application with my own findings and outline the development of the Chinese fintech market into four stages and one convergence. In chapter five (Conclusion), I will conclude my analysis conducted above and describe the limitations of my research. At the end of the paper, I will give out directions for future possible research.

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<sup>11</sup> Developed by Gomber, P., Koch J., and Siering M. and described in "*Digital Finance and FinTech: Current Research and Future Research Directions.*" Journal of Business Economics 87.5 (2017): 537-80.



## II. Research Methodology

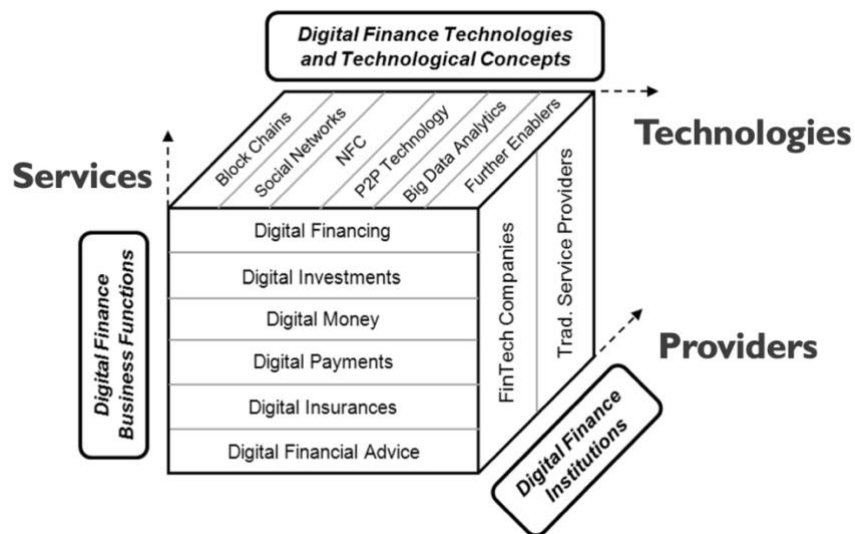
Considering the complex mechanism and the interdisciplinary nature of the fintech market, there is no leading theory on the study of the fintech industry. Some research focuses more on a specific fintech's function, such as third-party payment or peer-to-peer lending, while other research has focused on fintech's impact on the financial industry and the global economy. In this paper, I will employ the newly developed Digital Finance Cube model (DFC, 2017) to analyze and measure the development of the fintech market in China.

DFC is designed to analyze the fintech industry by dividing its essential elements using three main dimensions: *Digital Finance Business Functions*, *Digital Finance Intuitions* and *Digital Finance Technologies and Technological Concepts*. Each dimension is then further analyzed by dividing each dimension into more specific categories, so-called sub-cubes. The dimension of *Digital Finance Business Functions* contains the services that fintech offers. The dimension of *Digital Finance Technologies and Technological Concepts* illustrates the skills and instruments that enable fintech services. The dimension of *Digital Finance Intuitions* is, with adequate skills and instruments, the fintech services providers. *Digital*



*Finance Technologies* and *Digital Finance Intuitions* are the fundamental elements of *Digital Finance Business Functions*.

**Figure 1. Digital Finance Cube and Its Dimensions**



Source: (Gomber, Koch and Siering 2017)

## 1. Descriptions of dimensions

### 1-1. Digital Finance Business Functions

In the DFC model, *Digital Finance Business Functions* are further divided into six different sub-cubes: *Digital Financing*, *Digital Investments*,



*Digital Money, Digital Payments, Digital Insurances and Digital Financial Advice.*

- Digital Financing

The DFC model considers *Digital Financing* to be the lifeblood of businesses and individuals who require financial resources but lack credits. It releases individuals and SMEs from borrowing from traditional mediums, such as banks, government programs, venture capitals or angel investors (KLöhn and Hornfuf 2012). According to Gomber, Koch and Siering 2017, all financing that is acquired from the internet is defined as *Digital Financing*. The internet plays a role similar to that of a match maker as it brings borrowers and lenders together while reducing both transaction cost and information asymmetry (Zhang and Liu 2012). The most commonly offered digital financing services online include factoring (defined in Klapper 2006), invoicing (defined in Penttinen and Tuunainen 2011), leasing and crowdfunding (defined by Belleflamme et al. 2014)

- Digital Investments

The *Digital Investments* sub-cube, by utilizing smart devices and apps, offers the freedom and flexibility of making investment decisions and



transactions to both individuals and institutions. It includes mobile trading (described with details in Tai and Ku 2013; Zhang and Teo 2014; Kim et al. 2007), social trading (described with details in Doering et al. 2015; Pan et al. 2012; eToro Ltd 2016; Ayondo markets Ltd 2016; Gottschlich and Hinz 2014), and online brokerages. The diversified services that *Digital Investments* provide all involve little to no human interactions between the broker and the customer. At the same, some specific services may experience a lack of customization and lead to unwanted investment decisions.

- Digital Money

Gomber, Koch and Siering 2017 considers *Digital Money* as an unregulated virtual electronic currency that exists only online. They further went on to state that it provides a similar function to that of bank notes but is an independent medium of exchange unlike fiat currencies (Dodgson et al. 2015). It is distributed and controlled by its creators instead of being centrally managed by a centralized organization (European central bank 2012). The value of digital money depends on its supply and demand (Velde 2013). A prominent example of digital money is bitcoin.

- Digital Payments



Also known electronic payment, *Digital Payments* are a way to process payments electronically (Hartmann 2006). The process aims at facilitating fiat currency transactions with greater flexibility, lower transaction fees and less transaction time. It allows all parties involved in the transaction to be free from time and location constraints (Lim 2008; Weir et al. 2006). Digital payment is believed to be inspired by the needs arising from e-commerce. It is an alternative to traditional payment methods, such as cash, card payment or checks. The most adopted digital payment mechanisms include Mobile Payments, Peer-to-peer Payments (P2P), digital wallet or e-wallet. *Digital Payments* started with bank account-based transfers, but, now, it can be conducted through third-party service providers, even without a formal bank account.

- Digital Insurances

*Digital Insurances* are the mechanisms that adopt both traditional insurance concepts, such as getting insured through insurance companies, while combining small risk-sharing among acquaintances, the so-called peer-to-peer insurance. One kind of *Digital Insurances* platform allows friends or families to put money together to set up a protection fund, half of which goes to a formal insurance company and the other half of which is kept together



for this group of people. The amount that is insured by the insurance company is given out to policy holders when damages occur. The other half that is being kept by the platform is used to cover minor cases. Such arrangement results in lower costs for consumers but gives them the same level of protection.

- Digital Financial Advice

There are three types of *Digital Financial Advice* widely available at the moment. Traditionally, review sites and comparison sites for financial advice have been around for a long time. Studies show that such reviews and comparisons could influence investors' decisions. (Hu et al. 2008). There are also communities, such as trading communities, investment communities and stock communities, that focus on sharing and exchanging financial information on the internet. Just like on review sites, comments can also have an impact on viewers' investment decisions (Wysocki 1998). There is also computer programmed advisors that are developed based on established modern investment portfolio theories that utilize algorithms with the least amount of human intervention. Similar to algorithm trading in *Digital investments*, robot-advisors also lack customizable options when giving out financial advice.



## 1-2. Digital Finance Institutions

*Digital Finance Institutions* include *tradition service providers* and *fintech companies*. DFC considers the ‘brick-and-mortar’ institutions that offer financial services as the *traditional service providers*, but also consider whether or not these institutions have digitalized existing services or newly added fintech services. *Fintech companies* are defined as a group of companies that ‘emerged either as FinTech start-ups or technology companies without history in banking, business or financial services’ whom provide more flexibilities, innovations, security, efficiency and options.’

In the area of *Digital Finance Intuitions in the DFC Model*, *traditional service providers* and *fintech companies* could be facing competition for customers. *Traditional service providers* have the advantage of existing customer pools, but *fintech companies* have the advantage in the sense that they can provide alternative services at lower cost.

## 1-3. Digital Finance Technologies and Technological Concepts

Gomber, Koch and Siering 2017 consider block chain, social network, NFC, P2P technology, big data analytics and further enablers as the



prerequisite technologies and concepts which make fintech services possible. Block chain has been acknowledged as the ‘original invention of the cryptocurrency bitcoin (Nakamoto 2008). The social network was enabled by the extensive adoption of the internet. NFC, *near field communications*, is applied to facilitate immediate payment transactions (Want 2011). P2P technology functions without the support of ‘intermediation’ or any ‘central authorities’ (Androutsellis-Theotokis and Spinellis 2004). Big data analytics have the capacity to hold, manage, distribute and deliver data (Russom 2011). It has made things that were once impossible possible. Further enablers are described to be important infrastructures that comprise the technologies and concepts, such as “fast internet, used by mobile devices, broader connectivity, security technologies and intuitive user interfaces”. All of the technologies and concepts that were described above support systems of *functions*. There is no single fintech *function* that is powered by only one of the *Digital Finance Technologies and Technological Concepts*. *Functions* are the combined efforts of *Technologies*.



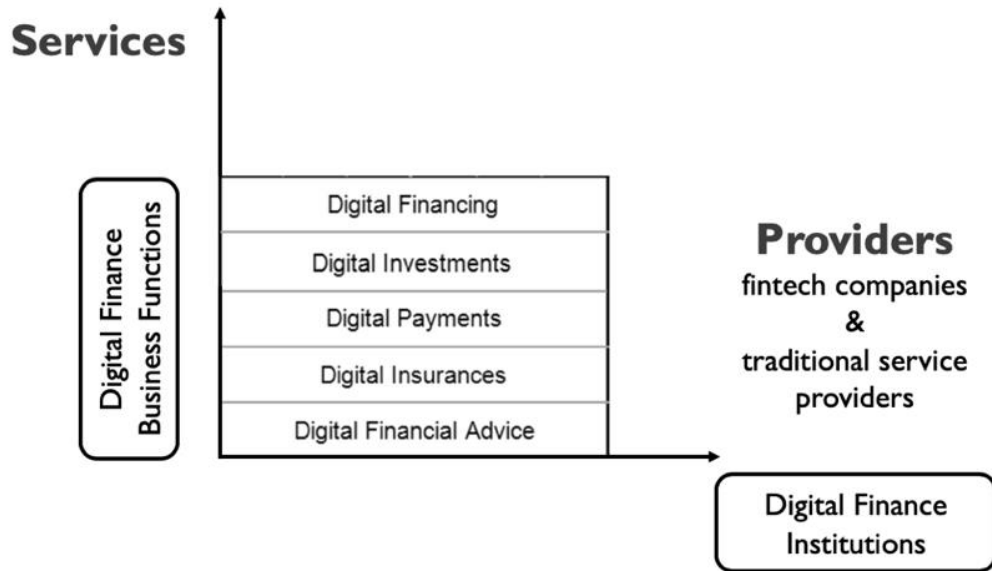
## **2. Reasons for adopting DFC model and the scope of application**

The DFC was designed as a powerful tool to arrange and analyze the entire Digital Financial field. I adopted this model because of its relevance when analyzing the development of the fintech industry and its flexibility, as existing technologies could be abandoned or evolved and new innovations could be applied, reduced, or extended to other dimensions.

This research on the fintech market in China is only related to the dimensions of *Digital Finance Business Functions* and *Digital Finance Intuitions*. In terms of *Digital Finance Technologies and Technological Concepts*, since this research focuses on a single nation, the dimension of *Digital Finance Technologies and Technological Concepts* is considered to be a common factor among the *Digital Finance Intuitions* within the China region.



**Figure 2. Redefined DFC Model**



Source: produced by the author.

### **III. The Application of DFC model**

#### **1. The overview of the fintech market in China**

Though fintech promotes and advances financial services through technologies globally, it has developed through different trajectories depending on the regions. For example, before fintech was adopted in a more



sophisticated financial region like the United States, the credit card adoption rate was high. The use of ATMs and banking branches are also higher in the US than they are in less developed financial regions, such as China. After the 2008 financial crisis, American banks started to fully embrace technologies in their banking services by reviving and upgrading both online and offline services in order to provide a fully integrated financial business, through internet banking, mobile banking, tablet banking and branch services. Therefore, in the US, technologies were adopted by the traditional service providers as a means to upgrade existing business models.

However, in China, non-traditional service providers--fintech companies-- were the first to adopt financial technologies. China has long been known to have an underserved financial market. The major banks are mostly backed by the central government or the provincial governments. As a result, they are more inclined to serve state owned enterprises (SOEs), or other large corporations. The credit adoption rate as well as the ATM and banking branch implementation rates are also low. The underserved market segment of retail banking and SMEs turned out to be the growth engine of fintech in China. Chen (2016) defines the initial application and success of fintech in China as the phenomenon of *senarization of finance* “enabled by technology... a much better integration between (of) finance and real-life



scenarios”. He explains that *senarization* is an ecosystem of technology, finance and real-life needs. Such an ecosystem, which was initiated by technology, flourished in actuality due to the needs arising from the trusts offered in the current civil society.

Though fintech companies may have been the first to launch fintech services, traditional service providers have also adopted digital finance business functions. The boundaries between fintech companies and traditional service providers are continuously overlapping, causing the line between the two to become blurred. Therefore, in this paper, I consider both types of service providers as fintech institutions, just as it is described in the DFC model.

In order to provide the most recent view of the Chinese fintech market’s development, I have adopted the list of the *Leading 50* fintech firms from the sixth annual *Fintech100* report (2019) published by H2 Ventures and KPMG<sup>12</sup>. *Fintech100* formed this list using “extensive global research and analysis based on data across the dimensions of average annual capital raised, rate of recent capital raising, geographic diversity and sectoral diversity”. On the list of the *Leading 100* fintech firms across the globe, China is ranked 7<sup>th</sup>,

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<sup>12</sup> <https://h2.vc/wp-content/uploads/2020/02/2019Fintech100.pdf>. Accessed Feb 1<sup>st</sup>, 2020.



with Ant Financial, Du Xiaoman Financial and JD Digits being ranked at the 1st, 3<sup>rd</sup> and 6<sup>th</sup> positions, respectively. Lufax, One Connect, WeLab and ZhongAn Insurance are ranked at 11<sup>th</sup>, the 18<sup>th</sup>, the 35<sup>th</sup> and the 50<sup>th</sup> positions, respectively. In terms of *Digital Finance Business Functions*, both Ant Financial, JD Digits and Once Connect are classified as multi-sector companies. Du Xiaoman and Lufax focus on the area of lending. ZhongAn Insurance is the only Chinese insurtech company that is on the list. Since Ant Financial and JD Digits are at the top of the global ranking list and are involved in multiple sectors, I will only discuss Ant Financial as it is representative of the multi-functioned fintech institution.

## **2. Applications of Digital Finance Business Functions and Digital Finance Institutions**

### **2-1. Digital payments**

In China, by the end of 2019 mobile Payment Business was showing the fastest growth rate among digital payment methods. In 2019, Chinese banks handled a total of 223.388 billion digital payment transactions, with a value of 2,607.04 trillion yuan. Of this total, 78.185 billion were online



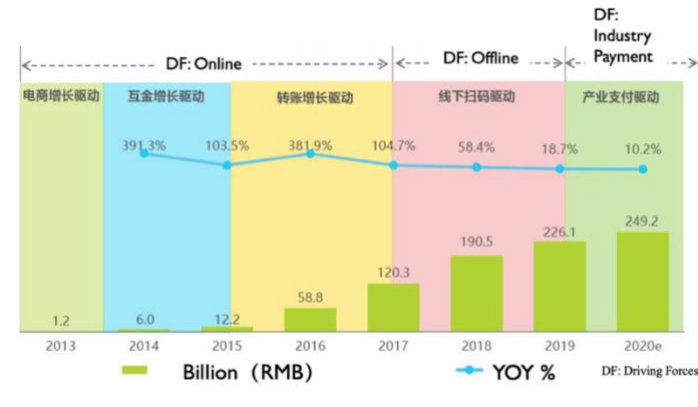
payment transactions, valued at 2,134.84 trillion yuan, up 37.14% and 0.40% respectively from the previous year. Additionally, there were 101.431 billion mobile payment transactions, valued at 347.11 trillion yuan, up 67.57% and 25.13% respectively from the previous year. Non-bank payment institutions handled 1,371.998 billion online payments, with a value of 249.88 trillion yuan, up 35.69 percent and 20.10 percent respectively from the previous year<sup>13</sup>. It is worth noting that the number of non-banking digital payment transactions was more than three times the number of digital payments made via the banking system, but the value was only about 9.58%. Digital payments that include telephone payments (transaction volume 0.176 billion, value 9.67 trillion) account for 75.84% of non-cash payments.

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<sup>13</sup> <http://www.pbc.gov.cn/zhifujiesuansi/128525/128545/128643/3990497/index.html>. Accessed March 21<sup>st</sup>, 2020.

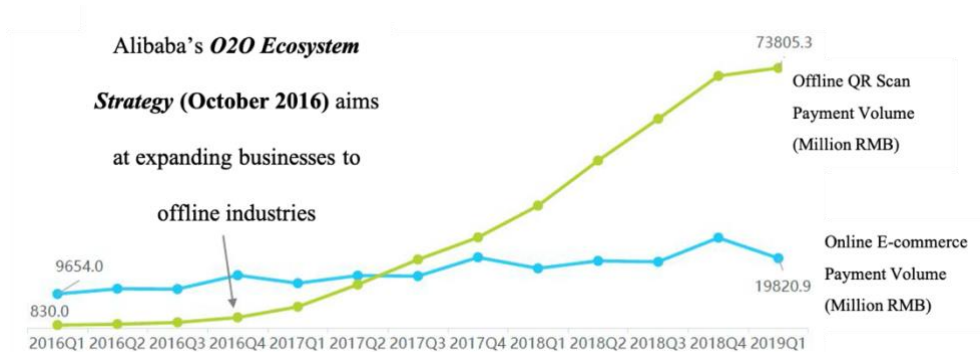


**Figure 3. 2013-2020 China's Third-Party Payment Volume<sup>14</sup>**



Source: iResearch

**Figure 4. 2016Q1-2019Q1 Online Payment and Offline QR Scan Payment**



Source: iResearch (see footnote no.14)

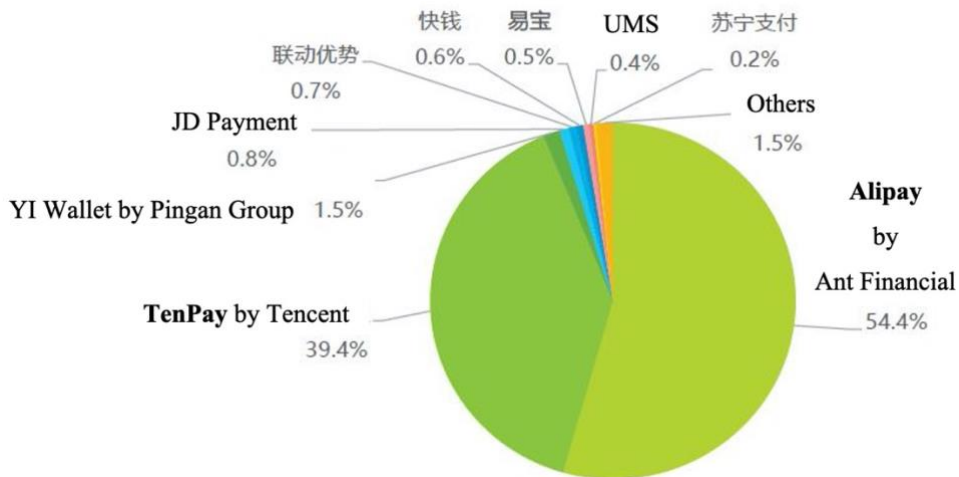
<sup>14</sup> Figure 3 and Figure 4: <https://www.iresearch.com.cn/Detail/report?id=3552&isfree=0>.

Accessed April 21<sup>st</sup>, 2020.



By the end of 2019, Alipay, owned by Ant Financial, and Tenpay, owned by Tencent Group and backed by its WeChat messenger app, continue to dominate the third-party payment market, taking 93.8% of the total market share, and 54.4% and 39.4% of the market share respectively. YiQianBao, part of PingAn Group, accounted for just 1.5% of the market, and JiDong Pay, owned by JD Digits, made up just 0.8% of the market share. Finally, UMS, owned by UnionPay, claimed 0.4% of the market<sup>15</sup>.

**Figure 5. The Third-Party Mobile Payment Market Share in China, 2019**



Source: iResearch

<sup>15</sup> <https://www.iresearch.com.cn/Detail/report?id=3552&isfree=0>. Accessed April 21<sup>st</sup>, 2020.



Internationally, Alipay is the biggest payment platform, beating out Apple Pay, Google Pay and Tenpay. In October 2016, the new retail concept of O2O – online to offline – was introduced by Alibaba Group, who used to fully own Ant Financial (Figure 4). As China's fintech pioneer, Alibaba Group has an intrinsic advantage in big data and traffic. It collects information about retail customers from Taobao, a C2C e-commerce platform, and Tmall, a B2C e-commerce platform, and it also collects data on SMEs from Alibaba, a B2B platform. As Chinese banks lack credit information on individuals and SMEs, Ant Financial launched a credit rating system, Sesame Credit, using the information they collect from the e-commerce platforms and other service platforms that they offer. By utilizing this credit rating system, Ant Financial is able to approve and offer a speedy loan service – JieBei – on Alipay's app, similar to Baidu's YouQianHua app, but even more popular. Alipay's HuaBei provides financial services that are similar to credits card but with a faster and a better service in areas such as checking transactions and bills or delaying payment dates with a finger click. Ant Financial is the fintech wing of Alibaba Group's integrated O2O ecosystem. Alibaba Group nowadays collects data in all kinds day-to-day scenarios, from paying housing bills to ordering takeaways. In conclusion, Ant Financial and its affiliates offer services in



wealth management, credit reporting, private banking, payments, and cloud computing. Their business value was estimated \$150 billion in 2018<sup>16</sup>.

Tenpay is the payment service of Tencent. Tencent, in previous years, was well-known in China for its widely adopted instant messaging software, QQ. Nowadays, it is famous for its chatting app, WeChat, which has largely replaced the messaging and phone call functions on smart phones. Tencent's company slogan is "Tencent enriches lives with technologies." Its financial service, WeBank, was formed in 2014 and was the first private bank in China. In 2018, WeChat had more than 1 billion monthly active users globally. Tencent mobile payments had more than 800 million active monthly accounts, and the average annual daily transaction volume reached more than 1 billion per day. By the 1st quarter of 2020, the number of active WeChat accounts reached 1,203 billion in China<sup>17</sup>. As part of Tencent's ecosystem, WeChat and Tencent are in a win-win relationship, because WeChat acts as a portal that brings data and traffic into Tencent, while Tencent has technology capabilities and capital to sustain and expand WeChat's services. WeChat's

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<sup>16</sup> <https://www.investopedia.com/tech/worlds-top-10-fintech-companies-baba/#citation-8>. Accessed May 10<sup>th</sup>, 2020.

<sup>17</sup> <https://www.statista.com/statistics/255778/number-of-active-wechat-messenger-accounts/>. Accessed May 25<sup>th</sup>, 2020.



e-wallet service also provides services comparable to Ant Financial's Alipay or Baidu's Du Xiaoman Financial. WeChat also has a social platform that functions like a combined version of Instagram and Facebook. Unlike Alibaba, which was originally an e-commerce site, and Baidu, which was originally a search engine, Tencent is also famous for entertainment, particularly gaming, and was the world's most profit game developer and operator in 2013. Recently Tencent has dominated the Chinese mobile gaming market with two of its most popular games.

## 2-2. Digital Financing

Gomber, Koch and Siering (2017) define *Digital Financing* as “making available financial capital” through digital technologies. Traditionally, brick and mortar banks have considered loans under \$100,000<sup>18</sup> to be not worthy of their time, cost and risk. The fintech interrupter, however, approves funding applications in less time and with lower costs since most of the evaluation processes are conducted by technology. It also considers a bigger

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<sup>18</sup> “Fintech Business Financing: The New Frontier” Accessed December 12<sup>th</sup>, 2019.  
<https://www.forbes.com/sites/forbesfinancecouncil/2017/05/02/fintech-business-financing-the-new-frontier/#3f0f6bac2b41>



data pool that could provide a more complete credit portfolio of potential borrowers who, whether individuals or SMEs, may not have collateral, impressive sales figures or high credit scores.

In 2018, \$304.5 billion in transaction value of the global alternative financial industry<sup>19</sup> was raised through online platforms for consumers, businesses and other initiators. This is a 27 per cent annual decline compare to the \$419 billion transaction volume in 2017. Such a decline was mainly caused by the credit constraints in the Chinese P2P market. Excluding the Chinese market, alternative financing rose by \$29 billion from 2017 to 2018, a 48 percent annual increase. Despite the tightened regulations in the alternative financing market, China still has world's largest transaction volumes: \$215.37 billion in 2018. In terms of financing for start-ups and SMEs, the global value fell from \$153 billion in 2017 to \$82 billion in 2018. Similar to the fall of total global alternative financing, this decline was caused by the sharp decline in credit in China. Excluding the Chinese market, there was a 47 per cent increase from 2017 to 2018 globally. Crowdfunding

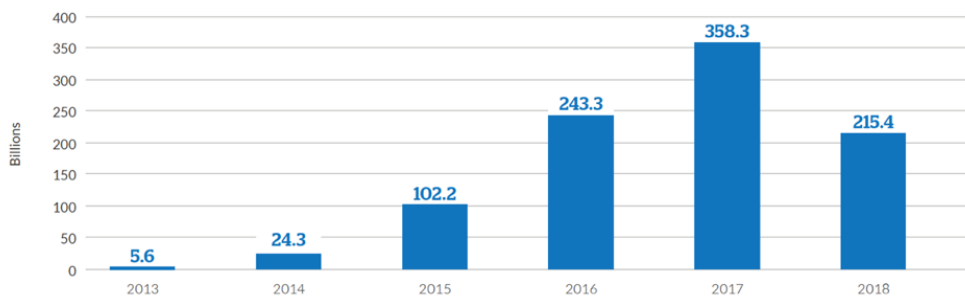
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<sup>19</sup> Digital financing is part of alternative financing that is define in The Global Alternative Finance Market Benchmarking Report, April 2020, published by Center of Alternative Finance, Cambridge University. Digital financing counted a significant part of alternative financing, hence such statistics applied here to represent digital financing.



accounted for the biggest segment of alternative financing either globally or in China<sup>20</sup>. After the Ezubao scandal, which cost Chinese retail investors \$7.7 billion, tightened regulations and the pressures of profit growth caused many P2P platforms to either close down or become involved with multi-service providers, such as Lufax, which was once the largest P2P platform in China. Its current status will be discussed in *Digital Investments and Advice*.

**Figure 6. Chinese Alternative Finance Market Volume 2013-18 (USD)**



Source: Statista

### 2-3. Digital Investment and Advice

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<sup>20</sup> “Alternative Financing report 2020” Accessed May 2020.

<https://www.statista.com/study/47352/fintech-report-alternative-financing/>



Digital investment embraces all investments conducted through the internet with no human interactions or minimum intermediaries, whether they are investments conducted through mobile applications or by following established traders on online social networks. Gomber, Koch and Siering (2017) separated Digital Investment and Digital Financial Advice into two different categories but, the boundary between these two digital functions has become very blurred nowadays, and therefore cannot be clearly separated. Any digital agent that facilitates investment deals also provide financial advice, either through the social trading community, comparison/review sites, or robot advisors. The only question is whether the focus of the service is on facilitating transactions or providing financial advice. Therefore, I will combine the sub functions of *Digital Investments* and *Digital Financial Advice* into *Digital Investments and Advice*. Chinese multi fintech giants provide investment services along with other services to retail customers and SMEs, such as Ant Financial, JD Digits and Tencent. There is no single internationally recognized Chinese *Digital Finance Institution* that provides only investment services. Du Xiaoman Financial and LuFax, ranked the 6<sup>th</sup> and 11<sup>th</sup> respectively on the global ranking list, were both categorized into “lending” on the *Fintech100* 2019 report. Backed by Ping An insurance, Lufax was originally one of the largest P2P lending platforms, connecting



SMEs and individuals with investors. But now, taking advantage of its big data and information technology, Lufax has transformed into an investment and wealth management platform. One of the reasons for such a transformation is because of the tightened regulations on P2P lending in China from 2018. Such regulations increased operational costs and hindered the potential IPO process<sup>21</sup>. Lufax now has a registered customer pool of 44.62 million people and it is part of PinAn Group's O2O ecosystem.

Derived from Baidu Finance, which was established in 2015, Du Xiaoman Financial was registered as a separate entity in April 2018. Though it was originally China's biggest search engine, prior to Du Xiaoman Financials' separation, Baidu Finance had already utilized its AI and Dig Data advantages in offering financial services. Du Xiaoman is now an integrated financial service provider that includes financing, investments and wealth management, risk management and insurance. Its financing brand, YouQianHua, provides loans to anyone who can provide a valid ID card and a formal personal bank card, up to maximum 20,000 RMB (approximately \$2800), with a maximum approval time of 30 seconds and a transaction time

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<sup>21</sup>"Exclusive: Ping An-backed Lufax to ditch P2P lending on regulatory woes" Accessed January 5th, 2020. <https://www.reuters.com/article/us-lufax-p2p-exclusive-idUSKCN1UD0QP>



of 3 minutes. Its investment and wealth management platform offer higher-rate depositing services, investment products and advice, insurance, and wealth management for high net-worth individuals. Its “wallet” service is the payment wing of Du Xiaoman Financial that aims to match retail consumers with financial products and merchandisers, as well as providing services in transactions, payments, and other scenario needs. Du Xiaoman’s financial technology brand, Panshi, focuses on risk management and does not just serve its own technological demands, but also provides such service solutions to other companies. Similar to Alibaba and Ali Financial, Baidu and Du Xiaoman Financial also aim to create a one-stop O2O ecosystem that embraces both online and offline scenarios.

#### 2-4. Digital Insurance

ZhongAn Online P&C Insurance Co., Ltd. is a Shanghai-headquartered online-only insurance company, founded in 2013 by Alibaba Executive Chairman Jack Yun Ma, Tencent Chairman Pony Huateng Ma, and Ping an Insurance Group Chairman Peter Mingzhe Ma. In the first year of operations, it acquired 150 million clients and wrote 630 million insurance policies. ZhongAn went public on the Hong Kong Stock Exchange in middle of 2017.



One of the revolutionary products ZhongAn provides that benefits retail customers and SMEs is offering insurance on the postage cost of returning e-commerce goods. Online merchandisers either provide the return post insurance for free when purchasing goods online, or offer it with very a very low cost, which could be as low as \$0.2. If the purchase is in any way unsatisfying, a buyer with insurance can return it without paying for the postage.

## **IV. Analysis of DFC Application**

### **1. Digital Finance Business Functions dimension**

Rather than analyzing and defining the development of the Chinese fintech market chronologically, I analyzed it by examining the major events which happened in each *Digital Finance Business Functions* and divided the analysis into the following stages:

- Stage one



The Chinese fintech market was not derived from the rise of cutting-edge technology; instead it was born due to the scenario needs of e-commerce online payment for retail customers and small businesses. Ant Financial, now the world's biggest-third party payment app, grew because Union Pay was reluctant to develop solutions to meet the scenario needs, so Alibaba Group came up with its own solution: Alipay. Chinese policy makers also paved the way for Alibaba Group and Ant Financial's development since former Chinese Hu Jintao was aiming for China to become the most fintech developed country in 2020. It's not clear whether China has achieved Hu Jintao's goal of becoming biggest fintech country in the world yet, but it has definitely transformed people's daily lives. Therefore, in DFC mode, the *Digital Payment* function was the start of fintech in China.

- Stage two

If Ant Financial represents the start of fintech in China, then the rise of P2P represents the infant stage of the Chinese fintech market. It boomed for three reasons: first, and most importantly, *Digital Finance Technologies and Concepts* were able to utilize big data to lower information asymmetry between investors and borrowers, particularly SMEs, therefore reducing intermediary costs; secondly, Chinese major banks were inclined towards



serving SOEs, and therefore SMEs which lacked credit and capital turned to alternative financing. Even for those banks who were likely to lend to SMEs, the paperwork was complicated, the approval time was usually very long, and it took considerable amount of collateral; thirdly, regulators did not respond to the Chinese fintech market until it went wrong. The relative lack of restrictions allowed P2P to boom until 2018. Therefore, in DFC mode, *Digital Financing* function represents the infant stage of fintech in China, as well as hard lessons learned by investors.

- Stage three

After regulators tightened P2P regulations in 2018, unqualified financing companies were given two years to exit the digital financing market. Once the biggest P2P lender, Lufax, took the opportunity to transform itself from a loan platform to an integrated digital consumer finance platform that encompasses loan, investments, wealth and risk management and its insurtech services are backed by PingAn Insurance. At this point, the boundaries between fintech providers of *Digital Payments*, *Digital Financing* and *Digital Investment and Digital Financial Advice* begin to become very blurred. Major platforms that originally only provided a single fintech service are now involved with multiple functions through independently acquiring licenses,



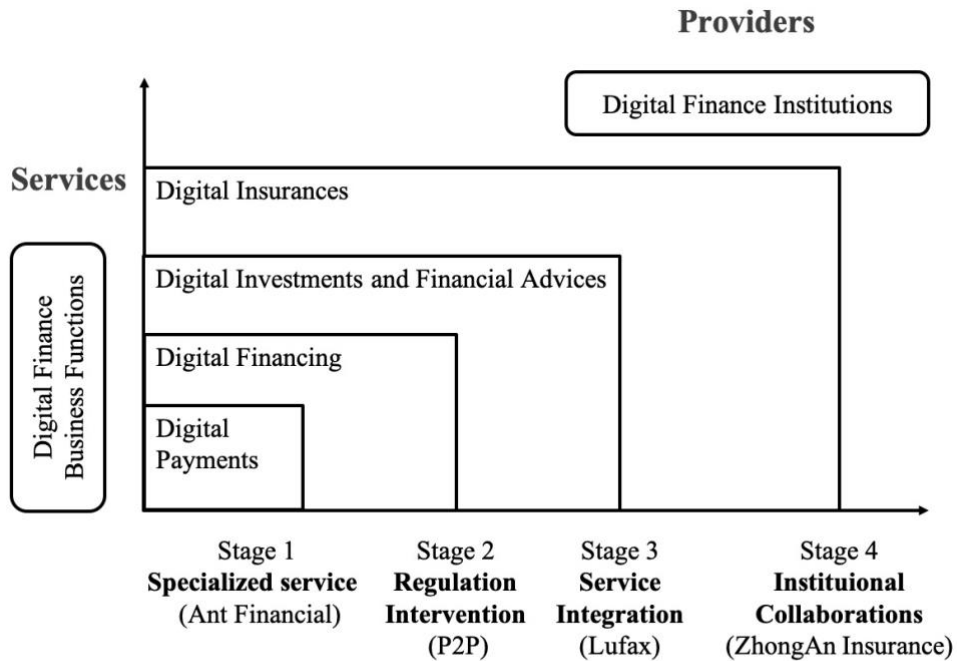
acquisitions, or investing in existing fintech companies or companies that serve scenario needs. In DFC mode, *Digital investments and Financial Advice* function is the product of convergence and integration.

- Stage four

The formation of ZhongAn Insurance represents a new era in the Chinese fintech market as fintech institutions no longer fight their battles alone. Instead, they begin forming alliances and corporations. ZhongAn was formed by the founder of Alibaba Group, Tencent and important figures from PingAn Insurance, representing the collaboration of three Chinese giants in fintech, communication, finance, and insurance. At this stage, we see banks, either the big four or other commercial banks, actively collaborating with fintech companies. Fintech brings data, traffic and new technological concepts to the banks. As the growth of the retail segment slows as the segment becomes saturated, fintech companies are looking for new break points through serving new business and industries. Therefore, banks can help fintech companies to access business customers, particularly big corporations and SOEs. Such a win-win strategy helps to produce more value-added services, and therefore upgrades the Chinese financial services and fintech market as a whole.



**Figure 7. The Development of Fintech Industry in China**



Source: produced by the author.

## 2. Digital Finance Institutions dimension

From the dimension of *Digital Finance Institutions*, traditional service providers originally lacked incentives to offer and improve financial services. Though individual banks may actively collaborate with third-party payment companies, their collaboration could be halted by the regulators at any time. Luckily, such uncertainty did not cause any major downfall in the fintech



market. The lack of banking legacy (traditional service providers), and the need for inclusive financial services, became the driving force of the Chinese fintech market. Instead of rejections, traditional service providers started to transform and are now actively joining the fintech market and increasing collaborations with fintech companies. The boundaries between fintech companies and traditional service providers are becoming increasingly blurred. Therefore, just like the trend in *Digital Finance Business Functions*, there is a convergence in *Digital Financial Institutions*.

## **V. Conclusion**

By applying the modified DFC model, I have concluded that the development of Chinese fintech industry can be divided into four stages. This started with the first stage of Specialized Service, third-party payments, through the driving force of *senariorization*. It was then downsized during stage two, Regulatory Intervention, as the Chinese government took more strict measures to control P2P lending. In order to survive and compete, specialized institutions started to integrate services, and therefore we see more multi-service *Digital Finance Institutions* in stage three, Service Integration. In stage four, Institutional Collaborations, institutions that bring



in different industry advantages begin to form alliances in order to stay ahead of the competition. The convergent phenomena in the dimension of *Digital Finance Business Functions* and the dimension of *Digital Finance Institutions* lead to less differentiation between *Digital Finance Institutions* which provide customers with more fintech options and increase competition. Increased competition leads to better services and reduced costs for customers. Therefore, in conclusion, the current Chinese fintech industry is a healthy, competitive market that benefit fintech users.

The DFC model provides a flexible framework for analyzing of fintech market. I removed the dimension of *Digital Finance Technologies and Technology Concepts* from the three dimensions, resulting in a redefined two-dimensional model which becomes more generalized. This paper is focused more on the dimension of *Digital Finance Business Functions* than on the dimension of *Digital Finance Institutions*. If the DFC model is used for a specific sub-cube segments study, for example if the study only focuses on *Digital Insurance*, then I would recommend using at least 3 dimensions to avoid over-generalization.

In this research, I briefly discussed the policies and regulations in *Digital Financing* and *Digital Payments*. I removed *Digital Money* from the *Digital Finance Business Functions* as the *Digital Money* is heavily regulated



by the government. Due to the distinctive characteristics of China's government-led society, policies and regulations have a tremendous effect on fintech industry in China, whether intentionally or unintentionally. In order to improve the current research, the modified two-dimension model could be stretched back to the three-dimensional model by substituting the dimension of *Digital Finance Technologies and Technological Concepts* with policies and regulations to the third dimension.

Because of the DFC's intrinsic characteristics of generalization and flexibility, the DFC model could be used in comparative studies of fintech industries among different countries. For future research involving comparative studies, researchers could either compare the data of each dimension for every country being studied, or just compare the data of the selected dimension among studied countries. Or, in comparative studies among countries, researchers can select one *sub-cube*, e.g. *Digital Payments*, from the dimension of *Digital Finance Business Functions* and use the dimension of *Digital Finance Institutions* and the newly proposed dimension of *Digital Finance Policies and Regulations* as variables and see what impact different value in variables could have on the outcomes.

This paper represents a qualitative research, completed by gathering data from government sites and reputable sources, such as Statista and KPMG.



However, different organizations have slightly different calculation methods, and some data is only available up to 2018. Therefore, future research could update the data used in this paper by using a more unified method or drawing data from a single source.



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## 초록

중국 금융서비스업의 점진적 확장에도, 그 위상이 핀테크 산업을 따라잡지는 못하고 있다. 중국의 핀테크 사업은 다른 세계적인 핀테크 선두주자들과는 차별화된 길을 걸어왔는데, 현재 그 크기, 용적, 그리고 서비스 다양성 측면에서 세계의 가장 큰 시장 중 하나이다. 이 논문에서 필자는 디지털 금융 큐브 모형(Digital Finance Cube model, DFC 모형) 중, “디지털 금융 비즈니스 기능(Digital Finance Business Functions)”과 “디지털 금융기관(Digital Finance Institutions)”의 차원에서 중국 핀테크 사업의 발달 과정과 현황을 분석해보고자 한다. 본래 디지털 금융 큐브 모형에는 디지털 금융 비즈니스 기능(Digital Finance Business Functions), 디지털 금융기관(Digital Finance Institutions), 디지털 금융 기술과 기술적 개념(Digital Finance Technologies and Technological Concepts)의 세 가지 차원이 있는데, 이 논문에서는 디지털 금융 비즈니스 기능의 하위 항목인 디지털 화폐(Digital Money)와 디지털 금융 기술과 기술적 개념은 적용하지 않았다. 재정립된 DFC 모형을 적용한 이후, 필자는 중국의 핀테크 시장의 성장 단계를 서술하고자 한다. 마지막으로, 필자는 DFC 모형을 사용한 핀테크 산업 분석의 향후연구방향에 대해 논의해보고자 한다.



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