The FinTech Industry in China : a new era of global financial supremacy

صناعة التكنولوجيا المالية في الصين: عصر جديد من التفوق المالي العالمي

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Abstract :
This article provides a comprehensive overview of China's FinTech development. Because of a unique combination of characteristics, China has been at the forefront of FinTech in recent years. And the emergence of China's FinTech industry has been marked by the success of national tech giants, who have recently embarked on international expansion.
The study concluded that China has worked to strengthen its position as a global financial technology power by acquiring new technologies as various major sectors such as payments and alternative financing , mature. As a result, financial technology in China will face new challenges, such as regulation and internationalization.

Key words : FinTech- New Technologies- Tech giants- Regulations.

Jel Classification : G20- G28- O31- O33

ملخص:

تقدم هذه المقالة نظرة عامة شاملة على تطور التكنولوجيا المالية في الصين، في السنوات الأخيرة، أصبحت الصين في الطليعة في مجال التكنولوجيا المالية نتيجة لمجموعة فريدة من العوامل، وقد تميز ظهور صناعة FinTech في الصين بنجاح العمالقة التكنولوجيين الوطنيين الذين شرعوا مؤخرًا في التوسع الدولي.
خلصت الدراسة إلى أن الصين عملت على ترسيخ مكانتها كقوة عالمية في مجال التكنولوجيا المالية من خلال اكتساب تقنيات جديدة مع نضوج مختلف القطاعات الرئيسية كالمدفوعات والتمويل البديل. نتيجة لذلك، ستواجه التكنولوجيا المالية في الصين تحديات جديدة منها التنظيمية والتدويل.

الكلمات المفتاحية: تكنولوجيا مالية - تقنيات حديثة – عمالقة التكنولوجيا – لوائح تنظيمية.

Intoduction :

Currently, a new round of FinTech innovation brough new reforms to the financial sector, the world’s innovations scene is being restructured, and FinTech is becoming the first driver for the new norm in the economy (AIF, 2020, p. 03), Internationally, every government treats FinTech development as a priority, more than 40 cities have issued FinTech related policies and support programs. At the same time, capital continues to flow into FinTech at an increasing rate. In 2019, the number of listed and highly capitalised unlisted FinTech companies grew by 33% (AIF, 2020, p. 06), and the global Fintech market reached a value of nearly $111,240.5 million , having grown at a compound annual growth rate (CAGR) of 7.9% since 2015, and is expected to grow at a CAGR of 9.2% to nearly $158,014.3 million by 2023. Also the market is expected to grow to $191,840.2 million in 2025 at a CAGR of 10.2% and to $325,311.8 million in 2030 at a CAGR of 11.1% (The Business Research Company, 2020). , total capital raised grew by 46% to USD155.8 Billion; evidencing the prosperity of the FinTech market.

In Asia, China continues to lead in FinTech innovation, and with China's FinTech market being one of the most active in the world, FinTech services are now deeply integrated into the lives of Chinese consumers, according to EY's 2019 FinTech Adoption Index, 87 percent of Chinese respondents now utilize one or more FinTech services (EY Global, 2021). In other hand, China's FinTech investments totaled USD 25.5 billion in 2018, ranking first in the world and accounting for about half of all FinTech investments made that year (Zhu, 2021, p. 28).

China's FinTech companies are committed to harnessing technology to ensure that everyone in the world has equal access to opportunities. Ant Financial and their ecosystem partners have been able to service the unbanked and underbanked because to their technologies, which include blockchain, artificial intelligence, security, the Internet of Things, and computers.

The significance of this article lies in taking an in-depth look at China's Fintech industry and identifying the key factors that have propelled it to the forefront of global Fintech superpower status.

I. An overview of China’s FinTech idustry :

1- The Driving Factors of Rising Fintech in china :

Chinese financial technology's rise is largely due to several factors, which include :

1-1- Structural shortcomings in the traditional financial system :

Prior to the year 2000, China's financial industry lagged behind that of many other countries, and it was plagued by a number of serious issues. Chinese financial infrastructure (market credit system, financial institutions, and payment systems) was insufficient (Shim & Shin, 2016, p. 171), for that,in the past four decades China has deepened reforms, but the government has remained in direct control of many activities related to finance. Small and medium enterprises (SMEs) have been the hardest hit, with limited access to bank loans due to severe information asymmetry (Xu & Xu, 2019, p. 02).

In addition, China's underdeveloped consumer banking sector has also failed to meet the needs of its customers. Despite the fact that banks are expanding their coverage, not everyone are rushing to establish a traditional banking relationship, Traditional banks are perceived as providing customers with homogeneous, uncompetitive, and unimaginative financial products rather than adapting to their requirements (EY, DBS, 2016, p. 14)

1-2- Technological advances :

Although China's physical banking infrastructure is significantly less developed than that of the United States and Europe, its digital infrastructure is much more advanced. Specifically, China has more Internet users than the United States, India, and Japan combined, implying that in less than 20 years, half of the country's population has begun to use these networks (Gorjón, 2018, p. 03).

Up to December 2016, China had 731 million Internet users, with a yearly increase of 42.99 million. The Internet penetration rate reached 53.2%, up 2.9 percentage points from the end of 2015. As of December 2016, the number of mobile Internet users in China reached 695 million, an increase of 75.50 million from the end of 2015. Mobile netizens accounted for 95.1% of the total netizen population, while this percentage was 90.1% in 2015. (CNNIC, 2016, p. 01).

Despite growing concerns regarding the safety of mobile financial transactions. At the time, China's mobile online payment adoption rate was 57.7%, with more than one out of every two people utilizing their smartphone to perform financial transactions, mostly through Alibaba's Alipay or WeChat's payment service. With 6.3 billion mobile payment transactions completed in 2016, the value of mobile banking has continued to grow tremendously (EY, DBS, 2016, p. 14).

1-3- The high relative significance of E-commerce :

China has become the world's largest and most developed retail e-commerce market due to its high levels of internet and mobile penetration, According to consulting company McKinsey and Company, sales in 2015 were anticipated to be $630 billion. This is over 80% greater than the market in the United States, which China surpassed more than two years ago (ITC, 2016, p. 01).

At the same time, the growth of major online consumer marketplaces like Taobao (Alibaba), Tmall, and JD.com has turned the country's conventional physical retail infrastructure into an advantage, and Many fintech companies are financial affiliates focused on payments and transfers from third parties as a result of these e-commerce companies' rise (EY, DBS, 2016, p. 17).

1-4- Internet Giants Driving Innovation :

In contrast to the US and Europe where FinTech was driven by start-ups, or in some cases financial services incumbents, China's Internet giants have largely been the sources of capital for its FinTech firms (EY, DBS, 2016, p. 19).

Baidu, Alibaba, and Tencent, collectively known as the BATs, are three of China's most prominent technology companies, the BATs were all founded in the late 1990s and early 2000s with investment from transnational venture firms: Tencent in 1998 Alibaba in 1999, and Baidu in 2000.

The BATs dominate their competitors in China across that include e-commerce, digital entertainment, e-finance. Tencent, which runs WeChat, has access to over 1B users on its platform, while Baidu is the country's largest search provider, and Alibaba is its biggest e-commerce platform. In addition They are multiplying innovations in various areas such as artificial intelligence (AI).

1-5- Supportive regulatory environment :

The FinTech industry has had direct and open government support without which a large part of its growth might not have happened. This support including the creation of a circuit of public financing of start-ups through the setting up of State-owned investment funds, the granting of significant government subsidies and the opening of technology parks jointly financed by firms and other public agencies (Gorjón, 2018, p. 06).

2- The stages of China's Fintech industry growth :

China's FinTech business has progressed through three stages, each with distinct characteristics (WEF, 2021, p. 06) :

2-1- The first stage :computerization of finance 1984 – 2003 :

China's banking sector has been fully computerized, resulting in a modern payment infrastructure for the country's financial system. The Golden Card Project, which began in 1993, and the Data Centralization Project, which began in 1999, were both notable occurrences during this period. During this period, the dynamics of innovation were top-down, which meant that regulatory bodies dominated and planned the process, which was then executed by traditional financial institutions (which were state-owned and licensed).

2-2- The second stage : internetization of finance 2004 – 2014 :

The debut of Alipay in 2004 represented the defining event of this second innovation stage, as the internet began to play a critical role in financial firms, notably in personal banking. Alipay was the first Chinese firm to offer online payment services, and later, mobile payment services. PPDAI, China's first peer-to-peer (P2P) lending platform, launched in 2007. Yu'ebao, an online money market fund sales platform, was created in 2013. These financial innovations sparked a new wave of FinTech progress, and the dynamics of innovation during this stage were bottom-up, driven first by technology companies (which were often unlicensed at the time) and then embraced by traditional financial institutions, with regulatory authorities catching up later.

2-3- The third stage : intelligentization of finance 2015 until today :

The third and current innovation stage is characterized by intelligentization, which refers to the extensive and pervasive usage of D-BASIC technology to replace manual labor in financial businesses. D-BASIC technologies assisted financial institutions in lowering costs, increasing efficiency, and disrupting existing business models while also launching new ventures and products.

The selection of eight pilot companies for personal credit reporting licenses in 2015, the advent of internet-based microlending enterprises in 2017, and the quick growth of the online mutual assistance sector in 2018 were all significant occurrences during this period. This stage's dynamics are defined by a mix of top-down and bottom-up innovation. Technology companies, traditional financial institutions, and regulatory agencies are all still figuring out where they fit into the new ecosystem, competing in some areas and collaborating in others.

3– Fintech regulation Framework in China :

The People's Bank of China (PBC) led a group of ten government agencies and ministries to announce "Guiding Opinions on Promoting the Healthy Development of Internet Finance" (Guiding Opinions) on July 14, 2015, outlining policy aims and regulatory responsibilities for China's Fintech industry . There are three components to the Guiding Opinions (Hui Huang, 2021, pp. 08-09) :

*The first part indicates the overall policy of the Chinese goverment to encourage innovations and support the development of internet, finance.

*The second part attempts to divide regulatory responsibilities for internet finance amongst relevant regulator.

*The third part of the Guiding Opinions outlines eight regulatory propositions for the internet finance markets, serving as a basis for more detailed regulatory rules to be issued by relevant regulators in the future.

Table 01 : China’s Fintech Regulators

Regulator	Responsibility	Reference
PBC (established in 1948)	Internet payment	*Guiding Opinions 2015*
CSRC (established in 1992)	Crowdfunding Internet fund	
CBIRC (merged from CBRC and CIRC in 2018)	Internet lending (include P2P) Internet trust Internet consumer finance Internet insurance	
Local finance bureau (initiated by Shanghai in 2002)	Locally registered micro-finance companies, crowdfunding entities, etc.	National Financial Work Conference 2017

Committee	Responsibility	Note
Financial Stability and Development Committee	Oversee financial stability and related reform and development, including coordinating financial regulation	Established in November 2017 by the State Council
Fintech Committee	Strengthen fintech research and coordinate fintech regulation	Founded in May 2017, by the PBC

Self-regulation Associations	Note
National Internet Finance Association	Founded in 2014 by the PBC
Fintech Association (at city level)	Vary across cities

CBIRC = China Bank Insurance Regulatory Commission, CBRC = China Bank Regulatory Commission, CSRC = China Securities Regulatory Commission, CIRC = China Insurance Regulatory Commission, PBC = People's Bank of China, P2P = peer-to-peer.

Note: The CBIRC was founded in March 2018, when the PRC's central government implemented an institutional reform. The CBIRC is based on the former China Banking Regulatory Commission (established in 2003) and the China Securities Regulatory Commission (established in 1998).

Source : (Xu & Xu, 2019, p. 05)

we note that PBC is a pioneer in financial technology regulation and growth strategies. Strengthening Fintech legislation and policies. On May 15, 2017, the PBC announced the formation of a new committee to investigate the effects of fintech development on monetary policy, financial markets, financial stability, payment and clearing mechanisms. The principles of fintech oversight were described as “integrity, security, inclusion, and openness” at a meeting on March 8, 2019 (Xu & Xu, 2019, p. 06).

In addition to governmental agencies, there are a number of self-regulatory organizations which are subject to regulatory oversight by the relevant governmental regulatory agencies. The National Internet Finance Association of China (NIFA) was founded on March 25, 2016, as a national self-regulatory body in the field of internet finance in China, (NIFA) was established with the goals of regulating industry institutions' market behaviors, protecting the industry's legitimate rights and interests, encouraging industry institutions to better contribute to social and economic development, and guiding the industry's compliant and sustainable development through self-regulatory management and membership services (Xiang, Zhang, Wang , & Huang , 2017, p. 153).

II. The Trends of China’s Fintech Industry :

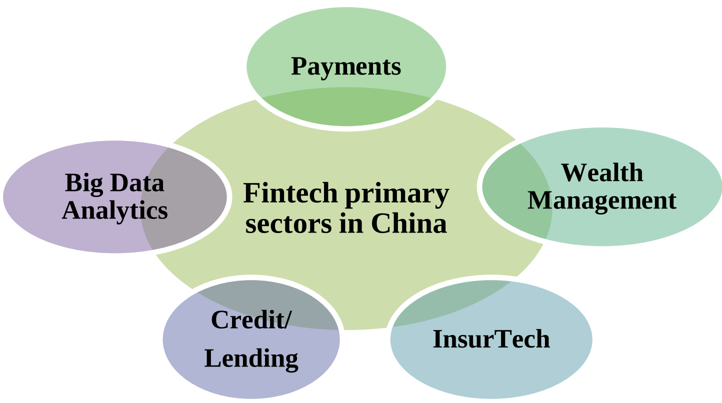
1- Primary Fintech Areas in China :

FinTech industry in china divide into four components (AIF, 2020, p. 15):

- **Internet Banking, Securities and Insurance:** concentrating on the financial sector's adoption of technology It refers to the process of doing banking, securities, and insurance transactions entirely over the Internet.
- **Alternative Finance :** concentrating on technology-enabled finance, such as comprehensive FinTech (covering multiple alternative finance sectors), third-party payment, marketplace lending, and crowdfunding.
- **Digitisation of the Financial Sector :** concentrating on the financial sector's adoption of technology Traditional financial services providers, such as banks, securities firms, insurance firms, investment funds, and trusts, are using technology to transform their businesses through digitisation and technological transformation.
- **FinTech Infrastructure :** concentrating on technology empowering finance, acting as the underlying support for the above related FinTech business models and associated applications, including financial support services such as exchanges and credit rating, and technological support services such as AI, big data, Cloud Computing, blockchain, information securities

In payments and alternative financing, China's FinTech sector is particularly powerful With new subsectors and technologies obtaining fast tractiveness, China is emerging as a global FinTech powerhouse, with maturity in multiple subsectors (EY, 2016, p. 15) as shown in the Figure below.

Figure 01 : Fintech primary sectors in China



Source : Prepared by the researcher

- **Payments :** Since June 2020, China has reached 805 million online payment users. The value of mobile payments in the first half of the year was CNY196.98 trillion with a continuous enrichment of the mobile payment application scenarios, representing the highest annual increase of CNY196.6 per cent in the world for three consecutive years (KPMG, 2020, p. 25).
- **Wealth Management :** As the total wealth of the society continues to grow, HNWI's needs for wealth management have become increasingly diversified and concentrated towards top institutions with mature service systems (China Merchants Bank, 2021, p. 01), the utilisation rates of online wealth management 17.2% , uptake of online wealth

management is relatively low because a large proportion of the elderly population continues to have qualms about using the internet (Dongrong, 2021).

- **Credit/Lending :** Internet lending facilitated by Chinese fintech heavyweights was virtually non-existent before 2014 but now helps source, according to some analysts, about 30% of the country's consumer loans (Reuters, 2021).
- **InsurTech :** China's InsurTech scene has become one of the most innovative and closely watched segments in the insurance world. Last year 2020, APAC-based InsurTechs attracted approximately $1.4bn in funding, with those in China accounting for more than half of the capital raised at $800m (Abbas, 2021).
- **Big Data Analytics :** Leading FinTech companies are increasingly using Big-data analytics to improve their understanding of the market and their customers by developing Know-Your-Product (KYP) and Know-Your-Customer (KYC) capabilities. They also employ such methods to aid in the development of more innovative products and dynamic pricing (Sheng, Yip , & Cheng, 2017, p. 18), According to the Report on the Development of China's Big Data Sector in 2019 by the China Industrial Control Systems Cyber Emergency Response Team, the country's big data sector was worth RMB850 billion in 2019 and will grow to more than RMB 1 trillion in 2020 (Hu & Keller, 2021, p. 12).

2- Leading Fintech Companies in China :

Chinese FinTech behemoths are expanding swiftly around the world and spending heavily in next-generation technologies. Chinese corporations led the ranking list in 2020, according to a Hurun Research Institute survey, with competition from American companies, There are 63 FinTech unicorn enterprises globally, including 21 in the United States, with a total value of $84 billion, and 18 in China, with a total value of US$239 billion (CIWTeam, 2020), (unicorn companies given to privately held start-ups valued at over $1 billion).

On the other hand, accounting giant KPMG recently released its latest list of China's leading financial technology companies, which includes the top 50 companies for the year 2020, demonstrating the fierce competition between established players and smaller emerging companies, as well as the market's diversity and dynamism. Five representative companies were chosen as a result of our research, and they outperformed other companies in their respective industries, a summary of this companies is presented on Table 01.

Table 02 : Big five Fintech Companies in China

Company Name	Company Description	Business Lines Main Services	total revenue	International Expansion
Ant Financial 蚂蚁金服 ANT FINANCIAL	Ant Group is the parent company of the mobile payment platform Alipay and the world's leading	* Mobile Payments (Alipay) * Wealth Management * Lending	$18.5B (2019)	Ant Group has presence in more than 200 countries and regions in the online transactions sector

	open platform for financial technology. Founded 2004 (Alipay), 2014 incorporated As Ant Financial.	* Insurance * Credit Scoring *Offer services to individuals and MSMEs and enhancing financial inclusion.		through Alipay
JD Digits (Formerly JD Finance)	JD Technology was firstly established by JD.com as JD Finance in 2013. In 2018, JD Finance decided to reflect a new focus as a broader "tech" platform, altering its name to JD Digits.	* Online Financial Services Provider * Consumer Credit * Wealth Management * Supply Chain Finance * Payment Services * Crowdfunding * Insurance * Securities	$1.6B (in the first half of 2020)	In 2017, it established a joint venture, Central JD Fintech, with Thai retail giant Central Group
Tencent	Founded in 1998, offers a range of services such as cloud computing, advertising, FinTech, and other enterprise services.	* Mobile Payments(WeChat Pay, QQ Wallet (QQ) *Wealth Management (Licai Tong) * Lending * Insurance * Credit Scoring	$34.2B (in the first half of 2020)	**Europe** (partnered with SafeCharge and Wirecard in 2017 to facilitate the use of WeChat Pay by European retailers) **South East Asia** entered the mobile payment sectors of the Philippines, Indonesia, Singapore, Thailand, Malaysia, Vietnam
Ping An	Founded in 1988, as the first joint-stock insurance company in China, Ping An has grown into a Fortune Global 500 company and one of the world's most valuable brands.	*Mobile Payments (Ping An One Wallet) *Insurance *Wealth Management (Lufax) *Lending (Ping An Consumer	$179B (2019)	* Ping An Global Voyager Fund was launched in May 2017, Fund has invested approximately USD 300 million across Europe, Asia and North America in 2020.

		Finance)		* in 2019 partnered with the FinTech subsidiary of Union Bank of the Philippines. * In 2020, Swiss Reinsurance, the world's largest reinsurer, and OneConnect announced a partnership to bring a digital end-to-end solution (Swiss Re Smart Claims)
Du Xiaoman Financial (formerly Baidu Financial)	DuXiaoman Financial is the FinTech arm of Baidu, It was previously known as Baidu Financial Services Group (Baidu FSG), founded in 2015. In 2018, it was separated from Baidu and became Du Xiaoman Financial.	*Online Financial Services Provider *Short-term lending *Consumer Finance *Online Banking *Online Insurance *Wealth and Fund Management *Financial Asset Transaction Platform Services	/	focuses on the domestic market

Source : Prepared by the researcher based on : (FAS, 2018)**,** (KPMG, H2 Ventures, 2018)**,** (Zhu, 2021)**,** (Ant group, 2021)**,** (Tencent, 2021)**,** (Ping An, 2021)**.**

The domestic FinTech market is dominated by Ant Group and Tencent. Their advantages stem from their experience and early entry into the market, By the end of March 2018, together with their JV partners, Ant Financial served 870 million users worldwide (KPMG, H2 Ventures, 2018, p. 12), and in the first half of 2020. Ant Group's digital wallet served 1.2 billion customers in 2019, a 20% increase from the previous year (Zhu, 2021, p. 41).

Tencent's WeChatPay is a duopoly over China's mobile payment system, with Ant Group's Alipay. Caixin reports that 54.2% of the mobile payment market was owned by Alipay, and 39.5% were held by WeChat Pay in the second quarter of 2019. 77 It can be claimed that China's third party payment market was built by the two heavyweights. They also rival each other fiercely (Zhu, 2021, p. 30).

Figure 02 : Tencent and Ant group's FinTech Ecosystems

Source : (SCMP RESEARCH, 2020, p. 19)

Ping An, Du Xiaoman Financial, and JD Digits, on the other hand, place a greater focus on offering tech solutions than competing for financial services with other FinTech businesses and financial institutions, As an example, As of December 31, 2020, the app users of Ping An's core financial companies increased by 61.62 million from the beginning of 2020 to 407 million, and provided over 218 million retail customers with over 10,000 financial products (Ping An, 2020, p. 16), while JD Digits has offered digital solutions to more than 600 financial institutions. By the end of the month of June 2020 (Zhu, 2021).

For traditional financial institutions, cooperation with FinTech businesses seeks to improve financial services, Fintech subsidiaries of banks can serve to amplify the bank's technological advantage the financial institutions will eventually develop their own market approaches,innovation points and commercial models (KPMG, 2018, p. 12). Bank of China, for example, created a new company called BOC Consumer Finance and teamed with Tencent to build a fintech lab. In addition, the Industrial and Commercial Bank of China teamed up with JD Finance to digitize its services, while the Agricultural Bank of China teamed up with Baidu and China Construction Bank with Ant Financial (Xu & Xu, 2019, p. 02). Another example is China's CITIC Bank's partnership with Baidu, the world's largest search engine, and the Bank of Beijing's collaboration with Tencent. This indicates that, rather than competing directly, FinTech players can put themselves in a stronger position by cooperating in mutually advantageous ways (Preen, 2017, p. 02).

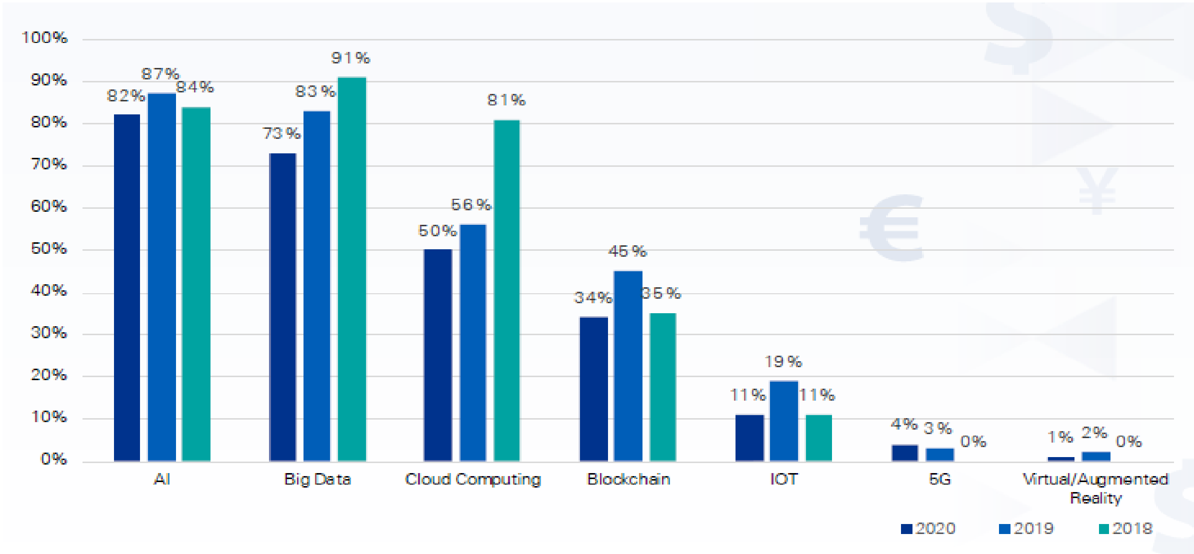
3- Intelligent technology adoption by Chinese FinTech companies:

China is the world's fastest growing and most dynamic market for emerging digital technologies, with rapid and large-scale deployments of 5G, advanced AI, IoT, and blockchain-based technologies (Figue 03) . Its digital economy accounts for 30% of its GDP. China's total import and export of high-tech products surpassed 1.5 trillion US dollars in 2019 (cbbc, 2021).

In a supportive political context, China's government encouraged development of new technologies by developing large-scale research finance and attractive incentives for tech entrepreneurs. Advances in technology and innovation are at the heart of China's 14th Five-Year Plan, which prioritises becoming a worldwide superpower by 2050. In 2015, the Made in China 2025 Strategy, a 10-year national plan to expand high technology manufacturing in

China such as IT and robots, was outlined. This attempts to expedite China's move to an innovation-based economy from low-value-added manufacturing (cbbc, 2021).

Figure 03 : Distribution of main technological elements in China



Source : (KPMG, 2020, p. 17)

Many problems in the financial industry necessitate the use of new technologies or model innovations based on technological applications, and for FinTech companies in China, they support the financial services industry by utilizing new technologies such as :

- **Artificial Intelligence (AI) :**

The U.S. National Security Commission on Artificial Intelligence released its final report recently, listing China as a strategic competitor to the United States in this field. The report describes China as a U.S. peer in many areas and an AI leader in some areas (Hsu, 2021), and PwC predicts that AI technologies could contribute a 26% boost to GDP by 2030.

By 2025, China intends to boost the production of the main IA industries to RMB400 billions, with its core sectors worth more than RMB1 trillion by 2030, to become the global leader for AI theory, technologies, and application. According to iResearch, by 2022 FinTechs is going to spend RMB58 billion on AI (WEF, 2021, p. 12).

In China, AI's application scenarios in financial industry has four aspects (PWC, 2018, p. 03):

- Speech recognition and natural language processing applications, such as smart customer service and voice data mining;

- Service robotics applications, such as room inspection and intelligence robot ;

- Machine learning, neural network application and knowledge map, such as customer persona, anti-fraud, intelligent risk control and robo-advisor ;

- Computer vision and biometrics applications, such as portrait surveillance warning, employee irregularities monitoring and core area security monitoring.

- **Blockchain :**

China has set out to develop national blockchain standard and policy frameworks. Blockchain is listed as one of the key cutting-edge technologies in its 13th Five-Year National Plan, which was published at the end of 2016. So far, major Chinese tech companies such as Alibaba, Baidu, Tencent, HUAWEI, JD, and Ping An Group have independently developed blockchain projects. According to online patent search engine Innojoy, over 10,000 blockchain-related patents have been filed with the China National Intellectual Property Administration (CNIPA). Leading the pack is Alibaba Group with 543 patents, followed by state-owned telecom company China Unicom with 214 patents (Forkast Insights, 2020, p. 21), It should be noted that Within the banking industry in 2019, payment settlement , supply chain finance, and cross-border payment are the three business areas with the largest number of blockchain patent applications (Wang & Stuckert, 2020, p. 29).

- **Cloud computing :**

Mobile connectivity, data-based AI and blockchain are enabled by cloud computing is the cornerstone of all digital technologies (WEF, 2021, p. 12) , China was the second-largest cloud infrastructure services market after the US, accounting for 14% of global investment, up from 12% in Q1 2020 (CIW , 2021) ,According to data from IDC, in 2020, public cloud market size in China was USD 19.38 billion (Peng, 2021).

- **The Internet of Things (IoT) :**

The Internet of things IoT alleviates the information asymmetry between fintech players and their customers, as valuable information can be gathered and analysed in real time, yielding predictions, feedback, and information-based decision making (Sheng, Yip , & Cheng, 2017, p. 18), The latest "China Financial Cloud Market (Second Half of 2019) Tracking" report released by International Data Corporation (IDC) shows that China's financial cloud market reached 3.34 billion U.S. dollars in 2019, a year-on-year increase of 49.6% . Among them, the financial cloud infrastructure and cloud solutions market basically maintained synchronous growth, with growth rates reaching 50.0% and 48.6% respectively (IDC, 2020), China's spending on IoT is expected to reach around 300 billion U.S. dollars by 2024, with the compound annual growth rate to stand at 13 percent in the next five years, data from global market research firm International Data Corporation (IDC) showed. In 2024, the country's spending on IoT will account for 26.7 percent of global spending in the sector, followed by the United States at 23.8 percent and Western Europe at 23.4 percent, IDC data showed (huaxia, 2021).

III. The future of China's FinTech industry :

Although the size and extent of the Chinese FinTech business is undisputed, the FinTech industry will certainly face fresh challenges and opportunities, these will surely influence its future shape. In the short run, the most notable challenges will be :

- **Internationalization :**

Chinese FinTech is advancing at an incredible rate, one that the rest of the world is attempting to match, As Chinese companies expand beyond China, they face internationalization challenges, and internationalization should: develop advanced technology to handle transactions; open the global settlement network; overcome international payment obstacles; and enhance the opportunities for these Chinese technology companies to turn financial services into a lifestyle product (EY, DBS, 2016, p. 39). And perhaps the biggest opportunity internationally is for China's fintechs to collaborate with traditional financial institutions, providing them with the tools necessary to compete in the new economy (SCMP RESEARCH, 2020, p. 42).

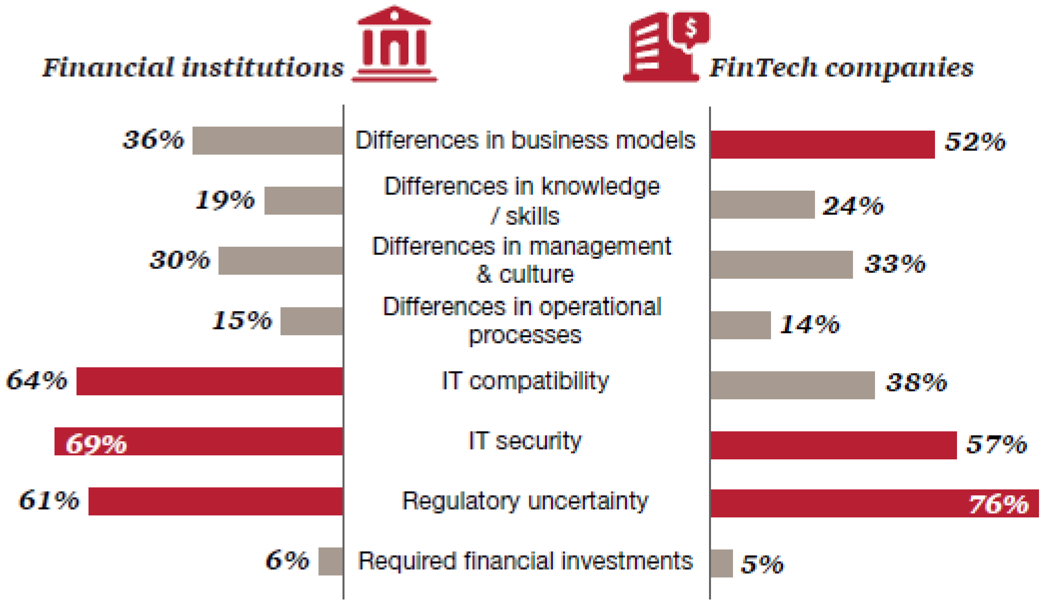
- **RegTech and FinTech risks :**

The FinTech businesses, in particular, have the typical features of large numbers of customers and very rapid transmission of risks, and its the same for Big Tech platforms, so the regulatory framework needs to apply digital technology (RegTech) in regulating FinTech and other financial businesses.on the other hand ,to keep up with the fast-paced developments in the FinTech industry, China need to develop new techniques such as "sandbox" in order to balance between FinTech innovation and financial stability. (Huang, 2020, pp. 14-15).

- **Regulatory challenges:**

According to a 2017 poll done by PWS, Some Chinese respondents believe that regulations have stifled innovation. The main obstacles they cite are those related to new business models, data storage, privacy and security, and initiatives such as anti-money laundering (AML) and Know-Your-Customer (KYC) (KYC). It is also the case for collaboration between financial institutions and FinTech firms, as they both see regulatory uncertainty as one of the top three barriers (Figure 04), so It is obvious that FinTech regulations must evolve in tandem with the market. The key is to strike a balance between risk and innovation (pwc, 2017, p. 11).

Figure 04 : Challenges in working with one another, financial institutions vs. FinTech companies



Source : (pwc, 2017, p. 17)

- **Blockchain challenges :**

In China, blockchain initiatives are still in their infancy, with big banks only recently commissioning proofs of concept and pilot projects for blockchain applications (WANG & H UA N G, 2017, p. 12), Hence, it is still too early to accurately evaluate China's blockchain strategy. However, it is possible to register emerging geopolitical and geoeconomic challenges as well as political challenges arising from blockchain development in China since a truly decentralised blockchain challenges authoritarian governments' capacity to maintain rigorous control of their populations (Ekman, 2021, p. 06).

On the other hand, blockchain technology is not a cure-all for all problems. Not all real-world scenarios lend themselves to blockchain. Most enterprise-level blockchain projects in China are still in the early stages of development. Exaggerating the functions of blockchain may result in unnecessary business costs and even waste of social resources (Zhao, 2020).

- **The restrictions on cryptocurrency operations :**

In 2013, the Chinese People's Bank (PBOC) prohibited banks from conducting Bitcoin transactions and in 2017 prohibited ICO's and domestic cryptocurrency exchanges. To justify the restriction, the PBOC defined public funding without the consent of Chinese legislation as ICO finance (in which virtual currencies like Bitcoin and Ethereum raising through irregular sale and distribution of tokens) as unlawful. in addition , the Speculation in the cryptocurrency market can lead to an asset bubble and large volatility, cryptocurrency can also be used for illegal purposes without leaving a trace (Xu & Xu, 2019, p. 17).

China's State Council's Financial Stability Committee vowed to crack down on the cryptocurrency's mining and trading activities in May 2021, however, onshore Chinese investors could still trade cryptocurrency on platforms owned by overseas exchanges, as the price of bitcoin jumped multiple times since late 2020, Chinese trading activities also heated up (Ma, 2021).

in the near future There's no sign that China will lift or loosen its cryptocurrency ban anytime soon, but recent moves imply that the government wants to position the country as a crypto leader. Statements from Chinese government officials endorsing blockchain technology, extensive trial and testing of the central bank's digital currency (the digital yuan), a joint venture with SWIFT (the international payment and cross-border payment gateway), and the continued status of crypto mining in China are among the recent developments (ComplyAdvantage, 2021).

- **Development Trends of New Technologies :**

Technological innovation is the driving force behind the digital economy's rapid growth, According to a study carried out by PCW in 2020, the main areas of technological breakthrough in FinTech in the next 3 years : big data analytics 28%, artificial intelligence (AI) 23%, cloud computing 20%, robotic process automation (RPA) 17%, blockchain 12% (PWC, 2020, p. 27), Looking ahead to the future, the FinTech companies in China will need to highlight its technological advantages, employ this technologies in a comprehensive and thoroughly interconnected manner with traditional financial institutions to ensure that the China's FinTech sector maintains its global supremacy.

Conclusion :

The success of the FinTech industry in China is, by any reckoning, undeniable. It is further the goal to which other similar firms in both industrialised and emerging countries generally aspire, However, this achievement has required a set of specific circumstances that are not easily replicable elsewhere. (Gorjón, 2018, p. 09). The growth of China's fintech industry is inextricably related to the government's supportive policy, and the technological prowess of the country that has enabled a rapid transformation of the Chinese financial system and changing patterns of competition and cooperation

Otherwise , China's FinTech sector's exponential growth and success has been heavily driven by tech businesses entering the FS market, leveraging their huge customer bases to gain significant traction. This has allowed them to quickly invest in building and acquiring FS functions to generate further growth and expansion. Despite FinTech's success in China, it will undoubtedly encounter hurdles in the future, the most significant of which is a more stringent regulatory approach, as regulators must strike a balance between innovation and risk.

Finally, China's FinTech firms will continue to expand their global footprints and their future innovations will benefit not only domestic users and businesses but also societies around the world (Hu & Keller, 2021, p. 21).

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