

# Smart Transformation of Bank Branches: Another Step in Industry 4.0

<sup>1</sup>Xiaoyan, Liu

**Abstract---** *With the advent of the digital age, as a traditional and central channel of financial services, banks are facing unprecedented shocks and challenges. The development of technology, the general improvement of consumers' education level and the diversification of Information channels, all of these factors have prompted great changes in customers' consumption habits and behaviors. At the same time, Internet giants and P2P platforms quickly enter the field of financial services that bring new challenges to traditional banking business. Different from the bank's trading model, these Internet financial companies establish direct contact with consumers through social networks or e-commerce, and launch financial products and services, which greatly increase consumer "stickiness". Due to the high cost of traditional branches and the booming of other digital channels (online banking and mobile banking), physical branches become the most threatened areas in the digitization process. In order to break through the dilemma, the physical branch is also looking for its own position in the transformation iteration. For example, some banks have chosen to establish smart branches while some banks have closed physical branches substantially. So far, there are some controversies in management. Therefore, the purpose of this research is to clarify the significance of physical branches and point out that "smart" is the development direction of physical branches. In practice, the physical branch is still an important part of the banking system in the information age, as the terminal window of the brand image's display and the integration platform for service customers. Smart branch is based on the Internet of things and integrates recognition technology, robot-adviser, VR technology, and other smart technologies. This kind of advanced smart service brings the client to customers' excellent experiences such as seamless and timely response. Therefore, this study believes that physical branches should exist, and they should follow the trend of digitization and actively transform to the direction of smart branches, that is the inevitable stage of the development of banking industry.*

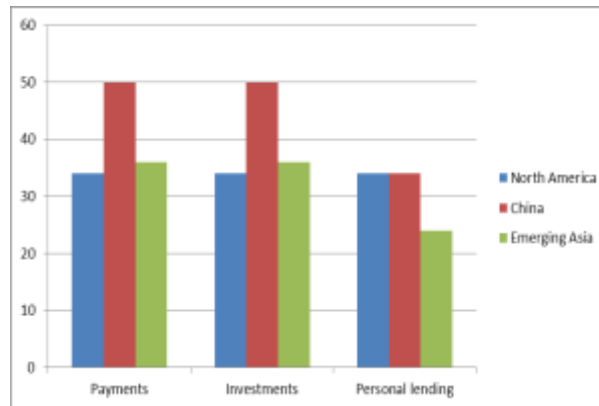
**Keywords---** *Bank Branch; Smart transformation; Industry 4.0*

## I. CHALLENGES OF THE BANKING INDUSTRY

Nowadays, most of banks are facing a severe environment and stress from customers and competitor (Kinnunen, 2018). With the development of science and technology, consumers' consumption habits, preference, and behaviors have changed dramatically. Firstly, comparing with the early stage, consumers have stronger autonomy and selectivity in financial services. Base on the improvement of consumers' education level and the maturity of the market, consumers no longer passively receive the services provided by banks' advice, they can make more independent decisions in the fields of financial management, investment and financing (Alt, Beck, & Smits, 2018). Moreover, consumers are becoming more digitalized in the practice transaction (Sivasankaran, 2017). For example, IBM report has shown that China's mobile banking transactions reached 158.7 trillion Yuan in 2016, up 118.6 percent year-on-year, further forecast that online banking and mobile banking transactions in China would continue to grow much faster than the rest of the world over the next three years. The trend of cashless consumption has emerged that consumers do not need to bring cash, and complete the whole day's living expenses only by mobile payment (Xu,

Ghose, & Xiao, 2018). In the fierce industry competition, Fin-tech, Internet giants and P2P platforms have rapidly entered the financial services sector on behalf of Internet companies, bringing unprecedented challenges to the traditional banking business, affecting the bank's financial intermediary status and its core business such as payment, person lending, and investment, see figure 1 (EY, 2018).

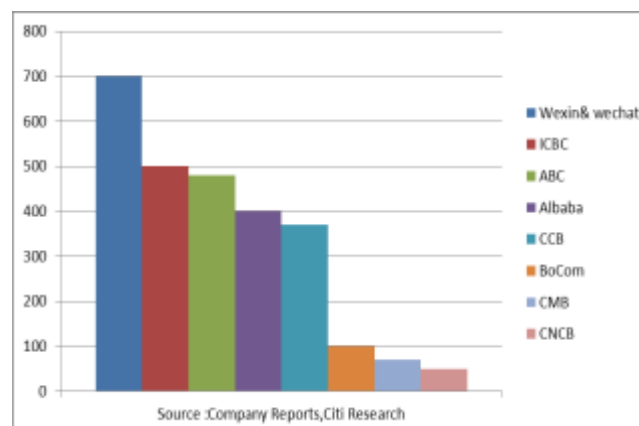
**Figure 1 Disruptive Models by 2025**



Source: Citi GPS Research Bank of the Future 2018

Different from the banks' transaction model, these companies establish direct connections with consumers through social networking or e-commerce. They launch financial products and services directly to the customer, which greatly increase the stickiness of consumers (Leong, Tan, Xiao, Tan, & Sun, 2017). Therefore, the advantages of traditional banks' financial products based on intensive knowledge and complex technologies have been weakened. Internet financial institutions have seized the financial market share and reshaped the financial landscape (Miao & Jayakar, 2016). Due to the de-intermediation and the low cost of the Internet, Internet finance breaks the characteristics of commercial bank solidification and attracts customers of commercial banks. Therefore, it has a large number of customer and financial resources, which has an impact on the main position of the bank in the financial service sector and comprehensively squeeze the future development space of banks. This situation is particularly special and serious in China. Following figure 1.2, in 2016, these internet giants' clients exceeded the traditional state-owned that is the industrial and commercial bank of China (ICBC), agricultural bank of China (ABC), China construction bank banks (CCB) that dominated the Chinese banking industry. WeChat clients' number won these banks and ranked number one of China's financial industry. Alibaba was beyond most banks accounted for the fourth.

**Figure 2 Customer Numbers at Bank and Internet Companies, 2016 (in million)**



For a long time, due to banks have an absolute advantage over non-financial institutions in terms of policy dividends, capital costs, credit costs, and operating costs in the past. However, with the development of society, the status of banks has been affected by various shocks. Banks are facing the risk of being marginalized. As new financial forces involve and continue to erode the banking business, financial substitution effects are increasingly apparent: customer churn, squeezed media channels, and increased competition.

## **II. PHYSICAL BRANCH CLOSURE AND SMART TRANSFORMATION**

Because of the high cost and inefficiency of the physical branch, requires a large capital investment in actual operations and labor force. According to CEB Tower Group (2013), the average transaction cost of a branch is about 20 times than mobile banking, and 40 times than online banking. The truth is that physical branches are expensive, accounting for a significant proportion of the cost base of banks, for example, labor and land cost around 50% of the total expenses of a bank(Kai et al., 2017).In addition to, compare to digital banking, traditional branches cannot give customers a superior experience(Komulainen & Makkonen, 2018). These reasons lead to the physical branch has become the hardest hit by the banking dilemma. High-cost operating, inefficient, unsatisfactory customers mean that physical branches must fundamentally change the way they operate.In this emergency situation, some banks have largely closed the physical branches of banks as a cost reduction strategy to maintain competitiveness and solve the dilemma(Abhishek, Geng, Li, & Zhou, 2017). The World Bank organization predicts that the total number of bank branches will be reduced by one third in 2025 around the world. In fact, in 10 years, the branch network of European banks has decreased by an average of 36% (EY, 2018).In practice, the branch as the traditional channel is still an important part of the bank. Physical branch is the most basic channel in the bank, The overall operating efficiency of bank branches directly affects the overall operating efficiency of banks(Abhishek et al., 2017;Taurisano, 2019).Physical branch has its necessary existence in the system of bank. First, the physical branch represents a long-term accumulation of rich customer resources and a safe and stable brand image. Bank staff appearance, interactive ability, equipment, atmosphere are important basis cognitions for consumers to understand and evaluate service quality and bank image, and they affect consumers' expectations and feelings about services directly. Therefore, these elements are used as the carrier of service marketing, and physical branches are effective and intuitive "tangible display" in banking service marketing (Kabir, 2018). Second, compared to Internet finance, physical branch can solve more complex, more personalized, and more experience-oriented financial needs(Oscar Granados, 2018). According to consumer preferences and consumer behavior, a large proportion of consumers prefer to go to physical branches to handle complex business. A recent survey by PWC has shown that physical branch is still the preferred channel of clients to deal with some certain types of transactions such as new loans, open checking/savings accounts,applies for brokerage/investment accounts accept proposals for financial products, and so on(PWC Financial Services, 2018).In particular, branches continue to exist as an advisory resource. It used to be the only place where people traded in banks in the past period, and now it has become an important place for clients to seek ready-made "personal" advice, expertise and services. The important point is that although clients like the speed and convenience of digital platforms and services, there are still other clients who visit their bank branches to conduct banking business and prefer to interact with bankersdirectly(Proctor & Live, 2018). In addition, for traditional Banks, after decades of vigorous development, huge manpower and material resources have been invested in bank branches, and the mass closure of physical branches has also brought great losses to banks. Actually, closing physical branches is not the only way to solve this problem. Physical branches should remain in the banking system.

However, banks must focus on supporting and supplementing omnichannel services, adding more value to branches and their core businesses, reducing the size and cost of branches, satisfying customers and maintaining profitability, providing an excellent experience for customers, and strengthening customer service to maintain customers. The transformation of smart branches is an important solution in the competition(Mani, 2018). Current

society has gone through the stages of agriculture, industrialization, and digitalization, and is crossing the threshold of the era of intellectualization, namely, Industry 4.0 time. Following Industry 4.0 era is coming, the development of Internet of Things, Intelligent Technology, Biometrics, Cloud Computing and other technologies, the various innovative applications for individual, family, and organization emerge in endlessly. Therefore, in the context of industry 4.0, smart services developed on the basis of smart technologies rapidly cover traditional industries, bringing new vitality to the economy such as logistics, tourism, finance, manufacturing, energy supply, healthcare (Beverungen et al., 2017). It also brings new opportunities and breakthroughs to the banking industry, so it is imperative to transform the smart of physical branches (Lande, Meshram, & Deshmukh, 2018).

### III. SMART BRANCH

In 2008, IBM proposed the idea of a "smarter planet". "Smart" has been added to the concepts of Smart City and Smart Planet by IBM, namely, innovative use of technology to achieve resource optimization, effective and fair governance, sustainable development and life improvement (Paroutis, Bennett, & Heracleous, 2013). In the concept of Smart Earth, IBM recommended that smart banking is an important part, it as a service guarantee for the development of a modern economy should be managed and operated in a more intelligent way (Li, Lin, & Geertman, 2015). The concept of smart banking was first proposed by Chris in 2010 (Lande et al., 2018). Smart banking as the advanced stage of traditional bank and Internet bank, that is a highly smart financial service form in which bank enterprises examine their own needs with smart means, new thinking mode, and innovative technology (smart devices, internet, digital media, human-computer interaction, etc.) to allocate resources efficiently, penetrate customer needs acutely, and respond flexibly and rapidly. Omnichannel integration and seamless connectivity is the most important feature of smart banking. Therefore, at this stage of the industry transformation, not only pushes forward the Internet banking and mobile banking development but also need to carry out the intelligent upgrading and transformation of the physical branch. As IBM reported in 2017, the upgrading of smart banking has entered a rapid transformation stage of the smart branch after the vigorous development of Internet banking and mobile banking. This off-line intelligent device combines online banking, mobile banking, and other products effectively reduce manpower and operating costs and contribute to the transformation of the "lightweight" banking industry (Larsson and Viitaoja, 2017). The banking industry is further developing into a smart banking phase with omnichannel. Over the two decades, the banking industry has stood rapid iterations, its virtual channel basically completing the transition from traditional banking to E-banking/Mobile-banking. However, in the sustained developing of the digital environment, physical branch as the physical channel of smart banking has been looking for its positioning and upgrade changes in the transformation iteration, which as a terminal window for the display of bank images and a contact integration platform for service customers. Therefore, there is no uniform definition and mature model for the smart branch, whether in academia or in marketing (Taurisano, 2019). One of the important contributions of this research is to preliminarily define the concept and basic framework of a smart bank branch, which provides direction and material for future managers.

As a highly intelligent network, smart branch refers to an intelligent and comprehensive financial service platform integrates the current frontier technology elements such as robots, VR, AR, face recognition, voice navigation, and holographic projection by fully utilizing the latest smart technology (McKinsey, 2018). Jiang, Wang, Ichinose, and He (2016) have proposed that the smart branch is an important stage in the development of smart banking. By changing the traditional operation mode, investing in smart devices, utilizing smart technologies, the bank integrates marketing channels to achieve seamless service, optimizes service flow, and provides personalized service to customers, thereby enhancing customer experience and stickiness, and re-exploiting the advantages of physical networks. This personalized sale approach and the unified full-channel user experience, meaning that customers can get seamless experience online from any channel. Smart branches use technology to promote sales

and significantly improve customer experience. It changes the traditional operation of branches (reducing staffing) and changes customer interaction (targeted, relevant sales and services to sales plans), so as to improve the efficiency of branches and save costs(Ammirato, Sofo, Felicetti, & Raso, 2018).

#### **IV. SMART BRANCH LAYOUT**

In fact, the format of smart branches is a complex issue. It not only affects customer satisfaction but also has a significant impact on financial performance. According to the McKinsey's report, there are four main forms based on customer segmentation, customer needs, and resource allocation: Box Branch, Standard Branch, Segment Branch, Flagship Branch(Taurisano, 2019).As a result, they use different devices and layouts. Generally speaking, there are some similarities. In terms of banking layout, it is divided into the following four regions according to the needs: reception, self-service area, functions area, service area. In terms of facilities, they have introduced smart machines, such as face-brushing withdrawal, robot service, VR technology, intelligent teller machine, VTM machine, cash recycle system(CRS) and so on(Jiang, Wang, Ichinose, & He, 2016b).

#### **V. CHARACTERISTICS OF SMART BANKBRANCH**

The purpose of the smart branch is that remove the barriers between traditional channels, and use advanced technology to improve the existing processes and customer service models (Chugunov et al., 2016). In order to achieve the target, the three important elements of the construction of smart branch: customer experience, operational processes and business model(Pramanik, Kirtania, & Pani, 2019), the details as follow:

##### **V.I. Use of advanced technology and smart devices**

The main characteristics of the smart branch are intelligent, remote and personalized, and their implementation mainly relies on technological transformation and innovative application. The essence of smart branch transformation refers to experience improvement, process reengineering and service transformation. In the process, new smart technologies and equipment play a primary role in the application deployment of the smart branch. For example, the application of cloud computing and big data to process massive amounts of customer information data enable banks to implement information push and accurate customer classification efficiently(Lande et al., 2018). Fingerprint recognition, face recognition, iris recognition and other biotechnology applications in the financial field, they do not only provide a convenient way for customers but also ensure the safety of transaction(Ammirato et al., 2018).

##### **V.II. Business process reengineering**

Business process reengineering (BPR) is the most important characteristic of the smart branch. Compared with a traditional physical self-service outlet, the smart branch is not only a simple stack of new technologies and new equipment but also refined management to promote lean services that are an inevitable stage of bank development. Its construction process is a process of channel integration and strengthening channel synergy. Traditional network upgrades focus on hardware retrofits. The true charm of smart branch lies in the support of powerful scientific and technological forces, the transformation and upgrading of business processes and the reshaping of the omnichannel system, and the creation of a system of the bank (Pramanik et al., 2019). It greatly improves service performance and provides customers with convenient and real-time service, so it is a fundamental difference compared with the traditional bank branch.

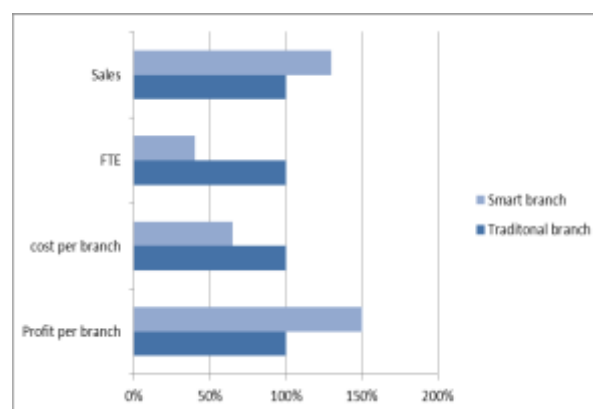
##### **V.III. Customer-center Insight**

Smart branch is a customer-centered service form. It makes rational use of technology, management, and other means to achieve digitization, accurate measurement and interconnection in all aspects of a branch operation, eliminate inherent opacity and uncertainty and improve the overall customer experience (Pramanik et al., 2019). Firstly, a more thorough sense and measurement of customer needs. For example, the smart branch conducts user experience analysis and data value analysis on the interaction process between customers and Banks, identifies key nodes and demands requiring informatization, and realizes customer classification and accurate marketing. Secondly, it achieves more comprehensive connectivity with customers. Create information sharing and process integration within the branch to achieve multi-dimensional collaboration between customers and bank personnel. Thirdly, smart branch brings more convenient services to customers. Smart devices such as automatic card issuing machines, automatic foreign currency exchange machines, and VIM can simplify the process. Robot, intelligent face recognition technology and intelligent online customer service support customers to get excellence service experience(Makarchenko, Nerkararian, & Shmeleva, 2016).

## VI. ADVANTAGES OF SMART BRANCH

The implementation of technologies and digital solutions typical of smart branches will increase the level of process automation of different types of activities, resulting in a minimum of 15% cost savings on front-office, middle-office, and back-office activities for the majority of banks (Cognizant, 2015). Following figure 4 (Taurisano, 2019),It shows the contrast between traditional branches and smart branches in terms of operating ability and performance, with smart branches winning by a huge margin. Among them,Smart Branch has 30% more sales than traditional Branch, 60% less Full-time equivalents than traditional Branch, 35% less cost than traditional Branch, and 50% more profit than traditional Branch. In conclusion, compared with the traditional branch, the transformation of the smart branch reduces costs and improves efficiency and productivity. Therefore, it expresses that the smart branch is an important way out for the dilemma of physical branches.

**Figure 3 Contrast between traditional branch and smart branch**



Source: Taurisano(2019)

## VII. CONCLUSION

With all sorts of pressures, some banks are closing their physical branches to save costs in order to remain competitive in an increasingly harsh environment. However, the physical branch is still the preferred channel for customers. Physical branch has its rationality in the bank's system. At the same time, for the purpose of retaining customers, smart branch is a viable solution. It simplifies traditional bank branches, saves operating cost, makes physical and digital worlds coexist in branch services, and provides customers with eye-catching and

channel-consistent services. Therefore, banks need to integrate smart branches and virtual banks to vigorously develop smart banks to adapt to their customers and create a more accessible, convenient, transparent and humane banking business. This study only theoretically verifies the feasibility of branching wisdom but does not collect data to verify it. Future research can make up for this limitation.

### VIII. ACKNOWLEDGMENT

I would like to express my special thanks of gratitude to my supervisor, Prof.Dr. BalaShanmugam, who provided lots of precious advice to my paper and guide me to complete this paper. Secondly, I would also like to thanks my university, SEGI University, which gave me the golden opportunity to attend this conference.

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