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AN ANALYSIS ON THE MOBILE PAYMENT INDUSTRY IN CHINA AND ITS IMPLICATIONS TO MALAYSIA

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Abstract

Internet which is one of the most transformative and fast-growing technologies has become an integral part of our lives. Globally, the number of Internet users increased from only 413 million in 2000 to over 4.5 billion as of June 2019, with the Internet users from Asia Pacific made up the major market share. Owing to changing lifestyle and rapid growth in E-commerce, this trend is expected to continue over for subsequent many years especially in China. China's mobile payment transaction volume has reached 190.5 trillion Yuan in 2018, with a year-on-year growth rate of 58.4% due to its advantages of security, stability and convenience. Meanwhile, Malaysia which represents one the fastest growing mobile payment market in the world, has its mobile payment usage skyrocketed in the last five years reaching a staggering 40 billion ringgit. Since 2005, the year when Central Bank of Malaysia liberalized its policy by permitting non-banking institution to provide mobile payment service, there were only 1billion ringgit spent via 365.6 million transactions. 13 years later, the transaction volume has increased to 11 billion ringgit with 1.92 billion transactions made. This implies that there is a huge development opportunity of mobile payment industry in Malaysia and the biggest mobile payment industry in the world, China can be a development model for further growth of this industry in Malaysia. Besides analyzing the current development of the mobile payment industry in China at the beginning of this paper by carrying out life cycle analysis, this paper also studies the influencing

factors and challenges of mobile payment in China. Moreover, a comparison of the industry in both China and Malaysia has been drawn out by using PEST analysis. Lastly, the author also proposed the measures and suggestions for enhancement of mobile payment industry in Malaysia.

Keywords

Mobile Payment, China, Malaysia, PEST Analysis

1. Introduction

1.1 Research Background

Mobile payment refers to the way that consumers pay for goods and services consumed by using mobile phone, tablets, and other electronic devices. The payment service which is also known as mobile wallet, e-wallet or mobile money, operate under financial regulation of each country. Instead of paying with cash, credit cards or cheques, consumers are able to make payment by using their mobile phone. In addition, there are also fingerprint payment, iris payment, sonic payment and other payment methods that use biometrics to verify the payees' identity. Mobile payment can further be divided into near field payment and remote payment. Near field payment refers to payment that occurs immediately when consumers pay by using their mobile phones to the merchant when they purchase goods or services. It takes place on-site and offline, and mobile network is not required as it uses mobile phone radio frequency, infrared, Bluetooth or near field communication to send signal to the vending machines or POS machines. In contrast, remote payment refers to payment method that uses a mobile device to access payment backend system through mobile telecommunication network to complete the payment process. Depending on its transaction target, remote payment is divided into remote transfer and remote online payment. For remote transfer, the consumer will be directed to a mobile banking or third-party mobile payment page to complete payment after purchasing goods or services on an e-commerce website by using a mobile device, whereas for remote online payment, payment is made via short messaging service or interactive voice response. Some of the notable mobile payment applications in the world are Samsung Pay, Apple Pay, Alipay and WeChat Pay. In the Chinese market, Alipay which accounts for 53.8% topped the ranking of mobile payment market share, and it is followed by Tenpay, which comprises of 39.9% (iResearch, 2019). Whereas in the Malaysian market, three major players– GrabPay, Boost and Touch 'n Go – each claiming to be the "biggest e-payment platform"(Aida Ahmad, 2019). Mobile payment does not only speed

up settlement, but it also causes tremendous change to people lifestyle, promotes internet innovation, ensures real-time receive of payment by other users and merchants, and also accelerates the process of big data application. The rapid development of mobile payment has also brought many new problems, including various risks, abnormal competition in the industry, irregular account management and flawed information protection mechanism, which have seriously hindered the development of mobile payment industry. In terms of security, almost all the existing mobile phones in China have system vulnerabilities and there are many malicious programs which steal users' private data. Thus, drastic measures have to be taken to strengthen the overall mobile payment industry and reduce the potential risks faced by the users.

1.2 Research Issues

The research questions that are intended to be highlighted in this paper are:

- What are the advantages of China in mobile payment industry?
- What are the problems arising in the mobile payment industry in China?
- What are the differences between the mobile payment industry in China and Malaysia?
- What are the measures and suggestions to improve the mobile payment industry in Malaysia?

1.3 Research Methodology

Several research methodologies have been applied in this study.

- Literature review on the mobile payment industry in China and Malaysia
- PEST analysis is used to investigate the mobile payment industry in both countries
- Comparisons of the industry in both China and Malaysia have also been made

2. Literature Review

2.1 Research on Mobile Payment Ecosystem

Ondrusused a technical environment feasible framework to investigate mobile payments by linking the three complementary aspects, which consist of market, role, and problem (Ondrus, 2005). The paper explained how the three are connected and why they need to be studied simultaneously. Ondrusalso proposed a dynamic model containing the concept of time series to cover a variety of discrete phases which was designed to better understand the reasons for the failure of mobile payment platforms to provide guidance for future design. Hedman and Henningsson studied how payment technology innovation affects the payment ecosystem. They believe that digital payment has caused the instability of the ecosystem by affecting the

dimensions of competition and collaboration in the ecosystem (Hedman & Henningsson, 2012). Staykova and Damsgaard proposed a new framework designed to determine the optimal point in time to enter a digital payment platform and determine the platform's expansion strategy (Staykova & Damsgaard, 2015). According to them, the ability to determine when to enter and make expansion decisions is a key factor in the success of a platform. From the above literature, topics on the ecosystem mainly include the multi-dimensional framework of the mobile payment ecosystem, the framework for determining the participants and their responsibilities, the analysis of business models, and the research of strategic issues.

2.2 Research on Technologies and Environment related with Mobile Payment

Karnouskos proposed standards for establishing mobile payment architecture in Europe by analysing market demand (Karnouskos, 2004). Konidala proposed a new anonymous solution and compared it with credit or debit cards, mobile NFC, contactless RFID debit or credit cards with prepaid contactless cards, and anonymous electronic cash solutions (Konidala, 2012).Yang and Wu developed three alternatives for micropayment schemes that have change capabilities based on different hash models (Yang & Wu, 2013). Badra use symmetric encryption primitives in mobile devices with limited memory and CPUs, making mobile payment transactions in NFC more secure and effectively reducing communication and computing costs (Badra, 2016).

2.3 Research on Consumer Willingness

Ondrus and Pigner have categorized the dimensions of participants to analyse the market from multiple perspectives. Xin studied trust issues of mobile payment from four aspects, namely, trust issues in mobile service providers, mobile payment providers, institutional environment and technology composition (Xin, 2013). Jia and Hall analyse the consumer's willingness to use mobile payment from the perspective of users' behaviour habits (Jia & Hall, 2014). Falk and Kunz consider how mobile payments and prices affect the image of retailers' overall prices in the minds of customers (Falk & Kunz, 2016). The survey results show that mobile payment as an innovative payment method will make customers more actively judge the overall price of retailers. We have seen that consumer willingness is mainly researched around convenience and security. Through different models, the effect of different factors on consumer willingness to use mobile payments is analysed.

3. Analysis of the Current Situation of Mobile Payment Industry in China

The first mobile payment company was established in China in 1999. However, the development of this industry was very slow due to insufficient users and lack of publicity. Alipay, founded in 2004, has gradually brought the concept of "mobile payment" or "third-party payment" into the people vision (ASKCI Institute, 2013). With the support and encouragement of national polices and rapid development of the e-commerce industry, the domestic mobile payment industry has revolutionized into a completely different stage. Since 2013, the transaction scale of mobile payment industry has steadily increased at an average rate of about 50% (Foresight Industry Research Institute, 2019). By 2017, the transaction scale of mobile payment had reached about 218.9 trillion yuan, which is approximately 16 times of 2013 (iResearch, 2018). At present, only a few oligarchs occupy the majority market share. Alipay, Tenpay, UnionPay and Fast Money are among the most successful mobile payment company in China. Alipay and Tenpay which are owned by Alibaba and Tencent respectively has accounted for more than 93% of the total market share, showing a duopoly market situation (ASKCI Institute, 2019). The two companies which have an absolute market share are said to be the "hegemony" of China's mobile payment market. In terms of mobile payment user volume, the amount has reached 587 million in 2018, which shows an annual growth rate of 10.7%. The internet users who use mobile payment increased from 70.0% to 71.4% and the internet users using mobile payments for offline consumption increased from 65.5% at the end of 2017 to 67.2%.

In order to increase market share, both Alipay and Tenpay do not only compete in the processing fees and other aspects, they also attract users through various preferential activities. For instance, in terms of money withdrawal processing fee, Alipay usersare given fee-free lifetime limit of 20,000 Yuan. After the free limit is used up, verified Alipay users can use Ant points to top up the free limit in the platform, whereby 1 Ant point equals to 1 Yuan fee-free limit. When the limit is used up, processing fee of 0.1% of the withdrawal amount will be charged. On the other hand, Tenpay offers free processing fee for withdrawal up to 1000 Yuan and 0.1% of the withdrawal amount after exceeds 1000 Yuan. Furthermore, both Alipay and Tenpay have also carried out cashless day campaigns. In August 2017, Alipay offered a maximum instant discount of up to 4,888 Yuan for scanning QR code when making payment by using Alipay (CHNFI, 2017). Also, all transactions of not less than 2 Yuan are entitled for a lucky draw of gold bar weighing 18888g. Similarly, Tenpay offered up to 88 Yuan incentive, red

packet or vouchers for users who make payment by using Tenpay. WeChat users are also entitled to coupons from merchants such as McDonald's, Walmart, Petrochina, Mobike, Watsons, and SF Express.

With the aim of regulating the third-party payment industry, the People's Bank of China officially announced the "Administrative Measures for Payment Services of Non-Financial Institutions" in June 2010 (The People's Bank of China, 2010). Non-financial institutions were required to apply for the permit before 1st September 2011. With the introduction of this "Payment Business Permit", mobile payment companies that failed to obtain permits within the time limit were prohibited from continuing to engage in payment business. This marked China's mobile payment industry officially entering the era of license supervision. In addition, the increasing number of competitors in the industry from 2014 to 2016 has led to chaos in the management of the industry. Thus, in August 2016, the People's Bank of China announced that no new permit will be approved, and the payment institution licenses that have not substantially carried out payment business for a long time will be cancelled, leading to the increase of market entry barriers. With the rapid development of mobile payment industry, industrial standards have gradually been implemented, such as the QR code payment standard released by UnionPay. Up to December 2015, 271 payment permits have been issued (The People's Bank of China, 2015). As of the end of May 2019, due to business changes, company mergers, renewal failures and etc., 33 payment licenses have been cancelled, of which 20 were due to serious violations, 2 applied for cancellation, and 11 more due to merging of business. At present, the issuance of mobile payment licenses in China has been in a "stagnant" stage, with a total of 238 existing third-party payment licenses. Judging from the geographical distribution of 238 mobile payment licenses, license holders are distributed in 29 provinces and cities. The top four cities with the number of licenses are Beijing, Shanghai, Shenzhen, and Jiangsu with 49, 46, 19, and 16 licenses respectively, accounting for about 55% of the total number of licenses issued nationwide. In short, the mobile payment industry in China is at a growing stage and the scale of mobile payment business has been expanding.

4. Advantages of China in Mobile Payment Industry

4.1 Rapid Development of Internet Economy and Huge Payment Demand

China leads the world in the mobile payment industry because of its advantages in certain sectors. To be specific, there are four main factors that lead to such achievement. Firstly, it is due

to the rapid development of Internet economy and huge payment demand. Throughout the history of mankind's economic development, the world economy has developed from primitive society to farming civilization, followed by the industrial age to the information age. Payment methods have also closely followed and transformed with changes in the needs of society. The payment methods have experienced evolution from commodities, gold and silver, vouchers for deposit, cash, bank cards, cheques to mobile payment. Mobile payment which is an important part of internet transactions is a tool for transaction settlements. The large-scale and still rapidly developing Internet economy represented by e-commerce in China, especially the mobile Internet economy, has provided a fundamental impetus for the rapid expansion of mobile payments. China's online shopping, sharing economy model, online social platform and other mobile applications continue to innovate and play a pioneering role in the world. In particular, an internet giant represented by Baidu, Alibaba, Tencent and JD.com has been developing the Online to Offline model. In the combination of both commerce and e-commerce, mobile payment plays an indispensable connecting role. In recent years, besides online transactions, mobile payment continuously deepened into offline application scenarios specifically in sectors such as food and beverages, clothing, transportation etc. The development of offline application scenarios has brought huge transaction demands, and promoted the improvement of mobile payment acceptance and the popularization of payment habits.

4.2 Insufficient Development of Traditional Non-Cash Payment Methods Leaves Room for the Development of Mobile Payment in China

Credit cards, debit cards and cheques acceptance in many countries is relatively ubiquitous. Payment made by using bank cards or cheques which offers the similar level of convenience as mobile payment causes bigger resistance for the existing users to change their payment habit. In fact, from a global perspective, the more lagged behind the banking system of a country is, the higher the resident's acceptance of mobile payment. For example, M-Pesa, a mobile payment company operating in Kenya, Tanzania, India and Lesotho had become the most successful mobile payment company in the developing countries. By 2012, about 17 million M-Pesa accounts have been registered in Kenya (Communications Commission of Kenya, 2012). Before that, there were only 1.5 bank branches per 100,000 people and only one Automated Teller Machine per 100,000 people in Kenya (Alliance for Financial Inclusion, 2010). The promotion of M-Pesa payment by Kenya's largest mobile operator, Safaricom only required an old-fashioned mobile phone (Michael, 2012). This mobile payment solution has provided the

locals with low-cost financial services. Similarly, by June 2016, 7 million M-Pesa accounts have been signed up by the people in Tanzania. Mobile payment service has been lauded for giving millions of consumer access to the formal financial system, which in turn reduces crime rate in largely cash-based societies. As a result, they have developed rapidly and become one of the most successful cases in the world of mobile payment. China's banking system is more comprehensive than that of Kenya and other developing countries. However, compared with developed countries, there is still a large gap in the acceptance of credit cards in China. A significant number of users who are not covered by the payment service of the banking system directly progressed from the bank card or cheques payment stage into mobile payment. So, they are less affected by their original payment habits.

4.3 Technological Innovation is an Important Factor in Driving the Development of Mobile Payment

Traditional payment method relies on point-of-sale devices and network, so the corresponding hardware purchase and maintenance costs are incurred. The innovative mobile payment method of scanning QR codes enables both online and offline payment, reduces cost of hardware and allows mobile payment to be used in smaller-scale premises such as wet markets, grocery shops and hawker stalls. Through technological innovation, mobile payment has penetrated deeply into the life of Chinese residents, further improving the acceptance of mobile payment, and guiding users to change their transaction habits from swiping cards to scanning QR code.

4.4 Network Effect brought by the Huge User Volume is China Unique Advantage

Based on the Theory of Network Effect, with the increase of user volume in a network, the value of the network increases geometrically. Two tech giants offering mobile payment services, namely Alipay and Tenpay, relied on their large-scale e-commerce app, Taobao and multi-purpose messaging and social media app, WeChat respectively. This migration of existing business users into the mobile payment business brought about a huge customer base, which in turns attracted numerous merchants to adopt mobile payment. When the cycle continues, more users are attracted to use mobile payment and continue to promote the rapid growth of mobile payment business. The user volume of China mobile payment industry in 2016 is 4.62 billion and it is expected to reach 7.9 billion in 2020 (iiMedia, 2019). The massive user volume has brought huge network effects to the development of China mobile payment industry, which is the unique advantage of China mobile payment industry.

5. Problems Arise in the Mobile Payment Industry in China

5.1 Credit Risk

Also known as default risk, credit risk refers to the risk that one of the parties fails to fulfill the obligation agreed upon and causes economic losses to other party. For mobile payment business, credit risk mainly comes from the negation of mobile payment transaction by either party. The occurrence of credit risk seriously endangers the social stability and financial orders, and causes harms to the rights and interests of consumers. In recent years, unlicensed non-financial institutions in China's payment industry often misappropriate merchant settlement funds or cardholder prepaid funds. In the first half of 2017, five mobile payment companies including Yfb-pay, Aliybpay, Cfbpay, Haspay and Bb-pay were suspected of conducting third-party payment services without license (Jinronghu, 2017). The existence of these unlicensed institutions increases the credit risk of the mobile payment industry. According to the Central Bank of China, some mobile payment platforms are subject to "runaway" risk (Cngold, 2017). At present, most payment companies are operating at a loss, except for a few leading mobile payment companies with good reputation, which have achieved profits. Mobile payment institutions have huge capital deposits, which are easy to be misappropriated for investment, affecting the safety of customer capital settlement. Once there is any issue happens to the misappropriated capital for investment, the third-party payment institutions may abscond with the funding. Although regular inspections have been conducted by the authority to reduce these mobile payment violation cases, there are still companies that choose to operate without a license to deliberately violate the rules. Businesses that are known to be unsustainable still generally have the mentality of running away after making a ‘fortune’ and engaging in money laundering. Even though China's current integrity management system has begun to take shape, it has not yet formed an effective administrative management mechanism and industry self-discipline mechanism. It also lacks effective supervision and punishment measures for dishonesty and violations. Credit risks due to information asymmetry often occur. In addition, the misappropriation of customer reserve funds by payment companies can easily risk the company's capital chain and cause liquidation problems. Due to the lack of a standardized exit mechanism, after a mobile payment company has a problem in its operation, the company often lacks any contingency plan. Therefore, information asymmetry, lax reserve management and lack of a

standardized launch mechanism are the main reasons for the occurrence of mobile payment credit risk.

5.2 Operational Risk

Operational risk of mobile payment can be classified into intentional and unintentional operational risk. Intentional operational risk mainly comes from external fraud risk, while unintentional operational risk refers to the risk those users, merchants or financial institutions who will suffer from direct or indirect losses due to unintentional operational errors during the mobile payment process. The risk of unintentional operational is comparatively lower than intentional operational risk which has caused threat to the asset security of the public. According to relevant data, more than 100 thousand people have engaged in illegal mobile payment business in China and this has formed a complete industrial chain (Hou Yunlong, 2016). By creating Trojan horses and phishing websites, criminals use fake base stations to disguise Trojan horses as normal applications, then, they hide the Trojan horses in their targets' mobile phones through SMS network control and anti-unloading methods so that they are able to steal their targets' private data and other crimes. Besides, based on the "2016 Mobile Payment Safety Investigation Report" released by UnionPay, common fraud methods of mobile payment mainly include social account embezzlement, SMS Trojan link, fraudulent SMS verification code, phishing webpage fraud, scanning unknown QR codes and connecting to unknown Wi-Fi network (UnionPay, 2016). Social account theft, SMS Trojan link and fraudulent SMS verification code ranked top three, while scanning unknown QR code and connection to unknown Wi-Fi network accounted for less than 20%. Besides that, there are also mobile payment scams such as WeChat red packet scams and stealing payment codes.

5.3 Money-Laundering

Due to the high volume and speed of online transactions that can occur at any time, coupled with the popularization of mobile payment platforms, payment activities are often completed in an instant. Money launderers also take advantage of this feature to carry out illegal activities, and this makes it difficult for regulators to identify the flow of each sum of funds. By the time a huge illegal fund transfer attracts the attention of relevant authority, the money has already been transferred, and it is difficult for regulators to further track the fund. Also, users in the mobile payment platform only need to register their name, phone number, home address and other simple information for signing up a virtual account. Neglecting the verification of customer information authenticity leads to registration of fake accounts and zombies accounts which in

turn provide an opportunity for money laundering activities. Additionally, when the authority finds out suspected money laundering cases, the privacy isolation technology adopted by the mobile payment company will hide the customer information, and it will take a period of time for the authority to communicate with the platform to determine the transactions of customer accounts, which will also increase the difficulty of anti-money laundering investigation and evidence collection. Some traders use fake transactions known as "self-buy, self-sell" method to cash out from their credit cards. For example, in 2013, some cardholders in Zhejiang, Fujian and other provinces deposited large overpayments into credit cards and used pre-authorization to complete transactions that required payment acceptance within 115% of the pre-authorized amount (The Economic Observer, 2014). These money launderers collaborated with certain special merchants that support pre-authorized transactions to obtain additional credits from card issuers. It is estimated that the amount involved in these cases reached 10 billion yuan nationwide.

6. Comparison of Mobile Payment Industry in China and Malaysia

Currently, there are 238 and 48 mobile payment companies in China and Malaysia respectively. The user volume of mobile payment in China is 658 million users by the end of 2018, while the user volume of mobile payment in Malaysia is 3.4 million users by end of June 2018. Alipay and Tenpay are the two major players of mobile payment industry in China. On the other hand, Touch 'n Go, GrabPay and Boost. PEST analysis is used to further compare the mobile payment in both countries.

6.1 Political Factor

Central Bank of China supervision has been continuously strengthened, and a series of regulatory documents have been promulgated, such as the "Measures for the Administration of Payment Services of Non-Financial Institutions", the "Measures for Depository and Management of Customer Provisions of Payment Institutions", and the "Measures for the Administration of Online Payment Business of Non-Bank Payment Institutions". The central bank has gradually established and improved the supervision and reporting system of payment institutions, anti-money laundering monitoring system, payment account management system, and daily supervision mechanism of provisions, and strictly supervised the mobile payment institutions by conducting supervision and regular license renewal review. The regulations of the central bank

on the certification requirements, payment limits and business scope of third-party payment has also been tightened.

In contrast, the Central Bank of Malaysia has released its Financial Sector Blueprint 2011-2020 which plans the future direction of the financial system over the next ten years has outlined the importance of mobile payment and the government effort to drive the agenda forward. Mobile payment being one of the nine focus areas under the Blueprint is intended to uplift Malaysia's transition to a high-income economy with adequate safeguards to maintain financial stability. The Central Bank aims to increase the number of mobile payment transactions per capita from 44 transactions to 200 transactions as well as reduce the number of cheques issuance from 207 million to 100 million annually (Central Bank of Malaysia, 2011). In order to attain this milestone, measures such as encouraging switching from paper-based payment to mobile payment and facilitating wider outreach of mobile payment facilities has been taken. The Central Bank of Malaysia has also issued the Interoperable Credit Transfer Framework that came into force on 1st July 2018 (Vincent Fong, 2018). The ICTF aims to allow interoperability of credit transfer services leveraging on shared payment facility to expand network reach and avoid market fragmentation. Another goal of the framework is to facilitate effective oversight of shared payment infrastructure to preserve the security and integrity of credit transfer systems and financial system. It also requires all inter-bank credit transfer transactions and inter-scheme credit transfer transactions to be processed in Malaysia through an operator called PayNet, a company jointly owned by the Central Bank and Malaysian licensed banks. The policy also outlines a national Real-Time Retail Payments Platform. The platform comprises of National Addressing Database that links an account to unique identifiers such as ID number or mobile phone to facilitate payments to a particular recipient. With the implementation of ICTF and RPP, it is expected that the displacement of traditional payment methods will be accelerated while reducing the cyber security risks. During the Budget 2020 announcement in October 2019, the government has announced a one-time 30 ringgit incentive for mobile payment users who are Malaysians aged 18 years and above and earn less than 100,000 ringgit annually (Norazhar, 2019). The allocation of 450ringgit million for this incentive program is expected to benefit 15 million Malaysians and speed up the adoption of mobile wallet usage in Malaysia.

6.2 Economic Factor

In the past ten years, the macroeconomic environment of China has been robust, and the consumer price index has been at a high level. The annual GDP growth is more than 6% since

1982 and the average CPI value from January 1985 to November 2019 is 2.8% (National Bureau of Statistics of China, 2019). Since 2005, the mobile payment industry has expanded in a blowout manner. Consumers are more willing to choose online shopping due to price advantage, which is also a boost to the mobile payment industry. At the same time, the e-commerce industry is developing rapidly and the competition is fierce. The mobile payment industry shows a rapid development, and constantly innovate the development model and expands the industry.

On the contrary, Malaysia has a newly industrialized market economy, which is relatively open and state-oriented. The economy of Malaysia is the third largest in Southeast Asia, after the more populous neighboring countries, namely Indonesia and Thailand, and 35th largest in the world. The annual GDP growth is more than 4% since 2009 and the average CPI value from January 1958 to October 2019 is 2.5% (CEIC, 2019). With Malaysia's high penetration of internet and mobile connectivity, the E-Commerce usage has become more popular. There are 16.53 million online shoppers and 62% of the mobile users use their phone to purchase goods online (U.S. Department of Commerce, 2019). Also, the National E-Commerce Council was established to work towards doubling Malaysia e-Commerce growth rate to reach a GDP contribution of 53 billion dollars by 2020.

6.3 Social Factor

As of December 2018, the number of Chinese Internet users reached 829 million, an increase of 3.8% over the same period in 2017 (China Internet Network Information Center, 2019). The proportion of Internet users using mobile phones increased from 97.5% in 2017 to 98.6%. The proportion of Internet users using mobile payment for offline purchase has increased from 50.3% at the end of 2016 to 65.5% (ASKCI Institute, 2019). The number of online payment users has grown rapidly, especially for mobile phone users.

Malaysia is an attractive market for E-Commerce in ASEAN due to its dynamic economy and developed infrastructure for digital technologies. There are approximately 28.7 million Internet users in 2018, an increase from 24.5 million in 2016. Around 93.1% of the Internet users used smartphone to access to the Internet and more than 54% of the Internet users used online banking in 2018, compared to 41.7% in 2016. Social engagement which includes text communication and browsing social networking platform has become the most common activity of Internet users. Based on the survey result announced by YouGov, Malaysians spend an average of five hours and forty-seven minutes a day on social media (Syed Umar Ariff, 2019).

Also, the Digital 2019 report shows that Malaysia was ranked top five globally and highest in ASEAN for social media penetration (Bernama, 2019).

6.4 Technological Factor

Technology innovation will promote the development and application of new products. In the mobile payment industry, the business entry barrier is low and the technology can easily be replicated. As a result, the differences in the major service market segments are becoming smaller and smaller, which also causes service homogeneity. In the fierce competition in this industry in China, besides developing new application, the mobile payment companies must seek breakthrough in terms of service security and technology to maintain the vitality of the industry.

On the other hand, technology innovation with localized solution is needed for further improvement of the industry in Malaysia. The mobile payments with radio-frequency identification and near NFC functions are rarely being integrated in existing mobile payment services, causing restriction to certain application scenarios.

7. Measures and Suggestions for Improvement of Mobile Payment Industry in Malaysia

Improving laws and regulations to strengthen the overall industry system is vital. Due to the lack of relevant laws in the mobile payment industry, the government should speed up the legislation process by revising existing laws and regulations, formulate detailed regulations, and address new issues in the development of the industry such as protection of the rights and interests of consumers, anti-money laundering and improper transactions. Besides that, Touch ‘n Go, Boost and GrabPay are the mobile payment companies that make up the major market share of the industry, but there are more than 40 mobile payment companies with licenses, and among them are small companies which are less active. Small mobile payment companies which may be relying on venture capital to maintain normal operations, possess low risk management capabilities, and may not be able to guarantee their platform security as well as the safety of their customer funds. Thus, improving the market exit mechanism and tightening the requirements for license application can effectively reduce industry risks. Furthermore, management of the reserve funds of mobile payment companies is the top priority of the authority. Safety of mobile payment users’ funds will potentially be threatened if there is no proper supervision.

Besides, cooperation with market players to strengthen product innovation is needed. Traditional banks rely on their existing customers to promote mobile banking service. They have

advantages in terms of customer base, experience in risk management and information security. However, the lack of motivation in innovation leads to serious product homogeneity and poor user experience. Conversely, mobile payment company possess strong innovation, continually launching new technologies and product to enhance user cohesiveness, while carrying out aggressive marketing communication to increase market share. However, they may be lacking in risk management and encounter issues such as system vulnerabilities. Thus, mobile payment companies and banks should learn from each other's strengths and tighten cooperation, in order to promote the steady development of the payment industry, while protecting the interests of their customers. Also, WhatsApp being the most commonly used social messaging application in Malaysia can be an ideal 'entry' in mobile payment application. For such instance, WhatsApp is working with ICICI bank based in Mumbai to introduce mobile payment via unified payment interface to the Indian market (TNN, 2018). Furthermore, utilizing a large number of users and mining the value of big data behind users is the path for mobile payment companies to achieve profitability. Enterprises with massive numbers of users and a complete payment ecosystem can turn their profit model to advertising revenue, consumer finance facilities, and increase revenue by providing investment management services for users.

Improving safety awareness and developing good payment habits of the consumers is essential. Consumers' own safety awareness and ability to prevent risks are very important in this Internet era. In the daily use of mobile phones, consumers should prevent download of apps or software from unknown or unauthenticated websites to prevent virus invasion. Disclosing personal privacy, phone number, address and other information on social media websites should be restricted as the details may be used by criminals for scams. Furthermore, with the increasing popularity of QR code scanning, consumers should not scan QR codes of uncertain sources to prevent theft of account funds. Mobile payment security is inseparable from the cooperation of consumers. Good payment habits can effectively prevent the occurrence of mobile payment fraud and losses.

8. Conclusions

In summary, not only does steady development of mobile payment industry require the efforts of mobile payment companies, joint efforts of the industry stakeholders which include regulators, legislatures, telecommunication companies and consumers are also needed. The legislative party should institutionalize and improve legislation, the supervisory party should

innovate supervisory technology as well as improving the supervisory system and management mechanism. Mobile payment companies and financial institutions should learn from each other's advanced experience and strengthen cooperation. Consumers should improve their safety awareness, develop good payment habits and embrace the technological enhancement with open mind. Only with the joint efforts of all the parties, the mobile payment industry in Malaysia can achieve a greater height and become a stepping towards welcoming the era of Industry 4.0.

The outcome of this study has given valuable feedbacks to researchers. Nevertheless, these outcomes are accompanied with some limitations. The research methodology applied in this study is not comprehensive. When analyzing the mobile payment industry in Malaysia, only limited business tools have been used. This may lead to the one-sided analytical result and a certain degree of inadequacy has affected the scientific judgment of the research. Also, this paper only explores the influencing factors without conducting empirical study, which causes the study to be not comprehensive. As this research has encountered some limitations, a few recommendations have been drawn for future research. Qualitative and quantitative study should be conducted in future research. It is suggested that probability sampling technique is applied in the future study in order to improve and enhance the validity and generalization of these research findings.

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