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A Study on Analysis of FinTech Start-ups in Conversions Period

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Abstract: A modern society is called as convergence period. The core technologies on convergence are mobile, smart and cloud. Because of popularization and progress on mobile device and service, the various patterns related with our consumption have been changed. There are many backgrounds in emergence of FinTech industry. In this study, we studied FinTech start-up firms. FinTech refers to a newly emerging industry and service fields through the fusion of finance and ICT. In this study, we studied on current status of FinTech firms. We deal with domestic firms such as Daum Kakao, LGU+. And we described In foreign firms such as Fidor Bank, Simple Online Bank, OnDeck, Stripe and Affirm. Eventually we analyzed problems of the current FinTech firms. In this study, we described several FinTech start-up firms. Many FinTech companies are especially in the payment sector. Two rapidly growing start-ups to notice for the recent five years are studied. A biggest hurdle in electrolyzation of financial service is personal information leakage therefore, biometrics to supplement it gains attention. According to gartner, bio authentication use ratio using mobile devices is forecast to grow from current 5-30%. However, damage may continue to one's life time if bio information leaks. The argument on user's psychological anxiety and human right violation needs to be solved. e-Payment services through non-financial companies like IT companies are on the rapid rise. Competition between financial companies and non-financial companies, between IT companies to preempt the e-payment market is fierce. As the FinTech market rapidly grows associated fields are expected to grow as well. Big data and crowd markets are forecast to grow together security and bio technology markets are also projected to gain attention, since security issue works as a huge hindrance factor for the future of the FinTech markets.

Key words: FinTech, banking, technology, start-up, payment, crowdfunding

INTRODUCTION

FinTech is the new technology and innovation that aims to compete with traditional financial methods in the delivery of financial services (Lin, 2015). The use of smartphones to enable mobile banking and investing services are examples of technologies aiming to make financial services more accessible to the general public (Schueffel, 2017). Financial technology companies consist of both startups and established financial and technology companies trying to replace or enhance the usage of financial services existing financial companies (Drummer *et al*., 2016).

After reviewing more than 200 scientific papers citing the term "FinTech", the most comprehensive scientific study on the definition of FinTech concludes that "FinTech is a new financial industry that applies technology to improve financial activities" (Lin, 2015; Schueffel, 2017; Seoul Web Design Inc., 2017; Drummer *et al*., 2016; Gulamhuseinwala *et al*., 2015; Jun and Yeo, 2016; Kauffman and Ma, 2015; Amer *et al*., 2015; Chishti and Barberis, 2016). FinTech is the new applications, processes, products or business models in the financial services industry, composed of one or more complementary financial services and provided as an end-to-end process via. the internet.

During the 2010's many financial services emerged which can be grouped as "FinTech". However, it is regulations as the European payment services directive which promises to open the gateways for rapid growth through a legally enforced deregulation as they break up the formerly monolithic servicesand turn them into distributed and decentralized cloud-based value chains where banking is provided online as-a-service. An evolution like the telecommunication sector during the 1990 and 2000's is likely to follow with a fragmented, more dynamic, more competitive and more value-adding financial market.

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FinTech is a compound of financial and technology means the industry in which mobile payment and remittance asset management and crowdfunding are blended. Simply put, FinTech is the marriage of technology and finance givingstartups and service providersthe ability to offer streamlined financial products/services that were previously only available through heavy-regulated, traditional financial institutions. Good examples of FinTech who are changing how individuals and businesses deal with payment processing and borrowing money are: Square, PayPal, Lending Club and Prosper. In today and future, FinTech startups are poised to revolutionize the banking industry and give traditional banks a run for their money.

Looking at a fully integrated financial service supply chain, we suggest to define the term banking-as-a-service as an end-to-end process, ensuring the comprehensive completion of a financial service, provided via. the internet on demand and managed within a specified timeframe. Such a service implies the inclusion of the financial service, a management, deployment and delivery environment, legal compliance with banking laws, provided through a player granted with a banking license, proper security mechanisms like strong authentication throughout the whole composed process in compliance with laws of data protection within the concerned areas of jurisdiction.

FinTech encompasses all technical processes related with financial services including mobile payment and remittance, private asset management and crowdfunding. Also, FinTech includes technologies affecting financial institution's overall businesses such as decision making, risk management, portfolio re-construction, law compliance, performance management, system integration and online transfer and payment.

The FinTech industry has naturally emerged in our living pattern change. The emergence background of FinTech can be divided into four areas as follows: change of consumption environment, IT technology development an incessant competition of companies, growth limitation of financial market.

MATERIALS AND METHODS

Major FinTech start-up cases

Domestic cases: As Korea's mobile payment market rapidly grows, competition among financial companies such as credit card companies and banks, communications carriers and IT businesses becomes fierce. Daum Kakao launched Bank Wallet Kakao service in alliance with 16 commercial banks. Once a user receives identity authentication, a cyber wallet with which remittance and withdrawal can be made within KRW 500,000 is created. If a user charges KRW 500,000 maximum in cash, after pressing the "Charge" button in the Kakao virtual account, the person can easily remit money or pay within KRW 100,000 day, like he/she sends a messenger. Daum Kakao launched a mobile payment service, Kakao pay in September, 2014 attracted 1.2 million subscribers within a month. When a person uses app card of a credit card company pays money he/she needs to enter password twice. However, one can pay money with one time entering of password using the daum kakao cafe which is convenient. Three major mobile communications carriers offer an on/offline payment function with smartphone's barcode or QR (Quick Response) code NFC in linkage with banks or credit card companies. Figure 1 shows usage case of Kakaopay.

LGU+ launched a convenient payment service, paynow also will launch paynow plus which has added an authentication mode in August this year. Paynow is a service through which payment can be made on mobile devices and PC conveniently without additional procedure if a user registers payment information initially once, after downloading the app, irrelevant of communications carriers. Paynow currently offers various benefits like over some 300 memberships and coupons as well as payment service in linkage with mobile wallet, smart wallet which 10 million subscribers use.

SK telecom recently started to squarely respond by developing BLE (Bluetooth Low Energy) based two mobile payment solutions. The payment solutions developed by SK telecom are BLE payment in which payment is made by only entering password to a payment device BLE e-Card through which several plastic cards can be put in one e-Card and managed. KT released olleh app secure authentication in which user authentication is conducted though the comparison of smartphone's handset information with KT-possessed user database, although a user does not enter his/her password. As such, all three mobile communications carriers respond with accumulated technological prowess, respectively.

Foreign cases: In Britain that emerged as start-up hub, FinTech start-ups relevant investment and development speed seem to be the top in the world. This study grasps several FinTech start-up cases.

Online bank, simple (Simple.com): In the US, there is a system that imposes expensive charge to careless customers. For example, penalty is automatically imposed when account balance is lower than a certain amount. Simple, an online bank has been launched for those who

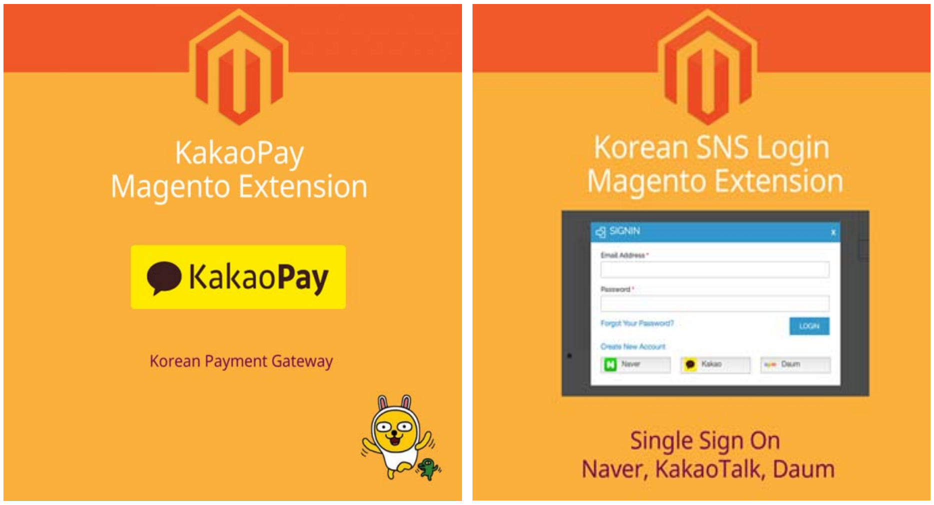

Fig. 1: Kakaopay for Magento

are sick of such an action of banks. This online banking start-up, launched in oregon, US, provides free checking account without penalty, although a customer does not deposit money over a certain level of amount. Also, the account shows customer's expenditure details graphically offers budgeting so that the customer can manage his/her finance by analyzing customer's consumption behaviors.

This company providing a well-made mobile app is popular with a function to add photos or PDF enabling use details of an account can be remembered conveniently. The company which started its operation in 2009, attracted over 100,000 customers without an offline branch.

Fidor Bank (www.Fidor.de): German Fidor Bank, established in 2009 is an online bank actively combining IT, especially, social media. In particular, the bank is renowned for making a sort of online community by actively accepting customer's opinions and ideas. Whenever, customers post opinions and participate online they can receive incentives case by case. The bank also draws attention by making a unique system: as the number of "good" goes up in the Facebook page, deposit interest rate also goes up. Figure 2 shows the bank services of Fidor Bank (Fidor Bank, 2017). Figure 3 shows core banking system architecture of Fidor.

Billguard (Billguard.com): Many people probably remember complaining about too many and complex credit card use details. Strange details which a user cannot remember where and when he/she used, pop up, thus, his/her money is withdrawn covertly in some cases. Even some charge is wrongfully imposed. Billguard introduces its service as an antivirus system that deciphers such a complex bill. Billguard monitors customer's credit card and bank account transfer details through prediction algorithm lets the customer know by alarming when suspicious details are generated. As a mobile app., the integrated management of various credit cards and bank accounts is possible.

OnDeck (OnDeck.com): A New York's start-up OnDeck propelling IPO with the value of KRW 1.5 trillion was established in 2007. The company offers loans from several million KRW to some hundred million KRW to owner-operators like a bank. However, this company has no offline branch. And therefore, loan screening is carried out only online (There are phone consultants for loan consulting) the procedure is quick. According to the company's homepage, online application takes just ten minutes whether loan can be offered is known to the applicant in several minutes. The loan money is deposited to the successful applicant in the following day. The reason why the company can proceed loans so quickly online without face-to-face encounter with a loan applicant is that the company developed its own algorithm technology. The company has actually developed a technology to quickly analyze applicant's credit rating in consideration of his/her bank transaction details, cash flows, credit rating, comments on and rating from social media. Even the company analyzes the loan applying restaurant's comments from Yelp (a US restaurant review website) and reflects the results. This company has offered loans worth KRW 1 trillion up until now achieved about KRW 70 billion of loans last year. Venture capital over KRW 200 billion like Google ventures was invested in this company.

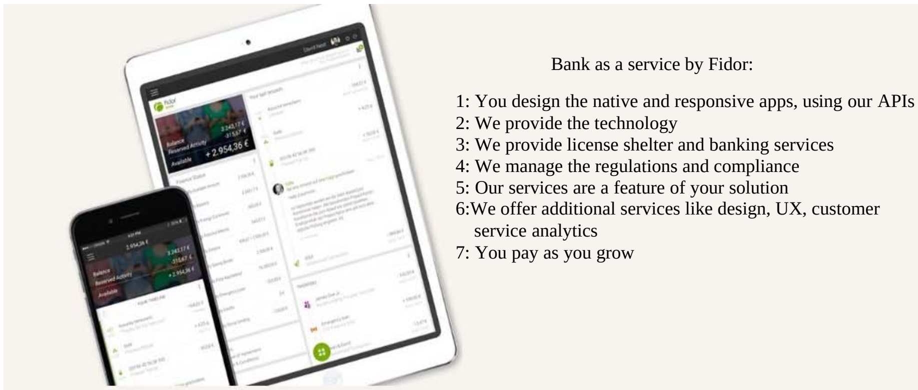

Fig. 2: Bank service by Fidor Bank (2017)

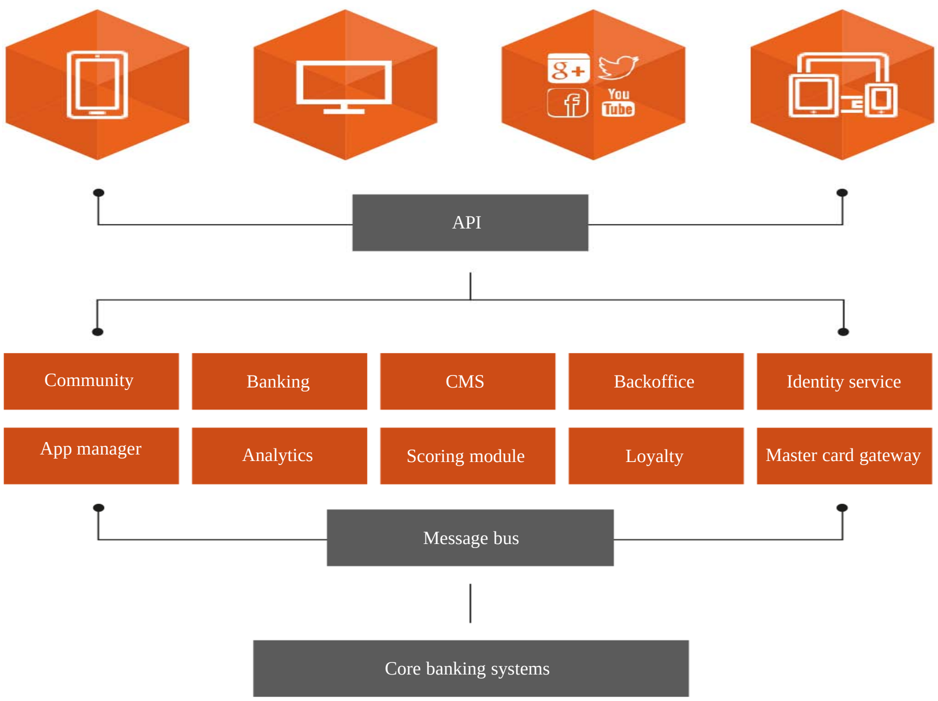

Fig. 3: Banking system of Fidor

Lending Club: Peer to peer lending through which money can be lent between individuals is rising rapidly. The Lending Club in San Francisco, established in 2006 is a platform connecting individual investors who want to lend money with individuals or small scale businesses that want to borrow money online. This company hugely grows with a merit that loan application can be made online easily, targeting customers who need urgently money from several million KRW to several 10 million KRW, due to small scale business expansion or personal reason. The company's lending interest rates are lower than those of credit card loans but a bit higher than those of banks. Over KRW 5 trillion of loans on a cumulative basis were offered this year through Lending Club platform the company prepares for IPO to procure KRW 500 billion of capital by the end of this year.

Many FinTech companies are especially in the payment sector. Actually, there are two rapidly growing start-ups to notice for the recent 5 years, they are Square and Stripe.

Square for mobile reader (Square.com): Square, established by Jack Dorsey, one of the co-founders of Twitter in 2009 is a platform with transaction amount over

KRW 3 trillion. Square is renowned for the services and products enabling POS system conveniently through the installation of a small credit card reader on smartphones or tablets. Because small businesses operating small shops even stall keepers can build a credit card payment system easily by easily using smartphone or tablet, the company rapidly grew for the past 5 years, receiving good response. In the US shops receiving orders with the Square reader-attached iPad, instead of traditional credit card terminal can be easily found recently. The company is worth about KRW 5 trillion Square that has received investment worth several ten millions of KRW so far has grown to the extent that it processes transaction amount over KRW 3 trillion this year. However, the future of Square is not always bright. A traditionally strong player in the internet payment sector, PayPal released a product, PayPal Here, similar to Square a huge company in the e-Commerce sector Amazon has entered the market recently.

Stripe (Stripe.com): Stripe, founded in Boston, US in 2009 is a start-up like a rising star in the mobile payment sector. This company provides a solution enabling to easily pay through credit cards from a mobile app. The company easily makes it possible to pay money by entering credit card number on a small smartphone screen, unlike desktop or laptop PCs. A mobile app developer brings Stripe's Application Programming Interface (API) code to his/her own app can make sales to global customers can receive money within 2 days. Not only stripe supports 139 currencies globally but it supports bank account transfer, Bitcoin China's Alipay. Therefore, Stripe gains popularity from mobile companies operating international businesses. Stripe receives 2.75% of transaction amount and also 30 cents of commission per payment. This start-up, created from Y combinator, a renowned accelerator of Silicon Valley is worth KRW 1.8 trillion early this year. Stripe has actually received venture capital investment from Sequoia Capital and Andreessen Horowitz. Stripe has participated in Apple Pay's partner together with big companies like Visa card has been selected as a payment solution company in charge of buy button to add as online shopping function to Tweet by Twitter. Meanwhile, PayPal acquired Braintree, a Chicago-based mobile payment start-up and Stripe's competitor, at KRW 800 billion last year.

Affirm (Affirm.com): Affirm is a payment service through which a consumer can buy goods and services in installments with his/her own credit online, not using a credit card. A customer using the Affirm payment service just needs to enter customer name, telephone number, email address, birth date and four-digit social security number. Affirm lets the customer know about whether installment purchase is possible at what interest rate using text message, after finishing the investigation of credit rating in seconds using open data including customer's credit rating. If a consumer wants to buy USD 1,000 goods, the purchase by 3 month installment is possible by paying USD 16 of additional fee if credit rating is good or USD 50 if credit rating is bad. Affirm pays the goods money immediately to the online member merchant like credit card companies. Korea's representative FinTech start-ups are Viva Republica that developed a technology enabling remittance of money easily through a mobile app., Korbit, a Bitcoin exchange and NFC Korea enabling convenient payment through NFC. Now is the time that interest in and support for FinTech start-ups are needed in Korea.

RESULTS AND DISCUSSION

Analyzation of FinTech: The biggest hurdle in electrolyzation of financial service is personal information leakage therefore, biometrics to supplement it gains attention. According to market research company, gartner, bio authentication use ratio using mobile devices is forecast to grow from current 5-30%. As for the case of using biometrics, Apple pay's fingerprint recognition technology, touch ID was applied. Samsung electronics has installed a fingerprint recognition sensor in its Galaxy S5 and Galaxy Note 4. PayPal released a fingerprint payment service using the technology to 25 countries. However, damage may continue to one's life time if Bio information leaks. Therefore, the argument on user's psychological anxiety and human right violation needs to be solved.

e-Payment services through non-financial companies like IT companies are on the rapid rise. Competition between financial companies and non-financial companies, between IT companies and between credit card businesses and communications carriers to preempt the e-Payment market is fierce. Therefore, global companies like amazon and alibaba are tapping to enter the Korean market, however, there are no large scale businesses to be comparable with those in Korea.

In the case of Korea, although, the launch of FinTech start-ups is very late, the FinTech market gradually grows. The launch of FinTech industry is late in Korea, due to financial regulations and security issues. e-Wallet services are active, however, they are mainly used for membership point management payment use ratio is low. Kakao launched such services as Kakaopay and Bank Walllet Kakao attracted many users. However, the number of member merchants is the key to success. Conflict with financial companies on commission income is a hurdle to tackle. Meanwhile, Korea's online shopping market reached KRW 40 trillion, showing 19.1% of growth for the past 4 years is forecast to grow to KRW 50 trillion in 2015. The number of mobile banking registration recorded 42.98 million during the same period showed a steep growth trend. Namely, the relevant fintech service is predicted to be important.

As the FinTech market rapidly grows associated fields are expected to grow as well. Big data and crowd markets are forecast to grow together security and Bio tech markets are also projected to gain attention, since, security issue works as a huge hindrance factor for the future of the FinTech market. In this regard, Korean data analysis, crowd and security businesses seem to need an attitude accepting the growth of FinTech as a new opportunity coping with it.

CONCLUSION

The FinTech industry combining financial industry and ICT technology becomes a hot issue globally, it gains much attraction in Korea as well. Because the FinTech industry is closely linked with human life its ripple effect is likely huge. In this context this study examines the global FinTech trends by dividing in into financial businesse's FinTech trends and non-financial global IT companie's FinTech trends. After reviewing the domestic and international environments and problems to cope with the trends this study has identified implications in Korea. Also, this study has examined efforts to respond by relevant industries targeting several companies.

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