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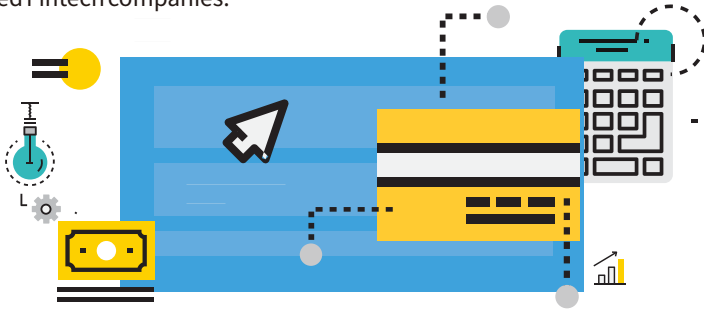
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Introduction

The rise of digital technology nowadays has touched the very corners of social life, including financial services. The already continuously evolving financial sectors started to cope with the digital revolution which reshapes the way people consume and engage in financial services activities. Little did we know, technology has always been playing key roles in determining the well-being-ness of the overall evolution of financial services, dating back to the 1950s. Such debauched evolution led to the development of what is called Fintech companies.



Fintech is pictured by the public as the use of mobile and web applications to complete transactions, like paying for our lunch. A more direct and profound definition on fintech refers to technology-enabled financial solutions,¹ while a fintech company refers to a technology firm that focuses on financial products and services.² Primarily, fintech refers to the utilization of any technological innovation imposed on the financial service industry. PayPal, Alipay, SoFi, Billguard are among the most renowned fintech companies in the world. Local fintech startups include Doku Wallet, Kartuku, Bareksa.com and Cekaja.com.

The industry currently gains prominence and is highlighted to be rapidly expanding over the next couple of years. As a departing point, the investments in the sector jumped from \$1.8 billion in 2010 to an investment of \$5.2 billion in the first quarter of 2016 alone.³ Together, fintech companies worldwide raised \$105 billion in total funding and worth nearly \$870 billion in current value, as reported by VBProfiles, a San Fransisco based market intelligence platform.⁴ Investment in fintech also doubled between 2014 and 2015, from \$17.8 billion to more than \$38 billion.⁵ There is an estimated number of 2000 to 12000 fintech companies in the world, and the number keeps on rising. This seems to be posing challenges to traditional financial services actors, particularly banks.⁶

A revolutionary expansion in this industry obviously raises eyebrows, and this calls for further discourse, especially on where and how the industry started, as well as how it is projected for the upcoming years. Thus, this writing aims to look back at how has fintech industry transformed, and what's coming in the future. The contextualization of Indonesia will be brought up as well to put fintech in a more relatable picture.

The Development of Fintech Industry

As mentioned before, technology has been playing vital roles in making sure of the continuation of the financial services industry. Thus, fintech is not only limited to every application and technological solutions it is embedded with nowadays. Every single innovation in financial services, or fintech in this case, is traceable since the financial industry bloomed decades ago. From this, Arner classifies three different phases of fintech development; FinTech 1.0, FinTech 2.0, and FinTech 3.0.⁷ The classification is based on the timeline of fintech development over the past years. The 1.0 era marked the very first initial development of the industry; the 2.0 era marked the first utilization of internet banking; while the 3.0 era marked the era where non-bank institutions began to start playing significant roles in the industry. Understanding this will give us broader insight on where has fintech gotten and how much it has transformed.

Fintech 1.0 (1866-1987)

The first phase of fintech development apparently began when people began to transition from hunter-gather life to more permanent agricultural settlements, in which, during this period, people of Mesopotamia initiated a recorded transaction history from their agricultural production.⁸ Fast forward from then on, the revolution in transaction recording, particularly with the double-digit accounting system, thrived even further, resulted from trade and finance activities in the middle age and the Renaissance.⁹ Even further than that, the revolution of banking, insurance and stock system in the late 1600s of Europe played a significant role in the Industrial Revolution.¹⁰

The first age of financial globalization began in the late 19th century when technology like telegraph, railroads, canals and steamships took control in delivering deeper and more intense cross-border trade and financial services. Further development emerged in the late 1950s, especially when credit cards were introduced by the Americans, particularly the Diners' Club in 1950 as well as Bank of America and American Express in 1958.¹¹ The first phase of fintech development, or might be referred as analog fintech period, ended when the first Automatic Teller Machine (ATM) was introduced by the Barclays in 1967, marking the very first digitalization of for-customer banking system.¹²

Fintech 2.0 (1987-2008)

The era of the digital financial system was accelerated by the introduction of ATMs by the Brits. Along with this, the more advanced coordinating bodies in the interconnected banking system were established accordingly, to further accommodate the overwhelming demand of banking service after the introduction of ATMs. An interconnected system of financial system forced regulators to safeguard the whole

economic ecosystem as risks and security concerns followed closely.¹³ The more integrated banking system was then further enhanced by the incorporation of online banking in the US in 1980, and then in the UK in 1983.¹⁴

As mentioned, the challenges and risks in online banking spiked after the immersion with the online system. This required a stronger regulatory framework for ensuring the overall financial system to be running well. One example of a regulatory initiative from the government came from the Hong Kong government in 1999, almost a decade from the start of deep penetration of online banking system. Despite the lagged regulatory guidance from the government and other prime authorities, the online banking industry still managed to capture more benefits from enhanced efficiency. The trend of big data then raised in prominence. However, one unique phenomenon in particular from the financial service industry is the actors involved, as in the FinTech 2.0, the technological innovations would only be used by licensed financial institutions only.^{15,16}

Fintech 3.0 (2008-now)

The biggest turnaround occurring during this period was an emergence of non-banks and public-driven financial services actors, what we might have been seeing nowadays. The rise of these so-called innovative market players, or fintech startups, was majorly triggered by the 2008 global financial crisis which brought four factors, which are public perception, regulatory scrutiny, political demand, and economic conditions.¹⁷ The fall of financial institutions in 2008 which led to global crises resulted in great public's distrust towards public banks and other licensed financial institutions. This then coupled with more solid regulatory frameworks introduced by authorities to scrutinize and bind banks and other financial institutions even tighter. The rooms for innovation were further scrapped by these stricter rules, pulling even worrying economic condition at that time. However, in the US in particular, the government was cornered by the fact that high unemployment rate also pushed people to drift away from the government. To tackle this down and maintain their political grip on society, the US government passed the Jump Start Our Business (JOBS) Act in 2012. The act specifically pushed the improvement of access to the public capital markets for emerging growth companies, prompting a whole new ecosystem of financial services supported by startups to take place, up until now, with even deeper involvement of infant fintech companies in the overall financial service industries.¹⁸

With such facilitative environment to grow, fintech startups began to swell exponentially over the past five years, with the peer-to-peer (P2P) lending platforms took center stage in the earlier phase of startups boom, shown in the graph below.¹⁹

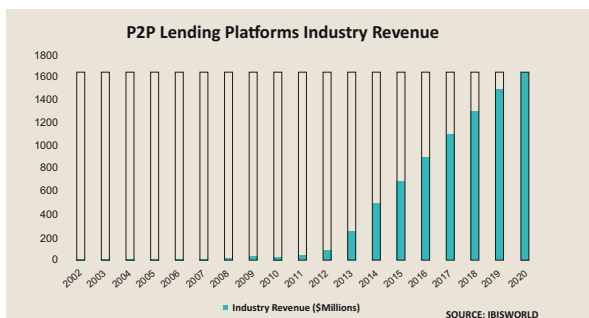


Figure 1: P2P Lending Platforms Industry Revenue (Khedr, 2015)

How Far Fintech Has Gone

In recent years, fintech has gained its footing in the financial industry and challenged incumbents in the industry. Fintech pushes significant developments and changes both at the level of customer experience and conventional banking system. Fintech developments at customer level are closely related to the increase of services both in scope and diversity. At scope level, fintech widens their areas to 30 new norms on financial services. The expanding scope of fintech can be seen in figure 2.

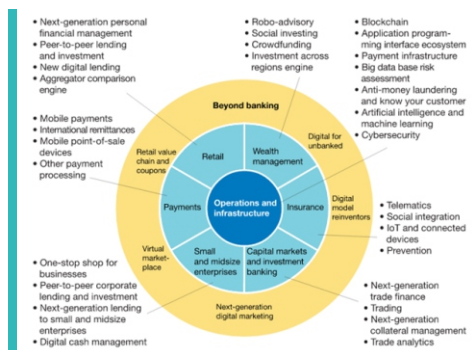


Figure 2: Key Trends of Fintech (McKinsey, 2016)

Increase in Scope

Eight years ago, fintech initial offering to the customer worldwide was only about conventional banking of saving and payments. Now, it embraces even beyond advanced conventional banking services, such as wealth management, insurance, and capital investment. Digital technology advancement becomes hallmarks of beyond banking services offered by fintech. Digital model re-inventors, virtual marketplace, and next generation of digital marketing are now part of fintech key trends.²⁰ Thanks to the extensive development of cloud computing and big data, fintech is experiencing rapid changes in beyond banking services. One of the groundbreaking critical trends in fintech development is the robot-advisory system. This new fintech system provides recommendations with less human intervention. The system tries exploring the possibility of fully automated financial services, starting from only meeting customers' needs, to pursuing more innovative services, such as blockchain systems that track

and store expanding transactions to help reduce infrastructure costs and improve efficiency.

Another breakthrough in developments of fintech industry can be best illustrated in the case of Social Finance (SoFi) and Holvi.²¹ SoFi began its first services to students and young professionals who need networking services and career advisory; while Holvi began by offering financial services to SMEs and expanding into digital fields such as bookkeeping services, cash-flow tracker, and online sales platform. Both SoFi and Holvi are the prime examples of the evolution of fintech companies which start to move beyond fulfilling customer financial needs. Their scopes widen very much to the extent that they blur financial boundaries.

Increase in Diversity

Not only increasing in scope, but fintech industry is also evolving in the diversity of business models, segments, and technologies. One of the best cases of increase in diversity can be best illustrated in the case of Stripe and Alibaba. Stripe is one of the fintech players that offer improvements in online business creation and payments. Before Stripe offered its services in 2011, incumbents in the online payment services needed five to seven days to set up a new merchant. With Stripe, merchants could build up their websites within minutes.²² The company then diversified its service by also introducing the service in payment management. In the case of Alibaba, financial services become part of their business transformation after they started in the e-commerce industry. Alipay is a new business branch from this China's major e-commerce company. With more than 800 million registered users in 2016, Alipay is confident to become the pioneer in fintech that started from e-commerce basis. The emergence of Alipay become the best-known example of the e-commerce-to-fintech expansion model.

Incumbents in fintech industry are also thriving to increase their service diversity. Elon Musk first fintech project, PayPal, has started to move beyond providing online payment system. PayPal expanded its services by offering instant lines of credit and mobile applications.²³ These services can be used to purchases goods in nearby stores and restaurants that accept payment by PayPal.

The increase in both scope and diversity in fintech industry is eventually challenging the conventional banking system. According to PwC Global Fintech Survey, 12 financial service sectors will be harmed by the development of fintech. Among these services, banking and capital market will become the first service areas that will be disrupted the most in the next five years, followed by asset and wealth management.²⁴ Consumer banking, in general, will face the most challenge because lending innovation that fintech provided will exceed the traditional data sources and powerful data analytics that the banks possess. Online platforms that become the basis for every fintech development are proven to be useful in gathering individuals and business preferences in financial services. Price risks, rapid customer-centric lending processes, lower operating costs, alternative processing networks, and the increased use of electronic devices to transfer money between accounts are the hallmarks in fintech and at the same time threats for consumer banking.

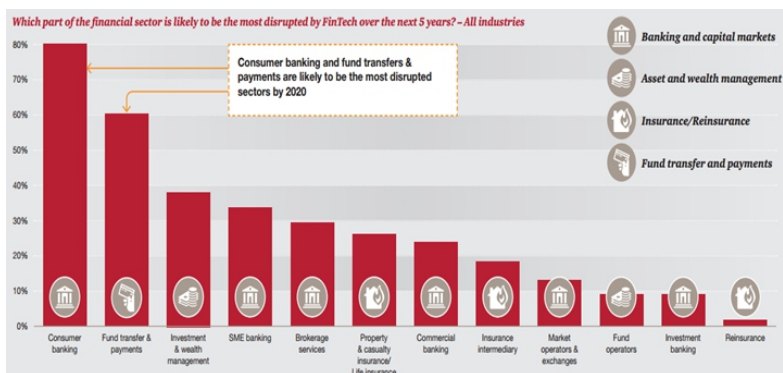


Figure 3: Global Fintech Survey 2016 (PwC, 2016)

Fintech Industry vs. Conventional Banks

Even though consumer banking will face a significant disruption in near future, it does not and will not automatically replace the roles of conventional banks. Fintech companies might possess unprecedented power in improving customer experience and in reducing costs significantly. However, they are not yet capable of acquiring customers at a faster pace. On the other hand, conventional banking institutions have an upper-hand on this matter, as they have capabilities and skills in customer acquisition but struggle to build a complete digital financial system. From this strength and weakness that both parties possess, it is reasonable for them to create collaborative partnerships.

There are two examples that best illustrated collaborative partnership between fintechs and conventional banks. First, in 2014, Moven and Westpac announced to integrate Moven mobile financial management tools with Westpac Internet Banking platform in New Zealand.²⁵ Westpac, an Australian consumer, and the corporate bank will use the tools that Moven possess to become the largest bank in the market. At the same time, Moven, a New-York fintech company aims to expand into new markets by partnering with Moven. Second, BBVA, a Spain-based bank, decided to partner with three fintech startups. The first is Descatame, a data analytics start-up. BBVA aims to use Destacame credit scores built from utility-bill payment histories to extend credits to the underbanked.²⁶ The second is FutureAdvisor, an automation robot fintech startups. BBVA aims to lower its cost by enhancing their system with financial-advisory services to help customers with portfolio optimization.²⁷ Lastly, BBVA teamed up with Dwolla, a payment company, to accelerate payment services with low fees.

The Challenges for Fintech Development

The development of the financial technology industry has numerous challenges, ranging from cultural and structural barriers. In fact, the challenges of fintech industries vary widely among countries. In this case, the challenges for fintech industry in developed and developing countries are clearly different. However, we will focus on analyzing the challenges of fintech growth in developing countries given the fact that the utilization of fintech is still largely dominated by the society in developed

countries, whereas the rapid economic growth in emerging market countries indeed offers tremendous opportunities because of their market share prospects. Even further than that, challenges occurring in the developing countries are also present in Indonesia, making the assessment of them becomes a lot more relevant and meaningful.

Digital Infrastructure and Financial Readiness

The first challenge for fintech growth is to solve the problem of technological access disparity in developing countries. In this context, the primary factor that impedes the growth of fintech in developing countries is the infrastructure barrier. According to Japhet E. Lawrence, the reason that hinders the adoption of the digital industry, including fintech, among developing countries are most commonly related to infrastructure barriers. These barriers include the limitation of technological access such as computers, limited bandwidths that reduce the capacity to access the Internet, unreliable electricity supply, and poor telecommunications infrastructure. These infrastructure barriers have also become a challenge for the fintech industry, because in developing countries there is a wide disparity on technological infrastructure, particularly in rural and remote areas. For example, according to the Association of Internet Service Providers in Indonesia (APJII), given that the total population of Indonesia is more than 250 million, Indonesia's Internet penetration rate only stood at 35% in 2014.²⁸ Moreover, according to Deloitte's recent studies, in 2013 60% of the entire bankable population in Indonesia did not have a bank account.²⁹ Also, the infrastructural problems are also correlated with cultural or supra-structural barriers. In many developing countries, such as Indonesia, the majority of people, especially those who lives in rural areas, are still not accustomed to utilizing digital transactions, and many of them still do not have a bank account. They still tend to use cash in transactions, instead of credit cards or other digital payment methods. Although the number of internet and financial service penetration is growing, the cultural problem of “trust” must also be reckoned.

Moreover, the financial readiness of the people also remains as one stumbling stone for fintech companies and the industry to flourish in general. The graph below captures the profile of financial inclusion in the world.

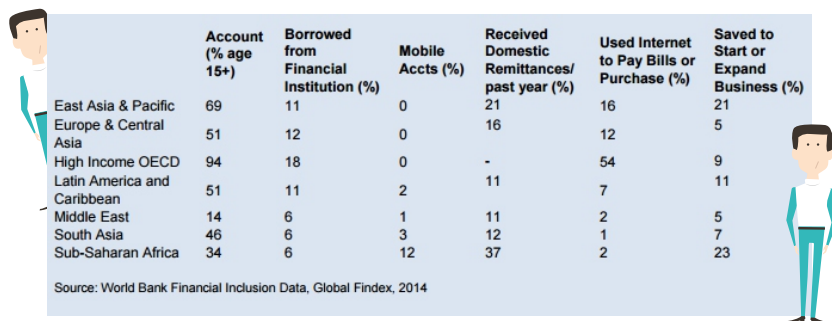


Figure 4: Global Financial Inclusion Profile



It is quite apparent to see that the larger part of developing the world still lags behind, even on the number of bank account holders. Despite the regrettable number of bank account holders, Asia also reflects high potential in improving in the future, as the number of internet usage to pay bills or pay for transactions is quite good. The numbers can tell a lot about the financial behavior of the people, as better numbers, shown by majorly developed countries, reflect better awareness in financial advancement as well. Little awareness in using financial services would mean bigger challenges for fintech companies to penetrate further, as the market does not promise staggering consumer number.

Trust and Compliance

The second challenge that might hinder the growth of fintech is the problem of trust and compliance, particularly in the developing countries. There are many reasons on why “trust” has become a salient issue, seen from the real geographical separations, the lack of regulations to protect customers or the company, and the lack of confidence in utilizing online transactions because of the limitation of its services. However, the issue of trust and compliance in fintech could be resolved by the emergence of regulator-technology (reg tech) start-ups. Regulatory Technology is an artificial intelligence system that can monitor traders, learn their behavior patterns and raise the alarm when they do something out of character.³⁰ The innovation of reg tech could help fintech start-ups to improve trust and compliance.

Regulatory Framework

The third challenge for fintech is government regulation. In this case, regulations can either be a boost or obstacle for fintech, depending on the countries regulation. For example, UK's fintech regulation is notably known as the most fintech friendly, because the regulation is intended to boost innovation, not to stifle it.³¹ The UK Financial Conduct Authority (FCA), as UK chief financial regulator, has launched an innovative regulation called “Sandbox.” The Sandbox is a set of mechanism to test products with temporary regulatory approval for three until six months with real customers.³² This regulation certainly eases fintech companies to figure out how to offer products that comply with the regulations.

On the contrary, fintech regulations in the US are heavily criticized because the US authority wants to regulate the fintech sector like traditional financial institutions. The financial industry is heavily regulated in the US because it is prone to crisis. The US Office of Controller of Currency stated that they started to accept applications for fintech companies and would formally subject them to federal banking rules. Fintech companies can get the benefit of being an established company in the eye of government, but they also face anti-money-laundering control and consumer protection.³³ According to the Chief of Digital Officer of Silicon Valley Bank Bruce Wallace, the fintech regulations in the US has made a lot of ambiguity and confusion, because they treat fintech start-ups similarly to conventional banks, such as the Western Union.³⁴ The strict regulations for financial institutions in the US are mainly

because of their experience in facing the financial crisis and their strict regulations to prevent money laundering or other financial crimes.

Indonesia's Fintech Industry

The increase in scope and diversity at fintech industry also happened in Indonesia. Even though they fall behind in scale compared to the rest of the world, the number of fintech industry in Indonesia is exploding in recent two years. The number of fintech startups in Indonesia has grown significantly from 9 percent in 2013-2014 to 78 percent in 2015-2016.³⁵ The newest number of fintech startups in Indonesia is reaching 140, an all-time-high in history and is expected to grow exponentially shortly. These startups offer a vast array of services, but they mostly focus on payment services. Payment becomes the catalyst for this increase because fintech startups aim to solve the problem of real cash dependency. By 2014, 60 percent of Indonesians do not have bank accounts, while for online business to grow, it requires a vast amount of access to online payment.

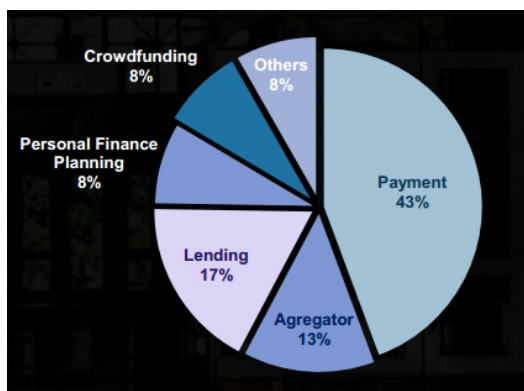


Figure 4: Fintech Startup Ecosystem in Indonesia (Daily Social, 2016)

The prime example of how payment services still become the hallmark in Indonesia fintech can be seen in the case of Doku. Since its founding in 2007, Doku is the first non-bank Indonesia's fintech startups that provide offline and online payment gateway. Having secured an e-money license from Bank Indonesia in 2012, DOKU then launched its e-money product for the first time in April 2013. Today, DOKU's electronic money has been used by more than 1 million Indonesian consumers, and DOKU has teamed up with more than 22,000 merchants. According to the survey, 42,7% of Indonesians mentioned they had used Doku before.³⁶ Beside payment service, lending and loan service are also gaining more footing in recent years. Modalku, a platform for small business loans, is in the second position after Doku with 17,2% of Indonesians has used it before. Other fintech fields such as investment, crowdfunding, and financial planning are relatively far away in term of public use compared to loan and payment services in the country.

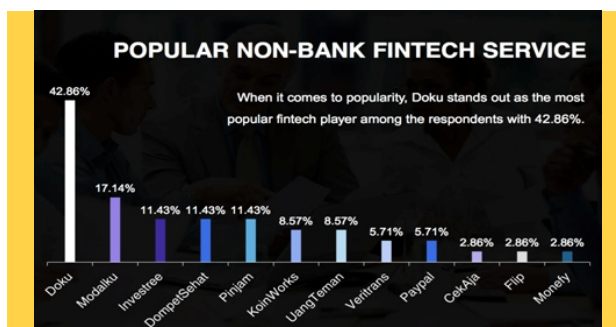


Figure 6: Survey on Non-Bank Fintech (Daily Social, 2016)

With this profile, Indonesia is still entailed to several obstacles hampering the much development of fintech industry in the country. Following the general challenges fintech industry is facing, Indonesia mirrors a quite similar story. As mentioned before, Indonesia still portrays low internet penetration and bankable population. Coupled with low digital literacy, where people in rural areas are still lagged behind when it comes to digital utilization, the problem is only getting worsened. This fact leads to the conclusion of unready digital infrastructure and financial prowess.

In Indonesia, fraudulent crimes using online transactions are still rampant. According to the Indonesian National Police Head of Cyber Crime Unit, AKBP Hillarius Duha, most cyber crime cases are still dominated by online transaction frauds, which in 2015 there were 404 online fraud cases from 785 reported cases.³⁷ This number reflects the fragile state of the online transaction in the country where insecurity still prevails and further prevents people from putting trust in making such transactions. Moreover, the digital cultures that are not fully established in the society also become a real obstacle for fintech growth.

As for regulatory framework issue, the Financial Service Authority (OJK) has finally issued a specific regulation on fintech companies that runs Peer-to-Peer (P2P) lending business. In the POJK No. 77/2016 regulation, fintech companies are required to have Rp 1 billion in capital when registering to the OJK, and the number will rise to Rp 2,5 billion to apply for a business license.³⁸ Similar to the UK's FCA regulation, OJK also implements a regulatory sandbox for fintech companies to test their products or services to consumers under the supervision of authority before it issues further regulations. In its press release, OJK agrees that the presence of fintech gives an opportunity to continue developing the financial industry as well as promoting financial inclusion programs as the number of unbankable population in Indonesia is still high.³⁹ This set of regulations prompted by the financial authority in the country reflects the awareness of Indonesia's government in providing incentives and safeguards for the growth of fintech companies in the country. This shows that the country is already seeing the digital industry as a nascent sector which is expected to contribute to the overall economy of the country significantly.

Conclusion

As the world is leaning towards everything-digital, industries are challenged to cope with such robust revolution. People begin to behave differently, and at the same time, require a different set of economic characteristic. The economy is then pressured to adapt to catch up with what society wants. The financial service sector, as the backbone of the economy, also experiences ample evolution through the financial technology (fintech) industry.

We have seen that fintech industry has grown and matured momentarily in the recent years, as they began to offer innovative financial solutions to people by taking advantage of the digital revolution. Fintech companies start to rely on themselves and push conventional financial services institution to the corner. From all the figures we have scrutinized, it is very likely that the industry will only receive more and more attention and captivate larger market. This is aided by the fact that more innovations are in line to be maximized by these companies, and that more people are more aware of the ease of making transactions using fintech-based services. The industry is also expected to thrive both in scope and diversity. More sectors of financial services will adopt the digital solution, - no longer limited to payment services – more innovations will be made by both fintech companies and conventional banks/financial institutions, and more fintech companies will emerge. Fintech is indeed heading towards a promising direction.

However, we shall not avoid the fact that fintech is, like any other digital industry, also struggling with several key challenges. Regulatory framework remains as one of the main hurdles faced by fintech companies. Governments in several parts of the world are not yet able to provide the correct and lucrative environment for these businesses to innovate and grow; even in the United States. Developing world is also seen to lag behind in giving incentives for these businesses to reap the most benefits. The developing world suffers even more by their already lagged digital infrastructure and financial inclusion profile. These undoubtedly remain as the primary homework for the ecosystem in general to cope with, for the industry to flourish even more in the future.

Indonesia, in particular, portrays another piece of story. The government has not made much intervention and incentives for fintech industry but is already prompting tenacious efforts to incite the industry. As we all are very aware of as well, President Joko Widodo is committed to encouraging the rise of the digital economy in prominence, hence the affirmative actions. The number of fintech companies in the country has also grown quite significantly over the past years, and show promising future. The country surely does not want to waste time and resources and is aspired to catch up with the rest of the world. One thing we know, despite all the rocky path ahead, the country is already cruising the correct path.

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