“Assessing the dynamics of fintech in Indonesia”

AUTHORS	Nofie Iman https://orcid.org/0000-0003-2689-5255

ARTICLE INFO	Nofie Iman (2018). Assessing the dynamics of fintech in Indonesia. *Investment Management and Financial Innovations*, *15*(4), 296-303. doi:10.21511/imfi.15(4).2018.24
DOI	http://dx.doi.org/10.21511/imfi.15(4).2018.24
RELEASED ON	Saturday, 08 December 2018
RECEIVED ON	Thursday, 16 August 2018
ACCEPTED ON	Wednesday, 28 November 2018

LICENSE	This work is licensed under a Creative Commons Attribution 4.0 International License

JOURNAL	"Investment Management and Financial Innovations"
ISSN PRINT	1810-4967
ISSN ONLINE	1812-9358
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
21	1	2

© The author(s) 2026. This publication is an open access article.

BUSINESS PERSPECTIVES

LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10, Sumy, 40022, Ukraine

www.businessperspectives.org

Nofie Iman (Indonesia)

ASSESSING THE DYNAMICS OF FINTECH IN INDONESIA

Abstract

Financial technology or commonly known as fintech is relatively a new thing in Indonesia. This article is attempting to capture the dynamics of such technology in Indonesia. This paper was aimed to help researchers and academics who are interested in studying the phenomenon of fintech more broadly. This study is descriptive and exploratory by nature. Data were gathered from secondary sources, as well as interviews with practitioners, policy makers, and users. Data were collected during the period from 2016 to 2018, which was divided into several different stages. The results of the study show that fintech is more than just a phenomenon, it cannot be compared to other start-ups, and has the potential to fundamentally change the business and economic landscape.

Keywords financial technology, financial services, innovation, adoption

JEL Classification G23, L84, O31, O33

Received on: 16th of August, 2018
Accepted on: 28th of November, 2018

© Nofie Iman, 2018

Nofie Iman, Ph.D., Faculty Member and Researcher, Department of Management, Faculty of Economics and Business, University Gadjah Mada, Indonesia.

This is an Open Access article, distributed under the terms of the Creative Commons Attribution 4.0 International license, which permits unrestricted re-use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Fintech came up and emerged so fast in Indonesia since 2010s. It was often considered to be as a result of the massively developed information and communication technology infrastructures in the country during the last decade. At the same time, the government of the Republic of Indonesia launched the vision of "Indonesia Digital Economy 2020" and "National Movement of 1000 Digital Start-ups". However, only around 36 percent of Indonesia's adult population have conventional banking accounts (Global Findex, 2014). As many as 170 million Indonesian residents have used mobile phones. About 130 million of them use mobile phones to access the Internet, but 80 millions of them apparently do not have access to conventional banking and financial services (Euromonitor, 2017).

This gap obviously encourages start-up entrepreneurs to take advantage of those untapped opportunities. Initially, the emerging fintech business was expected to be an initiative capable of harmonizing financial inclusion in Indonesia through expanding access, reducing costs and increasing efficiency. However, fintech have also been criticized by focusing only on big and major cities and targeting tech-savvy customers who are not really financially excluded. Some of those customers even have already established long-term relationship with conventional banking institutions. Thus, it is necessary to examine whether fintech are really setting up new and innovative business models or simply taking advantage of the gaps left by traditional players (Riemer et al., 2017).

This article aims to map the dynamics of fintech currently operating in Indonesia. In addition, this article also investigates the current prac-

http://dx.doi.org/10.21511/imfi.15(4).2018.24

tices of fintech, identifies and looks at factors that encourage or inhibit adoption, and presents relevant findings for academics, practitioners and policy makers related to fintech in Indonesia. For this reason, this article is divided into the following: the article begins the with introduction and background. The first section is the theoretical basis and conceptual framework, the second section briefly reviews the methodology used, the third section is the findings and analysis of this study, while the last section presents conclusions and limitations.

1. LITERATURE REVIEW

There are various concepts and diverse definitions regarding fintech. The Oxford Dictionary (2017) defines fintech as "computer programs and other technologies used to support or enable banking and financial services". Financial technology companies are generally founded with the purpose of disrupting incumbent financial systems and corporations that rely less on software". FinTech Weekly (2017) describes fintech as "a business that aims at providing financial services by making use of software and modern technology". Meanwhile, Hung and Luo (2016) define fintech as "the combination of both domains that will lead innovative financial services to shift away from an in-house approach to relying on external providers to deliver online and mobile solutions in a timely manner" (p. 2).

From these various definitions, there are several important keywords that have emerged repeatedly: technology, service providers, banking, financial services, and disruptive. Implicitly, these keywords illustrate that fintech has the flexibility that conventional banking and financial services providers do not have. This flexibility allows fintech to offer a variety of services, ranging from payments, investments, financing, insurance, to supporting infrastructure (back office) (see Table 1). On the other hand, however, these disruptive changes will also incur many challenges to the sector and industry, not only in banking and financial sectors (Riemer et al., 2017).

Global phenomenon of fintech also cannot be separated from technology-based innovations that plague the banking and financial services sector (Hung & Luo, 2016). These innovations have resulted in structural changes that have an impact on lowering costs, increasing efficiency, and more effective coordination. Thus, it is no wonder that fintech will be applied in many sectors and industries (Zavolokina et al., 2016), including, but not limited to, online marketplace, peer-to-peer lending, equity crowdfunding, financial and investment management, financial application (including artificial intelligence, big data, machine learning), and robo-advisor.

Here, I argue that a number of theorems can be used to explain the emergence of fintech, including agency costs, transaction costs, network externalities, multi-sided platforms, and disruptive innovations.

Agency cost is a kind of internal cost that arises from, or must be paid to, the party who acts as an agent (Jensen & Meckling, 1976). Agency costs arise because the business at the beginning of was only owned and managed by the same individual. As the economy grows, personal business grows into a large business entity and involves various parties with diverse interests. The term 'agency'

Table 1. Business process

Type of interaction	Business process	Some examples
Customer-to-customer (C2C)	Payment	Digital wallet, peer-to-peer (P2P) payment
	Investment	Peer-to-peer (P2P) lending, equity crowdfunding
Business-to-customer (B2C)	Lending	Crowdfunding, micro loan, credit facilities
	Insurance	Risk management
Business-to-business (B2B)	Infrastructure	Security, data management
	Multi-processes	Big data analytics, predictive modeling

refers to the interaction between principals (superiors) with agents (subordinates)[1]. To ensure that the business entity is running properly, agency costs are absolutely necessary. The existence of technological innovation in general will reduce agency costs significantly, making agents more accountable and transparent to their principals.

Transaction costs (or often referred to as coordination costs) are costs that arise when an entity conducts economic exchanges or participates in the market (Coase, 1937; Williamson, 1979, 1981). A number of transaction costs arise in the form of information seeking costs (search and information costs), bargaining costs, as well as the costs of monitoring and law enforcement (policing and enforcement costs). Similar to agency costs, transaction costs also tend to be reduced through technological innovation. For example, with the presence of information technology, the cost of finding the best suppliers, trading partners, and customers will be cheaper. Moreover, the cost of negotiating a contract agreed upon by both parties and the costs of ensuring the contract is adhered to will also be lower.

Network externalities is the effect on the user of a product or service from another person who uses the same or compatible product or service (Katz & Shapiro, 1985; Liebowitz & Margolis, 1994). Network externalities can be positive when more users of a product or service also increase usefulness for its users. It can also be negative when its usefulness decreases as users of the product or service increase. In the context of fintech, positive network externalities can arise from the presence of fintech and their user base. Positive influences were born as a result of trends that are considered current (fashion or stylishness), as well as from complementary products and services (complementors). Among millennials and metropolises, for example, fintech is seen as something "cool". Fintech application can also be seen as a 'complement' to other existing applications, such as mobile banking applications, on-demand online transportation, and so on.

Fintech also cannot be separated from the concept of network externality. A multi-sided platform is one of the concepts that can be used to explain the emergence and widespread of technology. A multi-sided platform is a business model that brings together two or more independent groups of users (Rochet & Tirole, 2003). This interaction is facilitated by the existence of a platform that manages such connectivity (Gawer & Cusumano, 2002). Multi-sided platforms are relevant because most of the existing technology utilizes platform technology that brings together the user base, on the one hand, and the customer base, on the other hand. For example, peer-to-peer (P2P) lending is a form of multi-sided platform that connects funds owners, on the one hand, and those who need funding, on the other hand. The platform owner then charges the percentages of fees for managing such interaction.

Finally, disruptive innovations can also explain the phenomenon of fintech from different point of view. Disruptive innovation can be defined as the process by which a product or service emerges by offering a simple application in the lower market (Christensen, 1997). Slowly, they aim to penetrate the market that is above its level until it is finally able to replace the incumbent who first controlled the market. Fintech that appears and operates currently are considered to be commonly following this disruptive pattern. They come with products and services that tend to be perfunctory, but continuously improve and expand their scope. Generally, incumbent and market authorities tend to ignore the presence of these disruptors, because they are difficult to detect. These disruptors are also working on a market, which is considered not very profitable.

Moving on in the following section, I will review the research method used.

2. METHODOLOGY

It is not easy to get a comprehensive picture of fintech practices in Indonesia. On the one hand, the available data and information are so scattered and not comprehensive. On the other hand, quantitative market data and information are very rare and difficult to access by the public. However, this limitation has actually been anticipated before this research is conducted. Therefore, I choose

1 Agency relations are not always between superiors (managers) and subordinates (employees), but can also occur between shareholders or owners with managers or managers. Agency relations can also be more horizontal, for example, between companies and suppliers (suppliers) or vendors and distributors.

http://dx.doi.org/10.21511/imfi.15(4).2018.24

and design a meticulous and practical methodology to build a conceptual explanation of fintech in Indonesia. As previously anticipated, the use of various data collection instruments is also unavoidable. In addition, to overcome the complexity of fintech mapping in Indonesia, building an appropriate research approach is a necessity.

First, I consider qualitative and interpretive approaches to be the most relevant (Denzin & Lincoln, 1994). This approach allows the researcher to focus on processes, mechanisms, and events that are expected to generate insight. This approach also provides deeper data collection and reflection on findings obtained. Moreover, this approach also supports the use of an 'insider' perspective (Bryman & Bell, 2007). Methodological literature also supports a qualitative approach for research that needs to be approached using a conceptual framework, which is and will still be developed (Creswell, 2003). What we also should not forget is that qualitative research must be in a unique and dynamic context. Researchers are required to be able to build explanations and give meaning to the findings. Philosophically, 'truth' is subjective, depends on the understanding, meaning, and context that surrounds it (Cassell & Symon, 2004).

In terms of data collection, the qualitative approach allows for a variety of different methods: interviews, focus group discussions, workshops, ethnography, observation, document analysis (Cassell & Symon, 2004). In this research, primary data were obtained from in-depth semi-structured interviews, while secondary data were extracted from literature review and document analysis. Secondary data are intended to capture macro images, while interviews are intended to build a detailed and nuanced understanding. Indeed, this research follows the general rules in rigorous qualitative research to process the data that have been collected previously (Cresswell, 2003; Denzin & Lincoln, 1994). Each interview and discussion is transcribed carefully, supported by relevant photos and supporting documents as well. Despite the limitations of various constraints, I have tried to use all available data and integrate them in such a way as to ensure a comprehensive depth of analysis.

Furthermore, the next section will tell the findings that I have obtained in the field.

3. RESULTS AND DISCUSSION

The research that has been initiated since 2016 has managed to gather interesting findings in the field. From the literature study, there are some slightly different data, but both show the large amount of fintech transactions in Indonesia, at around US$ 15 billion in 2017. Of that number, most of them are engaged in the payment sector, followed by investment and lending (see Table 2).

Table 2. Fintech transactions in Indonesia

Source: Indonesian Fintech Association (2017).

Type of fintech	Percentage, %
Payment	32
Investment	17
Lending	15
Point-of-Sales (PoS)	11
Crowdfunding	9
Others	16
Total (US$ 15 billion)	100

Although this figure cannot be underestimated, the actual potential of the fintech transactions can be even higher. Another data show that Indonesia is actually a digital country. With more than 256 million people, 132 million of them are active Internet users and 123 million of them access the Internet through mobile devices (We Are Social, 2017). What is more, the average user spends around 4 (four) hours on the Internet every day. Thus, the actual number of fintech transactions in Indonesia is considered to be much higher.

Unfortunately, with regard to fintech role in financial inclusion, as expected by many parties, it does not appear to have been fully carried out by Indonesian fintech companies. Out of 142 fintech companies registered in the Indonesian Fintech Association, most of them are still operating in Java and in big cities. In the context of geographical inclusiveness, it can be certain that those companies are not yet focusing on such agenda (see Figure 1).

Indeed, inequality is a crucial issue in infrastructure development and population distribution in Indonesia. About 52 million users of digital infrastructure are those who live in the main island, Java. The remaining 18 million users live on the island of Sumatra. The users of digital infra-

Source: APJII (2015).

Figure 1. Digital infrastructure map of Indonesia

structure on other islands range from 4 to 7 million people. It seems that they simply ignore those who are living on the other islands, not to mention those in the remote and outer areas.

However, one of the respondents who became the manager of a fintech start-up argued: *Our target market is still in Greater Jakarta area, but our custodians [are those] who do not have access to it [conventional banking]. Like advertising company, creative agency, media and creative industry ... Often also from traders (who work on online e-commerce trades)... Also sometimes from outsourcing services company, especially near Lebaran (Eidul Fitr) [CD].*

In this context, fintech may indeed be able to provide structural solutions for the growth of creative industries and electronic-based industries (e-commerce). Such efforts have the potential to encourage the birth of new entrepreneurs to be able to grow and reach a wider market distribution.

The next question that often arises is about security and trust. Can fintech be trusted? How well are they able to mitigate risk? One manager of a fintech company explained: *We are members of the Indonesian Fintech Association. There is a regulation for that [fintech] ... Not anyone can just start a fintech company. All must follow the rules of the game, join regulatory sandbox ... It will be good for us, too, for customers too [XR].*

Other respondents said: *We have an office (headquarters). There are also several branches. We are also not fully operating online. Our program even requires direct assistance and [offline] mentoring program [AL].*

Other respondents said: *We [fintech] are different from start-up. I believe we are more mature [compared to start-ups]. We all understand the system, understand banking [ER].*

This is in line with a number of government policies related to fintech. For example, Bank Indonesia has issued Bank Indonesia Regulation No. 16/8/PBI/2014 concerning Amendments to Bank Indonesia Regulation No. 11/12/PBI/2009 concerning Electronic Money. In addition, the Financial Services Authority (OJK) also released Financial Services Authority Regulation No. 77/POJK.01/2016 concerning Information Technology-Based Lending and Borrowing Services.

Nevertheless, it seems that fraud and online moneylenders under the guise of fintech are also still free to operate. One of the users of the fintech service uses those kind of service by installing the application through Google Play store. He said: *I honestly have debt in the [Fintech] apps, and finally 'killed' me by contacting all my contacts [that I have a loan and can't pay it back in time] [WP].*

http://dx.doi.org/10.21511/imfi.15(4).2018.24

This opinion is supported by other respondents: *In my experience… For example we have monthly installments [IDR] 1.5 million, now if we pay only 2 days late, we will have to pay the same next month plus fines. So you have to pay [IDR] 3 million and that doesn't include the charges [PP].*

This explanation shows that the regulation of fintech cannot be said to be mature yet. Their overlapping roles could have the potential to lead to frauds such as shadow banking, pyramid schemes (ponzi schemes), and various other forms of abuse.

Meanwhile, one of the service users of fintech expressed his opinion from a different side: *I actually see that there is investment potential here. We can consider to put our investment portfolio in fintech. The return is not bad, it can be 12-15% [per year] ... it could be an alternative to money deposits and mutual funds. So far so good [NF].*

This description shows that a number of schemes offered by fintech can be an alternative investment instrument with more attractive lure of returns. In addition, they also offer easy choices, especially for novice investors who want to try to invest in the real sector with a relatively large risk.

Then does fintech replace absolute banking and financial services? Will the bank be displaced by fintech? These questions were also asked to a number of respondents. Some of them answered: *Frankly, the idea of replacing conventional banks is indeed very tempting ... Hahaha ... Maybe [the bank] will not become extinct, but change roles [UB].*

Conversely, other respondents argue: *I don't see that possibility ... Private banking and priority banking ... I certainly prefer them rather than having to bother downloading, installing, and running applications. I'd better just call my personal banker directly [VB].*

This explanation is in line with previous observations and literature studies. Conventional banking for example, is directly dealing with fintech peer-to-peer (P2P) lending. However, despite offering similar products and services, fintech claim to only target markets that have not been served by unbanked population. On the other hand, the author found evidence that a number of conventional banks also invest in fintech, making them like standing on two legs[2].

If we draw the line back to the theoretical discussion at the beginning, the increasing popularity of fintech is relevant to agency costs (Jensen & Meckling, 1976) and transaction costs (Coase, 1937) are getting cheaper. Fintech is a logical and pragmatic solution that offers simple financial and banking products and services while expanding its scope. The emergence of disruptive innovation (Christensen, 1997) did begin to appear, but the symptoms of David defeating Goliath had not be seen.

With regard to multi-sided platforms (Rochet & Tirole, 2003), the majority of the fintech initiatives being studied indicate the existence of these practices. They operate in the middle of two different customer base through a technology-based platform mechanism (Gawer & Cusumano, 2002). However, the multi-sided platform which is run is not that simple. Regulatory factors also play an influential role in the fintech industry[3].

Despite using the latest technology and innovation, the author have not been able to prove the existence of positive network externalities (Katz & Shapiro, 1985) which appeared in the context of fintech in Indonesia. Respondents in this study, the majority of young people, consider fintech as something stylish. However, the influence of these perceptions on externalities has not been proven empirically.

Finally, allow me to conclude the results of this study.

2 For example, Bank Central Asia (BCA) invests through Central Capital Ventura (CCV) venture capital. Bank Mandiri also does the same through Mandiri Capital Indonesia (MCI). Bank Tabungan Pensiunan (BTPN) chose to develop its own service called Jenius, while Bank Negara Indonesia (BNI) and Bank Danamon chose to collaborate.

3 In addition to Bank Indonesia and the Financial Services Authority, there are the Ministry of Finance, the Ministry of Communication and Information, the Ministry of Cooperatives and SMEs, as well as a number of other state institutions that have an interest in fintech in Indonesia.

CONCLUSION

My attempt to map fintech in Indonesia can be summarized as follows. First, fintech is the implementation and utilization of technology to increase banking and financial services. Fintech utilizes the latest software, Internet, communications and computing technologies such as predictive analysis, big data, artificial intelligence, and so on. This is also in line with previous research such as Hung and Luo (2016), Riemer et al. (2017), Zavolokina et al. (2016), among others. However, fintech seemed to be quite different from start-ups in other sectors. This complexity suggests that fintech is not just a phenomenon.

Fintech is generally carried out by start-up companies, although this is not always the case. The fundamental difference is that the fintech company is not pioneered by students or fresh graduates as the start-up company, but initiated by those who have had previous experience. In addition, not infrequently large companies, including conventional banking and financial services, also invest in existing fintech businesses. Thus, while the technology provides the opportunity to disrupt the market, we have to question the potential for fintech to really fundamentally change the business and economic landscape (Riemer et al., 2017). The main sectors exposed to this risk at the moment are financing and funding. It might not be surprising if conventional banking will eventually only be a kind of 'cashier', while other products and services are offered by fintech due to their flexibility and efficiency in operational activities.

Of course, this research was hindered by a number of limitations. In terms of methodology, for example, I shall acknowledge some limitations. First, the data sources obtained were very limited and the official sources released tend to lag behind. Second, the selection of interview samples is not too representative, especially those based outside Java. Finally, this research is only descriptive and exclusively looking at the fintech phenomenon simply by ignoring external variables. Nevertheless, there are a number of opportunities for further research. For example, the specific sector of fintech needs to get a more significant and comprehensive portion, such as equity crowdfunding or peer-to-peer lending. Because this study focuses only on fintech, the interaction or connection with other neglected external variables can also be further investigated. Finally, different methods and approaches are needed to confirm or refute findings in this study.

REFERENCES

1. Bryman, A., & Bell, E. (2007). *Business Research Methods*. New York: Oxford University Press.
2. Cassell, C., & Symon, G. (2004). *Essential Guide to Qualitative Methods in Organizational Research*. London: SAGE Publications.
3. Christensen, C. (1997). *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Boston, MA: Harvard Business School Press.
4. Coase, R. (1937). The nature of the firm. *Economica, 4*(16), 386-405. https://doi.org/10.1111/j.1468-0335.1937.tb00002.x
5. Creswell, J. W. (2003). *Qualitative, Quantitative and Mixed Methods Approaches*. London: SAGE Publications Ltd.
6. Denzin, N. K., & Lincoln, Y. S. (1994). *Handbook of Qualitative Research*. Thousand Oaks, CA: Sage.
7. Euromonitor (2017). *Mobile Phones in Indonesia*. Retrieved from www.euromonitor.com/mobile-phones-in-indonesia/report (accessed on August 5, 2018).
8. FinTech Weekly (2017). *A definition by FinTech Weekly*. Retrieved from https://www.fintechweekly.com/fintech-definition (accessed on March 29, 2017).
9. Gawer, A., & Cusumano, M. (2002). *Platform Leadership: How Intel, Microsoft, and Cisco Drive Industry Innovation*. Boston, MA: Harvard Business School Press.
10. Global Findex (2014). *The Global Findex database: Indonesia*. Retrieved from http://datatopics.worldbank.org/financialinclusion/country/indonesia (accessed on August 5, 2018).
11. Hung, J. L., & Luo, B. (2016). FinTech in Taiwan: a case study of a Bank's strategic planning for an investment in a FinTech company. *Financial Innovation, 2*(1), 1-15. https://doi.org/10.1186/s40854-016-0037-6
12. Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305-360. https://doi.org/10.1016/0304-405X(76)90026-X

http://dx.doi.org/10.21511/imfi.15(4).2018.24

13. Katz, M., & Shapiro, S. (1985). Network externalities, competition and compatibility. *American Economic Review, 75,* 424-440. Retrieved from http://idv.sinica.edu.tw/kongpin/teaching/io/KatzShapiro1.pdf

14. Liebowitz, S. J., & Margolis, S. E. (1994). Network externality: An uncommon tragedy. *The Journal of Economic Perspectives, 8,* 133-150. https://doi.org/10.1257/jep.8.2.133

15. Riemer, K., Hafermalz, E., Roosen, A., Boussand, N., El Aoufi, H., Mo, D., & Kosheliev, A. (2017). *The Fintech Advantage: Harnessing digital technology, keeping the customer in focus.* University of Sydney, Business School and Capgemini. Retrieved from https://www.capgemini.com/au-en/wp-content/uploads/sites/9/2017/08/the_fintech_advantage.pdf

16. Rochet, J.-C., & Tirole, J. (2003). Platform competition in two-sided markets. *Journal of the European Economic Association, 1*(4), 990-1029. https://doi.org/10.1162/154247603322493212

17. The Oxford Dictionary (2017). *Definition of fintech in English by Oxford Dictionaries*. Retrieved from https://en.oxforddictionaries.com/definition/fintech (accessed on March 29, 2017).

18. We Are Social (2017). *Digital in Southeast Asia in 2017*. Retrieved from https://wearesocial.com/special-reports/digital-southeast-asia-2017 (accessed on March 4, 2018).

19. Williamson, O. E. (1979). Transaction cost economics: The governance of contractual relations. *Journal of Law and Economics, 22*(2), 233-261. http://dx.doi.org/10.1086/466942

20. Williamson, O. E. (1981). The economics of organization: The transaction cost approach. *American Journal of Sociology, 87*(3), 548-577. https://doi.org/10.1086/227496

21. Zavolokina, L, Dolata, M., & Schwabe, G. (2016). Fintech – what's in a name? *Proceedings of the 37th international conference on information systems*. Dublin. Retrieved from https://aisel.aisnet.org/icis2016/DigitalInnovation/Presentations/12/