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Article

Does financial technology matter? Evidence from the Indonesia healthcare industry during the COVID-19 pandemic

Scientific Papers of the University of Pardubice, Series D: Faculty of Economics and Administration

Provided in Cooperation with:

Faculty of Economics and Administration, University of Pardubice

Suggested Citation: Wijaya, Liliana Inggrit; Zunairoh, Zunairoh; Rianawati, Andri; Prasetyo, Vincentius Riandaru; Harianto, Indro (2022) : Does financial technology matter? Evidence from the Indonesia healthcare industry during the COVID-19 pandemic, Scientific Papers of the University of Pardubice, Series D: Faculty of Economics and Administration, ISSN 1804-8048, University of Pardubice, Pardubice, Vol. 30, Iss. 1, pp. 1-13, <https://doi.org/10.46585/sp30011509>

This Version is available at:

<https://hdl.handle.net/10419/334772>

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Does Financial Technology Matter? Evidence from the Indonesia Healthcare Industry During the Covid-19 Pandemic

Scientific Papers of the University of Pardubice, Series D: Faculty of Economics and Administration 2022, 30(1), 1509.
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DOI: 10.46585/sp30011509
editorial.upce.cz/SciPap

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Abstract

The Covid-19 pandemic has created various new restrictions, including restrictions on direct interaction in the administrative process of hospitals. In fact, the administrative process in Indonesian hospitals is still complex, not well organized, and has not used technology properly. This study aims to analyse the effect of financial technology (fintech) and financial literacy on the efficiency of the Indonesian healthcare industry during the Covid-19 pandemic era. This study uses a quantitative method with an online survey for data collecting. The purposive sampling was applied to get 225 respondents. The dependent variable is financial technology usage, which is measured through three perceptions of fintech users: perceived ease of use, perceived usefulness, and internet usage of all healthcare service users in the healthcare industry in Indonesia. The moderating variable adopted in this study is financial literacy, which is a combination of the understanding (knowledge), skills, attitude, and ability to make sound judgement and decision (behaviour) on personal financial matters resulting in individual financial well-being. This study uses the SEM (Structural Equation Modelling) method to analyse the efficiency of the healthcare industry. The study results show that perceived ease of use and perceived usefulness have an effect on fintech; fintech has a positive effect on efficiency, where financial literacy also strengthens the effect of fintech on efficiency in the Indonesia healthcare industry during the Covid-19 pandemic. The results of this study are expected to make a significant contribution to the development of the healthcare industry that currently becomes a top priority, given the urgency in handling public health, including Covid-19 patients. Additionally, this research provides a theoretical contribution by increasing fintech literacy in the healthcare industry in increasing efficiency during the Covid-19 pandemic. While practical contribution is about giving new insight to consider the technology in improving management process in healthcare industry.

Keywords

Covid-19, Financial technology, Efficiency, Financial literacy, Healthcare industry

JEL Classification

F64, F65, G, G01, G38

Introduction

Coronavirus disease (Covid-19) is a new virus that has infected all countries worldwide and is known as a deadly infectious virus. In Indonesia, the government of the Republic of Indonesia declared the Covid-19 pandemic as a national disaster on April 13, 2020 (BNPB, 2020). Since then, WHO and the government issued a policy to temporarily stop all out-of-home activities, including learning activities in schools, congregational worships, and work activities, and obligate people to wear masks, do swab/antigen tests, and abide by the physical distancing protocol for gathering or meeting events that involve many people (Fajrian, 2020).

Coronavirus disease has been defined as a long-term disaster called a pandemic that occurs worldwide (WHO, 2021). The impact on the decline in global economic performance stems from the unpreparedness of the healthcare

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industry in anticipating this sudden event. Therefore, the Covid-19 pandemic has become a lesson learned and a challenge for the healthcare system worldwide (WHO, 2021). Anxiety, disinformation, and physical distancing protocols are obstacles for the healthcare industry, as the frontline for the community, in providing optimal health services. The increasing number of deaths, both directly and indirectly, due to preventable and treatable diseases is one of the impacts of the healthcare system that is overwhelmed to cope with and accommodate the drastically increasing need for medical services. The biggest obstacle is the existence of a long queue which is very tiring for both the healthcare service providers and the patients being served. This all happened because patients could not access the needed services because of a lack of a supportive service system. The administrative and financial processes, including service procedures, are still manual and not integrated into an efficient, not easy-to-understand, and not friendly system (Erwin et al., 2017). As a result, decision-makers have to face a difficult choice to ensure that the handling of Covid-19 patients and other urgent health issues can be optimally addressed in the sense of prioritizing patient health while minimizing risks to healthcare workers and the community who treat them.

Along with the Covid-19 pandemic, industrial revolution 4.0 has introduced new technology into the business world, including the healthcare industry such as implementing of financial technology to improve administration process in healthcare industry. A number of financial institutions, including financial technology (fintech), have begun to provide financing in the healthcare sector (hospitals, suppliers of medical equipment, and the provision of social assistance by the private sector) to assist the government in restoring health and the Indonesian economy (IDX, 2021). Fintech that combines finance with technology is a key player in the industrial revolution 4.0 (Shen, Hu, & Hueng, 2018; Hau & Chang, 2021; Tu, Li, & Wang, 2021) as it can ease the healthcare industry to provide and facilitate the best health services for the society. Fintech has several target areas, including lending, such as peer-to-peer lending (P2P lending) and equity crowdfunding (ECF), payments, and enablers. Fintech is a new sector in the finance industry that incorporate the whole plethora of technology that is used in finance to facilitate trades, corporate business or interaction and services provided to the retail consumer (Erwin et al., 2017). Nowadays, Fintech has developed and has disruptive innovation such as Internet banking, mobile payments, crowdfunding, peer-to-peer lending, Robo-Advisory, and etc. (Arner, D., J. Barberis, 2015).

The Covid-19 pandemic has led to a surge in demand in the healthcare industry. The government has instructed service providers in the healthcare industry to contribute optimally in terms of helping the community in handling the Covid-19 outbreak (Mckinsey, 2020). The challenge of spreading Covid-19 through human media shows that the most urgent need right now is to deliver fast, reliable, and affordable health services. This is understandable because health problems will have a multiplier effect on the economy.

The technology enables the healthcare industry to collect relevant data and information quickly and accurately as well as allows communication between doctors and medical specialists to be safe and efficient through virtual channels to minimize the spread of Covid-19 (Ahmad et al., 2021). A very useful technology to be implemented in the healthcare industry is fintech to improve health services to the community. There is a stigma that the healthcare industry's administrative process and financial management seem complicated and long-winded with a long and tedious verification process. The presence of digital technology in the financial sector is expected to shorten the process; thereby, the operations of the healthcare industry are more effective and efficient (Mckinsey, 2020).

Fintech applications are becoming increasingly well-accelerated and financial literacy is also growing as expected. Therefore, financial literacy has an important role in achieving financial well-being. Financial literacy shows the ability to process economic information that helps make financial decisions. Furthermore, financial literacy is multi-dimensional, reflecting not only knowledge but also skills, attitudes, and behavior (Morgan et al., 2019). A better understanding of individual's financial data could help healthcare professionals improve care (Inkster et al., 2019). If individuals do not understand financial principles, then they will not benefit from the increased access to fintech. This implies that the role of financial literacy is also highly considered in the operations of the healthcare industry.

Many previous studies have investigated the efficiency of hospital administration and management processes, one of which was carried out by Handayani et al. (2015) who used a knowledge management approach. These studies showed that the efficiency of hospital administration processes could be done with the help of technology. Moreover, research related to the implementation of fintech during the pandemic was conducted by Um et al. (2020) whose results revealed that the use of fintech increased during the Covid-19 pandemic. However, these studies have not thoroughly examined the impact on process efficiency and have not involved financial literacy. The present research intends to examine the acceptance and use of fintech with TAM theory to increase the healthcare industry's efficiency. TAM is as mature theory developed by Davis (1989) to examine the acceptance of new technology based on the benefits/functions and convenience of technology. Therefore, the novelties of the study are as follows. This study adds financial literacy in the effect of fintech on the efficiency of the healthcare industry in Indonesia. Therefore, the main objective of this study is to analyze the effect of fintech on the efficiency of the healthcare industry in Indonesia during the Covid-19 pandemic. Another important objective is to analyze the financial literacy moderation of the healthcare industry that strengthens the effect of fintech on the efficiency of the healthcare industry in Indonesia.

The need to explore fintech and efficiency has an impact on a company's decision-making process. So that, this

research aims to investigate the effect of fintech in increasing efficiency of healthcare in Indonesia with moderating role of financial literacy during covid-19 pandemic. There are two reasons that makes this study is very interesting. Firstly, the study was conducted in Indonesia. Similar research on the topic is still limited, but has been carried out in several countries, including India (Jeet & Kang, 2020), China (Shen et al., 2018), and America (Li et al., 2012). However, there has been almost no research that relates fintech to the healthcare industry (Inkster et al., 2019), especially for the industry in Indonesia. Secondly, there has been almost no research in Indonesia that analyzes financial literacy as a moderating variable on the effect of fintech on the efficiency of the healthcare industry during the Covid-19 pandemic. Thirdly, this study applies a theory of reasoned action to explain the mechanism of implementing fintech in improving the efficiency of the healthcare industry in Indonesia.

The results of this study are expected to be an essential and valuable reference for the healthcare industry, government, and society. This study is fascinating and can be used as a reference for future research and requires urgent investigation so that the level of efficiency in the healthcare industry can be met and services are more optimal and affordable, especially during the Covid-19 pandemic. The present study serves as a lens to photograph the problems in the healthcare industry related to the quality of health services and how fintech is applied in this industry, as well as how far the power of financial literacy is in bridging the effect of fintech on efficiency itself.

Literature Review

Theory of Reasoned Action

According to the Theory of Reasoned Action (TRA), individual behavior originates from beliefs about the behavior under consideration (Vanyushyn, 2008; Uçanok, Karabatı, 2013; Troudi, Bouyoucef, 2020; Shapoval, Agglund, Pizam, Abraham, Carlback, Nygren, 2021). The principle of TRA is to determine how individuals will behave based on their pre-existing attitudes and behavioral intentions, to distinguish between beliefs and attitudes, and to determine external stimuli, so that the TRA model determines user reactions and perceptions of information system technology which in turn will determine the user's attitudes and behavior. Or in other words, individuals tend to engage in certain activities because they believe that the activities have positive results.

TRA has been developed by Davis (1989) into a Technology Acceptance Model (TAM) emphasizing on perceived ease of use and perceived usefulness that can predict attitudes in using technology. TAM is a mature theory appropriate to measure user acceptance of new technologies and following the people behavior approach. Thus, TAM is theoretical framework that explain the user acceptance of technology and system. Perceived ease of use is the degree to which people believes that using a particular system would be effort. While perceived usefulness refers to the degree to which people believes that using a particular system would enhance his or her job performance. In fintech context, TAM can explain whether the fintech system used is acceptable to users. Both theories also influence decision-making of people in accepting a technology or system (Abbasi et al., 2021). This present study will investigate whether fintech can be accepted by fintech users in the Indonesia healthcare industry during the Covid-19 pandemic.

Financial Technology and Healthcare Industry

Fintech has several advantages compared to other financial institutions. Firstly, fintech increases the possibility of borrowing at lower interest rates and can speed up the loan application process (Fuster, Plosser, Schnabl, & Vickery, 2019; Rosavina, Rahadi, Kitri, Nuraeni, & Mayangsari, 2019; Sangwan, Harshita, Prakash, Singh, 2020). In addition, fintech has big data that can input more factors in assessing borrower's credit risk (Langley & Leyshon, 2017; Jagtiani & Lemieux, 2019), thus enabling a transparent, more accurate, and fast evaluation of borrower's credit risk. During the Covid-19 pandemic, governments in various countries, including Indonesia, have implemented social distancing preventive measures that have become obstacles for the healthcare industry in providing optimal health services. The second benefit of fintech is that it enables users to pay bills (rent, insurance, electricity, water and other utility costs, medical expenses, hospital fees, surgery, and inpatient and outpatient care, etc.) without having to go to the location and carry out lending transactions and credit evaluations without meeting physically. The Covid-19 pandemic is a health problem that can threaten human life and cause excessive anxiety and feelings of insecurity for most people due to infectious disease of corona virus.

The third benefit is that fintech can increase financial literacy (Ozili, 2018). Financial literacy has a critical role in the financial well-being aspect. It shows the ability to process economic information that helps make financial decisions. Furthermore, financial literacy is multi-dimensional, reflecting not only knowledge but also skills, attitudes, and behavior (Morgan *et al.*, 2019). A better understanding of individual's financial data could help healthcare professionals improve care (Inkster, Loo, Mateen, & Stevenson, 2019). If individuals do not understand financial principles, then it is likely that they will not benefit from the increased access to fintech. This signifies that the role of financial literacy is also highly considered in the operations of the healthcare industry.

The fintech innovation as the urgent need of the industrial revolution 4.0 era in digitizing the healthcare industry during the Covid-19 pandemic (Mohammad, 2020). Fintech innovation is one of the strategies to increase the efficiency of the healthcare industry, which recently is at peak demand due to the explosion of Covid-19 patients who require immediate treatment. These days, the healthcare industry requires resource management not only for

the present but also for future demands so that the efficiency level of the healthcare industry can be met. Through good efficiency performance, health services and facilities will become more optimal and affordable so as to increase efficiency, especially during the Covid-19 pandemic. These efforts require collaboration between the government, primarily the Health Office and the Financial Services Authority (OJK) and the healthcare industry that includes all business units engaged in health-related sectors (hospitals, pharmacies, nutrition homes, counseling centers and integrated health services, polyclinics, public health centers, health laboratories, clinics, health insurance, medical device providers, medical personnel, and Covid-19 vaccine centers), and various other relevant supporting parties of patients, organizations, and communities. This research serves as a lens that photograph the problems that exist in the healthcare industry related to the quality of health services and how fintech is applied in this industry as well as how far the power of financial literacy is in bridging the effect of fintech on efficiency itself. Financial technology usage is measured through three perceptions of fintech users, namely perceived ease of use, perceived usefulness, and internet usage of all health service users in the healthcare industry in Indonesia.

Perceived Ease of Use

Perceived ease of use is defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989). If applied to fintech, it means that users believe that fintech is easy to use and does not require great effort to use it. Perceived ease of use can explain why users use technology and whether the new technology is acceptable to users (Davis, 1989). By adopting this theory, we can examine whether fintech is easy to use and acceptable to fintech users in the healthcare industry in Indonesia during the Covid-19 pandemic. Table 1. is initial scale items used to measure fintech related to perceived ease of use (Davis, 1989).

Table 1. Initial Scale Items for Perceived Ease of Use.

| Item | Indicator |
|----------------------|-----------------------------------------------------------------------|
| Confusing | I often become confused when using fintech. |
| Error Prone | I make errors frequently when using fintech. |
| Frustrating | I often become frustrated when interacting with fintech. |
| Dependence on Manual | I often need to read the user manual when using fintech. |
| Mental Effort | Interacting with fintech requires a lot of my mental effort. |
| Error Recovery | I find it easy to recover from errors encountered when using fintech. |
| Rigid & Inflexible | I consider fintech is rigid and inflexible to interact with. |
| Controllable | I find it easy to get fintech to do what I want it to do. |
| Unexpected Behavior | Fintech often behaves in unexpected ways. |
| Cumbersome | I find it cumbersome to use fintech. |
| Understandable | I understand fintech easily. |
| Ease of Remembering | I feel using fintech is easy to remember. |

Hypothesis 1: *Perceived ease of use has a significant effect on financial technology usage in the healthcare industry in Indonesia during the Covid-19 pandemic.*

Perceived Usefulness

Davis (1989) defines perceived usefulness as "the degree to which a person believes that using a particular system would enhance his or her job performance". That is, users believe that using technology will improve performance. The usefulness aspect will form a trust for decision-making whether to use the new technology later. By applying this concept, we can examine whether fintech is useful so that fintech can be accepted by fintech users in the healthcare industry in Indonesia during the Covid-19 pandemic. Table 2. is the initial scale items used to measure fintech related to perceived usefulness Davis (1989).

Table 2. Initial Scale Items for Perceived Usefulness.

| Items | Indicators |
|-----------------------|----------------------------------------------------|
| Job Difficult Without | My job would be hard to do without fintech. |
| Control Over Work | Fintech makes it easier for me to control my work. |
| Job Performance | Fintech improves my job performance. |
| Addresses My Needs | Fintech takes care of my work-related needs. |
| Saves Me Time | Fintech saves me time. |

| | |
|-----------------------|-----------------------------------------------------|
| Work More Quickly | Fintech allows me to complete tasks faster. |
| Critical to My Job | Fintech supports important aspects of my work. |
| Accomplish More Work | Fintech allows me to get my job done better |
| Cut Unproductive Time | Fintech reduces time for non-productive activities. |
| Effectiveness | Fintech increases my effectiveness at work. |
| Quality of Work | Fintech improves the quality of work. |
| Increase Productivity | Fintech increases my productivity. |

Hypothesis 2: *Perceived usefulness has a significant effect on financial technology usage in the healthcare industry in Indonesia during the Covid-19 pandemic.*

Internet Usage

This study includes internet usage to examine whether the fintech used in the healthcare industry is acceptable (Shen et al., 2018). Despite having an internet penetration rate of only 53.7% that is lower than many countries in the Asia Pacific, data on June 2019 showed that Indonesia is one of the countries with the highest number of internet users in the world with 171.26 million people, from the country's total population of more than 260 million people, are active internet users (Statista, 2020). Table 3. is the initial scale items used to measure fintech related to internet usage (Shen et al., 2018).

Table 3. Initial Scale Items for Internet Usage.

| Items | Indicators |
|---------------------|---------------------------------------------------------------------------------------------------------------|
| Online Duration | In a day, I often use the internet in my activities. |
| Internet Dependency | I use the internet to find information. |
| Third-party Payment | I tend to agree that the information obtained via the internet is useful in increasing knowledge and insight. |

Hypothesis 3: *Internet usage has a significant effect on financial technology usage in the healthcare industry in Indonesia during the Covid-19 pandemic.*

Efficiency of the Healthcare Industry in Indonesia

Efficiency is defined as maximizing the use of all resources. In this study, efficiency is the maximization and utilization of all resources owned by the healthcare industry in Indonesia to achieve maximum output or, in other words, maximizing income by minimizing spending. The initial scale items used to measure efficiency in Table 4.

Table 4. Initial Scale Items for Efficiency.

| Items | Indicators |
|---------|--------------------------------------------------------------------------------------------------------|
| Cost | Financial technology usage in health services reduces operating costs. |
| Cost | Healthcare costs are more efficient through fintech. |
| Revenue | Financial technology usage in the healthcare industry reduces queue times. |
| Revenue | Financial technology usage in the healthcare industry simplifies the financial administration process. |

Hypothesis 4: *Financial technology usage has a significant effect on efficiency in the healthcare industry in Indonesia during the Covid-19 pandemic.*

Financial Literacy

Financial literacy refers to a combination of the understanding (knowledge), skills, attitude, and ability to make sound judgement and decision (behavior) on personal financial matters resulting in individual financial well-being (Shen et al., 2018). The International Network on Financial Education groups financial literacy into three components: knowledge, behavior, and attitude (Atkinson, 2012). While fintech is present as a new market that combines finance and technology (Arner & Barberis, 2015) and replaces traditional financial structures with new technology-based processes. Financial literacy will influence decisions about whether to use available financial products, which will have an impact on the business efficiency of fintech users. This means that if the healthcare industry has high financial literacy, financial technology usage will be more optimal, as seen by the efficiency of the healthcare industry. Table 5 is the initial scale items used to measure financial literacy.

Table 5. Initial Scale Items for Financial Literacy.

| Items | Indicators |
|------------------------------------------------|-----------------------------------------------------------------------------|
| Understanding of financial concepts | I understand financial concepts in general. |
| Understanding the allocation of funds | I allocate my funds according to my needs. |
| Understanding the time value of money concept | I understand the time value of money concept. |
| Understanding the risk and return concept | I understand the risk and return concept. |
| Understanding the interest calculation concept | I understand how to calculate interest rates in investing. |
| Understanding the saving and investing concept | I understand the difference between saving and investing. |
| Understanding of the debt concept | I understand the mechanism in making loans/debts. |
| Understanding of insurance products | I understand insurance products and risk management against the unexpected. |
| Understanding of Emergency fund management | I provide a personal emergency fund. |

Hypothesis 5: *Financial literacy strengthens the effect of financial technology on efficiency.*

Methods

The present study is quantitative research that analyzes the effect of using financial services on fintech, measured by the Technology Acceptance Model (TAM) and internet usage on the efficiency of the healthcare industry in Indonesia during the Covid-19 pandemic. Based on its objectives, this study is causal research because it aims to prove that fintech affects efficiency, which is strengthened by financial literacy in the healthcare industry in Indonesia during the Covid-19 pandemic. Based on its approach, this research is a positivist study that offers solutions to the problems faced by the healthcare industry in facing the challenges of the Covid-19 pandemic.

This study used primary data sources. The data was obtained by using a survey method with a questionnaire instrument to obtain the required primary data sources of information. While the sampling method is using purposive sampling with 225 respondents. Respondents were active users of fintech applications related to various services in the healthcare industry in Indonesia, including suppliers of clinical and herbal medicines, medical equipment, health workers, education and research institutions to train health workers, hospitals, health and nutrition clinics, health laboratories, vaccine centers, pharmacies and drug stores, health insurance, and health education centers (Bhatia, 2021) during the Covid-19 period. The population of this study was fintech application users who received health services in the healthcare industry in Indonesia. The measurement level in this study was the interval measurement level, where the distance or interval between numbers is the same and the zero-point is arbitrary. The measurement scale used was a 5-point Likert scale, where 1 means disagree and 5 means strongly agree. A nominal scale was used to identify respondents.

The dependent variable in this study is financial technology usage which is measured through three perceptions of fintech users: perceived ease of use, perceived usefulness, and internet usage of all health service users in the healthcare industry in Indonesia. The moderating variable is financial literacy which a combination of the understanding (knowledge), skills, attitude, and ability to make sound judgement and decision (behavior) on personal financial matters resulting in individual financial well-being. This study utilized SEM (Structural Equation Modeling) in analyzing the effect of fintech on the efficiency of the healthcare industry in Indonesia. The regression model to test the five hypotheses of this research is as follows:

$$Fintech_{i,t} = \beta_{11}Usefulness_{i,t} + \varepsilon_{it} \quad (1)$$

$$Fintech_{i,t} = \beta_{21}Ease\ of\ use_{i,t} + \varepsilon_{it} \quad (2)$$

$$Fintech_{i,t} = \beta_{31}Internet\ usage_{i,t} + \varepsilon_{it} \quad (3)$$

$$Efficiency_{i,t} = \beta_{41}Fintech_{i,t} + \varepsilon_{it} \quad (4)$$

$$Efficiency_{i,t} = \beta_{51}Fintech_{i,t} + \beta_{52}Financial\ literacy_{i,t} + \beta_{53}Fintech * Financial\ literacy_{i,t}\varepsilon_{it} \quad (5)$$

Where $Usefulness_{it}$ is the usefulness aspect of fintech $Ease\ of\ use_{it}$ is the ease-of-use aspect of fintech, $Internet\ usage_{it}$ is the internet usage aspect of fintech, $Efficiency_{it}$ is efficiency, $Fintech_{it}$ is financial technology used in the operations of the healthcare industry, and $Financial\ literacy_{it}$ is the ability and knowledge of finance.

Results

Profile of Respondents

There were 300 questionnaires distributed and 225 respondents responded as internet users who had access to the healthcare industry. A total of 225 questionnaires obtained met the characteristics of the respondents on August 2021, which were then processed by Structural Equation Modeling (SEM). All respondents had the appropriate characteristics: internet users, had access to the healthcare industry, and used fintech to pay their bills. The results of processing respondents' data are presented in Table 6.

Table 6. Profile of Respondents.

| Profile | Characteristics | % |
|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----|
| Gender | Male | 39% |
| | Female | 61% |
| Age | < 25 years | 35% |
| | 26 - 35 years | 42% |
| | 36 - 45 years | 5% |
| | > 46 years | 18% |
| Marital Status | Married | 42% |
| | Single | 50% |
| | Divorced | 3% |
| Education Level | Senior/Vocational High School | 16% |
| | Diploma | 1% |
| | Bachelor's degree | 59% |
| | Specialist/Master's degree | 20% |
| | Doctoral degree | 5% |
| Current Occupation | Private employee | 16% |
| | Self-employed | 6% |
| | Professional | 6% |
| | Civil servant | 5% |
| | Others | 66% |
| Business Line | Restaurant | 43% |
| | Hotel | 5% |
| | Media | 3% |
| | Healthcare | 17% |
| | Tourism | 15% |
| | Others | 16% |
| Monthly Income (IDR) | < 2 million | 24% |
| | 2 million - 4 million | 18% |
| | 4 million - 8 million | 38% |
| | > 8 million | 19% |
| Types of Health services | Healthcare worker, pharmacies, and drug stores | 16% |
| | Health and nutrition clinic | 19% |
| | Medical equipment | 11% |
| | Hospitals and medical personnel, pharmacies and drug stores, and health insurance | 38% |
| | Supplier of clinical and herbal medicines | 15% |
| | health laboratory and health insurance | 5% |
| Daily time spent using the internet | 1 - 5 hour(s) | 36% |
| | 6 - 10 hours | 10% |
| | > 10 hours | 54% |
| What applications do you access in your smartphone besides phone activities | Social Media | 85% |
| | Reading news/information | 5% |
| | Health and nutrition clinic | 10% |
| What fintech application features do you use | Digital Payment (GoPay, Ovo, and DANA) | 80% |
| | Don't use fintech | 20% |
| What health application features do you use | Health insurance (BPJS Kesehatan and Alodokter) | 19% |
| | Pharmacies, health clinics, hospitals, clinical and herbal treatment places | 14% |
| | Consultation (Halodoc, klikdokter, go-doc, and prosehat), Health insurance (BPJS Kesehatan and Alodokter) | 51% |

| Profile | Characteristics | % |
|----------------------------------------------------------|-------------------------------------------------------------|-----|
| | None, usually look for health info directly via browser | 1% |
| | Clinical laboratories (Pramita, Parahita, Sima, and Prodia) | 17% |
| How many times do you use fintech applications in a week | 1 - 2 time (s) | 5% |
| | 3 - 5 times | 21% |
| | 6 - 8 times | 32% |
| | > 8 times | 41% |

Fig 1. presents the conceptual framework of this study with perceived ease of use, perceived usefulness, and internet usage as the antecedent factors; financial technology (fintech) and financial literacy as the independent variables: and efficiency as the dependent variable.

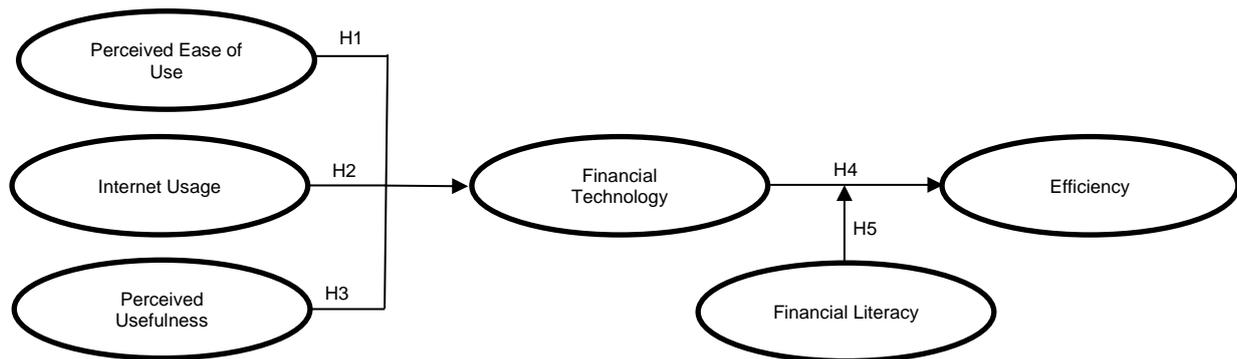


Fig 1. Conceptual Framework.

Based on Fig 1, two models were created to carry out Multivariate Regression Analysis to analyze the data. In the first model, the independent variables are perceived ease of use, perceived usefulness, internet usage, the moderating variable is financial literacy, and the dependent variable is financial technology. In the second model, the independent variables are financial technology and financial literacy, and the dependent variable is efficiency. Reliability is measured using Cronbach's alpha, and values ranged from 0.797 to 0.958, exceeding the minimum recommended level of 0.700. These values are shown in Table 7 and Fig 2.

Table 7. Reliability analysis of the questionnaire items.

| Construct | Items | Loading | Composite Reliability | Average Variance Extracted (AVE) | Cronbach's Alpha |
|----------------------------|-------|---------|-----------------------|----------------------------------|------------------|
| Perceived Ease of Use | PEU1 | 0.795 | 0.905 | 0.614 | 0.876 |
| | PEU3 | 0.792 | | | |
| | PEU4 | 0.798 | | | |
| | PEU6 | 0.737 | | | |
| | PEU7 | 0.780 | | | |
| | PEU8 | 0.799 | | | |
| Perceived Usefulness | PU1 | 0.812 | 0.963 | 0.686 | 0.958 |
| | PU2 | 0.843 | | | |
| | PU3 | 0.862 | | | |
| | PU4 | 0.866 | | | |
| | PU5 | 0.683 | | | |
| | PU6 | 0.855 | | | |
| | PU7 | 0.836 | | | |
| | PU8 | 0.826 | | | |
| | PU9 | 0.763 | | | |
| | PU10 | 0.883 | | | |
| | PU11 | 0.847 | | | |
| | PU12 | 0.845 | | | |
| Internet Usage | IU1 | 0.847 | 0.882 | 0.715 | 0.797 |
| | IU2 | 0.911 | | | |
| | IU3 | 0.773 | | | |
| Financial Technology Usage | FTU1 | 0.791 | 0.899 | 0.692 | 0.851 |
| | FTU2 | 0.816 | | | |
| | FTU3 | 0.894 | | | |
| | FTU4 | 0.823 | | | |
| Financial Literacy | FL1 | 0.824 | 0.897 | 0.685 | 0.846 |
| | FL2 | 0.873 | | | |

| Construct | Items | Loading | Composite Reliability | Average Variance Extracted (AVE) | Cronbach's Alpha |
|------------|-------|---------|-----------------------|----------------------------------|------------------|
| Efficiency | FL3 | 0.775 | 0.894 | 0.679 | 0.845 |
| | FL4 | 0.836 | | | |
| | E1 | 0.817 | | | |
| | E2 | 0.800 | | | |
| | E3 | 0.811 | | | |
| | E4 | 0.866 | | | |

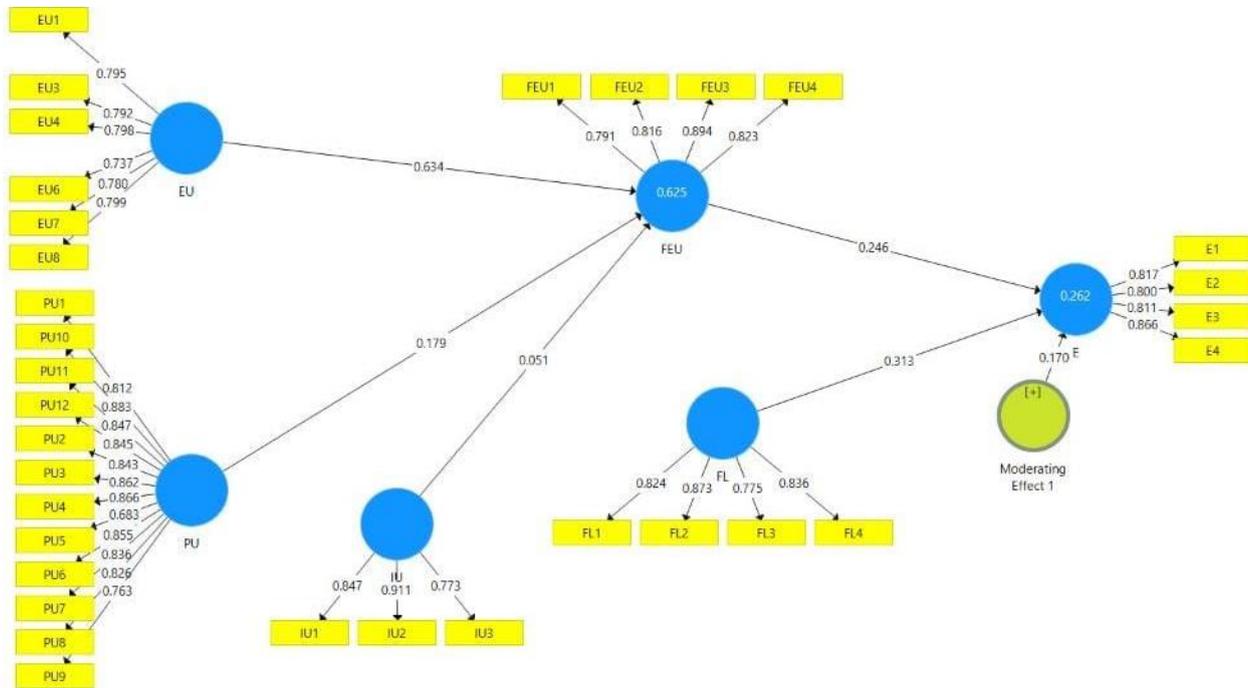


Fig 2. Construct's factor loading of SEM-PLS result.

Pearson's correlation was implemented to explore the correlation between the dependent and independent variables. Table 8. exhibits the Pearson correlation analysis values.

Table 8. Correlation matrix.

| Variable | Efficiency | Ease of Use | Financial Technology | Financial Literacy | Internet Usage | Perceived Usefulness |
|----------------------|------------|-------------|----------------------|--------------------|----------------|----------------------|
| Efficiency | 0.824 | | | | | |
| Ease of Use | 0.456 | 0.784 | | | | |
| Financial Technology | 0.391 | 0.779 | 0.832 | | | |
| Financial Literacy | 0.394 | 0.474 | 0.376 | 0.828 | | |
| Internet Usage | 0.263 | 0.423 | 0.368 | 0.404 | 0.845 | |
| Perceived Usefulness | 0.426 | 0.689 | 0.630 | 0.373 | 0.275 | 0.828 |

Based on the results presented in Table 9 and Fig 2, the beta value of perceived ease of use is 0.634 with a significance level of 0.000. Thus, perceived ease of use has a significant positive effect on fintech, meaning that H1 is supported. The beta value of perceived usefulness is 0.179 with a significance level of 0.059. Thus, perceived usefulness has a significant positive effect on fintech, meaning that H2 is supported. The beta value of perceived internet usage is 0.051 with a significance level of 0.420. Thus, internet usage is not significant for fintech, meaning that H3 is rejected. The beta value of fintech is 0.246 with a significance level of 0.004. The beta value of financial literacy is 0.496 with a significance level of 0.000. Thus, financial literacy has a significant positive effect on efficiency, meaning that H4 is supported. The beta value of fintech is 0.170 with a significance level of 0.039. Thus, financial literacy strengthens the positive effect of using fintech on efficiency, meaning that H5 is supported.

Table 9. Hypothesis testing.

| Hypothesis | Relationship | Beta | t-value | p-value | Remarks |
|------------|--------------|------|---------|---------|---------|
|------------|--------------|------|---------|---------|---------|

| Hypothesis | Path | β | t-statistic | p-value | Significance |
|------------|------------|-------|-------------|---------|-----------------|
| H1 | PEU → FTU | 0.634 | 7.207 | 0.000 | Significant |
| H2 | PU → FTU | 0.179 | 1.823 | 0.059 | Significant |
| H3 | IU → FTU | 0.051 | 0.806 | 0.420 | Not significant |
| H4 | FTU → E | 0.246 | 2.861 | 0.004 | Significant |
| H5 | FTU*FL → E | 0.170 | 2.067 | 0.039 | Significant |

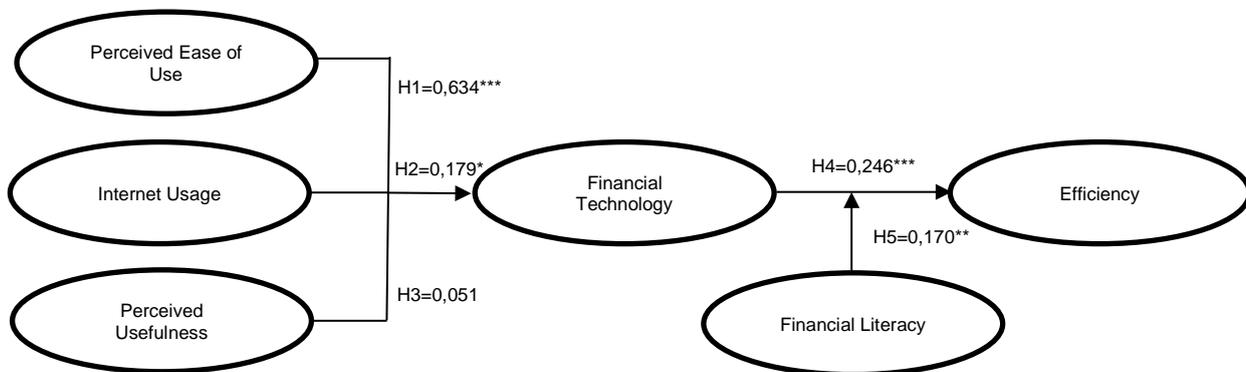


Fig 2. Results for direct effects.

Discussion

Perceived ease of use and fintech usage

This study finds that perceived ease of use is associated with fintech usage; this finding proves that the use of technology and system is influenced by a person's degree of ease in using it and can improve their performance. This is in line with the TAM theory that good technology that is acceptable to users and has a good level of convenience will increase a person's intention and behavior to use it (Davis, 1989). This supports the previous research conducted by Um et al. (2020). The results of this study prove that most respondents agree that fintech makes work easier, more useful, and can be completed in a shorter time. In terms of ease of use, fintech does not require special skills to run the application. Respondents who are younger and have a high education level agree with this. In this condition, users believe that fintech applications are easy to use; thereby, they do not need great effort or are not difficult to run. Perceived ease of use can explain the reasons users use technology and whether the new technology is acceptable to users (Kitsios & Giatsidis, 2021).

Perceived Usefulness and Fintech Usage

This study finds that perceived usefulness influences fintech usage, implying that the level of usability and benefits of fintech is a determining factor in using fintech. This is because if someone benefits from new technology, he will prefer to use it. This is in accordance with the TAM theory developed by Davis (1989) the findings from a previous study said the more useful a technology would be, the more accepted it will be by users. In terms of usefulness, financial technology helps respondents in conducting transparent transactions. Fintech also provides various consulting services related to finance and investment to minimize losses. It has several advantages compared to other financial institutions. Firstly, fintech increases the possibility of borrowing at lower interest rates and can speed up the loan application process (Fuster, Plosser, Schnabl, & Vickery, 2019; Rosavina, Rahadi, Kitri, Nuraeni, & Mayangsari, 2019; Sangwan, Harshita, Prakash, Singh, 2020). In addition, fintech has big data that is able to input more factors in assessing borrower's credit risk (Langley & Leyshon, 2017; Jagtiani & Lemieux, 2019) thus enabling a transparent, more accurate, and fast evaluation of borrower's credit risk. These advantages can help the healthcare industry in serving quickly to provide emergency healthcare at the right time. "Goena" and "KoinSehat" are examples of fintech engaged in the P2P Lending sector that collaborates with hospitals by providing loans for all hospital employees or healthcare workers and assisting the community in getting access to better healthcare facilities through an easy and affordable financing system. The mechanism is that prospective patients, both healthcare workers and the public, pay down payments and apply for health loans; if approved, the loan will be inputted into the P2P fintech lending platform and then funded by thousands of investors who are members of the platform. If the healthcare financing is fully funded, prospective patients will enjoy various quality healthcare facilities at the hospital. The obligation of the borrower is to monthly pay the loan installments to the platform in a pre-agreed tenor. The program is expected to help ease the burden of funding needs for all hospital employees and the public in Indonesia because the process is very fast through funding from the community, which is returned to the community receiving the service itself in exchange for low interest. Additionally, the hospital has the advantage of avoiding the risk of not being able to serve patients who have financial constraints.

Internet usage and fintech

Internet usage has become a necessity in almost every aspect of people's lives. With the internet, many activities are diverted online to improve business performance. This is supported by the rapidly developing fields of life that take advantage of current technological developments. During the Covid-19 pandemic, the need for internet usage is also increasing, and various applications in the financial sector are emerging. Fintech as a technology solution in the financial sector is starting to develop. Therefore, internet usage was found not to affect fintech usage. This is because the internet has become a basic need for many people, so it is not a factor that affects someone in using fintech. According to the TAM theory, people consider perceived ease of use and perceived usefulness rather than internet usage in accepting and using technology (Davis, 1989). Respondent's familiarity with internet usage is significant in terms of acceptance of financial technology in the everyday world. A positive effect is not significant because 85% of respondents used social media when using the internet. While the rest were respondents who used online paid applications.

Fintech Usage and efficiency

This study finds that the usage of fintech increase the efficiency in healthcare industry especially in administration and management process. This result support previous paper, mention that the use of fintech could shorten the administration flowchart and cut the expenses (Handayani et al., 2015). One of the benefits of using financial technology is to enable respondents and healthcare workers to provide health services without having to go to the location. Respondents do not need to physically come to the location or the money transaction machine. During the Covid-19 pandemic, governments in various countries, including Indonesia, have implemented social distancing preventive measures that have become obstacles for the healthcare industry in providing optimal health services. The second benefit of fintech is that it enables users to pay bills without having to go to the location and conduct lending transactions and credit evaluations without meeting physically. The Covid-19 pandemic is a health problem that can threaten human life and cause excessive anxiety and feelings of insecurity for most people. In this context, the role of health insurance becomes vital to mitigate these risks. The increasing use of insurance accompanied by social distancing restriction makes people use fintech to pay for their health insurance. In addition, fintech facilitates transactions during the Covid-19 pandemic because most public and private services are closed (Al, 2020). Payments for hospital or health services transactions such as health checks, operations, inpatient care, the ICU and MCU, and other medical treatments carried out manually are becoming increasingly complicated during this Covid-19 pandemic. This ultimately causes significant problems for the healthcare industry and society. The presence of fintech can guarantee a faster, safer, more convenient, simple, inexpensive, and transparent transaction so that the flow of funds can be seen clearly. Fintech will reduce the financial risk in its operations. From the first and second benefits, fintech can make the healthcare industry more efficient in carrying out its operations so that the benefits are optimal.

Fintech, Financial Literacy, and Efficiency

This study also proves that respondents with previous financial knowledge have high self-efficacy. In this case, the financial knowledge the respondent has is the basis that makes it easier for the respondent to understand the economic value of the fintech application used in healthcare services. This finding is in line with Panos & Wilson (2020), which postulated that adequate financial literacy is needed in the operations of fintech. Respondents' financial literacy can increase efficiency without having to consult about finance and investment first. Financial literacy is not only about ability, but also skills, attitudes, and behavior (Panos & Wilson, 2020). Thus, it is increasingly clear that the role of financial literacy is crucial because it has knowledge content that impacts behavior and skills, which is supported by Morgan et al. (2019). The results of this study support Ozili's (2018) research that shows the existence of fintech can increase understanding of financial literacy. Financial literacy has an important role in financial well-being. Financial literacy shows the ability to process economic information that helps make financial decisions. Furthermore, financial literacy is multi-dimensional, reflecting not only knowledge but also skills, attitudes, and behavior (Morgan et al., 2019). A better understanding of individual's financial data could help healthcare professionals improve care (Inkster, Loo, Mateen, & Stevenson, 2019). If individuals do not understand financial principles, then it is likely that they will not benefit from the increased access to fintech. This means that the role of financial literacy can also be considered in the operations of the healthcare industry.

Conclusion

The Covid-19 pandemic is a challenge for healthcare systems around the world. The challenge of quick and global Covid-19 transmission shows that the most urgent need right now is to deliver fast, reliable, and affordable health services. This is understandable because health problems will have a multiplier effect on the economy, so the government pays special attention and provides various relaxation of special financial policies for the healthcare industry. This study aims to investigate the fintech usage to face the turbulence of the Covid-19 pandemic in increasing efficiency in the healthcare industry. This research adopted TAM theory to understand user acceptance better, while the effectiveness variable and coupled with the fintech literature as a moderator, was used to determine the effectiveness of fintech.

This research model specifically also raises financial literacy in the healthcare industry to prove that financial literacy in the healthcare industry can increase the effect of fintech on the efficiency of the healthcare industry. The financial literacy variable has a very strategic role, especially for the Indonesian people, including the healthcare industry players, because from the mapping results done by the Health Office in Indonesia, it is found that the financial literacy index is still low.

This study applied the theory of reasoned action with a behavioral approach to proving the mechanism for implementing fintech in increasing the efficiency of the health industry in Indonesia during the Covid-19 pandemic. So that, this finding contributes to the theoretical and practical. Theoretical contribution of this study is adding literature about fintech in increasing effectiveness in healthcare industry using TAM approach. While practical contribution is giving insight to the healthcare industry to consider the fintech and acceptance of technology in improving healthcare effectiveness. For the government it can be recommendation to increase the use of fintech and other technology to increase efficiency and healthcare performance. Beside the contribution, this study also has limitation due to the perspective of this study is too wide, for further research it can be specified by user both professional and patient perspective. This proves that respondents with previous financial knowledge have high self-efficacy. Respondents' financial literacy can increase efficiency without having to consult about finance and investment first.

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