Fintech, financial literacy, and financial inclusion in Indonesian SMEs

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Abstract: This study examines the effect of fintech and financial inclusion moderated by financial literacy in improving the financial performance and business growth of SMEs in Indonesia. The purposive sampling technique was used to obtain data from 202 SMEs in Indonesia, statistically analysed using descriptive and multiple regression analyses. The results showed that financial literacy could moderate the effect of fintech on financial inclusion. Furthermore, fintech cannot improve financial performance, despite being moderated by financial literacy. Meanwhile, financial inclusion can improve financial performance, and subsequently, financial performance increases the business growth of SMEs. Implications of this study are that SMEs must improve financial literacy, and the government needs to improve regulations on financial literacy, fintech, and financial inclusion, especially for SMEs.

Keywords: fintech; financial inclusion; financial literacy; financial performance; business growth.

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1 Introduction

In 2019, the total poverty in Indonesia was 25.14 million, approximately 9.82% of the total population (https://www.bps.go.id). One of the strategies to reduce poverty is expanding the role of SMEs because most business units in Indonesia are SMEs. Based on data in 2019, 99.9% of the total business units in Indonesia were SMEs, and the remaining 1% was big companies (https://kemenkopukm.go.id). In terms of employment, SMEs absorb 97.22% of the total workforce in Indonesia. However, most of these SMEs did not grow well due to limited access to finance (El-Said et al., 2013; Yoshino and Taghizadeh-Hesary, 2016; Martinez et al., 2019; Mutamimah and Hendar, 2020), finance, and knowledge gap (Seet et al., 2010). This affects the financial performance and business growth of SMEs. However, most SMEs in Indonesia have limited access to finance (Martinez et al., 2019; Mutamimah and Hendar, 2020). Seet et al. (2010) found that finance is a factor in supporting business activities for SMEs.

In this digital era, as financial innovation, fintech (financial technology) can contribute to easy financial decisions (Arner et al., 2015). Safitri (2020) stated that the community is interested in using fintech because it is efficient, cheaper, faster and more effective than other financial services. Access to finance supports SMEs in selecting various financial sources effectively. The Indonesian Government is highly committed to supporting the development of fintech, as reflected in regulation No. 77/PJOK.01/2016 (Financial Service Authority, 2016). In this research, digital financial transactions by SMEs toward financial institutions mean fintech. Therefore, it is expected that fintech can increase financial inclusion, facilitating access to capital and other products and services from financial institutions.

Previous studies reported inconsistent results regarding fintech and financial inclusion. Fintech can increase financial inclusion (Bongomin and Ntayi, 2020; Ozili, 2018; Salampasis and Mention, 2018) and financial performance (Thomas and Hedrick-Wong, 2019). This is consistent with previous studies by Jack and Suri (2011) and the World Bank Group (2016). These studies stated that fintech saves time and funds by ensuring the execution of transactions in financial institutions. However, this is inconsistent with the findings of Baber (2019), which state that fintech negatively affects financial inclusion. This is because it is less transparent, and stakeholders do not have sufficient information access to financial institutions.

In addition, fintech can support performance of financial. However, the results of previous studies are still contradictory. Oranga and Ondabu (2018) found that fintech positively impacts financial performance. However, Bigliardi (2013) stated that fintech negatively impacts financial performance. Tahir et al. (2018) stated that fintech does not affect financial performance. This research ignores the financial literacy. Therefore, based on this research gap, it is necessary to add financial literacy as a moderating variable.

Previous studies about fintech, financial inclusion, and financial performance have not used financial literacy. Literacy of financial has moderated effect of fintech on financial inclusion and performance. Fintech cannot increase financial inclusion without the financial knowledge and understanding of SMEs managers. Subsequently, SMEs managers must understand and master the financial sector; this helps them make appropriate financial decisions and have easier access to finance and improve their financial performance (Eniola and Entebang, 2017). Mindra and Moya (2017) stated that financial literacy is the key to increasing financial inclusion. Managers need to possess comprehensive financial literacy and skill to support optimal financial decision-making (Tuffour et al., 2020) and improve performance and growth.

Previous research only focused on financial inclusion based on the supply-side approach (Mutamimah and Hendar, 2017). Therefore, this study focuses on the demand-side approach to test of financial literacy in strengthening fintech on financial inclusion, or financial inclusion on performance, to increase the business growth of SMEs. The novelty in this research is the existence of financial literacy as a moderating variable between fintech and financial inclusion and the effect of fintech on business performance and growth in Indonesia SMEs.

This research contributed to the resource-based view (RBV) theory in explaining the importance of knowledge and skills in financial decisions (Coleman et al., 2013). RBV theory explains the role of financial literacy in strengthening fintech as a form of intangible asset possessed by SME managers to improve financial performance and business growth. Additionally, this study contributes to improving the government regulations, especially in fintech, financial inclusion, and financial literacy for SMEs.

2 Literature review

2.1 Fintech for SMEs

Fintech is a financial innovation related to financial markets, institutions, and services (Financial Stability Board, 2017a). Akpan et al. (2020) stated that technological innovation could drive business growth and competitive advantage. Fintech can provide financial solutions (Arner et al., 2015). Digital payments have immense potential to be widely used in Indonesia as over 140 million people in the country, which is approximately 93% of the population, have smartphones or tablet devices. Using the internet and digital payments benefits individuals and positively affects the development of SMEs (Asian Development Bank Institute, 2019).

Based on OJK data in 2018, 88 fintech companies registered and obtained permission from them. Fintech provides convenience to the public in accessing financial products and services from financial institutions, facilitating consumer transactions. According to Bank Indonesia, the various fintech models can improve financial access for SMEs and facilitate financial inclusion for them to run their business activities well.

Baber (2020a, 2020b) explain the history of fintech. First, Fintech 1.0 (1866–1967): The relationship between financial services and technology through FinTech was manual, and few companies used it. Second, Fintech 2.0 (1967–2008): the transformation of the financial industry into an industry, investing in technology to provide advanced services cheaply and efficiently. Third, Fintech 3.0 (2008–present): FinTech as a financial solution for customers.

Demand and supply-side as main factors to drive financial innovation (Awrey, 2013; Financial Stability Board, 2017a, 2017b). Factors from the demand side as shifting consumer preferences to financial innovation and new evolution of technology in financial services and utilising different business models. Meanwhile, supply side as financial regulations and market structures. This provided an opportunity to develop new services and business models with FinTech solutions (Financial Stability Board, 2017b).

Fintech for SMEs is an important factor in supporting business activities and easy financial access. Financial innovation provides new business models and financial solutions (Arner et al., 2015). One of the fintech models often used by SMEs is the digital transaction to access financial institutions. The development of fintech is divided into demand and supply sides (Awrey, 2013). Demand-side is from the perspective of customers or investors, and the supply-side is from the financial institutions' perspective. Therefore, the two perspectives must have the infrastructure to support business activities.

2.2 Fintech and financial inclusion

Fintech is also a digital technology application for financial intermediation (Aaron et al., 2017). Fintech is the short form for financial technology, the application of technology to provide financial services (Arner et al., 2020). Financial innovations can enhance inclusion of financial (Beck et al., 2015). Presidential Regulation No. 82/2016 said that inclusion of financial as community can access of financial services faster, low cost, and timely. Financial inclusion (Demir et al., 2020) is an intermediary for fintech to reduce income inequality. It affects reducing income inequality in all low, middle and high-income countries, but the effect is greatest in high-income countries.

Fintech supports access to financial services from institutions. Therefore, it has a positive and significant effect on financial inclusion. Thomas and Hedrick-Wong (2019) stated that fintech could encourage higher performance and financial inclusion. The results of this study are consistent with the results of Arner et al. (2020), Jack and Suri (2011, 2014), Manyika et al. (2016), World Bank Group (2016), Gomber et al. (2017), Ozili (2018), Salampasis and Mention (2018), Bongomin and Ntayi (2019) that fintech has a positive effect on financial inclusion.

H1 Fintech has a positive effect on financial inclusion.

2.3 Fintech, financial literacy, and financial inclusion

Fintech supports financial inclusion (Hasan et al., 2020). According to research (Mutinda et al., 2018), financial inclusion ensures that the public has easy access to financial institutions. The development of fintech needs to be supported by financial knowledge and skills. Asymmetric information and cost of monitoring can be decrease with financial knowledge (Hussain and Matlay, 2007). Bongomin and Ntayi (2020), Ozili (2018), Salampasis and Mention (2018) stated that fintech increases financial inclusion. The level of financial knowledge and financial skills must be possessed by SMEs manager (Silva et al., 2010). Therefore, financial literacy is a moderating variable between fintech and financial inclusion. Mindra and Moya (2017) stated that financial literacy is the key to increasing financial inclusion. To increase access to financial institutions, it is necessary to be financially literate (World Bank Group, 2016).

H2 Financial literacy strengthens the effect of fintech on financial inclusion.

2.4 Fintech and financial performance

Fintech as a financial innovation encourages SMEs to use digital financial transactions in every business activity. In this research, fintech is defined as the use of technology by SMEs to execute digital financial transactions. Fintech for SMEs is expected to process financial transactions practically, safely, cheaply, and effectively. Therefore, the fintech of SMEs can improve sales, services, and financial performance (Exposito and Sanchis-Llopis, 2018). Marullo et al. (2020) showed that innovation activities impact performance and adopt partner-oriented innovation patterns, characterised by a balanced approach to knowledge exploration and technology exploitation activities that can increase performance. These results are consistent with the studies by Effiom and Edet (2020) and Oranga and Ondabu (2018) that fintech positively affects financial performance.

H3 Fintech enhance of financial performance.

2.5 Fintech, financial literacy, and financial performance

Fintech is an innovation in financial transactions that encourages financial performance. SMEs use technology to conduct financial transactions and improve financial performance. Oranga and Ondabu (2018) reported that fintech could support financial performance; Karagouni (2015) found that the intensity of knowledge and innovation provides a competitive advantage and improves company performance. Alberti and Pizzurno (2013) stated that knowledge sharing could improve company performance. Financial knowledge, understanding, and skills are part of financial literacy. Fintech needs to be supported by a financial understanding of the skills to improve financial performance by SME managers. In addition, SMEs with a high level of financial literacy can manage their finances, minimise risk, and improve financial performance (Liu et al., 2020). This is consistent with (Hossain et al., 2020) that financial literacy affects the financial performance of SMEs.

H4 Financial literacy moderates the effect of fintech on financial performance.

2.6 Financial inclusion and financial performance

Based on Regulation 82 of 2016, financial inclusion is a condition in which every individual has access to quality, timely, smooth, and safe formal financial services at affordable costs based on individual needs and abilities. Conversely, SMEs with a high level of financial inclusion would find it easier to access funds from a financial institution (bank or non-bank sector). In addition, financing schemes provided by banks follow the characteristics of SMEs, and financial problems are quickly resolved, thereby increasing the financial performance. Financial inclusion is a process that guarantees SME managers easy use and access to the financial system. Studies have shown that the knowledge of financial inclusion helps SME managers discover various ways to manage their finances properly, effectively, and efficiently. Financial inclusion is linked to financial performance because easy access to capital from a bank can help SME managers run business activities well. Oranga and Ondabu (2018) stated that financial inclusion supports financial performance.

H5 Financial inclusion increase of financial performance.

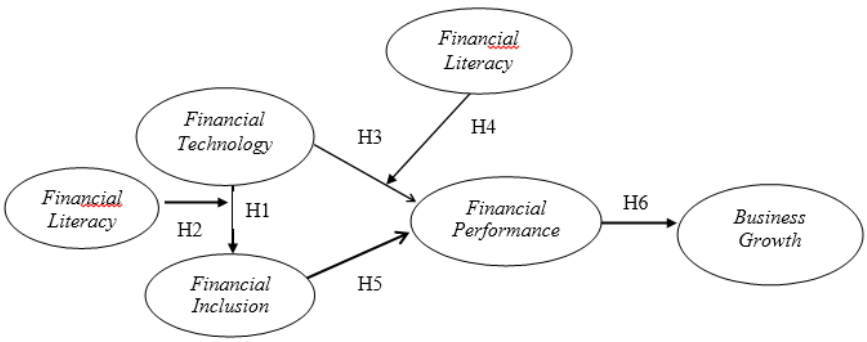
2.7 Financial performance and business growth

The achievement of SMEs is indicated by a financial indicator called financial performance, reflecting the achievements of a company within a certain period.

Therefore, SMEs must achieve financial performance. Some studies stated that over 50% of SMEs failed to sustain their financial performance within five years (Ogawa and Tanaka, 2013). However, it is necessary to study financial performance and business growth. SMEs contribute to the acceleration of business growth. Moreover, the company must have good financial performance due to business growth (Voulgaris et al., 2003).

H6 Financial performance has a positive effect on business growth.

Figure 1 Framework of the study



Based on the research model, fintech affects financial inclusion. Financial literacy moderates the effect of fintech on financial inclusion. Fintech and financial inclusion have an impact on financial performance. In addition, financial literacy moderates the effect of fintech on financial performance. Furthermore, financial performance can improve the business growth of SMEs in Indonesia.

3 Research method

Culinary sector of Indonesia SMEs as population in this research. This sector has contributed to economic growth (https://kemenkopukm.go.id). However, the real population number is unknown because the government did not register some SMEs properly. Therefore, this study adopted the Jacob Cohen formula as a technique for calculating the number of samples, as follows:

$$N = \frac{t}{F^2} + u + 1$$

$$N = \frac{19.76}{0,1} + 5 + 1 = 203.6 = 204 \text{ respondents}$$

where

N size of sample

F^2 size of effect (0, 1)

u number of variables (5) is 19.76.

Based on the Jacob Cohen formula, a sample size of 204 respondents was obtained. However, it turns out that only 202 questionnaires (99.9% response rate) were completed. The data collection used questionnaires with a Likert scale (1–5). The indicators in every variable are as follows: fintech (the use of digital applications in finance, financial innovations that support the effective and fast transactions), financial inclusion (access, use, quality), financial literacy (financial understanding, financial knowledge, and financial skill), financial performance (profit, sales, and size of SMEs), and business growth (sales growth, asset growth).

The statistical analyses applied were descriptive regression analysis and multiple regression analysis (MRA). These analyses examine the effect of more than one independent variable on one dependent variable. The regression equation of this research is as follows:

$$FInc = \alpha + \beta FTech + \beta FLit + \beta FTechFLit + \varepsilon \tag{1}$$

$$FPfc = \alpha + \beta FTech + \beta FLit + \beta FTechFLit + \beta FInc + \varepsilon \tag{2}$$

$$BGwt = \alpha + \beta FPfc + \varepsilon \tag{3}$$

Notes:

α constant

β coefficient

ε error

FInc financial inclusion

FTech financial technology

FLit financial literacy

FPfc financial performance

BGwt business growth.

4 Results and discussion

4.1 Respondent profile

A total of 204 questionnaires were distributed to the respondents, with a 99% response rate. Therefore, the total sample analysed included 202 SMEs. Respondents were women (112 or 55%) and men (90 or 45%) in the age group of 28 to 38 years (41%). However, 4% were at least 50 to 60 years old. Regarding their educational background, most were in college (96 or 48%), high school (55 or 27%), and elementary school (0.5%). This shows that most SMEs are in their productive age with the potential to develop fintech, financial literacy, and financial inclusion to increase financial performance and business growth.

4.2 Descriptive statistics

The results showed that the average financial inclusion of SMEs is 14.77%, meaning that SMEs' ease of financial access during the COVID-19 pandemic was 15%. This is because the ability of SMEs to use fintech is still poor. Financial literacy is 13.56%, that SMEs' knowledge and skills of financial are low. Fintech is at 10.08%, meaning that 10.08% of SMEs engage in innovation. The average financial performance is 11.12, and business growth is at an average of 13.73%, meaning that the financial performance and business growth of SMEs are still low. This phenomenon must be analysed and supported to improve financial performance and business growth.

4.3 Data quality test (validity and reliability test)

The results of the validity test indicate that the variables of financial inclusion, fintech, financial literacy, financial performance, and business growth showed a significant value of 0.000 < 0.05, all variables are valid. The reliability test results showed that the value of the Cronbach's alpha for financial inclusion, fintech, financial literacy, financial performance, and business growth is 0.865 > 0.05, 0.706 > 0.05, 0.668 > 0.05, 0.820 > 0.05, and 0.787 > 0.05, all the variables are reliable.

4.4 Classical assumption test result

The classical assumption test consists of the normality, multicollinearity, and heteroscedasticity tests. The normality test results for models 1, 2, and 3 are normally distributed. Model 1 led to tolerance values of 0.993 and 0.993, while the values of variance inflation factor (VIF) are 1.007 and 1.007. Regression model 2 shows that each variable has a tolerance value of 0.858, 0.784, and 0.907, while the VIF values are 1.166, 1.275, and 1.103, respectively. Therefore, it can be concluded that the variables in models 1, 2, and 3 have no multicollinearity. The heteroscedasticity test results show no heteroscedasticity in the regression models 1, 2, and 3. This result shows that the classic assumption can be analysed further.

4.5 Multiple linear regression analysis

The calculated results of the multiple linear regression analysis are financial inclusion, financial performance, and business growth, presented in Table 1.

The first hypothesis stated that fintech positively affects financial inclusion. However, Table 1 shows that the coefficient of fintech is 0.515, with a value greater than the t-table (0.607 > 0.05). This means that at a significance level of 5%, fintech does not affect financial inclusion. Therefore, th*e first hypothesis is rejected*.

The second hypothesis states that financial literacy strengthens the effect of fintech on financial inclusion. The t-test results of the statistics in Table 1 show that the coefficient of interaction between financial literacy and financial inclusion is 4.662, with a t-count value smaller than the t-table (0.000 < 0.05). Therefore, the *second hypothesis is accepted*.

Table 1 Results of MRA

Model	*Dependent variable*	*Independent variable*	*β Unstandardised*	*T*	*Sign 5%*
Model 1	Financial inclusion	Fintech	–0.078	–0.515	0.607
		Fintech*Financial literacy	0.041	4.622	0.000
	Adj. R square		0.217		
Model 2	Financial performance	Fintech	0.443	1.337	0.183
		Financial literacy	0.422	2.287	0.023
		Financial inclusion	0.582	10.776	0.000
		Fintech*Financial literacy	–0.026	–1.052	0.294
	Adj. R square		0.560		
Model 3	Business growth	Financial performance	0.161	1.986	0.048
	Adj. R square		0.014		

Source: Statistics result (2020)

The third hypothesis states that fintech can increase of financial performance. However, the results of the statistical tests show that the value of the fintech coefficient is 1.337, with a t-value > t-table (0.183 (sig. > 0.05) at a significance level of 5%. Therefore, the *third hypothesis is rejected*.

The fourth hypothesis states that financial literacy moderates the effect of fintech on financial performance. However, Table 1 shows that the coefficient of interaction between financial literacy and fintech is –1.502 with a significance value of 5%, where the t-value is greater than the t-table (0.294 > 0.05). Therefore, the *fourth hypothesis is rejected*.

The fifth hypothesis states that financial inclusion positively affects financial performance. The results of statistical tests in Table 1 show that the financial inclusion coefficient value is 10.776 with a t-value smaller than the t-table at a significance value of 5% (0.00 < 0.05); therefore, the *fifth hypothesis is accepted*.

The sixth hypothesis states that financial performance positively affects business growth. The results of statistical tests show that the coefficient of financial performance is 1.986 at a significance level of 5%, where the t-value is < t table (0.048 < 0.05); therefore, the *sixth hypothesis is accepted*.

5 Discussion

5.1 Fintech and financial inclusion

The insignificant effect of fintech on financial inclusion was because SMEs in the emerging markets and developing economies (EMDEs), such as Indonesia, do not possess comprehensive technical skills to apply the available advanced technology. In general, culinary SMEs in Indonesia still use simple fintech with poor-quality human resources. Therefore, they are unable to access financial institutions. Besides, it is less transparent, and stakeholders do not have sufficient information access to the financial institution. The results of this research are inconsistent with the findings by Bongomin and Ntayi (2020), Ozili (2018), Salampasis and Mention (2018) and Thomas and Hedrick-Wong (2019), meanwhile consistent with Baber (2019).

5.2 Fintech, financial literacy, and financial inclusion

Financial literacy strengthens the effect of fintech on financial inclusion. Financial literacy is the knowledge, understanding, and skill SME managers possess, enabling them to strengthen the use of fintech, thereby increasing financial inclusion. This is supported by Hussain et al. (2018). The results of this study are consistent with the findings of Mindra and Moya (2017) that financial literacy is the key capability in improving financial inclusion to create easy access to financial institutions. Financial literacy is essential in financial knowledge and skills (World Bank Group, 2016). SMEs in Indonesia require good financial knowledge and understanding. This includes balance sheets, profit or loss statements, risk management, calculating debt of costs, evaluating financial performance as a basis for financial decision making, having easy access to funds, and providing solutions to financial problems.

5.3 Fintech and financial performance

Fintech was unable to improve financial performance in the SMEs. Largely, SMEs used financial innovations for simple purposes and did not encourage increased financial performance. Therefore, the contribution of fintech to SMEs' financial performance is still poor. Therefore, this research is inconsistent with the studies conducted by Oranga and Ondabu (2018) but consistent with Tahir et al. (2018) and Bigliardi (2013).

5.4 Fintech, financial literacy, and financial performance

Financial literacy does not moderate the effect between fintech and financial performance. This indicates that the knowledge and understanding of financial skills cannot strengthen the effect of fintech on financial performance for SMEs. Moreover, SMEs' knowledge and understanding of finance skills does not improve financial performance. The level of financial literacy in Indonesia is extremely poor, especially in managing finance and risk in business activities. Therefore, they are unable to improve financial performance.

5.5 Financial inclusion and financial performance

Financial inclusion has a significant positive effect on financial performance. Access to capital, financial services, and products offered by the financial institution (bank or non-bank sectors) can increase financial performance. In addition, capital loan from financial institutions is important for SMEs to support their business activities to improve financial performance. The third National Survey on Financial Literacy and Inclusion (SNLIK) conducted by the Financial Services Authority (OJK) in 2019 reported that financial inclusion was 76.19%. Therefore, financial inclusion is a solution for SMEs to obtain easy access to financial institutions, enabling them to obtain capital, products, and services (from banking and non-banking sectors) to support their activities and improve their financial performance. This study is consistent with Oranga and Ondabu (2018) that financial inclusion positively and significantly affects financial performance.

5.6 Financial performance and business growth

Financial performance increase on business growth. These results indicate that the financial performance of SMEs in Indonesia can increase business growth. Therefore, the function of SMEs in expanding employment and accelerating economic growth tends to be realised. This study is consistent with Voulgaris et al. (2003).

6 Conclusions, limitation, and implication

This study examined the role of financial literacy in strengthening fintech and financial inclusion. It analysed the effect of financial inclusion on financial performance and business growth of SMEs. The results show that fintech cannot increase financial inclusion. However, it increases financial inclusion after being moderated by financial literacy. This means that digital financial innovation cannot improve access to financial institutions; it must be strengthened by financial literacy, involving SME managers' financial knowledge, understanding, and skills. Therefore, fintech cannot improve financial performance although it is moderated by financial literacy, while financial inclusion can improve financial performance. In addition, financial performance can boost the business growth of SMEs in Indonesia.

Some limitations and future research are explained as follows:

a This study only analysed financial inclusion and literacy from the demand side. Future research needs to apply the two approaches simultaneously and integrate financial inclusion from both the demand and the supply sides to discover the quality of financial inclusion that has never been studied.

b This study used four variables that affect the business growth of SMEs in Indonesia.

Therefore, future research needs to include other variables, such as business risk, investment, corporate debt, ownership structure, etc. Additionally, they need to use other moderating variables, such as demographic factors, social capital, culture, and types of ownership. Furthermore, this research was conducted in Indonesia, a developing country. Future research can include developed countries. The two types, developed and developing countries, have different characteristics, and the results will be more interesting to analyse and compare.

The result has practical and theoretical implications. The practical implications are:

a Government, financial institutions (banking or non-banking sectors), and educational institutions must synergise to increase financial literacy and fintech for SMEs.

b The government must improve financial literacy and inclusion regulations, especially for SMEs (demand side), because the current government regulations are universal for all types of businesses in Indonesia.

The theoretical implication is that this research recommends the development of a RBV theory in the financial literacy to improve fintech on financial inclusion, financial performance, and business growth of SMEs.

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