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Technology Adoption Determinants Micro and Small Enterprises in Indonesia: Pre-Adoption and Post-Adoption Review

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We study Small and Micro (SMEs) behavior towards digital financial technology adoption. Using a 11548 SMEs in all provinces in Indonesia, we employ SEM-PLS approach to estimate intention to use (pre-adoption stage and intention to continue use the technology adoption stage to observe SMEs behavior towards technology-based microfinance system. The results show SMEs perceived benefits to adopt technology and environment context are the strongest drivers for SMEs to encourage adopting technology. Further, overall company performance and financial capability as proxy of SMEs satisfaction after adopting the technology will increase SMEs motivation to continue using technology. Overall, our findings suggest that government support in smoothing digital microfinance ecosystem development drives shifting in most transaction of daily transaction to digital platform. Eventually it will lead to higher satisfaction for SMEs due to realization of perceived benefits and increases SMEs to continue adopting the technology.

Keywords: SMEs, TOE, technology adoption, post adoption, intention.

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1. Introduction

Over recent years, tremendous attention has been anchored on the digitization of financial services worldwide through, for its potential to change real lives, especially those in developing countries. The digitization is substantial in all facets of technology and wireless and mobile technology has been one of the most important factors in ICT penetration which improves the availability of financial products (supply side) and boosts demand for these products (demand side) (Chian-Son, 2012; Mushtaq & Bruneau, 2019). Moreover, technology penetration facilitates information flows and reduces transaction cost (Yum et al., 2012; Liu et al., 2019). This aspect of technologies solves asymmetrical information that is inherently attached to micro and small enterprises (SMEs) which may increase loan approval from financial institutions (Stiglitz & Weiss, 1981).

Access to formal finance continues to become a critical barrier for SMEs to expand, especially in developing economies (Quartey et al., 2017). The empirical literature has studied the significant impact of SMEs' financial access on firm performance, such as enhanced employee skills, declined poverty, and economic growth (Beck and Demirgic-Kunt, 2006; Beck et al., 2008). Due to the importance of SMEs to the economy, policymakers and regulators put their attention on creating a favorable environment to address the financing obstacle by SMEs. Regarding that condition, Information and Communication Technology (ICT) adoption may reduce the information asymmetry between the lender and borrower, resulting in easier access to finance.

The study by Pellegrina et al. (2017) argues that firms who broadly adopt ICT are more likely to experience less financial constraints because the intention to adopt technology is considered readiness to innovate. By utilizing ICT, the transaction cost in the financial market can be reduced, thus encouraging lenders to disburse more financing by considering that the ICT adoption by SMEs allow them to be more transparent for assessing their creditworthiness (Pellegrina et al., 2012). Furthermore, the ICT usage gives the SMEs many financing alternative sources; it increases their efficiency in maintaining direct communication with existing lenders. Macpherson et al. (2002) assume that the effective use of ICT is beneficial for SMEs to become "knowledge integrators" to ther stakeholders In addition, the relationship between ICT adoption and access to finance is also associated with SMEs overall performance by increasing their profitability, outreach, productivity and exports (Raymond et al., 2005), which lead to higher reinvestments (Qiang et al., 2006). The increase in productivity and overall performance of SMEs, therefore the financial institutions more trusting in giving them lending.

Several efforts have been made to analyze the ICT adoption by SMEs in various aspects. For example, Meske and Stieglitz (2013) explored the adoption, usage, and benefits of social media and SMEs and the potential concerns that may prevent SMEs from wider adoption of social media. Bowman et al. (2018) explore digital technologies' contribution to SMEs ' innovativeness and performance. The study by Mushtaq et al., (2021) examines the association between ICT adoption, innovation, and SMEs' access to finance. In addition, Stankovska et al. (2016) investigate the role of the digital channel to diminish SME barriers in marketing.

Despite numerous research on ICT adoption by SMEs, the study concerning ICT adoption, especially digital financial technology and its influence on overall firm performance and financial capability, is still limited. Furthermore, the available literature is still narrow to the usage behavior of ICT. Thus this research is contributed to expanding the existing literature by analyzing the post-adopt experience after using digital financial technology. In addition, this

study helps government and related parties focus their effort on factors that will encourage SMEs to embrace technology adoption.

To conduct this research, we improve the concept from Technology, Organizational, and Environment (TOE) by Thong and Yap (1995) to develop a robust theoretical framework to observe technology adoption determinants. Moreover, we aim for post-adoption experience to observe factors that support SMEs' continued technology adoption. We first provide a literature review in Section 2, which explains the theoretical perspective and related literature. Section 3 describes the research methodology consisting of the datasets used in the analysis, variables, and the modeling framework. Section 4 presents the estimation results and analysis. Section 5 explains the result, and Section 6 concludes the empirical study implications to policymakers and SMEs in Indonesia.

2. Theoretical perspective and related literature

The TOE framework consists of three factors that influence the organization to adopt innovation: technology, organization, and environment (Baker, 2012). According to Oliveira and Martins (2011), the TOE framework has been widely used in technology adoption of innovation studies due to its strong theoretical basis and substantial empirical support. A literature review of digital financial technology adoption in SMEs was conducted to identify the constructs within the TOE framework in this research. The following explains the factors in each of the six main constructs along with the hypothesis development.

2.1 Technology context

In general, the technological characteristics of an organization explain the innovation attributes in technology that affect the organization's intends to adopt innovation in technology (Kapoor et al., 2014; Thong, 1999). This study acknowledges two innovation attributes in the context of digital technology adoption by SMEs: infrastructure readiness and technology comfort. Infrastructure readiness refers to the technical competence of SMEs to acquire new technology. The probability of adopting new information technology will be higher if the firm already has technology infrastructure requirements (Mohamed et al., 2009). On the other hand, a previous study shows that the more users acquire knowledge and confidence through experience, the more they perceive a system as easy to use (Hackbarth et al., 2003). In addition, if the users discover that the system is effortless to be adopted, they will be more encouraged to use it (Tarhini et al., 2016; Zhou et al., 2010).

H1. Technology context contributes significantly and is positively related to intention to adopt digital financial technology.

2.2 Organizational context

The Organizational contexts are discussed from three points of view: firm capital adequacy, perceived financial cost, and employee capability. The TOE's organizational context explains that the intention to adopt technology relies upon the resources exceeding the minimum requirement to produce a certain level of organizational output (Lin, 2014). The input of the technology adoption process can be tangible and intangible assets (Prakash et al., 2008). Several empirical studies focus on financial resources (Franquesa and Brandybery, 2009), owner and employee knowledge (Jeyaraj et al., 2006; Lin, 2014), and human capital (Wang et al., 2013). The findings from the above studies show that such resources positively influence the firm flexibility and innovation (Judge et al., 2001), resulting in them being proactive in adopting new technologies (Lawon et al., 2003).

H2. Organizational context contributes significantly and is positively related to intention to adopt digital financial technology.

2.3 Environmental context

The environmental contexts are discussed from four points of view: cultural aspects, government role, quality of availability of technology products and services, and pressure from stakeholders. Cultural aspects refer to the technology acceptance by the community and their religion. Several studies conclude that social influence significantly predicts the intention (Tarhini et al., 2016; Yang et al., 2012; Yu, 2012). On the other hand, according to Chen et al. (2021), the digitalization level in small businesses is still low; therefore, they need appropriate policies, programs, and support from the government to implement digital technology adoption successfully. In addition, factors that can accelerate the adoption of financial products and services can be the availability of financial products and services (Fu, 2020) that can be accessed easily at a relatively low cost. Furthermore, the pressure from stakeholders refers to pressure from customers and pressure from partners. The more consumers demand a company to provide up-to-date products or services, the more it is willing to adopt this technology (Wu et al., 2003); also, the business partners who have adopted new technologies earlier can encourage their partner companies to follow them (Zhu and Kraemer 2006).

H3. Environmental context contributes significantly and is positively related to intention to adopt digital financial technology.

2.4 Owner-manager context

The owner-manager contexts are explained in three points of view: innovation, technology knowledge, and subjective norm. Literature by Thong and Yap (1995) describes that owner-manager innovation is their ability to modernize the business by implementing new forms and processes, including developing the internal technological progress and expanding new external markets. In addition, Bassellier et al. (2003) refer to technology knowledge as the ability to understand current and developing technologies applicable to industries or specific organizations (Bassellier et al., 2003). Further, subjective norms refer to how individuals are influenced by the people they think important to adopt certain technology (Venkatesh and Davis, 2000).

H4. Owner-manager context contributes significantly and is positively related to intention to adopt digital financial technology.

2.5 Perceived Benefit

The perceived benefit is described as a set of foreseen innovation advantages for adopters (Seyal et al., 2004). According to Davis (1989), perceived benefit is the extent to which a person believes that their job performance would improve if using a particular system. Related to mobile financial services, consumers are likely to adopt the system if they believe by using the system, time spent on going to the bank can be reduced and improving efficiency (Rao et al., 2003).

H5. Perceived benefit contributes significantly and is positively related to intention to adopt digital financial technology.

2.6 Digital financial literacy

Digital financial literacy is explained in two points of view: digital literacy and financial literacy. Digital literacy refers to a set of basic skills in using technology. Previous research by Bruno et al. (2011) and van Deursen et al. (2011) argue that inadequate digital skill is considered a barrier to experiencing the benefit of using information technology. Moreover, a study by Yu et al. (2017) found that low information literacy negatively leads to information communication adoption behavior.

On the other side, financial literacy is defined as the knowledge and skills to manage financial resources to make effective financial matters. Njenga and Ndlovu (2013) stated that the new mobile banking user might have low financial literacy and expose the risk of losing privacy, services, and fraud. Financial literacy is important when an individual shifts from traditional banking to mobile banking; therefore, there is a new behavior change (Cohen and Nelson, 2011). With sufficient knowledge of financial literacy, users can obtain the full benefit of using financial services and make a proper financial management decision (Huhmann and McQuitty, 2009).

H6. Digital financial literacy context contributes significantly and is positively related to intention to adopt digital financial technology.

2.7 Intention to actual use

Accordant to all theory-based psychological models, it assumed that individual behavior is motivated by individual intention. Customers' intention is explained as the base for actual behavior in adopting a new system and technology (Venkatesh et al., 2003). Regarding technology adoption, empirical studies have supported the findings that behavioral intention significantly affects the actual use behavior (Lim et al., 2019; Venkatesh et al., 2012; Baptista and Oliveira, 2015).

H7. Intention to adopt contributes significantly and is positively related actual use of digital financial technology.

2.8 Actual use to firm financial capability and overall performance

The empirical study by Isobe et al. (2008) explains that the company that has implemented the technology system in their operational has the advantage in adapting to environmental changes. Furthermore, the technology adoption will improve the firm productivity. Thus, the better the technology implementation, lead to better the firm performance (Rao et al., 2015). In addition, several researchers argue that technology adoption decreases operational costs (Saloner and Shepard, 1992; Benitez-Amado et al., 2010) and increases the firm's efficiency and effectiveness (Milne, 2006).

H8a. Actual use contributes significantly and is positively related to firm financial capability

H8b. Actual use contributes significantly and is positively related to firm overall performance

2.9 Overall firm performance to financial capability and technology continuos adoption

Firm performance can be defined as utilizing its assets to generate profit (Marimuthu et al., 2009). As SMEs have a significant contribution to the economy, thus their performance is crucial. Harash et al. (2014) explain that small business performance involves the degree to which the owner can manage its operational purpose and goals. In addition, Garman and Forgue (2011) argue that an increase in firm capability or performance can create awareness in firm profit and how such funds have to be used and managed efficiently.

Regarding the intention to continuous adoption of digital financial technology, we use the theory by Oliver (1980) concerning the cognitive model of the antecedents and consequences of satisfaction decisions. The study reveals that the satisfaction of certain systems influences post-exposure attitude. In this case, satisfaction measured by the adaptation of pre-exposure attitude sequencely affects the intention in usage behavior. Therefore, we hypothesize that firm performance and financial capability influence the technology's continuous adoption after using digital financial technology.

H9a. Overall firm performance contributes significantly and is positively related to firm financial capability

H9b. Overall firm performance contributes significantly and is positively related to firm technology's continuous adoption

H10. Financial capability contributes significantly and is positively related to firm technology's continuous adoption

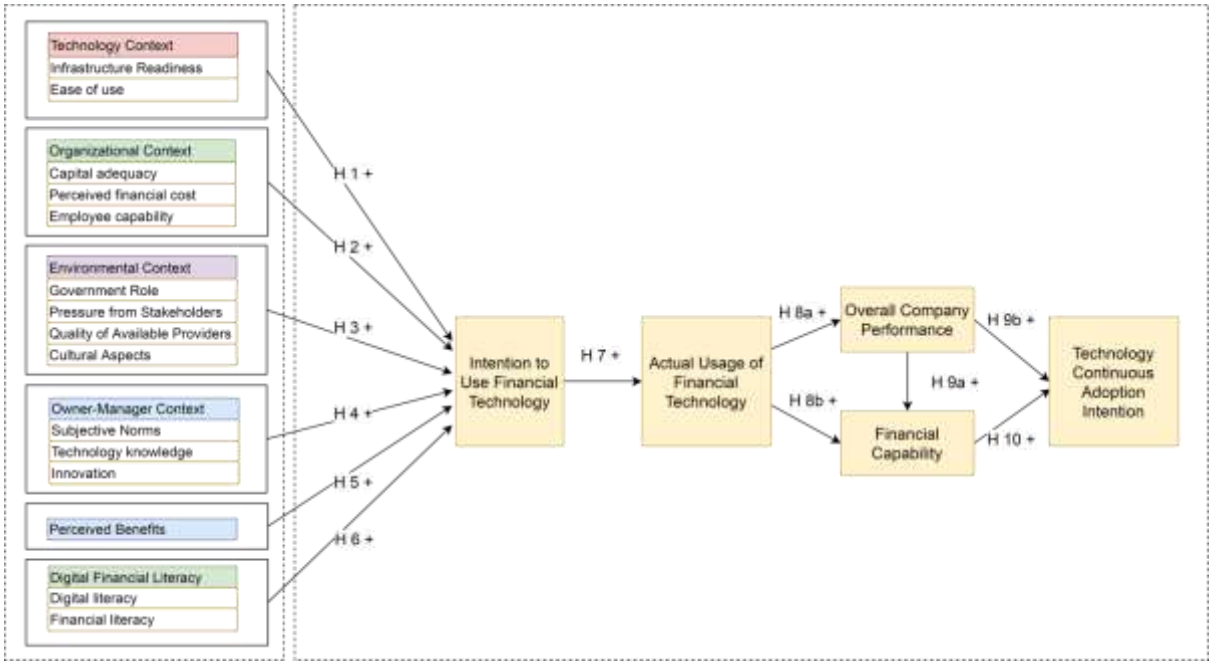

Figure 1 Research framework

3. Data and Methodology

3.1 Description of the survey

The empirical analysis is based on a large dataset that consists of 11548 SMEs in all provinces in Indonesia. The data were collected through a large-scale survey conducted from May to September 2021 using the OJKsurvey platform. The objective of the survey was to analyze the level of technology readiness of Indonesia's SMEs and identify the factors that determine the adoption of financial technology.

The survey was established on a structured questionnaire with seven sections referring to a firms' technology context, internal organization, management context, environmental influence, owner financial digital literacy, financial capability, and overall performance. Questionnaire

items were adapted from previous studies that utilized the extended TOE model in examining technology acceptance (Thong and Yap, 1995; Kamdjoug et al., 2020). We modified the items to be fitted with the objective of this study. Some questions were measured on a 6-point Likert scale: 6 (*strongly agree*), 5 (*agree*), 4 (*slightly agree*), 3 (*slightly disagree*), 2 (*disagree*), 1 (*strongly disagree*), and 'no'/'yes' modality for others. In addition, our questionnaire also consists of the 'correct'/'wrong' type of answer for financial literacy and frequencies for usage questions.

We initially conducted a pilot web-based survey to 50 filled questionnaires to get feedback if there were any difficulties in understanding and answering the questionnaire (Hair, Black, Babin, & Anderson, 2013). We required owner or manager of the SMEs as the person who responsible to input the survey. The survey targeted 21 industries sectors of the Indonesian economy, based on the Indonesia Standard Industrial Classification. A total of 24614 firms were asked to fill the questionnaire which only 11548 completed the survey, resulting in a 47% response rate for further analysis. This completed numbers fulfill the rule of thumb to determine the minimum sample size as ten times the largest number of any dependent variables predictors in the model (Gefen et al. 2011), and meet the assumption of 300 cases as a proper general rule of thumb for factor analysis (Tabachnick and Fidell, 2007). In addition, the population size of SMEs in Indonesia is more than 100000 which according to Israel (1992) needs only 1111 samples to achieve the precision level of our study is 3%, with a confidence level of 95%. Hence, by these assumptions, the statistical power of the sample size is confirmed. To select the research sample, we used a non-probability technique, convenience sampling; this technique determines the sample units by selecting respondents willing to answer the questionnaire in this study.

3.2 Methodology

Quantitative analysis is primarily used in this study to validate the research framework, as shown in figure 1. This study utilizes PLS methodology developed by Wold (1985) that belongs to the family of structural equation models (SEM). The PLS methodology consists of two parts: (1) a measurement model (known as outer or external model) that explains the relationship between an unobserved or latent variable (LV), also called construct, and its observed or manifest variables (MV), also called indicator variables; (2) a structural or inner model, which defines the interrelationship between latent variables. We use SmartPLS 3.2.9 software to conduct the PLS analysis. Table 2 presents the scale items used to examine the selected constructs. The measuring items shown below are those that already validated in accordance with construct reliability and validity result (refer to Table 3).

4. Results

The theoretical research model of this study was analyzed using a variance-based technique PLS, which is convenient and statistically powerful (Henseler & Fassot, 2010; Rahman et al.,2020). We conduct a two-step approach in analyzing the model following Anderson and Gerbing (1988). First, the reliability and validity of the measurement model were performed. Second, we examined the structural model and tested the hypothesis.

4.1 Measurement model

The convergent validity is validated by performing the factor loading, average variance extracted (AVE), and composite reliability (CR) as proposed by Hair et al. (2014). Overall, the values of Cronbach's alpha are exceeded 0.7, except for Actual use (Table 3). However, the

Actual use value is still acceptable since the composite reliability measure is fit above 0.7 (Hair et al. 2014; Henseler et al. 2009). All composite reliability values are larger than 0.7, suggesting that our constructs are reliable (Henseler et al., 2009).

The AVE indicates the convergent validity of each item against its construct. Table 3 shows all variable constructs account for more than 50% of the variance of their items, confirming that all variable constructs are valid (Henseler et al., 2009). Discriminant validity suggests the distinction of each construct from the others. Thus we perform the Fornell–Larcker criterion, which compares the value of the square root of the AVE (along the diagonal) to the correlations of the latent variables (Hair et al. 2016; Miltgen et al. 2013). Table 4 shows that our constructs are different for each variable. It also shows that all values on the diagonal are higher than the values below and to the left, except for OMC-EC. Nonetheless, the difference is immaterial (0.829-0.816 = 0.013), considered acceptable (Ab Hamid et al. 2017).

Table 1 Scale items of the selected constructs.

Variable constructs	Measuring items	Obs	Mean	Std.Dev	Min	Max
Technological context						
Infrastructure readiness	INF1: Our business has adequate equipment or computers to use digital technology-based microfinance services.	11548	4.135	1.459	1	6
	INF2: Our business locations have a good internet network to use digital technology-based microfinance services.	11548	4.372	1.343	1	6
Ease of use	EASE1: Microfinance products and services based on digital technology are much more convenient to use.	11548	4.318	1.26	1	6
	EASE2: Digital technology-based microfinance products and services make it easier to run my business because financial products and services can be accessed and used anytime and anywhere.	11548	4.39	1.267	1	6
Organizational context						
Capital adequacy	CAP1: Financial support for the use of digital technology-based microfinance services can be obtained easily from supporting institutions such as governments, banks, and international organizations.	11548	3.967	1.22	1	6
	CAP2: Our business has access to sources of capital such as banking (bank credit) and the capital market to finance infrastructure and use digital technology-based financial services.	11548	3.784	1.272	1	6

Variable constructs	Measuring items	Obs	Mean	Std.Dev	Min	Max
Perceived financial cost	COST3: We feel that investment in equipment/machinery related to implementing microfinance products and services based on digital technology is quite expensive.	11548	4.103	1.195	1	6
Employee capability	EMPLOY1: The majority of employees understand the use of digital technology-based microfinance products and services.	11548	3.775	1.35	1	6
	EMPLOY2: The majority of employees are proficient in using digital technology-based microfinance products and services.	11548	3.743	1.357	1	6
Environmental context						
Cultural aspects	CULT1: Microfinance products and services based on digital technology are well received by our families and communities.	11548	4.295	1.152	1	6
	CULT2: Our belief does not prevent us from using digital technology-based financial products and services.	11548	4.321	1.141	1	6
Government role	GOV1: Government policies encourage us to use digital technology-based microfinance products and services (e.g., government loan applications via the internet, easy taxation through technology applications).	11548	4.031	1.239	1	6
	GOV2: Government financial support increases our interest in digital technology-based microfinance products and services such as online registration and distribution.	11548	4.083	1.262	1	6
	GOV3: Government support is important to encourage SMEs owners to use digital technology-based microfinance services.	11548	4.273	1.243	1	6

Variable constructs	Measuring items	Obs	Mean	Std.Dev	Min	Max
Quality of Availability of Technology-Based Products and Services	QUALITY1: The diversity of existing digital technology-based microfinance products and services increases our interest in using them.	11548	4.105	1.239	1	6
	QUALITY2: The availability of digital technology-based microfinance products and services at low costs increases our interest in using them.	11548	4.288	1.195	1	6
	QUALITY3: The availability of digital technology-based microfinance products and services with easy and fast access increases our interest in using them.	11548	4.341	1.179	1	6
Pressure from stakeholders	STAKE1: Most business partners (banks, lenders, vendors, suppliers, and customers) use digital financial technology in their transactions, thus pressuring our company to do the same.	11548	4.052	1.251	1	6
	STAKE2: Most business partners (banks, lenders, vendors, suppliers, and customers) have recommended using digital financial technology products.	11548	4.057	1.237	1	6
	STAKE3: Many customers want our company to use digital financial technology in their transactions.	11548	4.005	1.277	1	6
	STAKE4: Our customers will choose to transact with our competitors if we do not apply digital financial technology in their transactions.	11548	3.745	1.344	1	6
Owner manager context						
Innovation	INNOV1: Our business uses the latest digital financial technology for daily operational activities without the help of others.	11548	3.935	1.329	1	6

Variable constructs	Measuring items	Obs	Mean	Std.Dev	Min	Max
	INNOV2: Our business became the first company in our environment (peer group) to use digital financial technology for daily operational activities.	11548	3.512	1.396	1	6
	INNOV3: Our business becomes a reference point or source of information for our stakeholders (other micro and small businesses, suppliers, customers, and the surrounding community) who need input related to technology.	11548	3.571	1.384	1	6
Technology knowledge	KNOW1: I have general knowledge of computers and their basic applications (Microsoft Word, Excel, and similar).	11548	4.104	1.417	1	6
	KNOW2: I have general knowledge of e-mail.	11548	4.151	1.405	1	6
	KNOW3: I have general knowledge of e-commerce.	11548	3.932	1.413	1	6
	KNOW4: I have general knowledge of smartphone apps (available on Google Play, Apple Store).	11548	4.307	1.31	1	6
Subjective norm	NORM1: The owner/manager of the company is committed to using digital technology-based microfinance products and services in the company's daily operational activities.	11548	4.082	1.253	1	6
	NORM2: Some people important to me (business partners, friends, family) think I should use digital technology-based microfinance products and services.	11548	4.169	1.214	1	6

Variable constructs	Measuring items	Obs	Mean	Std.Dev	Min	Max
	NORM3: Owner/management feels that access to easy and fast financial services such as saving, withdrawing, or transferring money and business transactions anytime and anywhere is very important for my business.	11548	4.421	1.214	1	6
Digital financial literacy						
Financial literacy	LITFIN1: Suppose you had IDR 1.000.000 in a savings account, and the interest rate was 2% per year. After five years, how much do you think you would have in the account if you left the money to grow? *(a)More than IDR 102.000; (b) Exactly IDR 102.000; (c) Less than IDR 102.000; (d) Do not know*					
	LITFIN2: Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, how much would you be able to buy with the money in this account? *(a)More than today; (b) Exactly the same; (c) Less than today; (d) Do not know*					
	LITFIN3: Do you believe that investments that provide high returns tend to be high risk? *(a) Yes; (b) No*					
Digital literacy	LITDIG1: Our employees and I are aware of digital financial applications.	11548	3.182	1.022	1	4
	LITDIG2: Our employees and I have transacted using digital financial applications without help from others.	11548	3.049	1.074	1	4
Questioner items related to the dependent variable						

Variable constructs	Measuring items	Obs	Mean	Std.Dev	Min	Max
Intention to use	INT1: Our business will use digital technology-based microfinance products and services for our daily operations in the future.	11548	4.33	1.192	1	6
	INT2: Our business will increase the frequency of using digital technology-based microfinance products and services for daily operations in the future.	11548	4.315	1.188	1	6
	INT3: We will increase digital interaction with sources of capital or funding (banks, MFIs, Cooperatives, Venture Capital, and others).	11548	4.13	1.193	1	6
Actual use		11548	1.859	0.93	1	4
	ACT1: How long have you been using digital technology-based microfinance products and services? *(a) Not yet; (b) Less than 1 year; (c) 1-2 year; (d) 2-3 year; (e) 3-4 year; (f) More than 1 year*	6479	2.751	1.061	1	4
	ACT2: How often does your business use digital technology-based microfinance products and services? *(a) Once a week; (b) 2-3 times a week; (c) Daily; (d) every time*	11548	2.735	0.639	1	4
	ACT3: What digital technology-based microfinance products and services do you use? *(a) Payment Gateway; (b) Digital Wallet; (c) Social Crowdfunding; (d) P2P Lending; (e) Banking App*	6479	4.396	1.059	1	6
Company performance		6479	4.669	0.957	1	6
	PERF1: Our sales growth has increased since using digital technology-based microfinance products and services.	6479	4.346	1.102	1	6

Variable constructs	Measuring items	Obs	Mean	Std.Dev	Min	Max
	PERF2: The time needed to process financial transactions has become shorter since using digital technology-based microfinance products and services.	6479	4.543	0.927	1	6
	PERF3: Financial transaction costs have become more efficient since using digital technology-based microfinance products and services.	6479	4.511	0.958	1	6
Financial capability	CAPA1: Our business has good planning or budgeting for business continuity.	6479	4.21	1.218	1	6
	CAPA2: Our business can manage operating profit and save or reinvest a portion of operating profit.	6479	4.139	1.264	1	6
	CAPA3: Our business has capability to apply credit for expansion.	6479	4.622	0.935	1	6
	CAPA4: When applying a loan, we rationally choose based on the interest rate rather than the lender's reputation.	6479	4.739	0.914	1	6
Technology continuous adoption intention	CONT1: Considering current technology costs and benefits, our company keeps using digital technology-based microfinance services.	6479	4.562	1.041	1	6
	CONT2: Our business will use digital technology-based microfinance services in the future.	6479	4.691	0.938	1	6
	CONT3: We actively seek any information on the development of digital technology-based microfinance services.	6479	4.33	1.192	1	6
	CONT4: Our business is interested in using microfinance services based on the latest digital technology.	6479	4.315	1.188	1	6

Table 2 Reliability and validity tests

Variable Constructs	Items	Outer loading	Cronbach α	Composite reliability	AVE	R^2	Q^2
Technology context (TC)	inf1	0.863	0.906	0.934	0.780		
	inf2	0.850					
	secur1	0.906					
	secur2	0.912					
Organizational context (OC)	cap2	0.698	0.793	0.859	0.557		
	cap3	0.723					
	cost1	0.504					
	employ1	0.871					
	employ2	0.873					
Environmental context (EC)	cult1	0.849	0.954	0.960	0.666		
	cult2	0.820					
	gov1	0.784					
	gov2	0.767					
	gov3	0.752					
	quality1	0.848					
	quality2	0.877					
	quality3	0.881					
	stake1	0.796					
	stake2	0.828					
	stake3	0.837					
	stake4	0.740					
Owner manager context (OMC)	inov1	0.827	0.938	0.947	0.644		
	inov2	0.701					
	inov3	0.723					
	know1	0.839					
	know2	0.846					
	know3	0.812					
	know4	0.831					
	norm1	0.821					
	norm2	0.813					
	norm3	0.796					
Perceived benefit (PB)	ben1	0.916	0.950	0.964	0.869		
	ben2	0.936					
	ben3	0.943					
	ben4	0.932					
Digital financial literacy (DFL)	litdig1	0.940	0.769	0.867	0.695		
	litdig2	0.934					
	litfin	0.572					
Intention to Use (IU)	int1	0.933	0.896	0.936	0.829	0.775	0.639
	int2	0.939					
	int3	0.857					
Actual use (AU)	act1	0.632	0.423	0.707	0.457	0.461	0.204

Variable Constructs	Items	Outer loading	Cronbach α	Composite reliability	AVE	R^2	Q^2
	act2	0.506					
	act3	0.847					
Overall company performance (CP)	perf1	0.885	0.836	0.901	0.753	0.131	0.097
	perf2	0.900					
	perf3	0.817					
Financial capability (FC)	capa1	0.866	0.808	0.870	0.628	0.325	0.196
	capa2	0.869					
	capa3	0.741					
	capa4	0.677					
Sustainable financial technology adoption (SUS)	sust1	0.890	0.898	0.929	0.766	0.602	0.459
	sust2	0.909					
	sust3	0.801					
	sust4	0.898					

4.2 Structural model and hypothesis testing

We follow Hair et al. (2014) to examine the structural model (path relationship), R^2 value, t-values by conducting bootstrapping procedure with 5.000 resampling, beta coefficient, the effect size (f^2), and the predictive relevance (Q^2). The R2 and Q2 are shown in Table 3, while path coefficients results is shown in Table 5

Hair et al. (2014) suggest that it is necessary to examine the change in the R^2 value to obtain the effect size (f^2). Usually, the specific exogenous construct of a model is omitted to evaluate the changes in R^2. If the omitted construct has an essential impact on the endogenous construct, it will significantly change R^2. The result of the f^2 can be seen in Table 5. To evaluate the effect size, Cohen (1988) classify that the effect size of 0.02 (small), 0.15 (medium), and 0.35 (large). Our result shows that intention to use highly affects SMEs' actual use of financial technology (0.857), followed by overall company performance on sustainable use of financial technology (0.634). In contrast, technology context on intention to use has less effect size (0.004), even though the relationship is significant; thus, technology context cannot be considered a good predictor of intention to use financial technology by SMEs in this research. The same results also appear on digital financial literacy on intention to use (0.011) and actual use on financial capability (0.017).

Table 3 Correlation matrix and the square root of AVE: Fornell–Larcker criterion

	AU	DFL	EC	FC	IU	OC	OMC	PB	CP	SUS	TC
AU	**0.676**										
DFL	0.527	**0.834**									
EC	0.635	0.682	**0.816**								
FC	0.302	0.217	0.339	**0.793**							
IU	0.679	0.704	0.804	0.301	**0.911**						
OC	0.552	0.622	0.750	0.338	0.673	**0.746**					
OMC	0.615	0.701	0.829	0.273	0.782	0.707	**0.802**				
PB	0.618	0.731	0.807	0.306	0.845	0.681	0.764	**0.932**			
CP	0.361	0.289	0.402	0.560	0.414	0.356	0.352	0.417	**0.868**		
SUS	0.369	0.311	0.414	0.592	0.456	0.335	0.374	0.440	0.747	**0.875**	

	AU	DFL	EC	FC	IU	OC	OMC	PB	CP	SUS	TC
TC	0.549	0.635	0.747	0.241	0.711	0.609	0.790	0.711	0.353	0.367	**0.883**

The Q^2 in Table 3 presents the result from blindfolding procedure to obtain the predictive relevance of the model. All dependent variables (actual use, financial capability, intention to use, firm performance, and sustainable use of financial technology) have Q^2 values more than 0, indicating that our model has good predictive relevance (Hair et al., 2014). We examine the hypotheses by analyzing the path estimates by a critical t-value (Hair et al., 2014). Table 5 demonstrates that all direct relationships are significant except for H2.

Table 5 Results of the structural model

Hs	Relationship	β	T	ρ	Sig.	f^2
H1	Technology Context -> Intention to Use	0.109	2.847	0.005	**	0.004
H2	Organizational Context -> Intention to Use	0.022	0.773	0.440	ns	0.001
H3	Environmental Context -> Intention to Use	0.184	3.978	0.000	***	0.035
H4	Owner Manager Context -> Intention to Use	0.115	2.446	0.015	*	0.026
H5	Perceived Benefit -> Intention to Use	0.429	9.115	0.000	***	0.253
H6	Digital Financial Literacy -> Intention to Use	0.086	2.564	0.011	*	0.011
H7	Intention to Use -> Actual Use	0.459	14.973	0.000	***	0.857
H8a	Actual Use -> Financial Capability	0.137	3.577	0.000	***	0.017
H8b	Actual Use -> Performance	0.428	12.85	0.000	***	0.150
H9a	Performance -> Financial Capability	0.417	10.989	0.000	***	0.346
H9b	Performance -> Continuous	0.587	19.068	0.000	***	0.634
H10	Financial Capability -> Continuous	0.187	5.236	0.000	***	0.110

5. Discussion

This paper empirically examined social commerce adoption by SMEs, using the extended TOE framework. The related literature was reviewed and a suitable theoretical model based on the extended TOE framework proposed. Then, the model was examined using structural equation modelling. Ten hypotheses were proposed to test the model, all of which were found to be significant except organizational context (OC) to intention to use (IU). Our H1 investigated the impact of technology context (TC) on intention to use (IU). The relationship between OC and IU was supporte. Technology context in this research refer to technology readiness that consists of infrastructure readiness and security. Meuter et al. (2005) referred to customer readiness as a condition or state in which a consumer is prepared and likely to try new technology services; it can be conceptualized as role clarity, motivation, and ability. Our finding supported by Jaafar et al. (2007) examined influence demographic background on the technology readiness level. They found that the technology readiness level among managers of Malaysian construction firms was moderate in terms of their readiness to adopt technology.

Organizational context was found to not significantly intention to use, thus H2 is not supported. Previous literatures indicate that in the face of the high costs of technology, a company could be indifferent to various external pressures (from consumers, competitors, and partners). From this point of view, we should expect the perceived costs of technology to be significant, which is not the case. It can be explained by the fact that small firms usually rely on subsidies for their technological equipment, and may therefore not be overly concerned about the cost–benefit

dimensions of IT (Kamdjoug, 2020). In addition, nowadays many financial providers offer simple mobile application for their financial products and services, for example Jenius, and e-commerce platform partner with financial institutions offer capital loan for their merchants. As users, SMEs are not required to have high level of digital skill or large investment to use mobile banking application and e-commerce platform.

The H3 which is relationship between environmental context (EC) and intention to use (IU) was supported. The hypothesis findings provide evidence that the pressure from consumers, competitors or partners, drive them to move toward digital financial technology adoption (Wu et al., 2003; Sila, 2013; Kurnia, 2015). Additionally, subsidies or grant form government, and various choices of digital financial technology providers with ease and low-cost also encourage them to adopt. The relationship between owner manager context (OMC) and intention to use (IU) was supported (H4). This finding is in line with most studies in the technology adoption context, which examined the influence of top management support on intention to adopt TI (Low et al., 2011; Ramdani et al., 2009; Wang et al., 2010). The hypothesis findings provide evidence that OMC has a significant effect on intention to adopt digital financial technology by SMEs.

Consistent with previous research (Iacovou et al, 1995; Looi, 2005; Kurnia, 2015) our finding on the relationship between perceived benefit (PB) and intention to use (IU) was positive and significant. Organizations are likely to perceive the benefits of digital financial technology if it is potential to improve their business process, able to manage the risks and compatible with their current business needs, process and culture. The result for H6 was also supported, digital financial literacy (DFL) is found to be positive and significantly influence intention to use digital financial technology. Information literacy is an important factor in new IT adoption and increased IT usage (Yu et al., 2017), study by Wawire et al., (2017) and Alant & Bakare (2021) conclude that the lack of certain ICT skills could greatly affect the adoption of ICT by farmers. Our finding in line with Jang et al., (2021) that assume information literacy has a direct effect on the intention to use digital technologies for learning in Korea and Finland, furthermore perceived financial literacy is considered to have direct impact on intention to use mobile financial services (Huhmann & McQuitty, 2009; Ramos, 2016).

Intention to use (IU) was found to be positive and significant influence the actual use (AU) of digital financial technology (H7). The result indicates that the intention to utilize financial technology on daily operation significantly influences the actual use of digital tools in SMEs. This is in line with innumerable studies based on TAM (Venkatesh et al. 2003). Further, our result also supports the relationship between actual use and financial capability (H8a) and actual use to overall company performance (H8b). It indicates that the frequency of usage behavior in using digital financial technology will impact the SMEs financial capability and firm performance. Consistent with Yeo & Fisher (2017), digital financial services able to increase the possibility of saving and the amount of cash saved it is convenient to use the mobile financial application. In addition, the features offered by digital financial services such as peer to peer landing can help its users in crisis times through easy access to liquidity (Johnson, 2010). Therefore, it will lead to better company performance.

From company performance context, financial capability (FC) and technology continuous adoption intention (TCA) is positively influenced by overall company performance (CP), supporting H9a and H9b. Digital financial technology may help its users to managing income, make better risk management and cope with unforeseen emergencies such as business failure, there it is believed that the usage of digital financial technology can maintain or even resulting better company performance. Then H10, which is relationship between financial capability (FC) and technology continuous adoption intention (TCA) was also supported. This finding in

line with (Bhattacherjee, 2001) that assumes satisfaction with the usage of digital financial technology is proven to be main driver of technology continuance intention to adopt, where the satisfaction can be measured by increase in financial capability.

6. Conclusion and implication

This study estimate empirical model by identifies determinants affecting SMEs behavior intention to adopt digital financial technology by surveying 11548 SMEs in Indonesia. Further, we try to observed intention to continue using the digital financial technology after the initial adoption phase. Our finding shows only one hypothesis insignificant. Organizational context which presented by cost and capital needed to acquire the technology considered to be relatively cheap because as users, SMEs need sufficiently basic digital skill and little investment to utilize digital financial technology. On the other hand, the strongest predictors for intention to use are perceived benefit and environmental context. Moreover, we also found that better overall firm performance and financial capability as SMEs satisfaction indicator are drivers for firm's intention to continue using digital financial technology.

As a result, it is essential for government to support the development of digital ecosystem for SMEs. Digital ecosystem offers a comprehensive digital environment for SMEs and all the stakeholders (consumers, suppliers/vendors, financial institutions and others) to perform business transactions. As most business transaction close digitally, it will lead to higher satisfaction for firms (perceived benefit expected by SMEs is realized) and consequently, higher intention to continue adopting and using digital financial technology.

Consistent with most survey research, this study has limitation and offers opportunities for future research. First, due to owner or manager of SMEs as our targeted respondents, this study focuses largely on the view of adopting managers. Thus, lower level employees may not have the same perspective towards adopting technology as managers. Lower level employees may see technology as threat for possibility of losing job. Second, most respondents are micro and small enterprises which may have different response to the survey compared to medium and large corporation. Third, this study unable to observes the sample overtime because data collection only capture a snapshot of only one time influence. Consequently, we cannot capture the change of SMEs behavior pre, during and post the adoption which may diminish the bias. Future research can be conduct to obtain longitudinal data and generate better view of financial technology adoption by SMEs in Indonesia.

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