

IT LITERACY AND TECHNOLOGY ADOPTION: SMES RESPONSES DURING COVID-19 PANDEMIC

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Abstract: The Covid-19 pandemic has forced Small and Medium Enterprises (SMEs) to be more adaptive to changes in the business environment. SMEs must respond quickly to changes in consumer behavior that are digitally oriented to survive and thrive. This study aims to examine the effect of IT Literacy on Technology Adoption as measured by Perceived Usefulness, Perceived Ease of Use, Attitude, and Intention. This research is explanatory research with a quantitative approach involving 330 SMEs in three leading sectors (culinary, handicrafts, and fashions) in Great Malang (Malang Raya). The sampling technique used quota sampling, and data collection was carried out by distributing questionnaires both offline and online. Data analysis uses partial least squares using high-order (second-order) construction. The results showed that IT Literacy had a positive and significant effect on Technology Adoption. It means that the higher the IT Literacy, the higher the ability of SMEs to adopt the technology. It is undoubtedly instrumental in enhancing the business resilience of SMEs during the Covid-19 pandemic. IT Literacy has also been shown to affect Perceived Usefulness, Perceived Ease of Use, Attitude, and Intention informing Technology Adoption.

Keywords: IT Literacy; Technology Adoption, SMEs, Covid-19

1. Introduction

As the largest business entity in Indonesia, SMEs have become the national economy generator. The SME sector proves job creation by 89% of the total workforce, contributing to a GDP of 60% (Canada, 2018). History shows that SMEs had strong business resilience when Indonesia experienced the economic crisis in 1998 (Tambunan, 2000; Sandee *et al.*, 2000). However, a different situation occurred in mid-2019 when the world encountered a shock due to the Covid-19 pandemic. This health crisis that causes the global economic crisis severely affects the development of SMEs. Government policies limiting social interaction directly influence economic activities, including SMEs. The Asian Development Bank (2020) survey shows that almost 49% of the SME sector in Indonesia is temporarily closed.

Meanwhile, those still running their business activities experience decreased sales by more than 30%. More than 50% of Micro and Small Business Actors are also forced to temporarily lay off their employees, while Medium Enterprises prefer to reduce working hours. Even employees who are still working in the SME sector encounter delayed paychecks. Furthermore, implementing policies such as Large-scale social restrictions

(Indonesian: *Pembatasan Sosial Berskala Besar* or PSBB), work from home, a study from home, and social distancing encourages changes in consumer behavior from conventional economic activities to digital-oriented activities (Mas'udi and Winanti, 2020). The big challenge for SMEs owners is to adapt to changes in the business environment. The Covid-19 pandemic seems to have accelerated technological disruption, which had previously become a particular problem for SMEs in Indonesia. Maedche (2016) says the biggest challenge for business actors, including SMEs, in the digital era is not only being able to keep up with developing trends in technology, innovation, and changes in consumer behavior. SMEs need to be adjusted with culture and mindset based on digital competencies. The ability to collect, analyze, and utilize information technology will determine SMEs' competitiveness, which is still an issue for SMEs even though Indonesian citizens are quite adaptive in using digital technology, especially utilizing a mobile phone, internet, and social media (Hootsuite, 2020). Mourougane (2012) findings show that only 7.9% of Indonesian SMEs have international standards, in contrast to the fact that 40.8% of large businesses are internationally certified. Likewise, only 13.4% of SMEs, while 45.3% of large businesses utilize the website as a marketing medium. Using only electronic mail (e-mail) as a means of communication is relatively large utilized by SMEs in Indonesia (40.5%), although still lower than large businesses (81.8%). Furthermore, the findings of the OECD (2018) also show that the level of competitiveness of Indonesian SMEs still needs to be improved at the ASEAN level. Indonesia's SME development policy index, especially in productivity, technology, and innovation aspects, is still below Singapore, Malaysia, and Thailand.

The latest findings from Erlanitasari *et al.* (2020) also reinforce that SME IT Literacy is still low. It can be seen from the ability of SMEs to do marketing. As many as 36% of SMEs in Indonesia are still struggling with conventional marketing. Meanwhile, 37% of SMEs only have basic online marketing capacities, such as computer access and broadband. The rest, 18% of SMEs, have medium online capacity because they can use websites and social media. Only 9% have digital marketing capacity, which is categorized as sophisticating. It means that the ability of SMEs to utilize information technology is still low, while information technology is an absolute requirement that must be mastered by all business entities in the current digital era. The Covid-19 pandemic must be captured as momentum to accelerate SMEs' digital capacity and capability to improve their performance. The findings from Priyono *et al.* (2020) prove that mastering digital technology will make SMEs adapt more quickly during the Covid-19 pandemic.

Several studies have shown that IT Literacy can be an antecedent factor in increasing technology adoption in the SME sector. The studies from Neumeyer *et al.*, 2020 and Kulathunga *et al.*, 2020 show that the IT Literacy that has by SMEs owners give significantly affects technology adoption capability. The previous study from van Doorn *et al.*, 2010 is proved too that IT Literacy has a significant effect on Technology Adoption in SMEs sectors. Based on this, this study aims to examine the effect of IT Literacy on Technology Adoption by developing the results of previous studies to be re-tested on SMEs in the Covid-19 pandemic conditions as well as the pressures of technological disruption that SMEs must face. This study adopts the Technology Acceptance Model (TAM) theory, including the Theory of Planned Behavior, in looking at the relationship between IT Literacy and Technology Adoption, which are variables in this study.

2. Literature Review

In the digital era, the company's life cannot be separated from IT development which is believed to improve organizational performance. IT Literacy is an absolute skill that companies must have in order to compete in an intensified competitive business environment

(Mahapatra & Lai, 2005). Ezziene (2007) defines IT Literacy as a person's ability to understand the characteristics of computers and operate and utilize information technology to support the goals to be achieved. This study tries to operationalize the concept of IT Literacy in a practical way. Thus, it can project the real conditions of SMEs. In this study, the IT literacy measurement tools used include the use of computers/laptops, internet usage, the use of applications that support business promotion (such as Instagram and Canva), and the use of applications that support non-promotional business operations (such as Microsoft Office and Point of Sales system).

Furthermore, IT is proven to encourage business innovation in improving business performance (Sambamurthy et al., 2003). Chen and Tsou (2007) discuss and analyze the adoption of information technology at the organizational level and the application of information technology concepts based on four elements: information technology infrastructure, strategic alignment, organizational structure, and individual learning. IT infrastructure is a collection of components that are the foundation of an IT service, usually including physical components (hardware, computer, and network facilities) and various software components (Laan, 2011). An adequate investment and management of IT infrastructure is the basis for IT adoption (Weill et al., 2002). The strategic alignment shows that the effect of information technology on performance depends on how well the information technology strategy and company strategy complement each other (Palmer and Markus, 2000). According to Piccoli and Ives (2005), many companies benefit by aligning their information technology strategy with their business strategy. The organizational structure's design also plays a role in building connectivity and ease of accessibility among employees to exchange knowledge and acceptance of information technology. In addition, successful adoption of information technology can be achieved when individual learning (Slavin, 2013) increases individual knowledge and skills (Kandampully, 2002).

These four dimensions are relevant to the Technology Acceptance Model (TAM) developed by Davis (1989), which explains the factors influencing IT acceptance. The construction that shapes the acceptance of technology can be measured from four aspects: aspects of perceived usefulness, perceived ease of use, attitude, and behavioral intention. These four aspects are used in this study to measure the technology adoption variable. Research from Jang et al., 2020; Neumeyer et al., 2020; Kulathunga et al., 2020; van Doorn et al., 2010 proves that IT Literacy is indispensable in increasing the ability of SMEs to adopt the required technology. Based on theoretical and empirical reviews, the hypotheses in this study are as follows:

H1: IT Literacy influences Technology Adoption

3. Method

This study uses a quantitative approach that explains the causal relationship between variables through hypothesis testing. The criteria for this research population are Leading Small Business actors in Great Malang (Malang Raya: Malang City, Malang Regency, and Batu City), which have at least 5 employees 5 people and have been operating for at least 2 years. The leading SME sectors include the culinary, fashion, and craft sectors. Given that the number of populations that meet these criteria is uncertain, the sampling in this study uses a non-probability sampling approach with a quota sampling technique. The number of SME owners involved in this study was 330 respondents from small business actors spread across 3 regions of Malang Raya. Data was collected by distributing questionnaires to respondents either in person or via Google Form. The analysis technique uses descriptive analysis with the help of SPSS software and path analysis to test hypotheses with the help of SmartPLS software.

Hereafter, the IT Literacy variable measurement was adopted from Dincer (2018) and Rafi, JianMing & Ahmad (2019). IT Literacy is defined operationally as the ability of SMEs to use computers/laptops, use the internet, use applications that support business promotion (such as Instagram and Canva), and use applications that support non-promotional business operations (such as Microsoft Office and Point of Sales systems). IT Literacy in this study was measured by 14 question items directly (first-order). Moreover, the Technology Adoption variable is the second-order latent variable tested with a reflective construct. The technology adoption variable is measured by four indicators, namely: Perceived Usefulness (six items), Perceived Ease of Use (five items), Attitude (three items), and Intention (three items), with a total of 17 questions. The instrument's determination was developed from the study of Chen and Tsou (2007) and Davis *et al.* (1989). Technology adoption is defined operationally as the ability of SMEs to use digital technology in various aspects, from basic functions to the most complex functions, to provide more benefits for the business being run. Based on the results of the model's feasibility (Goodness of Fit), the Technology Adoption variable has met all of the SEM principle criteria where the convergent validity value (loading > 0.7; AVE > 0.5) and the composite reliability and Cronbach's alpha values are above 0.7 (Hair, 2014). The results of the outer model analysis for the technology adoption variable are shown in Table 1.

Table 1. Outer Model Technology Adoption

Variable	Indicator	Item	Convergent Validity		Reliability	
			Loading First Order	AVE	Composite Reliability	Cronbach's Alpha
Technology Adoption (Y1)	Perceived of Usefulness (Y1.1)	Y1.1.1	0.897	0.860	0.974	0.967
		Y1.1.2	0.935			
		Y1.1.3	0.923			
		Y1.1.4	0.947			
		Y1.1.5	0.944			
		Y1.1.6	0.917			
	Perceived Ease of Use (Y1.2)	Y1.2.1	0.898	0.802	0.953	0.938
		Y1.2.2	0.894			
		Y1.2.3	0.906			
		Y1.2.4	0.884			
		Y1.2.5	0.895			
	Attitude (Y1.3)	Y1.3.1	0.926	0.858	0.948	0.918
		Y1.3.2	0.936			
		Y1.3.3	0.918			
	Intention (Y1.4)	Y1.4.1	0.888	0.822	0.933	0.891
		Y1.4.2	0.931			
		Y1.4.3	0.900			

Source: primary data obtained using Smart PLS, 2022

Furthermore, the calculation of construct reliability and validity for the IT Literacy variable, instead of using AVE and Composite Reliability values, uses the values from Pearson Correlation and Cronbach's Alpha. It is done considering that the data from IT Literacy uses nominal figures because it measures the level of respondents' understanding of IT Literacy, not measuring respondents' perceptions. Therefore, in determining the outer loading in the SEM model, the IT Literacy variable uses the sum score format. Furthermore, the measurement of validity and reliability uses SPSS software so that construct reliability and validity can be known as table 2. All IT Literacy items have met validity as the Pearson correlation value is more than 0.3, and all items have a p-value of 0.000. Similarly, the reliability results with Cronbach's alpha value of 0.773 is greater than the minimum limit of reliability value of 0.6. It means that all items on the IT Literacy variable are valid and reliable for use in this study.

Table 2. Validity Test Results for IT Literacy Variables

Variable	Item	Pearson Correlation	Cronbach's Alpha
IT Literacy (X1)	X1.1	0.559**	0,773
	X1.2	0.409**	
	X1.3	0.305**	
	X1.4	0.564**	
	X1.5	0.483**	
	X1.6	0.526**	
	X1.7	0.548**	
	X1.8	0.403**	
	X1.9	0.512**	
	X1.10	0.578**	
	X1.11	0.551**	
	X1.12	0.558**	
	X1.13	0.606**	
	X1.14	0.527**	

Source: primary data obtained using SPSS, 2022

4. Result and Discussion

Descriptive Statistics

In the IT Literacy variable (using nominal data), descriptive analysis determines the respondents' understanding of the statements submitted related to information technology. Therefore, the description of the IT Literacy variable does not use a categorization with an interval range but a true or false categorization of the answers given by respondents, as shown in Table 3.

Table 3. Distribution of IT Literacy Variable Frequency

Item	Focus Questions	FALSE		TRUE	
		f	%	f	%
X1.1	Understanding the application for website browsing	98	29.7	232	70.3
X1.2	Understanding the correct website address	60	18.2	270	81.8
X1.3	Understanding the cost for website development	162	49.1	168	50.9
X1.4	Understanding the most important feature in business applications	118	35.8	212	64.2
X1.5	Understanding the advantages of WhatsApp Business	73	22.1	257	77.9
X1.6	Understanding the use of Google Drive	158	47.9	172	52.1
X1.7	Understanding Instagram features	62	18.8	268	81.2
X1.8	Understanding the principle of a marketplace transaction	166	50.3	164	49.7
X1.9	Understanding the application for promotion design	37	11.2	293	88.8
X1.10	Understanding broadcast promotion	93	28.2	237	71.8
X1.11	Understanding Microsoft Excek	64	19.4	266	80.6
X1.12	Understanding the use of a password for digital safety	47	14.2	283	85.8
X1.13	Understanding the operating system	111	33.6	219	66.4
X1.14	Understanding cloud	127	38.5	203	61.5

Source: primary data obtained using SPSS, 2022

Based on the above results, the level of IT Literacy of SMEs in Malang is overall quite good. Most of them have answered basic questions related to information technology in business activities. Nevertheless, SMEs still do not fully understand the mechanism of buying and selling transactions on the marketplace. It is a challenge considering that marketplace applications are the most widely accessed digital platforms, such as Bukalapak, Tokopedia, and Shopee. This result reinforces the findings of Erlanitasari *et al.* (2020), which revealed that the ability of SMEs to promote digitally still needs to be improved.

Other than that, the descriptive statistical analysis results of the Technology Adoption variable used a Likert scale from one (strongly disagree) to five (strongly agree) to describe respondents' perceptions of technology adoption. The first indicator, Perceived of Usefulness, is measured by six-question items with a mean indicator value of 3.84 (high category). SMEs agree that the use of technology provides benefits for companies and can improve business performance better. The second indicator, Perceived Ease of Use, is measured by five-question items with a mean indicator value of 3.65 (high category). It means that SMEs agree that today's technology is easy to use and apply in company activities.

Furthermore, SMEs also have a high perception of the third indicator, attitude (measured by three question items), with a mean indicator value of 3.96. It means that SMEs agree that using technology is the right decision and makes work more enjoyable. The last indicator, intention, which is measured from the three question items, has a mean indicator value of 3.95 (high category). It means that SMEs agree that a commitment to the use of technology is needed in business development, including the use of appropriate and appropriate technology. Overall, the grand mean value of the technology adoption variable is 3.85, indicating that the ability of SMEs to adopt technology is an important thing to have so that technology provides benefits in improving company performance.

Structural Model Analysis

Structural model testing (Inner Model) aims to measure the relationship between variables. This test was conducted to determine the predictive power of the structural model. The results of testing path coefficients and specific indirect effects of this study can be seen in Table 4 below.

Table 4. Path Coefficients Model

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
IT Literacy -> Technology Adoption	0,313	0,310	0,055	5,684	0,000
Technology Adoption -> Attitude	0,900	0,899	0,013	69,908	0,000
Technology Adoption -> Intention	0,847	0,845	0,023	37,056	0,000
Technology Adoption -> Percieved Ease of Use	0,917	0,916	0,011	84,147	0,000
Technology Adoption -> Percieved of Usefulness	0,950	0,949	0,007	144,514	0,000
IT Literacy -> Technology Adoption -> Attitude	0,281	0,279	0,050	5,616	0,000
IT Literacy -> Technology Adoption -> Intention	0,265	0,262	0,048	5,474	0,000
IT Literacy -> Technology Adoption -> Percieved Ease of Use	0,287	0,284	0,052	5,524	0,000
IT Literacy -> Technology Adoption -> Percieved of Usefulness	0,297	0,294	0,053	5,620	0,000
IT Literacy -> Technology Adoption -> Attitude	0,281	0,279	0,050	5,616	0,000

Source: primary data obtained using Smart PLS, 2022

Table 4 concludes that IT Literacy has a significant effect on Technology Adoption. Thus, the hypothesis in this study is accepted. The correlation value is 0.313, and the P-Value is 0.000 with a t-statistic of 5.684, which indicates that the t-count is greater than the t-table (1.960), then the effect is said to be significant. The positive coefficient indicates that the better the IT Literacy value, the higher the Technology Adoption ability. The correlation coefficient value of 31.3% indicates that when the IT Literacy variable increases by one time, the technology adoption variable will also increase by 31.3%. These results affirm several previous studies

that tested IT knowledge on technology adoption, with similar objects, namely small and medium enterprises (Jang et al., 2020; Neumeyer et al., 2020; Kulathunga et al., 2020; van Doorn et al., 2010). These findings indicate that the owners or managers of Small Businesses in Malang Raya are able to adopt technology in their business when they have good IT literacy.

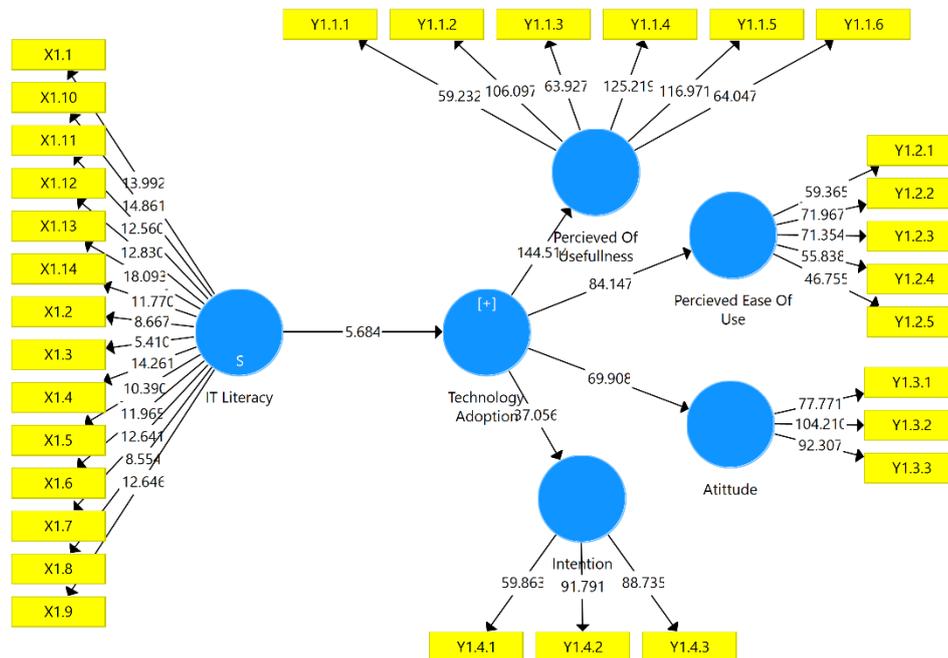


Figure 1: Adjusted Path Model
Source: primary data obtained using Smart PLS, 2022

In the future, the results of the path coefficients test also show that all indicators on technology adoption have a significant influence in shaping the ability of SMEs to adopt the technology. The Perceived of Usefulness indicator has the greatest influence, which is 95%, in shaping the ability to adopt technology, followed by the Perceived Ease of Use (84.1%), Attitude (69.9%), and Intention (37%). IT Literacy has also been shown to have a significant effect on all indicators that make up Technology Adoption. These results indicate that the use of technology in business development is the main factor that encourages SMEs to adopt the technology. These results are also relevant to the respondents' perceptions of the technology adoption variable described previously. The Covid-19 pandemic has proven to encourage SME owners, especially in Malang Raya, to increase IT Literacy to impact their ability to adopt the technology. It is very useful as an effort to continue to survive, even to be able to improve the company's performance amid environmental uncertainty due to the Covid-19 pandemic.

5. Conclusions

This study proves that IT Literacy has a significant effect on Technology Adoption. Perceived of Usefulness is the most dominant factor in shaping technology adoption. This study provides an overview of how SMEs respond to the Covid-19 pandemic by increasing IT Literacy and, at the same time, increasing the ability to adopt the technology. These two factors are proven to be able to make SMEs have business resilience amid environmental uncertainty. Nevertheless, the role of stakeholders is still needed to continue to improve the

IT Literacy of SMEs as the basic capital in developing businesses in this digital era. Assistance for SME owners related to business promotion on digital platforms, optimizing internet use, and understanding related to the use of computer equipment, both hardware, and software, can be a priority for the government, campuses, and other parties.

For further researchers, studies can explore more deeply the determinants that affect business resilience and digital transformation in the SME sector to improve the performance of SMEs and long-term business sustainability.

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