Social Media Adoption on SMEs in Indonesia: TOE Model

by Dyah Sugandini

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Dyah Sugandini, Mohamad Irhas Effendi, Yuni Istanto, and Rahajeng Arundati

Abstract SMEs are very much affected by the current pandemic. Social media is believed to be needed by SMEs to improve performance. This study analyzes the marketing performance of SMEs, which are influenced by SM adoption. The performance of SMEs can be predicted from the availability of technology, management support, competition, convenience, and perceived usefulness. All of these variables make it easier for SMEs to adopt SM. The data in this study were 300 SMEs consisting of handicraft, tourism, and general trading. The research location is in the Special Region of Yogyakarta. Analysis of the data using a structural model with the help of the PLS-SEM program. The results show that the SME performance model with antecedents of SM adoption is acceptable. This study analyzes the adoption of SM with three categories of SMEs namely crafts, tourism and general trade in one model, which has never been done by other researchers. In addition, the condition of SMEs in Yogyakarta has a uniqueness that is different from SMEs in the world related to the absence of good management implementation in managing their business.

Keywords Technology · Organizational · Environment · Complexity · PU · Adoption · SMEs performance

1 Introduction

SM adoption in small and medium enterprises is an important thing to do. SM can communicate information to several interested parties at a minimal cost. SMEs must be able to access and use the information to improve their performance of SMEs. SM adoption in developing countries is the right strategy for the success of SMEs in the new normal. SM facilitates good communication between customers and SMEs

D. Sugandini (✉) · M. I. Effendi · Y. Istanto · R. Arundati
Universitas Pembangunan Nasional "Veteran" Yogyakarta, Jl. SWK Jl. Ring Road Utara No. 104, Sleman, Yogyakarta, Indonesia
e-mail: dini@upnyk.ac.id

M. I. Effendi
e-mail: m_irhaseffendi@upnyk.ac.id

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quickly. SM is a low-cost digital option for analytics, content tracking, and customer tracking. Qalati et al. (2021) show the benefits of SM for SMEs to maintain their competitive position through strengthening relationships with customers to impact sales performance. This study uses technology-organizational-environmental (TOE) and TAM to predict the performance of SMEs caused by SM adoption in developing countries, especially in Indonesia, which represents an area that is still underresearched. Previous research has shown that SM affects consumer purchases (Sugandini et al. 2019). However, there is not good literature on how SMEs choose, adopt, or practice SM platforms (Fernandes et al. 2016). Many areas remain unexplored, such as the adoption of SM in the context of SMEs (Chatterjee and Kumar Kar 2020), the influence of SM on the survival of SMEs, and antecedents of successful adoption of SM in SMEs (Rahman et al. 2016). SMEs in developing countries face more competitive challenges with increasing market uncertainty and a lack of resources. In addition, some of these SMEs also avoid the adoption and use of SM due to inadequate technical skills (Nisar and Shafiq 2019).

The research gap in technical capability is one of the reasons behind the increasing non-adopter of SMEs in developing countries. This study aims to justify the adoption of SM in SMEs and the factors that influence it using the context of the technology-organization-environment (TOE) framework. TOE is a technology-organization-environment construct. Technology refers to the technological suitability of new technologies. The organization covers the type, size, scope, managerial level, and related issues (Effendi et al. 2020). Environment refers to the climate in which SMEs operate, including government, industry, and competitor policies and support. This study also uses the technology acceptance model (TAM).

The integration of TOE and TAM combines human-non-human aspects into one model, strengthening existing traditional frameworks such as the UTAUT model. There are three novelties in this research. First, this study applies the TOE framework to integrate three contexts explaining SM adoption in SMEs in Indonesia. The comprehensive framework provides a broader perspective of SM adoption in evaluating the impact of different antecedents. Second, an empirical study was conducted based on survey data collected from three different SME types, namely tourism enterprises, handicraft SMEs, and trading SMEs. This study can provide a broader generalization of findings of SM adoption. Third, this survey was conducted on home-based SMEs that carry out their production processes, are self-managed and sell themselves, do not have employees and craftsmen outside their immediate family, and do not have adequate production capacity. This study provides a clearer picture of SMEs in developing countries with limited conditions.

2 Literature Review

2.1 SM Adoption

Technological innovation is believed to provide a competitive advantage for SMEs in market diversification and creating new commercial opportunities. Venkatesh et al. (2012) states that innovation is the application of new ideas or technologies in organizations related to competitiveness. The organization's competitive ability is the feasibility of gaining a competitive advantage in terms of time, cost, and service quality (Beier and Wagner 2016; Cartwright et al. 2021). Innovation is a means of survival in today's increasingly difficult economy and a driver of productivity and competitiveness. Innovations related to SM are very appropriate to be applied to SMEs in Indonesia. SM provides several opportunities about costs that can be saved, do not require high IT skills, and are easy to use (Abed 2020). SM helps SMEs promote products and services, build brand communities, and reach niche markets (Guha et al. 2017). Alshaer et al. (2020) show that social media plays an important role in consumer decision making. The speed of information from social media spreads to many consumers so that it can increase competition. TOE has been widely used by researchers in analyzing technology adoption in SMEs. The TOE framework categorizes technology, organization, and environment as three factors influencing SME innovation adoption (Dwivedi et al. 2017).

2.2 TOE Model

TOE Model is a conceptual framework that shows the determinants of innovation adoption behavior. The technological context in the TOE model is one of the factors that influence innovation adoption behavior (Jia et al. 2017; Sugandini et al. 2019; Effendi et al. 2020). Adoption of this innovation is an essential thing in the SME business process. Innovation helps SMEs to market unique product and service features. Research (Brulhart et al. 2017) inspires productive partnerships with multiple stakeholders, enabling SMEs to access resources useful in sourcing practices. The technology factor in the TOE framework shows a significant influence on technology adoption. Technological factors include perceived relative advantage, compatibility, and cost efficie (Qalati et al. 2021). Hadi Putra and Santoso (2020) shows that technology can have an impact on the use of e-business and improve company performance. Research conducted by Abed (2020) using the TOE framework on 181 SMEs in Saudi Arabia shows that technology has the most significant effect on SM use.

H2a: Technology influences SM adoption
H2b: Technology affects the performance of SMEs by mediating SM adoption

The TAM model from Davis (1989) shows that PU and PEOU influence innovation adoption. The ability to adopt good innovation will improve performance. SM

adoption in SMEs has been studied from various theoretical perspectives. TAM is one theory that is often used to analyze SM adoption in SMEs. TAM is the perception of SME owners/managers as the basis for adopting innovation (Hadi Putra and Santoso 2020) Social Media Adoption and Financial Sustainability.

Research conducted by Chatterjee and Kumar Kar (2020) shows that PU and PEO impact SM adoption and can ultimately improve the performance of SMEs. PU is a perception where SMEs have confidence that technology helps improve overall performance (Yu and Schweisfurth 2020). PEOU shows that technology is uncomplicated, easy, and useful (Venkatesh et al. 2012). If the innovation is easy to use by SMEs, then SMEs are motivated to use the technology (Lin et al. 2021).

H3a: PU affects SM adoption
H3b: PU affects SMEs performance by mediating SM adoption
H4a: Perceived complexity affects SM adoption
H4b: Perceived complexity affects SMEs performance with mediation

2.3 SM Adoption

The organizational context is the second discussion of the TOE model. The organizational context is related to the internal factors of SMEs, such as managerial support, the size of the SMEs rice, adequate capabilities, and resources to support SM adoption (Abed 2020). In TOE, this organizational factor is developed from managerial support. According to (Pateli et al. 2020), organizational support involves approval from the owner/manager to make changes throughout the organization. Top management support influences the availability of human, time, and financial resources (Qalati et al. 2021). Smerecnik and Andersen (2010) argue that top managers who are up-to-date with current and future technologies and have positive intentions and views towards SM adoption are better positioned to facilitate SM adoption in SMEs. Qalati et al. (2021) proved a significant relationship between the role of top management support on organizational performance. Managerial support is a determinant of SM adoption behavior. Sahaf and Tahoo (2021) show that the experience, partnership and knowledge of the owner/manager can support planning, execution, fundraising and all stages of a business. Top management support can create the resources needed to adopt new technologies and influence the adoption of innovations such as SM (AlAwadhi and Al-Daihani 2018).

H5a: Organizational context influences SM adoption
H5b: Organizational context affects the performance of SMEs by mediating SM adoption

The environmental context shows that the adoption of innovation in SMEs is influenced by external factors beyond the company's control, one of which is competitor pressure (Oubrich et al. 2021). Competitor pressure refers to the level of competition that SMEs face in the industry (Cao et al. 2014). The intense competition requires

SMEs to find new ways of doing business. Innovation can be used to change competition (Martins et al. 2015). Pressure from competitors is a force for information and technology adoption (Popov et al. 2010). When SMEs have adopted an innovation, their competitors will usually follow it to adopt the innovation as well (Cao et al. 2014).

H6a: Environment context influences SM adoption
H6b: Environment context affects SME performance by mediating SM adoption.

3 Research Methods

The research was conducted in a survey, using a quantitative research approach with a survey sample and a questionnaire as a data collection tool whose central unit of analysis is the organization.

3.1 Measurement

The technological, organizational, and environmental context was measured by nine items from Qalati et al. (2021) and Abed (2020). PU and perceived complexity from Chatterjee et al. (2021) and Venkatesh et al. (2012). SM adoption from Cartwright et al. (2021) and Dwivedi et al. (2017). The performance of SMEs is obtained from Qalati et al. (2021) and Ferreras-Méndez et al. (2021). All items use a five-point Likert scale ranging from one = strongly disagree to five = strongly agree. The validation of the measuring instrument is carried out through discussions with three professors who are experts in consumer behavior and digital marketing and five SME leaders whose performance is still excellent. The purpose of this validation is to ensure the appropriateness of context and content (Leong et al. 2018). The recommended value of Cronbach's alpha is 0.70 (Hair et al. 2014).

3.2 Data Collection

The data for this study were collected through a survey in the Special Region of Yogyakarta, Indonesia. The current research population consists of user SMEs. Respondents are SMEs that use at least two social media platforms. Respondents in this study were SMEs. This research was conducted during the COVID-19 pandemic, where many SMEs were negatively affected by this pandemic. Types of SMEs are handicrafts, tourism, and general trade. The sample number in this study was 300 samples consisting of 100 handicraft SMEs, 100 tourism SMEs, and 100 trade SMEs. The sample size meets the recommended requirement of ten times the number of

structural paths (Hair et al. 2020). According to the experts above, the various definitions of marketing performance can be concluded that marketing performance can be defined as the achievement of organizational goals related to profitability and sales growth, market share, and the result of corporate strategic goals. The measure of the company's success in achieving its goals is also based on the marketing performance.

4 Result

This study uses partial least squares structural equation modeling (PLS-SEM). Data were analyzed with Smart PLS (version 3.2.9) and IBM SPSS (version 25) statistics. Hair et al. (2020) stated that PLS-SEM can be used for prediction purposes and uses a causal-predictive approach. PLS-SEM allows researchers to analyze complex models that have several additional constructs and characters without considering the assumption of normality in the data distribution (Hair et al. 2014). PLS-SEM is a statistical tool favored by researchers because it does not limit the sample size. PLS-SEM is analyzed in two stages: measurement model (outer model) and structural model (inner model).

4.1 Measurement Model Analysis

The measurement model was evaluated from the value of construct reliability, convergent validity, and discriminant validity (Hair et al. 2020). The results of construct reliability in Table 1 show that Cronbach's alpha value is between 0.703 and 0.846, while the composite reliability value is between 0.725 to 0.902. All criteria offer a value of 0.70, so the reliability is confirmed. Factor loading and average variance extract (AVE) values are used to measure convergent validity. The data processing results

Table 1 Characteristics of respondents

Characteristics of respondents	Respondents%
Gender	
Male	71%
Female	29%
Old establishment of SMEs	
One year - four years	35%
Five years - eight years	15%
Nine years	50%
Number of employees	
10–20 people	78%
>20 people	22%

show that the validity is convergent, and the AVE value is 0.50, which meets the valid requirements for the research instrument (Sarstedt et al. 2017). Discriminant validity was confirmed using one of the well-known traditional approaches (Fornell and Larcker 1981) as well as the heterotrait-monotrait ratio (HTMT) approach (Henseler et al. 2014). The Fornell-Larcker results show that the value of the square root of AVE is higher than the correlation value between constructs. The HTMT approach recommends that the value should be lower than 0.90 for discriminant validity. The resulting findings confirm the good discriminant validity criteria. Thus the instrument can be used for analysis in the structural model.

4.2 *Structural Model Analysis*

After verifying the measurement model, then confirming the structural model for the purpose of testing the hypothesis. The results of the structural model analysis showed a positive and significant effect of SM adoption and SMEs Performance (H1: beta = 0.947; $p < 0.05$). Technological context influences SM adoption in a significant positive way (H2a: beta = 0.215; $p < 0.05$). PU affected SM adoption in a significant positive way (H3a: beta = 0.345; $p < 0.05$). Perceived complexity has a significant negative effect on SM adoption (H4a: beta = −0.067; $p < 0.05$). Organizational context had a significant positive effect on SM adoption (H5a: beta = 0.388; $p < 0.05$). Environmental context. significant positive effect on SM adoption (H6a: beta = 0.154; $p < 0.05$. The overall results are presented in Table 2 (Fig. 1).

Table 2 Hypothesis testing results

	Original Sample (O)	T Statistics (|O/STDEV|)	P values	Hypothesis
Adoption SM → SMEs performance	0.947	9.220	0.000	Supported
Technology → Adoption SM	0.215	4.899	0.000	Supported
PU → Adoption SM	0.345	4.466	0.000	Supported
Perceived complexity → Adoption SM	−0.067	1.993	0.047	Supported
Organizational → Adoption SM	0.388	5.069	0.000	Supported
Environment → Adoption SM	0.154	3.337	0.001	Supported

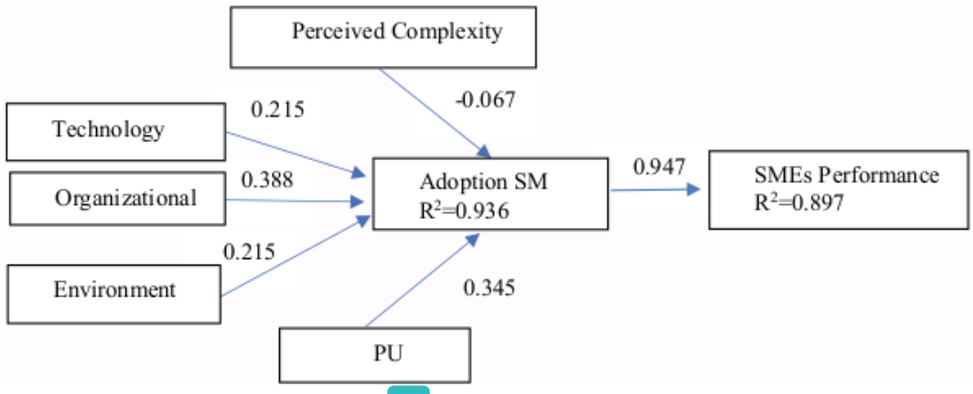

Fig. 1 SM adoption model and SMEs performance

Table 3 Indirect effect test results

	Original Sample (O)	T Statistics (|O/STDEV|)	P Values
Technology → adoption SM → SMEs performance	0.204	4.971	0.000
PU → adoption SM → SMEs performance	0.326	4.509	0.000
Perceived complexity → adoption SM → SMEs performance	−0.063	1.997	0.046
organizational → adoption SM → SMEs performance	0.367	4.985	0.000
Environment → adoption SM → SMEs performance	0.145	3.323	0.001

4.3 Mediation analysis

This study analyzes the effect of meditation on social media adoption on the relationship between technology context, organizational context, environmental context, public works, and perceptions of complexity with SME performance. The results of the indirect pathway analysis in Table 3 show that all mediating pathways are significant.

4.4 Measurement R^2, f^2, and Q^2

The determinant coefficient (R^2) and effect size (f^2) were also analyzed. R^2 is considered weak if the value is (0.25), moderate (0.50), and substantial (0.75) (Hair et al. 2020). Table 4 shows the results of the model fit assessment as indicated by the values of R^2, f^2, and Q^2. Overall, Table 2 shows a 93.6% variance in SM adoption, and SMEs performance variance is 89.7%. Cohen (1988) shows the value of money is used to confirm f^2. The value of f^2 is small if = 0.02, medium = 0.15, and large

Table 4 Assessment of R^2, f^2, and Q^2

Endogenous	R square	Q^2	Exogenous variables	f^2
Adoption SM	0.936	8.665	Adoption SM	8.665
	0.897		SMEs performance	0.897
			Environment	0.127
			PU	0.208
			Perceived complexity	0.042
			Technology	0.230

= 0.35. The results showed that all exogenous variables sufficiently influenced the endogenous variables—Q^2 to measure the accuracy of the predicted model. (Hair et al. 2020) stated that if $Q^2 > 0$, the model has predictive relevance, $Q^2 > 0.25$ indicates moderate, and $Q^2 > 0.50$ has high predictive relevance. The endogenous variables in this study have great predictive relevance leading to encouraging results.

5 Discussion

This study analyzes the antecedents of SM adoption and SME performance using the TOE and TAM frameworks. The results show that the adoption model that affects the performance of SMEs is acceptable. These findings indicate a significant relationship between the context of technology, organization, environment, and SM adoption in SMEs. Jia et al. (2017) stated that SMEs that have promising technology adoption capabilities can increase their sales. The results show that although organizational readiness is not yet feasible enough to adopt SM with the consequences that arise, the owners, who are also the leaders of SMEs, are serious in supporting the successful use of SM for SMEs. The pandemic that has devastated SMEs due to falling demand has led to even greater pressure in the competitive environment. SMEs in Indonesia feel significantly helped by this SM technology. SMEs in Indonesia choose digital platforms, namely Facebook and Instagram. Both digital media are believed to have a low level of complexity and are easy to adopt. This ease of adoption and perceived benefits make SMEs happy to use SM. This finding is in line with Chatterjee and Kumar Kar (2020); Yu and Schweisfurth (2020), which shows that uncomplicated and helpful technology will be easily accepted by users Venkatesh et al. (2012) and Lin et al. (2021). This study indicates that the adoption of SM is considered an important technology that must be applied by SMEs as a condition to achieve a competitive advantage. The findings of this study support Brulhart et al. (2017) and Qalati et al. (2021). Other research results from this study show that the adoption of SM by SMEs in Indonesia boosted sales of Selma during the pandemic. SM is beneficial in marketing SME products which during the pandemic went down drastically. The development of the sales level is starting to show good results thanks to the marketing

efforts carried out through SM. This study also supports Qalati et al. (2021), which indicates that SM can increase the competitive power of SMEs.

Theoretical Contribution

This study investigates the adoption of SM in three tennis SMEs, namely handicraft SMEs, tourism and general trade in one model, which has not been done by other researchers. The condition of SMEs in Yogyakarta has unique characteristics that may be different from SMEs in general in the world. The uniqueness of SMEs in Yogyakarta, among others: no one has a manager, because the owner is also a manager of SMEs. There is no special place for production, and the management of SMEs is not well organized. This research contributes to the findings on the adoption of innovative technology of SMEs by utilizing the TOE framework of Tornatzky and Fleischer (1990). This study also observes the internal side of SMEs not in the context of consumers, such as research that Abed (2020) has carried out; Akman and Mishra (2017). It is hoped that the results of this study can add to the theoretical contribution related to the setting of this research.

Practical Contribution

This research provides a good understanding of the importance of SM for SMEs in increasing competitive advantage. SM is trusted to contribute to helping the marketing of SMEs, which have fallen sharply due to the pandemic. The SME owner who doubles as a manager can facilitate everyone who works in his SME in adopting SM. Owner support is beneficial for all parties in SMEs to contribute generously to the progress of SMEs. This study shows that the organizational context indicated by the support from the SME leadership has the most influence on SM adoption. However, although leadership support as an organizational factor has been found to be the main driver for adoption, the perceived usefulness factor has a significant influence. SM provides many benefits for businesses because it can increase sales, speed up task completion, and increase the competitiveness of SMEs. SME owners and managers must be willing to take risks involved in SM adoption. SME owners need to keep abreast of the latest developments of SM technology and provide funding for technology adoption.

Limitations and Future Research Direction

This research is limited to SMEs that have adopted SM, not analyzing SMEs that have not adopted SM. This study also has not explored several indicators to justify the TOE model. Organizational readiness, pressure from consumers have also not been involved in shaping the organizational context and environment. Some of the variables that have not been analyzed and found at this research are the trust variable on transactions made through SM. The technical readiness of SMEs related to facilities and infrastructure is also indicated to be the cause of SM adoption. Some of these variables should be studied for future research on SM adoption that affects the performance of SMEs.

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