



ADOPTING DIGITAL TRANSFORMATION IN SMALL AND MEDIUM ENTERPRISES: AN EMPIRICAL MODEL OF INFLUENCING FACTORS BASED ON TOE-TAM INTEGRATED

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ARTICLE INFO	ABSTRACT
<p>DOI: 10.52932/jfm.vi72.352</p> <p><i>Received:</i> November 10, 2022</p> <p><i>Accepted:</i> November 22, 2022</p> <p><i>Published:</i> December 25, 2022</p> <p>Keywords: Adoption of digital transformation; Factors affecting adoption of digital transformation; Integrated TOE with TAM; SMEs.</p>	<p>This study examined relations between factors impacting the adoption of digital transformation of small and medium enterprises (SMEs) in the Vietnam context by mixed method research. The qualitative research was carried out by a group discussion with 11 participants and a cross-sectional survey with 346 valid questionnaires. The results show the relative advantage, perceived benefits of digital transformation, compatibility, security concern, competitive pressure, vendor support, top management support, investment readiness, perceived usefulness, and attitudes toward adoption have impacted the adoption of digital transformation in SMEs in Vietnam. This research contributed to extending the academic framework and examining causal relationships by adopting new characteristics from the integrated perspective of TOE with TAM beyond the existing research models. The findings are the basis for the government to propose policies to promote digital transformation and for SMEs to prepare technological and organizational readiness for successful digital change.</p>

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1. Introduction

Digital transformation is one of the important drivers of economic growth (Vu et al., 2020). There has been much academic research on the adoption by businesses. However, the core question is what are the factors influencing the digital transformation of SMEs? has not yet been answered. That's because of the complexity of identifying small and medium-sized enterprises (SMEs). SMEs play a crucial role in developing and developing nations' economic growth. In Vietnam, SMEs account for 97%, contributing 45% of GDP, 31% of total budget revenue, and attract more than 5 million employees (SMEs account for 97%, contributing 45% of GDP, 31% of total budget revenue, and attracting more than 5 million employees (Vietnam MPI, 2021). Nadkarni and Prügl (2021) stated that despite the diversity in the theoretical foundations for digital transformation research, the available literature is generally scarce on quantitative empirical evidence. This study uses a technology, organization, and environment (TOE) framework integrated with the TAM model to examine the drivers of digital transformation adoption in the SME sector. The use of the integrated model TOE with the TAM can be justified as follows. Firstly, the factors that impact the adoption of digital transformation are influenced by human, organizational, and environmental factors (Petter et al., 2008) and these factors are present in the TOE framework. Secondly, several researchers used the TOE framework or TAM model to understand the adoption of new technology. The research results on the determinants of digital transformation in Vietnam's SMEs are expected to give many implications for developing countries that are pursuing digital transformation.

2. Literature review and hypotheses

2.1. Adoption of Digital Transformation

Digital transformation is a transformation concerned with the changes digital technologies can bring about in a company's business model,... products, or organizational structures (Hess et al., 2016). The researchers

looked at the digital transformation of SMEs from 12 different angles: (1) e-commerce, (2) social commerce, (3) Industry 4.0, (4) digital platform (CRM/SCM), (5) cloud computing, (6) sterilization, (7) adoption social media, (8) blockchain, (9) RFID, (10) Portal (website), (11) Accounting Information System & (12) Smart Manufacturing. The adoption of digital transformation will give an impact on businesses such as innovative (Nambisan et al., 2019), by using the internet, online communication, online transactions, e-commerce, e-tax, e-service, and enterprise systems (Azam & Quaddus, 2012). According to Bloomberg (2018) and Peter (2017), digital transformation is customer-driven and requires cross-cutting organizational change along with the implementation of digital technologies.

2.2. Technological Context

The research literature identified relative advantage as the degree to which a new system is more advantageous to the organization than a similar conventional method or technology. It is a variable influenced by knowledge, a variable of behavioral factors (Ostlund, 1974). Heinze et al. (2018) state that digital transformation's relative advantage is Information within organizations is more easily accessible. The higher the relative advantage, the greater the acceptance of digital technologies. Digital transformation is not only new technology but also a great change, so it can be said that its relative advantage is high. Perceived benefits from digital transformation indicate the extent to which businesses perceive benefits such as time savings, cost reductions, and decision support (Gartner, 2014). One of the key features of transformation applications is that they save time and effort (Lytras & Visvizi, 2019). The benefits of digital transformation manifest in aspects such as increased innovation capacity; improve customer satisfaction; shorten time to market; enhance competitiveness (European Commission, 2015). The Covid-19 pandemic context spurred the digital transformation into an urgent matter that can not hesitate (Lesser & Reeves, 2020). In particular, the digital transformation taken both in the public

sector and private organizations contributes significantly to improving ways to better serve citizens (OECD, 2018).

Compatibility with existing systems is the degree to which digital transformation is compatible and consistent with current information systems. Borgman et al. (2013) argued that compatibility has a significant positive impact on the adoption of new technologies. Firm-level system compatibility drives the adoption of digital transformation (Cao et al., 2014). Security concerns are consistently identified as one of the issues for digital transformation managers. Self-learning, self-improvement, and standardization can help overcome privacy and security challenges (Yin et al., 2016). Viriyasitavat (2016) states that an appropriate selection process is needed to accommodate the dynamics in real-time service process interaction that creates complexity. Many studies have shown that SMEs adopting digital transformation can lead to overcoming challenges of security concerns, being able to access new market opportunities, and boosting business efficiency better business (Marchand et al., 2002). As the independent variable of the integrated model, we incorporated four variables to integrating the TOE framework and TAM model. Hence, the following influencing factors related to the technical context are hypothesized:

H1. The relative advantage of digital transformation has a positive effect on perceived usefulness.

H2. Compatibility with existing systems has positively influenced perceived usefulness.

H3. The perceived benefit of digital transformation has positively influenced perceived usefulness.

H4. Security concern has positively influenced perceived usefulness.

2.3. Environment Context

The variables relate to the external environment in which an organization operates include competitive pressure and vendor support. To compete in the knowledge-based economy, firms must consider adopting new

technologies, especially digital-based ones (Alsaad et al., 2018). According to Tyler et al. (2020), the expectations of competitive pressure by SMEs affect their decision-making switch toward digital transformation. In addition, market globalization and business internationalization are factors of new competitive pressures (Karlton, 2017). Therefore, many businesses are switching to digital transformation measures to gain a competitive advantage, to satisfy consumers with increased demand for digital solutions, or simply because it is important for survival (Karlton, 2017). Vendors in digital transformation involve software providers, cloud service providers, and data collection and analysis. Vendors are required to make sure digital transformation is always available when they need it. Moreover, support is the main need to solve the problem in the case of digital transformation that firms pay the support vendors. Therefore, digital transformation service vendors recruit and train adequate support teams to provide the best possible support to their customers (Kim & Suwon, 2009). Vendors' support drives the adoption of digital transformation. Therefore, the following influencing factors related to the environmental context are hypothesized:

H5. Competitive pressure has positively impacted attitudes toward the adoption of digital transformation.

H6. Vendor support has positively impacted attitudes toward the adoption of digital transformation.

2.4. Perceived Usefulness

The term perceived utility (PU) was proposed by Davis in 1989 to refer to the extent to which an individual believes that using a particular system will enhance their job performance. According to Mathwick et al. (2001), the perceived usefulness of technology is the extent to which a person believes that using technology would enhance their job performance. Venkatesh et al. (2016) stated that employees attitude prefer digital technology

because they believe it can help them do their tasks more efficiently. Therefore, perceived usefulness is important in predicting attitudes toward the adoption of digital transformation and long-term sustainable digital technology adoption (Navimipour & Soltani, 2016). The perceived usefulness of technology is a fundamental factor that indirectly influences user adoption decisions (Joshi et al., 2005). The perceived usefulness of technology is the fundamental determinant of user acceptance (Joshi et al., 2005). From the above argument, the hypothesis proposed is:

H7. Perceived usefulness has positively affected the attitude toward the adoption of digital transformation.

2.5. Organization Context

Tan et al. (2007) described organizational readiness as the support of managers and the level of investment readiness to adopt new technology. According to Sin et al. (2016) technology context will help businesses outperform their competitors. Perceptions and actions of top management about the use of technological innovation in creating sustainable values. It ensures long-term vision and manager support, reinforces values, commits resources, and supports overcoming barriers resistance, and resistance to change (Salleh & Janczewski, 2016). Borgman et al. (2013) suggest that top management support sustains the effective adoption of new technologies. It means that only when new technologies are integrated into key business processes can enterprises have core competencies (Shen, 2018). In addition, enterprise resources will influence digital adoption. Investment readiness has a significant positive relationship with firms' ability and willingness to adopt innovation (D'Ambra, 2001). The marketing materials focused on customer-centric digital transformation and yielded insights into how to improve the effectiveness of digital advertising and develop multi-channel and multi-channel environments effective channel (Kannan, 2017). Advanced technology will

help businesses outperform competitors (Sin et al., 2016). An important factor that can affect the adoption of digital transformation is the investment readiness of the organization. Financial investment is required for equipment and consulting to apply digital transformation and operate systems (Gartner, 2014). Therefore, the following hypotheses are proposed:

H8. Top management support has positively affected the adoption of digital transformation.

H9. Investment readiness has positively affected the adoption of digital transformation.

H10. The strategy has positively affected the adoption of digital transformation.

2.6. Attitude Toward Adoption of Digital Transformation

Attitude is defined as an individual's positive or negative feelings about performing the target behavior (Davis, 1989). According to the TAM model, consumers' decisions and attitudes are predictable. Bakar et al. (2020) stated that attitude is **de-ned** as a tendency to react favorably or adversely to firms. Some previous research has found that the attitude of leaders and employees favors conducting new technology and this relationship has received solid empirical evidence (Farahnak et al., 2020). Employees are more likely to execute an activity if they have a positive attitude and are less likely to do so if they have a negative attitude. Employees and leaders move towards sustainable digital adoption as they realize the technology's optimistic outlook (Nguyen et al., 2017). In some studies of new technology using the TAM model, it has been shown that firms' positive attitudes have a positive effect on the adoption of new technology systems. Therefore, we propose a hypothesis:

H11. Attitude toward adoption has positively affected the adoption of digital transformation.

2.7. Conceptual model

There have been many models used in research and application of new technologies such as TRA, TBP, TAM, UTAUT, DOI, TOE,

etc, but the two most widely used models that have proven to be relevant for new technology adoption are the Technology Acceptance Model (TAM) and the Technology Organizational Environment Framework (TOE) (Nguyen et al., 2022). TAM has the limitation of looking at future behavior, not actual behavior (Wu, 2011), and the external variables of TAM extrinsic variables in the extended models of TAM are not well defined. The TOE is particularly suitable for innovative internet-based explanations of organizational behavior in terms of information technology (Abualrob & Kang, 2016). However, the TOE framework has major structures that are unclear and general. Therefore, this research has integrated TOE and TAM so that the predictive power of the resulting model can be improved and some individual limitations of both TAM and TOE. The TOE complements TAM as external variables affecting technology adoption behavior. The study integrated the TAM-TOE model consisting of 9 independent and 2 mediating variables utilized to figure the impact degree and causal level of factors on the adoption of digital transformation.

3. Methodology

3.1. Research Design

This study used mixed method research by qualitative and quantitative research. The qualitative research was carried out by a focus group with 11 participants. It includes two sections primarily concerned with answering ‘what’ and ‘why’ questions within the adoption of digital transformation of the SME. In section 1, a discussion is based on an unstructured questionnaire to unfold the core issues related to the adoption of digital transformation and reviews variables and measurement items inherited from previous studies. Section 2 is testing the content validity of variables and measurement items that were chosen through section 1. According to Ayre and Scally (2014), $CRV_{critical} = ((z\sqrt{N}) + 1) / N$. Where N is the total number of panel members, ne is the number of experts agreeing “essential,” p is the probability of agreeing each item essential

$= \frac{1}{2}$, 0.5 is the continuity correction, z is the normal approximation of the binomial, $z = \{(ne - Np - 0.5) / (\sqrt{[Np(1-p)]})\} \sim (N(0,1))$. In this focus group with 11 experts, if CVR Critical ≥ 0.636 , the variables and measurement items were accepted (Ayre & Scally, 2014). The quantitative study used a cross-sectional method with non-probability and convenience sampling was carried out in all territories of Vietnam.

3.2. Quantitative Research

The survey questionnaire consists of three parts, not to mention the introduction. The first part consists of two screening questions to ensure that the respondent is competent to represent the SME and that the business has been adopting digital transformation. The second section ordered a 5-point Likert scale for each five measurement items of a variable. The 5-point Likert scale (1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree). Measurement items were adapted from previous research as sequence follows: Five measurement items of each independent variable belonging to context: “technological, organizational, and environmental” were adaption from Sun et al. (2018); Salleh and Janczewski (2016); Chen et al. (2015). Five measurement items of each mediating variable: perceived usefulness and attitude toward the adoption of digital transformation were adaptations from (Nguyen & Luu, 2020); Truong, 2018; Davis, 1989). The dependent variable (adoption of digital transformation) was adaptations from Nguyen and Luu (2020) and Palmatier and Martin (2019). The third section addressed information, including the firm’s age, number of employees, revenue, and business industry.

3.3. Data Collection and Analysis

This study uses Smart-PLS software for SEM analysis. According to the 10-fold rule for PLS-SEM, with 10 numerical links pointing to the variables in the model, the minimum sample size in this study is $(10 \times 11) = 110$. With the number of obtained 346 valid questionnaires rate, this study warrants the sample size. This

study uses a non-probability sampling method with a convenient technique. The questionnaire was distributed across both in-person and online processes in April 2022. Collected data were analyzed using SPSS and SmartPLS software. According to Hair et al. (2021). The external load indicator of the measured item is > 0.708 and the AVE is > 0.50 convergence effect gain variable. The confidence interval of the Heterotrait-Monotrait ratio (HTMT) should be less than 0.85, and the relevant threshold level statistic should not include a value of 1 for all combinations of variables. The significant confidence level for the estimates is 0.05.

4. Results and Discussion

4.1. Qualitative Research

The conceptual model was developed from theories and previous research consisted of 12 variables and 60 measurement items. The results of the focus group were that 3 measurement items (RA1, CP4, AD4, and AD5) were deleted because the validation $CVR_{\text{Critical}} < 0.636$ was not valid. The remaining 56 measurement items were then conducted for the quantitative research.

4.2. Descriptive Analysis

This study collected 346 valid questionnaires from 346 respondents who represent SMEs. As for the age establish of the firms, there are 35 SMEs were operating under 2 years (10.12%), 121 SMEs from 2 to 5 years (34.97%), 135 SMEs from 5 to 10 years (39.02%), and 55 SMEs over 10 years (15.89%). Regarding the number of employees, the result showed that 38 SMEs have less than 10 employees (10.98%), 266 SMEs have 10-49 employees (76.88%), and 42 SMEs have 51-100 employees (12.14%). For the main business sector, the result showed that 12 SMEs in the agriculture sector (3.47%), 76 SMEs in the industry sector (21.97%), 130 SMEs service sector (37.57%), and 128 SMEs in two or three sectors (36.99%). As for the market of the firm, the result showed that 7 SMEs (2.02%) have the international market, 270 SMEs (78.03%) have only the domestic market, and 69 SMEs (19.94%) have domestic and export markets.

4.3. Valuation of the Measurement Model

Reliability and Validity. The construct gains internal consistency reliability if a factor displayed its reliability if its Cronbach's Alpha and composite reliability (CR) are greater than 0.7 Hair et al. (2021). The result showed that Cronbach's Alpha ranged from 0.862 to 0.933, and CR ranged from 0.904 to 0.949 (Appendix 1). Thus, all 11 variables had high levels of internal consistency reliability.

Convergent Validity. To evaluate the convergent validity of reflective variables, researchers considered the outer loadings of the indicators and the average variance extracted (AVE). According to Hair et al. (2021), the construct was convergent validity if the Average variance extracted (AVE) was higher than 0.50, outer loading higher than 0.6, and indicator reliability higher than 0.5. The results showed that the outer loading of 51 measurement items was from 0.764 (PU3) to 0.904 (PS4) larger than 0.60 and the AVE of 11 variables ranged from 0.655 to 0.788 larger than 0.5. Therefore, 11 variables were considered to have achieved convergent validity (Appendix 1).

Discriminant Validity. The confidence interval of the Heterotrait-Monotrait Ratio (HTMT) should be lower than 0.85, and the relevant threshold level statistic should not include the value 1 for all combinations of variables (Hair et al., 2021). The results showed that all HTMT values ranged from 0.336 to 0.783 lower than the conservative threshold value of 0.85. However, when examining the HTMT ratios, the HTMT values were significantly different from 1. Hence, all 11 variables were already discriminant validity (Appendix 2).

4.4. Structural Equation Modeling (SEM)

Collinearity Test. A related measure of collinearity was the variance inflation factor (VIF). According to Hair et al. (2021), VIF values must be lower than 5. This study's results show that the VIF of the PU3 had the lowest (1.719) to the highest value of TS4 (3.621). Therefore, 51 measurement items all had a VIF value below the threshold value of 5. Therefore,

collinearity among the predictor variables was not a critical issue in the structural model, and we can continue examining the results report.

Model fit. Model fit is measured by Standardized Root Mean Square Residual (SRMR). The SRMR was defined as the difference between the observed and model-implied correlation matrix. A value less than 0.10 or 0.08 (Hu & Bentler, 1999) was considered a good fit. The result of this research showed that $SRMR = 0.040 (< 0.08)$ indicates a good fit.

Hypotheses Testing

The hypotheses and conceptual model were tested by bootstrapping with 5,000. First, when

examining the p-value, which should be lower than 0.05 (Hair et al., 2021). The research results show that all p-values ranged from 0.000 to 0.009, lower than 0.05 so the eleven hypotheses were supported. Overall, all the path coefficient-related hypotheses were from 0.133 to 0.378 (Table 1). The R^2 value of the variables ranged from 0.529 to 0.592, showing the interpretation level of the independent variables on the dependent variables perceived usefulness (PU), attitude toward adoption (AT), and adoption of digital transformation (AD) as a medium level. The f^2 values indicated an exogenous construct ranging from 0.024 (H9) to 0.274 (H5) respectively on an endogenous construct from small to medium level.

Table 1. Hypothesis Test

Relationship	Hypothesis	Original Sample (O)	T Statistics (O/STDEV)	P-Values	f^2	Hypothesis test
RA -> PU	H1	0.235	5.320	0.000	0.090	Supported
PB -> PU	H2	0.189	3.943	0.000	0.052	Supported
CO -> PU	H3	0.292	6.733	0.000	0.125	Supported
SC -> PU	H4	0.261	5.725	0.000	0.107	Supported
CP -> AT	H5	0.378	8.178	0.000	0.260	Supported
VS -> AT	H6	0.378	8.449	0.000	0.274	Supported
PU -> AT	H7	0.227	5.845	0.000	0.108	Supported
AT -> AD	H8	0.279	5.021	0.000	0.101	Supported
TS -> AD	H9	0.133	2.627	0.009	0.024	Supported
IR -> AD	H10	0.307	5.304	0.000	0.114	Supported
ST -> AD	H11	0.197	3.729	0.000	0.048	Supported

Predictive Relevance

The results show that the Q^2 values are all greater than 0 indicating that the exogenous variables had predictive relevance for the endogenous construct under consideration. The Q^2 of attitude toward adoption (AT) has the largest value (0.496), the next adoption digital transformation (0.456), and the smallest perceived usefulness (0.340). Therefore, attitude toward adoption, perceived usefulness, and adoption of digital transformation are supporting the model's predictive relevance regarding the endogenous latent variables.

Indirect Effect

The mediating effects of PU and AT were analyzed. As shown in Table 2, the effect of co-created value on AB is mediated by PU and AT. The results show that all indirect effects are significant since neither 95% confidence intervals include zero and p-values < 0.05 . Hence, seven variables have significant indirect effects on AD. The empirical β of the indirect effect smallest (0.012) for the PB -> PU -> AT -> AD yielded a p-value of 0.008. The indirect effect biggest (0.106) for the VS -> AT -> AD, yields a P-value of 0.014. Similarly, the indirect effect (0.048) for the CS \rightarrow PU \rightarrow AB, yields a p-value of 0.000.

Table 2. Specific Indirect Effects

Relationship	β	Standard deviation	T Statistics	P-Values
CP -> AT -> AD	0.106	0.024	4.327	0.000
CO -> PU -> AT -> AD	0.018	0.006	3.027	0.002
PB -> PU -> AT -> AD	0.012	0.005	2.658	0.008
RA -> PU -> AT -> AD	0.015	0.005	3.113	0.002
PU -> AT -> AD	0.063	0.017	3.635	0.000
SC -> PU -> AT -> AD	0.017	0.006	2.975	0.003
VS -> AT -> AD	0.106	0.025	4.271	0.000
CO -> PU -> AT	0.066	0.016	4.073	0.000
PB -> PU -> AT	0.043	0.013	3.284	0.001
RA -> PU -> AT	0.053	0.013	4.029	0.000
SC -> PU -> AT	0.059	0.015	4.005	0.000

Importance-Performance Map Analysis (IPMA)

The IPMA was divided into four quadrants of variables based on two dimensions (importance and performance) for further exploration. The results showed that the average total effects of all variables were 0.114, and the average performance of the construct was 55.849. As can be seen, the PU, CP, and VS located in the higher right area of the importance-performance map have high performance and low importance for the target construct AD. Therefore, there

is a particularly high potential for improving the performance of the variables positioned in this area. On the other hand, the AT, ST, and TS variables in the higher right area have high importance for the target construct AB and show high performance. Hence, there is a need to keep up the good work. Meanwhile, the PB, RA, and CO variable is in the lower-left area, showing low performance and low importance for the target construct AD. Hence, there is a lower priority for performance and important improvements.

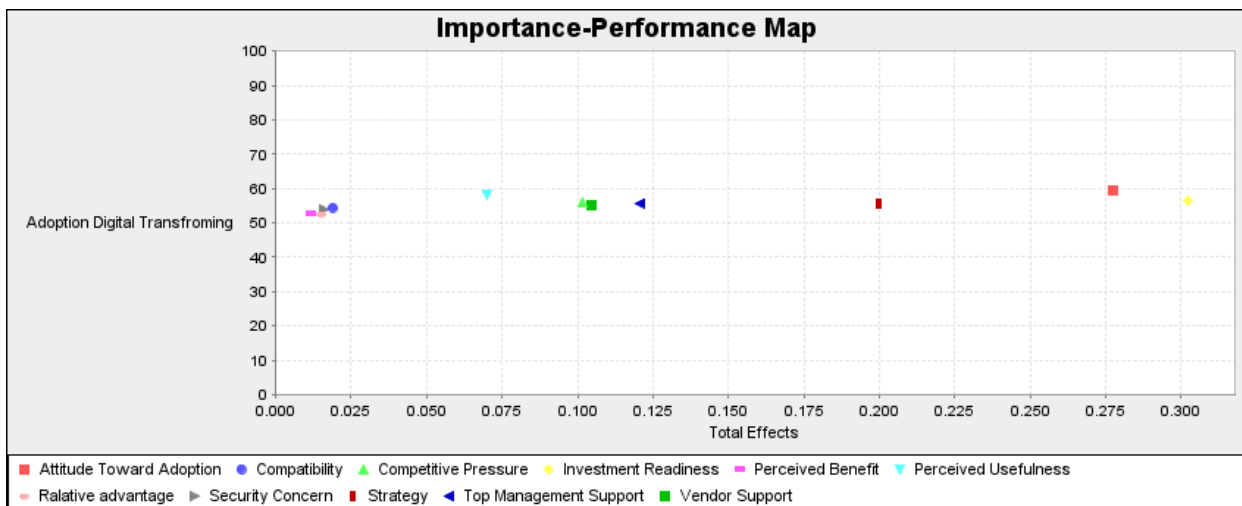


Figure 1. Importance-Performance Map

4.5. Discussion

The study identified relative advantages, perceived benefits of digital transformation, compatibility, security concern, competitive pressure, and vendor support as important variables for affecting the adoption of digital transformation using perceived usefulness and attitude as mediating variables. Also, top management support, investment readiness, and strategy were found directly affect the adoption of digital transformation. The results of this study are as the study of Cabrera-Sánchez and Villarejo-Ramos (2019); Sam and Chatwin (2018) when confirming the factors of business resources... affecting the adoption of digital transformation. The findings also indicate the adoption of digital transformation on top management support, investment readiness, and strategy. Firms with a high level of readiness for digital transformation are more likely to use digital platforms. Therefore, managers and policymakers need to focus on financial resources such as physical infrastructure, knowledge, and hiring staff with digital skills. Furthermore, for SMEs, leadership styles are often thin and flat, so technology adoption is often done with a top-down approach. The top management has an important role in persuading employees with words of encouragement and rewards to promote their work behavior. The manager must demonstrate ongoing commitment and support to develop an enabling environment for the adoption of digital transformation. Training employees to help them understand the functional and technical perspectives of digital technology and gain first-hand information and experience. Therefore, managers must strongly support the training of employees serving digital skills.

5. Conclusions and implications

This study developed an integrated TOE-TAM framework for analyzing the adoption of digital transformation. The TOE-TAM integration model has been confirmed to be suitable for this study as well as to address the

same important areas related to the adoption of transformation. The contribution of the study is that it provides evidence from an empirical survey with an objective interpretation of the findings. The research findings and discussion presented in this paper confirmed that relative advantages, perceived benefits of digital transformation, compatibility, and security concerns significantly direct affect perceived usefulness and indirectly on the adoption of digital transformation. The variables which affect attitude toward adoption are competitive pressure, and vendor support. Top management support, investment readiness, attitude toward adoption, and perceived usefulness direct impact the adoption of digital transformation. The research results presented in this paper serve as the basis for the implications of spreading the adoption of digital transformation.

The study contributes to providing information for managers and businesses applying digital transformation to consider and propose specific solutions to improve quality when adopting digital transformation. It is crucial to improve the awareness of SMEs about how easy it is to learn and use digital transformation. Besides, it is necessary to raise a positive attitude for SMEs that adopting digital transformation will bring many beneficial values to businesses. Practices to do it could be through forms such as providing more information about the benefits of digital transformation, and at the same time training and organizing seminars to help businesses gain positive experiences and awareness about the benefits of digital transformation. In addition, the government needs to have more policies to encourage and support businesses in digital transformation adoption activities. Finally, business solutions for the adoption of digital transformation would be provided to minimize competitive pressure from competitors and minimize possible risks when applying digital transformation in the future. The partners are encouraged to form networks with other players so that they can support and satisfy the needs of rapidly changing and diverse customers.

This study is a special attempt to contribute to the adoption of digital transformation literature. However, it is limited in terms of using a limited set of variables and exclusion of non-acceptors. Future research should validate the findings of the study in other contexts. Besides, this study is limited to SMEs

in Vietnam, where the number of SMEs is overwhelming compared to large firms and the adoption of digital transformation is growing rapidly. The results in other countries should therefore be considered in future research.

Conflicts of interest: The authors declare no conflict of interest

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Appendix 1. Reliability and Validity of the Measurement Model

Variable/ measurement item	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Adoption Digital Transforming	0.862	0.916	0.784
Attitude Toward Adoption	0.913	0.935	0.742
Compatibility	0.901	0.926	0.716
Competitive Pressure	0.905	0.934	0.779
Investment Readiness	0.918	0.938	0.753
Perceived Benefit	0.917	0.938	0.75
Perceived Usefulness	0.868	0.904	0.655
Relative advantage	0.874	0.914	0.726
Security Concern	0.915	0.937	0.747
Strategy	0.911	0.933	0.737
Top Management Support	0.933	0.949	0.788
Vendor Support	0.914	0.936	0.744

Appendix 2. Heterotrait_Monotrait Ratio (HTMT)

	AD	AT	CO	CP	IR	PB	PU	RA	SC	ST	TS
AT	0.740										
CO	0.568	0.618									
CP	0.623	0.783	0.577								
IR	0.758	0.662	0.517	0.622							
PB	0.541	0.518	0.503	0.426	0.524						
PU	0.611	0.677	0.653	0.582	0.623	0.592					
RA	0.390	0.448	0.425	0.425	0.500	0.465	0.572				
SC	0.476	0.477	0.477	0.421	0.421	0.46	0.598	0.336			
ST	0.706	0.658	0.575	0.544	0.665	0.468	0.516	0.429	0.401		
TS	0.648	0.589	0.516	0.507	0.643	0.442	0.525	0.536	0.381	0.628	
VS	0.631	0.77	0.476	0.631	0.503	0.457	0.537	0.368	0.442	0.563	0.402