
E-Commerce as a Strategic Digital Capability for Sustainable MSME Performance: Evidence from Malaysia's Insurance Sector

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Abstract: This study investigates the role of e-commerce as a strategic digital capability that supports the sustainable performance of Micro, Small, and Medium Enterprises (MSMEs) within Malaysia's insurance sector. Drawing on the Technology Acceptance Model (TAM) and the Resource-Based View (RBV), the study examines how perceived usefulness, perceived ease of use, and perceived privacy influence the development of digital capability through e-commerce utilization. Data were collected from 276 MSME owners and managers in the Klang Valley and analyzed using Partial Least Squares Structural Equation Modeling. The results show that perceived usefulness, perceived ease of use, and perceived privacy significantly influence the utilization of e-commerce platforms. In turn, e-commerce utilization positively affects sustainable MSME performance. The mediation analysis further indicates that e-commerce utilization acts as an important mechanism through which managerial perceptions of digital technologies translate into long-term organizational resilience and competitive sustainability. These findings suggest that e-commerce should be viewed not merely as a technological tool but as a strategic capability that strengthens operational continuity, governance reliability, and long-term value creation. The study contributes to the sustainability accounting and management literature by providing empirical evidence from Malaysia's MSME insurance sector and highlighting the importance of digital capability development for sustaining enterprise competitiveness in emerging economies.

Keywords: Digital capability, emerging economies, MSMEs, organisational sustainability, RBV, TAM.

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INTRODUCTION

Digital transformation has increasingly reshaped how organizations operate and compete in contemporary markets. Across many industries, firms are turning to digital platforms to maintain operational continuity and improve long-term competitiveness (Organisation for Economic Co-operation and Development, 2017; United Nations Conference on Trade and Development, 2021). In particular, the rapid expansion of electronic commerce has transformed how companies interact with customers, manage transactions, and create value in digitally connected environments (Tolstoy, Nordman, Hånell, & Özbek, 2021). Following the COVID-19



pandemic, digital technologies have shifted from optional tools to essential components of business survival and adaptability (Khan, Shams-E-Mofiz, & Sharmin, 2020; United Nations Conference on Trade and Development, 2021).

MSMEs constitute the backbone of developing economies, including Malaysia (Rahayu & Day, 2017; Tambunan, 2021). They contribute significantly to national output, employment creation, and socio-economic stability (Kurnia, Choudrie, Mahbubur, & Alzougool, 2015; Organisation for Economic Co-operation and Development, 2010). According to the Department of Statistics Malaysia (2022), MSMEs account for a substantial share of national GDP and demonstrate consistent expansion across sectors. However, despite their economic importance, MSMEs often operate under structural constraints, including limited financial resources, restricted technological capability, and heightened vulnerability to market disruptions (Levy & Powell, 2005; Salim, Susilastuti, & Rafiqah, 2020). In such contexts, the strategic adoption of digital technologies, particularly e-commerce, can enhance organizational resilience and sustain competitive advantage.

Within Malaysia's insurance industry, digital transformation has accelerated in response to evolving consumer expectations and regulatory developments (Statista Research Department, 2023). Online policy subscriptions, digital claims processing, and platform-based distribution channels are becoming increasingly prevalent. While larger corporations may possess substantial resources to implement advanced digital infrastructures, MSMEs must strategically allocate limited capabilities to build digital competence. The challenge, therefore, extends beyond simple technology adoption toward understanding how digital capability contributes to sustained organizational performance over time.

The existing literature extensively examines e-commerce adoption from a technology acceptance perspective, particularly the Technology Acceptance Model (Davis, 1989; Venkatesh & Davis, 1996). Perceived usefulness and perceived ease of use are widely recognized as core determinants influencing technology utilization (Grandon & Pearson, 2004; Shaw & Sergueeva, 2019). Additionally, privacy considerations play a crucial role in shaping digital trust and online engagement, especially in service-based industries such as insurance (Chang, Wong, Libaque-Saenz, & Lee, 2018; Yu, Li, He, Wang, & Jiao, 2020). However, prior studies predominantly focus on short-term adoption intention or immediate performance outcomes (Herzallah & Mukhtar, 2015; Kabanda & Brown, 2017). Limited attention has been given to understanding how digital adoption translates into sustainable competitive advantage and long-term enterprise resilience, particularly within MSMEs in emerging economies.

From a Resource-Based View perspective, firm performance depends on the effective deployment of valuable, rare, inimitable, and well-organized resources (Arbab Kash, Spaulding, Gamm, & Johnson, 2014; Rothaermel, 2012). Digital capability, when strategically integrated into organizational processes, can serve as an intangible resource that enhances operational efficiency, governance reliability, and adaptive flexibility. In this sense, e-commerce utilization extends beyond transactional convenience; it represents a strategic capability supporting sustainable MSME performance through resource orchestration and long-term value creation.

Against this backdrop, this study examines how perceived usefulness, perceived ease of use, and perceived privacy influence e-commerce utilization, and how such utilization contributes to sustainable MSME performance within Malaysia's insurance industry. By integrating the Technology Acceptance Model with the Resource-Based View, this research reframes digital adoption as a sustainability-enabling capability rather than merely a technological choice. The study contributes to the sustainability accounting and management literature by providing empirical evidence from an emerging economy context and highlighting the strategic role of digital capability in strengthening long-term MSME resilience and competitiveness. This perspective is particularly relevant for sustainability accounting and management, as digital capability enhances transparency, governance reliability, and accountability mechanisms that support long-term organizational sustainability.

Specifically, this study aims to (1) investigate the influence of perceived usefulness, perceived ease of use, and perceived privacy on e-commerce utilization; (2) examine the relationship between e-commerce

utilization and sustainable MSME performance; and (3) assess the mediating role of e-commerce utilization in translating digital perceptions into sustainable organizational outcomes.

DIGITALISATION AND ORGANISATIONAL SUSTAINABILITY

The growing body of research on digital transformation increasingly recognizes that digital technologies are not merely operational tools but strategic enablers of organizational sustainability. In contemporary business environments characterized by rapid technological change and market uncertainty, firms are required to develop adaptive capabilities that ensure continuity, competitiveness, and long-term value creation (Organisation for Economic Co-operation and Development, 2017; United Nations Conference on Trade and Development, 2021). Digitalization, particularly through e-commerce platforms, facilitates process efficiency, market expansion, and improved customer engagement, all of which contribute to sustained enterprise performance (Tolstoy et al., 2021).

For MSMEs, digital capability development may serve as a mechanism to overcome structural limitations such as restricted capital, limited physical reach, and informational asymmetries (Kurnia et al., 2015; Rahayu & Day, 2017). By leveraging digital platforms, MSMEs can reduce transaction costs, enhance operational transparency, and strengthen relationships with customers and stakeholders. These improvements are not confined to short-term revenue effects but extend to organizational resilience and competitive sustainability.

From a strategic management perspective, the Resource-Based View posits that firm performance depends on the effective deployment of valuable, rare, inimitable, and well-organized resources (Arbab Kash et al., 2014; Rothaermel, 2012). Digital capability, when embedded within organizational routines and processes, may satisfy these criteria. Unlike easily replicable technologies, the capability to integrate digital systems with managerial practices, governance mechanisms, and customer engagement strategies can create sustained competitive advantage. In this context, e-commerce utilization should not be interpreted solely as a technological adoption decision but rather as the development of a strategic digital capability that supports organizational sustainability.

In addition to enhancing operational efficiency, digitalisation has increasingly been recognized as a driver of sustainability-oriented business practices among MSMEs (Bocken, Short, Rana, & Evans, 2014). Digital platforms enable firms to improve information transparency, strengthen communication with stakeholders, and enhance the reliability of organizational governance processes. These capabilities are particularly important for MSMEs operating in emerging economies, where resource constraints often limit the implementation of formal sustainability management systems. By facilitating better information flow and operational monitoring, digital technologies can support responsible business practices and improve stakeholder trust. Consequently, digital capability development through e-commerce utilization may contribute not only to improved firm performance but also to broader sustainability objectives, including organizational resilience, governance transparency, and long-term value creation.

Furthermore, sustainability in enterprise contexts extends beyond environmental considerations to encompass economic continuity, governance reliability, and stakeholder trust. Particularly within service industries such as insurance, privacy assurance and data protection are central to maintaining customer confidence and reputational stability (Chang et al., 2018; Yu et al., 2020). Ensuring secure, trustworthy digital transactions contributes to long-term organizational viability. Therefore, digital capability, intertwined with governance and trust mechanisms, is a critical component of sustainable MSME performance.

Despite the recognized importance of digital transformation, empirical research linking technology acceptance constructs with sustainable enterprise outcomes remains limited. While prior studies confirm the influence of perceived usefulness and perceived ease of use on technology utilization (Davis, 1989; Venkatesh & Davis, 1996), fewer investigations explore how such perceptions ultimately contribute to long-term organizational sustainability. Addressing this gap is especially important for MSMEs operating in emerging economies, where resource constraints intensify the need for strategic capability development.

Accordingly, this study conceptualizes e-commerce utilization as a mediating strategic mechanism through which digital perceptions translate into sustainable organizational performance. By integrating technology acceptance perspectives with resource-based logic, the present research advances understanding of how digital capability development strengthens MSME resilience and competitiveness within Malaysia's insurance industry.

UNDERPINNING THEORETICAL FRAMEWORK

Understanding how digital adoption contributes to sustainable organizational performance requires integrating behavioral and strategic management perspectives. This study draws upon the Technology Acceptance Model (TAM) and the Resource-Based View (RBV) to explain how individual-level technology perceptions translate into firm-level sustainable outcomes. While TAM elucidates the behavioral determinants of e-commerce utilization, RBV provides the strategic rationale for how digital capability may function as a source of sustained competitive advantage.

Technology Acceptance Model (TAM)

The Technology Acceptance Model, originally developed by Davis (1986) and Davis (1989), remains one of the most influential frameworks for explaining technology adoption behavior. Rooted in the Theory of Reasoned Action, TAM posits that perceived usefulness and perceived ease of use determine an individual's intention to utilize a technological system (Davis, 1989). Subsequent refinements by Venkatesh and Davis (1996) further established the direct influence of these perceptions on behavioral intention and actual system usage.

Perceived usefulness refers to the extent to which an individual believes that the use of a particular system enhances job performance. In the context of MSMEs, this reflects managerial beliefs regarding whether e-commerce improves operational efficiency, customer outreach, and revenue generation. Perceived ease of use denotes the degree to which the system is considered free of effort, influencing the likelihood of sustained utilization. When digital platforms are perceived as complex or burdensome, adoption may stagnate despite potential benefits.

In addition to these foundational constructs, privacy perception has emerged as a critical determinant of digital engagement, particularly within service-oriented industries such as insurance (Chang et al., 2018; Yu et al., 2020). Concerns regarding data protection, transaction security, and confidentiality influence managerial confidence in digital platforms. In environments where trust and information sensitivity are paramount, perceived privacy may significantly shape sustained e-commerce utilization.

While TAM effectively explains the antecedents of technology adoption, its explanatory power remains primarily behavioral. The model does not inherently address how sustained utilization translates into long-term organizational competitiveness. To bridge this limitation, the present study integrates TAM with the Resource-Based View. Figure 1 presents the Technology Acceptance Model (TAM). Developed by Venkatesh and Davis (1996), this model posits that external factors influence users' perceptions of a technology's usefulness and ease of use. These perceptions drive behavioral intention, which ultimately predicts actual usage behavior.

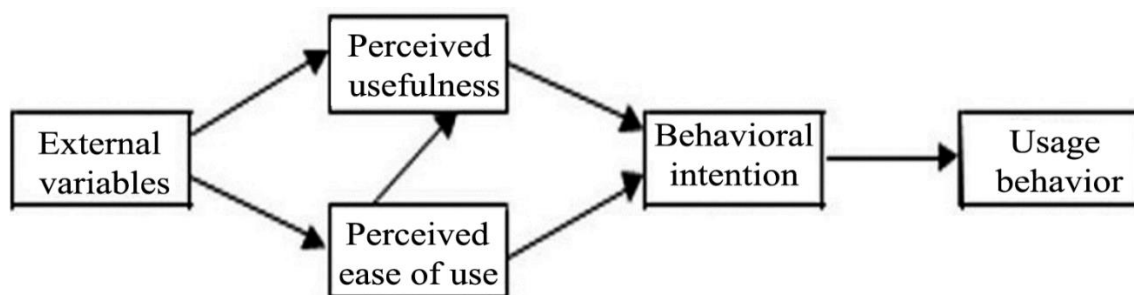


Figure 1: TAM

Source: Venkatesh and Davis (1996)

Resource-Based View (RBV)

The Resource-Based View asserts that firm performance depends on the effective deployment of strategic resources that are valuable, rare, inimitable, and organizationally embedded (Arbab Kash et al., 2014; Rothaermel, 2012). According to RBV, sustainable competitive advantage arises not merely from resource possession but from the firm's ability to integrate and coordinate those resources within its operational and managerial processes.

Digital capability may be conceptualized as a strategic resource. While e-commerce platforms may be widely accessible, the organizational competence required to effectively integrate digital systems into marketing, operations, and governance structures is less easily replicated. This capability includes managerial expertise, process alignment, customer relationship integration, and privacy governance mechanisms. When embedded within organizational routines, digital capability contributes to efficiency, adaptability, and long-term value creation.

For MSMEs, which often operate under resource constraints, the strategic orchestration of digital capability becomes particularly critical. Properly utilized, e-commerce may enhance market reach, reduce operational friction, and strengthen stakeholder trust. These outcomes extend beyond immediate financial gains and contribute to sustainable organizational performance.

Conceptual Integration

By integrating TAM and RBV, this study proposes that managerial perceptions of usefulness, ease of use, and privacy influence the development of digital capability through e-commerce utilization. In turn, digital capability functions as a strategic resource that enhances sustainable MSME performance.

This integrative perspective advances prior research by moving beyond adoption intention towards understanding how digital utilization contributes to long-term organizational resilience and competitive sustainability. In Malaysia's insurance industry, where trust, governance, and service continuity are central, such integration offers a theoretically grounded explanation of how digital transformation supports sustainable enterprise outcomes.

Hypotheses Development

Perceived Usefulness and Digital Capability

Perceived usefulness represents the extent to which managers believe that the adoption of e-commerce enhances organizational effectiveness (Davis, 1989). Within MSMEs, particularly in service-oriented industries such as insurance, managerial perception of digital value plays a decisive role in shaping sustained utilization behavior. When e-commerce platforms are perceived to improve efficiency, customer interaction, and operational performance, managers are more likely to integrate digital systems into core business activities (Grandon & Pearson, 2004; Shaw & Sergueeva, 2019).

From a strategic perspective, perceived usefulness does not merely influence adoption intention; it facilitates the development of digital capability. When digital systems are recognized as performance-enhancing, firms are more inclined to invest time and resources into embedding them within organizational routines. Such integration contributes to process optimization, improved responsiveness, and long-term competitiveness. In resource-constrained MSMEs, this perception-driven investment may be particularly significant in enabling sustained enterprise development.

Accordingly, the following hypothesis is proposed.

H₁: Perceived usefulness positively influences e-commerce utilisation among MSMEs.

Perceived Ease of Use and Digital Capability

Perceived ease of use refers to the degree to which a technological system is considered effortless to operate (Davis, 1989). Ease of interaction reduces cognitive and operational burdens, thereby increasing the likelihood of continuous utilization. Prior research confirms that systems perceived as intuitive and manageable are more readily adopted and sustained (Moridis, Vasileiou, & Efraimoglou, 2018; Venkatesh & Davis, 1996).

In MSMEs, where managerial capacity and technical expertise may be limited, system simplicity becomes a critical determinant of sustained digital integration. Technologies that demand excessive complexity or training may discourage continued use, thereby weakening digital capability development. Conversely, platforms perceived as accessible and manageable facilitate organizational learning and gradual process integration. Over time, this sustained utilization contributes to the strengthening of digital capability as a strategic organizational resource.

Therefore, it is hypothesised that:

H₂: Perceived ease of use positively influences e-commerce utilisation among MSMEs.

Perceived Privacy and Digital Governance

Privacy perception refers to the degree to which digital systems are perceived as secure and capable of protecting sensitive information (Chang et al., 2018; Yu et al., 2020). In the insurance sector, where personal and financial data are routinely processed, privacy assurance is a foundational element of digital trust.

Managers who perceive e-commerce platforms as secure and reliable are more likely to adopt and sustain digital operations. Beyond behavioral intention, privacy assurance contributes to governance credibility and stakeholder confidence. Trust in digital infrastructure supports long-term customer relationships and mitigates reputational risk, thereby reinforcing sustainable organizational outcomes.

Consequently, the following hypothesis is formulated:

H₃: Perceived privacy positively influences e-commerce utilisation among MSMEs.

E-commerce Utilisation and Sustainable MSME Performance

While technology acceptance constructs explain the determinants of utilization, the Resource-Based View provides insight into how sustained utilization contributes to organizational performance (Arbab Kash et al., 2014; Rothaermel, 2012). E-commerce utilization, when embedded within organizational processes, represents the operationalization of digital capability.

For MSMEs, sustained digital utilization enhances operational efficiency, market reach, customer engagement, and adaptive flexibility. These improvements extend beyond immediate financial gains and contribute to sustainable organizational performance, defined by continuity, competitiveness, and resilience. Particularly in emerging economies, digital capability may enable firms to navigate market volatility and maintain long-term viability.

Thus, the following hypothesis is proposed.

H₄: E-commerce utilisation positively influences sustainable MSME performance.

The Mediating Role of E-commerce Utilisation

Integrating TAM and RBV suggests that managerial perceptions alone do not directly generate sustainable performance. Instead, perceptions must translate into sustained digital utilization, which then functions as a strategic resource. E-commerce utilization, therefore, operates as a mediating mechanism through which perceived usefulness, ease of use, and privacy contribute to sustainable organizational outcomes.

When managers perceive digital systems as useful, manageable, and secure, they are more likely to embed such systems into business routines. This sustained integration strengthens digital capability and enhances long-term organizational performance.

Accordingly, the final hypothesis is advanced.

H_{5abc}: E-commerce utilisation mediates the relationship between perceived usefulness, perceived ease of use, perceived privacy, and sustainable MSME performance.

RESEARCH METHODOLOGY

This study adopts a quantitative research design to examine the role of digital capability in enhancing sustainable MSME performance within Malaysia's insurance industry. The empirical investigation focuses on

the Klang Valley region, which represents a highly urbanized and economically active area characterized by significant digital adoption among service-oriented enterprises.

A non-probability purposive sampling technique was employed to target managers and owners of MSMEs operating within the insurance sector. This approach was deemed appropriate because respondents were required to have direct experience with e-commerce implementation within MSMEs, and purposive sampling was used to ensure participants had relevant managerial knowledge and operational experience with digital platforms. Given the study's emphasis on digital capability development, participants were selected based on their active engagement with online platforms for business transactions, communication, or service delivery.

Data were collected between September 2025 and November 2025 through a structured questionnaire distributed via Google Forms. The use of an online survey instrument aligns with the study's digital orientation and facilitates efficient access to respondents engaged in e-commerce. Confidentiality and anonymity were assured to encourage candid responses and minimize response bias.

A total of 300 questionnaires were distributed, with 276 usable responses retained for analysis, reflecting a response rate of approximately 92 percent. This sample size meets the minimum requirements for Partial Least Squares Structural Equation Modeling, especially considering the complexity of the proposed mediation model (Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014).

Data analysis was conducted using SPSS version 29 and SmartPLS version 4. The analytical procedure followed a two-step approach. First, the measurement model was assessed for reliability and validity, including internal consistency, convergent validity, and discriminant validity. Second, the structural model was examined to test the hypothesized relationships and mediation effects.

The questionnaire comprised two sections. The first captured demographic information related to gender, age, educational background, firm size, annual sales, and years of operation. The second measured the latent constructs using established scales adapted from prior studies. Perceived usefulness and perceived ease of use were measured using the scales developed by Grandon and Pearson (2004). Perceived privacy was adapted from Eid (2011). E-commerce utilization and MSME performance were adapted from Aremu, Shahzad, and Hassan (2021) and Grandon and Pearson (2004).

All constructs were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). In line with the sustainability orientation of this study, MSME performance was conceptualized not solely in terms of short-term profitability but also as encompassing indicators of organizational continuity, competitive strength, and adaptive capacity within dynamic market conditions.

To provide clarity regarding the structural relationships examined in this study, the empirical model can be expressed as follows:

$$ECU = \beta_0 + \beta_1 PU + \beta_2 PEOU + \beta_3 PP + \varepsilon_1 \quad (1)$$

$$MP = \beta_0 + \beta_1 ECU + \varepsilon_2 \quad (2)$$

Where ECU represents e-commerce utilization, PU denotes perceived usefulness, PEOU denotes perceived ease of use, PP denotes perceived privacy, and MP denotes sustainable MSME performance. β_0 is the intercept term, β represents the path coefficients, and ε represents the error term.

RESULTS

Sample Demographic Characteristics

With the 300 distributed questionnaires, 276 valid responses were retained for analysis, yielding a high response rate and reflecting strong engagement among MSMEs in Malaysia's insurance sector. The demographic distribution shows that 44.9 percent of respondents were male and 55.1 percent female. The largest age group was 28–37 years (34.8 percent), followed by 38–47 years (30.1 percent), indicating that a substantial proportion of respondents are in economically active and digitally adaptive age cohorts.

In terms of educational background, the majority of respondents possessed undergraduate qualifications (55.8 percent), followed by diploma holders (24.6 percent). This educational profile may contribute to

managerial readiness in adopting digital technologies, which is relevant in the context of sustainable digital transformation.

Managers constituted 73.2 percent of respondents, while owners accounted for 26.8 percent. The predominance of managerial-level participants indicates that responses reflect operational decision-makers directly involved in digital implementation. Most firms had been operating between one and five years (46.0 percent), suggesting a relatively young enterprise demographic potentially more receptive to digital integration.

The majority of businesses reported annual sales of RM300,000 or less (76.8 percent), and most firms employed fewer than five staff (58.3 percent), confirming that the sample is largely composed of micro-enterprises. This profile is particularly significant when examining sustainability, as smaller enterprises typically operate under tighter resource constraints, making strategic digital capability development critical for long-term competitiveness. Table 1 illustrates the demographic characteristics of the 276 survey respondents.

Table 1: Frequency of demographic characteristics

Gender		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	124	44.9	44.9	44.9
	Female	152	55.1	55.1	100.0
	Total	276	100.0	100.0	
Age		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-27	72	26.1	26.1	26.1
	28-37	96	34.8	34.8	60.9
	38-47	83	30.1	30.1	90.9
	48 and above	25	9.1	9.1	100.0
	Total	276	100.0	100.0	
Education qualification		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Primary/ secondary school	6	2.2	2.2	2.2
	Diploma	68	24.6	24.6	26.8
	Undergraduate	154	55.8	55.8	82.6
	Postgraduate	48	17.4	17.4	100.0
	Total	276	100.0	100.0	
Position		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Owner	74	26.8	26.8	26.8
	Manager	202	73.2	73.2	100.0
	Total	276	100.0	100.0	
Years of operations		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<1	26	9.4	9.4	9.4
	1-5	127	46.0	46.0	55.4
	6-10	90	32.6	32.6	88.0
	>10	33	12.0	12.0	100.0
	Total	276	100.0	100.0	
Annual sales		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< RM 300, 000	57	20.7	20.7	20.7
	RM300,000 to < RM 3 million	212	76.8	76.8	97.5
	RM 3 million to ≤ RM 20 million	7	2.5	2.5	100.0
	Total	276	100.0	100.0	
Number of employees		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<5	161	58.3	58.3	58.3
	5 to < 30	112	40.6	40.6	98.9
	30 to ≤ 75	3	1.1	1.1	100.0
	Total	276	100.0	100.0	

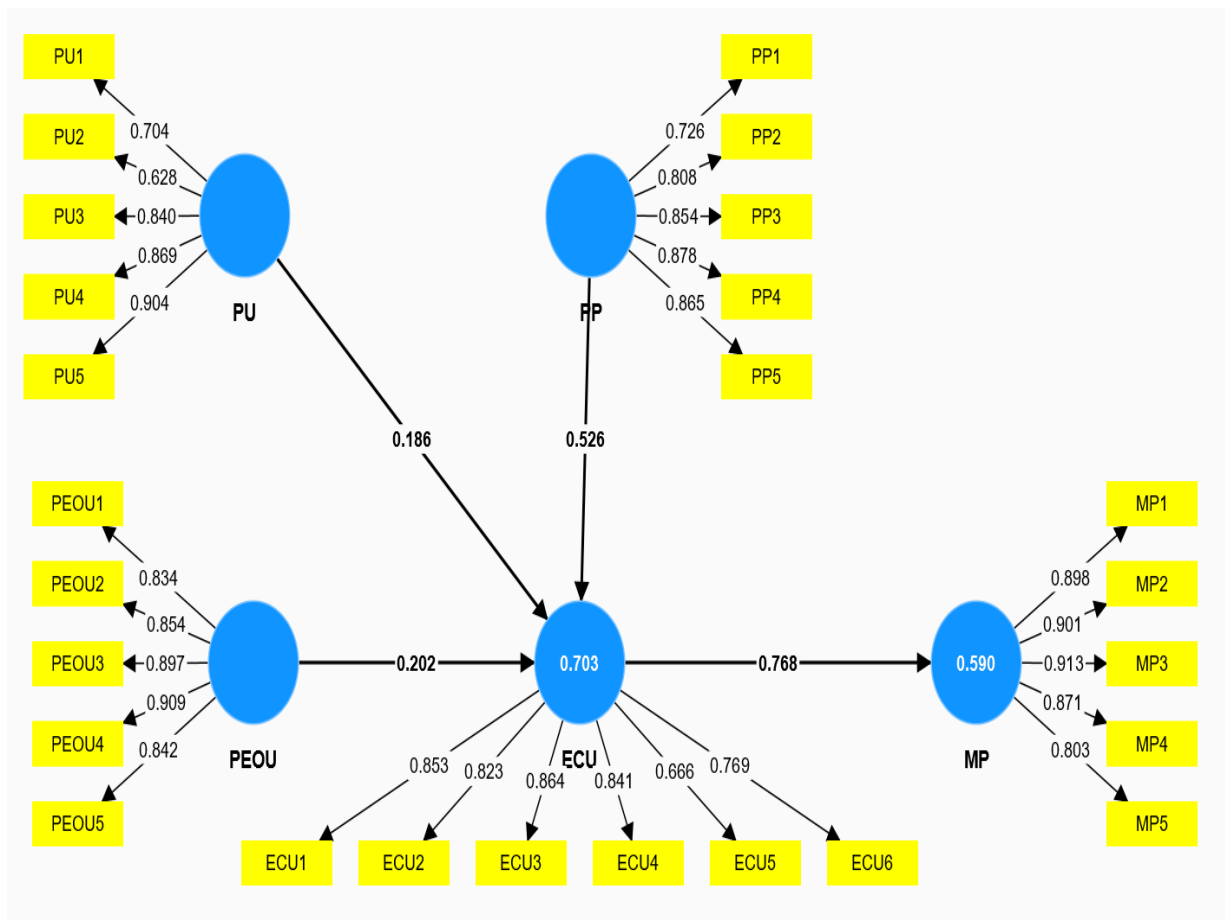


Figure 2: Measurement model of the PLS algorithm

Figure 2 presents the measurement model of the study, analyzed using the partial least squares structural equation modeling (PLS-SEM) algorithm. The diagram shows the relationships between five latent constructs and their respective observed indicators.

Measurement Model Assessment

Internal Consistency, Reliability, and Convergent Validity

Following Hair et al. (2014), the measurement model was assessed using indicator loadings, Cronbach's Alpha, composite reliability, and Average Variance Extracted (AVE). As shown in Table 2, all constructs exceeded recommended thresholds, with composite reliability above 0.70 and AVE above 0.50, indicating satisfactory convergent validity.

Cronbach's Alpha values for all constructs were above 0.70, demonstrating strong internal consistency reliability. These results confirm that the constructs measuring perceived usefulness, perceived ease of use, perceived privacy, e-commerce utilization, and MSME performance reliably capture their respective theoretical dimensions.

The robustness of the measurement model ensures that subsequent structural relationships can be interpreted with confidence, particularly when evaluating the role of digital capability in shaping sustainable enterprise performance.

Table 2: Indicator loadings, internal consistency reliability, and convergent validity

Dimension	Loading	Cronbach's Alpha	Composite Reliability	AVE
PU1	0.704	0.849	0.895	0.633
PU2	0.628			
PU3	0.840			
PU4	0.869			
PU5	0.904			
PEOU1	0.834	0.918	0.938	0.753
PEOU2	0.854			
PEOU3	0.897			
PEOU4	0.909			
PEOU5	0.842			
PP1	0.726	0.885	0.916	0.686
PP2	0.808			
PP3	0.854			
PP4	0.878			
PP5	0.865			
ECU1	0.853	0.891	0.917	0.649
ECU2	0.823			
ECU3	0.864			
ECU4	0.841			
ECU5	0.666			
ECU6	0.769			
MP1	0.898	0.926	0.944	0.771
MP2	0.901			
MP3	0.913			
MP4	0.871			
MP5	0.803			

Table 3: Discriminant validity matrix

Constructs	ECU	MP	PEOU	PP	PU
ECU	0.806				
MP	0.768	0.878			
PEOU	0.735	0.539	0.868		
PP	0.802	0.753	0.727	0.828	
PU	0.714	0.554	0.812	0.694	0.796

Discriminant Validity

Discriminant validity was assessed using the Fornell–Larcker criterion. As shown in Table 3, the square roots of the AVEs for each construct exceed their correlations with other latent variables, confirming adequate discriminant validity.

This indicates that each construct captures a distinct conceptual domain. In the context of sustainability-oriented interpretation, this distinction is important as it ensures that digital perceptions (PU, PEOU, PP), digital utilization (ECU), and organizational performance (MP) represent separate but interconnected dimensions of strategic digital transformation. Figure 3 depicts the structural model of direct relationships, analyzed via partial least squares structural equation modeling (PLS-SEM). The diagram shows the t-values for each hypothesized path and the R² values for the endogenous constructs.

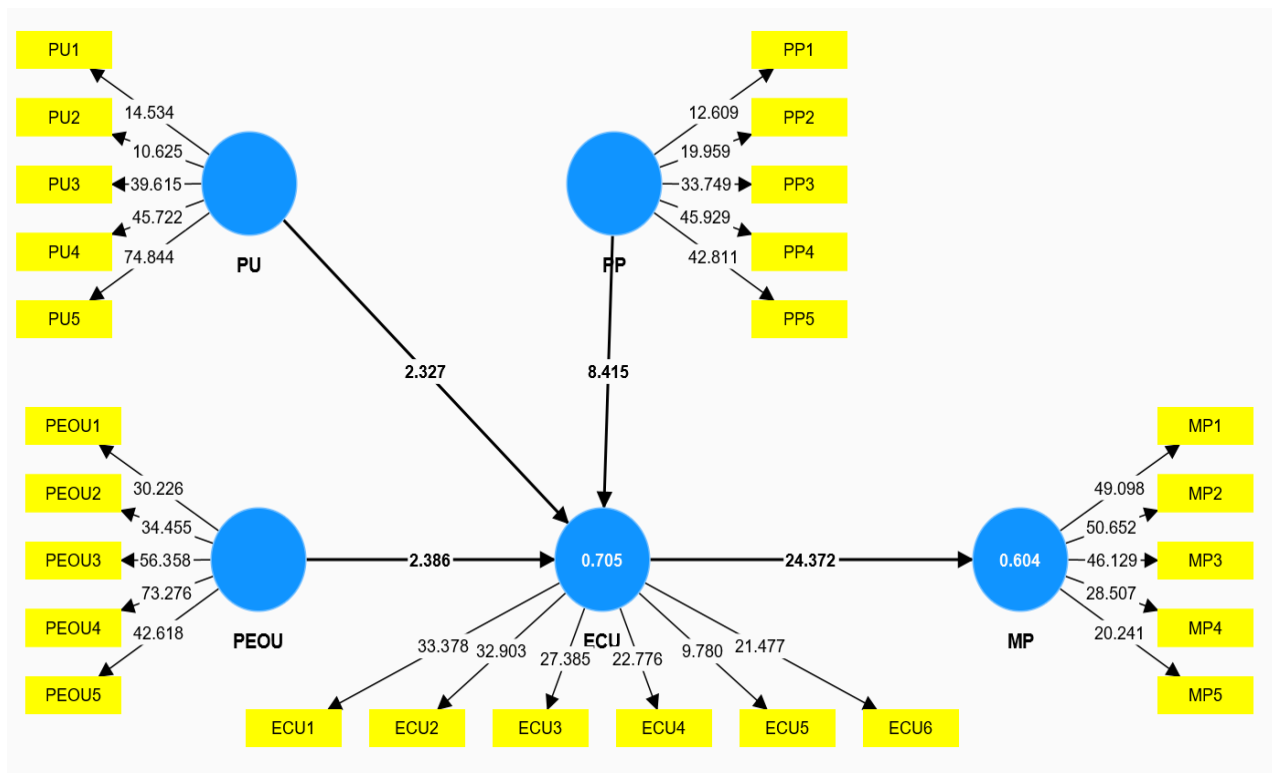


Figure 3: Structural model direct relationships

Table 4: Hypothesis testing (H1, H2, H3, H4)

Hypothesis	Path	Beta	t	p	Result
H1	PU → ECU	0.183	2.327	0.020	Supported
H2	PEOU → ECU	0.193	2.386	0.017	Supported
H3	PP → ECU	0.539	8.415	<0.001	Supported
H4	ECU → MP	0.777	24.372	<0.001	Supported

Table 5: Mediating effects (H5abc)

Hypothesis	Path	Beta	t	p	Result
H5a	PU → ECU → MP	0.142	2.288	0.023	Supported
H5b	PEOU → ECU → MP	0.150	2.421	0.016	Supported
H5c	PP → ECU → MP	0.419	7.497	<0.001	Supported

Structural Model and Sustainability Interpretation

The structural model results presented in Table 4 demonstrate that perceived usefulness, perceived ease of use, and perceived privacy significantly influence e-commerce utilization. Additionally, e-commerce utilization significantly impacts MSME performance. The mediation analysis in Table 5 confirms that ECU mediates the relationships between PU, PEOU, PP, and MP, with all indirect effects statistically significant.

The findings indicate that digital adoption among MSMEs should not be interpreted purely as a technological upgrade. Instead, it represents a broader organizational shift in how firms manage operations, customer relationships, and long-term competitiveness. The significant influence of perceived usefulness indicates that when managers recognize the strategic value of e-commerce, they are more likely to integrate digital systems into routine operations. Such integration enhances operational efficiency, responsiveness, and

market reach, elements that contribute to sustained organizational viability rather than short-term performance improvements alone.

Similarly, the significant effect of perceived ease of use highlights the importance of manageable digital infrastructures. Sustainable digital transformation depends not merely on adoption but on continued and embedded utilization. Systems perceived as easy to operate reduce resistance, support incremental learning, and enhance operational stability. These cumulative benefits strengthen organizational resilience, particularly within competitive service industries such as insurance.

Perceived privacy emerges as a critical determinant in sustaining digital engagement. In the insurance sector, where sensitive financial and personal information is handled, privacy assurance reinforces trust and reputational stability. Trust functions as a strategic intangible resource under the Resource-Based View framework. By safeguarding data and ensuring secure transactions, MSMEs enhance stakeholder confidence, supporting long-term relational sustainability.

The significant impact of e-commerce utilization on MSME performance confirms the strategic role of digital capability. While digital tools are widely accessible, the ability to integrate them effectively into organizational processes is a valuable, difficult-to-imitate resource. When embedded within operational routines, e-commerce enhances cost efficiency, customer engagement, and competitive positioning. These advantages support sustained performance outcomes and strategic continuity.

The mediation findings further reinforce this interpretation. Managerial perceptions alone do not directly generate sustainable performance. Rather, performance improvements materialize when these perceptions translate into consistent digital utilization. This demonstrates that sustainable competitive advantage arises from the operationalization of digital capability rather than from technological belief structures alone.

Overall, the structural results suggest that e-commerce adoption in Malaysia's MSME insurance sector serves as a pathway to sustainable competitiveness. Digital capability development enhances resilience, governance reliability, and adaptive capacity, core elements required for enduring business success in an increasingly digital marketplace.

CONCLUSION

This study examined how e-commerce utilization contributes to sustainable MSME performance in Malaysia's insurance industry. By integrating the Technology Acceptance Model and the Resource-Based View, the research demonstrates that managerial perceptions of usefulness, ease of use, and privacy significantly influence the extent to which MSMEs utilize digital platforms.

The findings indicate that sustained e-commerce utilization strengthens organizational performance and contributes to long-term enterprise sustainability. Rather than representing a short-term operational adjustment, digital adoption appears to function as a strategic capability that improves efficiency, enhances governance reliability, and strengthens competitive positioning. For MSMEs operating with limited resources, effectively integrating digital tools is an important pathway to maintaining resilience in dynamic market environments.

The mediation analysis also suggests that favorable perceptions of digital technologies do not automatically translate into improved organizational outcomes. Sustainable outcomes occur when these perceptions translate into consistent and embedded digital practices within organizational routines. In Malaysia's insurance sector, where confidentiality, trust, and service responsiveness are particularly important, secure and user-friendly e-commerce systems play a critical role in strengthening stakeholder confidence and organizational stability.

Overall, this study contributes to a deeper understanding of how digital capability development supports sustainable competitiveness among MSMEs in emerging economies. The findings highlight that long-term enterprise success increasingly depends on the strategic integration of digital technologies within organizational processes.

RECOMMENDATIONS AND FUTURE RESEARCH

Recommendations

Based on the findings, MSMEs within Malaysia's insurance sector should prioritize the strategic integration of e-commerce as a long-term digital capability rather than a short-term operational tool. Sustainable competitiveness requires continuous utilization of digital platforms that enhance efficiency, customer responsiveness, and market accessibility.

First, MSMEs should invest in user-centered platform design to ensure systems remain intuitive and manageable, thereby supporting sustained digital engagement. Second, privacy and data protection mechanisms must be strengthened to maintain stakeholder trust, particularly in data-sensitive service industries such as insurance. Third, digital capability development should be supported through structured training initiatives to enhance internal digital literacy and operational readiness. By aligning digital strategies with long-term business objectives, MSMEs can reinforce resilience and sustain competitive positioning in increasingly digital markets.

Future Research

Future research may adopt longitudinal designs to examine how sustained digital utilization influences enterprise resilience over time. Comparative studies across industries or emerging economies may further clarify contextual variations in digital capability development.

Additionally, future investigations could explore the integration of advanced digital technologies, such as artificial intelligence and data analytics, to determine their roles in strengthening sustainable enterprise performance.

IMPLICATIONS FOR MSMEs

The findings highlight important sustainability-oriented implications for MSMEs operating in digitally evolving markets. E-commerce utilization functions not merely as a transactional mechanism but as a strategic capability that enhances operational stability and competitive endurance.

By embedding digital systems into core business processes, MSMEs can improve cost efficiency, strengthen customer relationships, and increase adaptive capacity. Privacy assurance further reinforces reputational sustainability, which is especially critical in service-based industries where trust underpins long-term viability.

In resource-constrained enterprises, strategic digital capability development offers a practical pathway to sustain growth and resilience. MSMEs that approach digital transformation as an integrated and ongoing process are better positioned to navigate market volatility and maintain durable competitive advantages.

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TRANSPARENCY: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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