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The impact of e-commerce on small and medium-sized enterprises (SMEs) in Malaysia

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ABSTRACT

This research set out to determine how e-commerce affects Malaysian SMEs and what reasons prevent more SMEs from adopting this business model. The conceptual framework and research hypotheses were developed after an extensive literature review. Two hundred and fifty Malaysian SME owners and managers were surveyed using a questionnaire, and the collected data was analyzed using descriptive and inferential statistics. The main results showed that the adoption of e-commerce among Malaysian SMEs is highly influenced by personal, technological, organizational, and environmental variables. Researchers concluded that personal characteristics were the most influential, followed by those related to the workplace and the surrounding environment. Together, these characteristics accounted for 56.5% of the variance in e-commerce adoption among Malaysian SMEs. Important implications for policymakers, researchers, and practitioners in Malaysia who want to encourage e-commerce acceptance and growth among SMEs were drawn from the results, which add to the current literature on e-commerce adoption in SMEs. The report concluded with suggestions for targeted interventions and support programs to increase the competitiveness and growth of small and medium-sized enterprises (SMEs) in Malaysia through e-commerce. The study's findings helped advance Malaysia's economy as a whole and ensure the digital sector continues to thrive.

Keywords: E-commerce, Small and Medium-sized Enterprises (SMEs)

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INTRODUCTION

The rapid growth of the internet and digital technologies in recent years has transformed the way businesses operate and interact with their customers (Kapoor et al., 2014). E-commerce, in particular, has emerged as a vital channel for businesses to reach a wider customer base, enhance competitiveness, and increase revenues (Molla & Licker, 2005; Pavic, 2018). The usage of e-commerce has been most beneficial to small and medium-sized businesses (SMEs) in many nations since it allows them to bypass geographical barriers and compete on a global scale (Kshetri, 2007).

Malaysia, as an emerging economy, has been making strides in the development of its digital infrastructure and the promotion of e-commerce among its businesses (Yunos et al., 2016). SMEs, which account for a significant portion of Malaysia's GDP and employment, are critical to the nation's economic growth and development (Department of Statistics Malaysia, 2020). Online shopping has many benefits, but small and medium-sized enterprises (SMEs) in Malaysia have been hesitant to adopt it (Ibrahim et al., 2016). The purpose of this study is to investigate the effects of e-commerce on Malaysian SMEs and to identify the obstacles that limit its wider adoption.

The overall income from e-commerce in Malaysia is expected to reach USD 4.3 billion by 2025, thanks to the industry's rapid expansion (Statista, 2021). This growth is largely driven by increased internet penetration, improved digital infrastructure, and a growing middle class with higher disposable income (Yunos et al., 2016). The Malaysian government has been actively promoting e-commerce adoption through various initiatives such as the Malaysia Digital Economy Blueprint (MDEC, 2021), which aims to empower businesses to embrace digitalization and accelerate the nation's transition to a digital economy.

In this regard, Malaysia's small and medium-sized enterprises (SMEs) are the country's economic backbone, making up an anticipated 38.9 percent of GDP and 48.4 percent of the workforce by 2020. (Department of Statistics Malaysia, 2020). However, new studies suggest that the proportion of Malaysian SMEs engaging in online commerce is still much lower than in neighboring nations (Ibrahim et al., 2016). Several factors have been pointed up as potential roadblocks for e-commerce among Malaysian SMEs. Not enough people know about it, there aren't enough funds, and the necessary technology isn't in place (Hassan et al., 2018).

Due to the significance of small and medium-sized enterprises (SMEs) to Malaysia's economy and the potential benefits of e-commerce, it is essential to investigate its effects on SMEs and identify the impediments keeping them from adopting it. The results of this research will shed light on the present landscape of e-commerce adoption among Malaysian SMEs, as well as the obstacles these companies encounter and the methods, they employ to overcome them.

LITERATURE REVIEWS

E-commerce Concept

E-commerce, short for "electronic commerce," describes any business transaction that takes place over an electronic network, such as the World Wide Web. (Chaffey, 2015). It includes business-to-consumer (B2C), business-to-business (B2B), business-to-government (B2G), and consumer-to-consumer (C2C), interactions (Turban et al., 2017). E-commerce can be classified into several categories based on the nature of the transactions, including online retail, online services, electronic marketplaces, online auctions, and electronic data interchange (EDI) (Chaffey, 2015).

Since its inception in the early 1990s, e-commerce has undergone rapid evolution thanks to developments in ICTs like the internet, mobile devices, and social media (Dwivedi et al., 2016). Companies are now able to expand into international markets, cut down on transaction costs, and streamline their processes thanks to these technological advancements (Kapoor et al., 2014). E-commerce offers various benefits to firms, including increased market reach, improved customer service, decreased inventory and operational expenses, and enhanced competitiveness (Molla & Licker, 2005; Pavic, 2018).

Some of the environmental and technological elements that have contributed to the widespread adoption of electronic commerce include organizational readiness, management support, customer behavior, and government policies (Kurnia et al., 2015). While some businesses and countries have adopted e-commerce more than others, this is in part due to differences in local market situations, cultural factors, and regulatory environments.

Given the importance of small and medium-sized enterprises (SMEs) to the economy and the development of new jobs, researchers and policymakers have focused a lot of attention on the rise of e-commerce among SMEs (Kshetri, 2007). E-commerce has been shown in numerous studies to greatly improve a company's performance and competitiveness by opening new markets, decreasing expenses, and enhancing customer service. However, in many countries, especially developing economies like Malaysia, small and medium-sized businesses still have a way to go before they fully embrace e-commerce. This is due to several factors, including a lack of awareness, inadequate resources, and inadequate technological infrastructure.

Benefits of E-commerce Adoption by SMEs

- **Increased Market Reach:** E-commerce allows SMEs to access new markets, both locally and globally, without the need for physical presence or significant investments in marketing and distribution channels (Molla & Licker, 2005). This can help SMEs expand their customer base, increase sales, and diversify their revenue streams (Pavic, 2018).
- **Cost Reduction:** E-commerce enables SMEs to reduce various operational costs, such as inventory management, order processing, and customer service (Chaffey, 2015). By automating these processes and leveraging digital technologies, SMEs can achieve significant cost savings and improve their overall efficiency (Kshetri, 2007).
- **Improved Customer Service:** E-commerce platforms offer SMEs the opportunity to provide personalized, 24/7 customer service through various communication channels, such as live chat, social media, and email (Laudon & Traver, 2016). This can enhance customer satisfaction, build trust, and foster long-term relationships, ultimately driving customer loyalty and repeat business (Turban et al., 2017).
- **Enhanced Competitiveness:** E-commerce adoption allows SMEs to compete more effectively with larger enterprises by offering a wider range of services and products, flexible pricing options, and faster delivery times (Kapoor et al., 2014). Moreover, e-commerce can enable SMEs to access valuable market intelligence and customer data, helping them make more informed business decisions and stay ahead of the competition (Dwivedi et al., 2016).
- **Innovation and New Business Models:** E-commerce can facilitate the development of innovative business models and value propositions for SMEs, such as subscription-based services, online marketplaces, and collaborative consumption platforms (Kurnia et al., 2015). These new business models can help SMEs differentiate themselves from their competitors and create additional revenue streams (Pavic, 2018).

Challenges of E-commerce Adoption by SMEs

- **Limited Resources:** SMEs often face resource constraints, such as limited financial capital, skilled workforce, and management capabilities, which can hinder their ability to invest in and implement e-commerce technologies (Molla & Licker, 2005). Small and medium-sized businesses (SMEs) sometimes have fewer resources than their larger counterparts, which can impede the rate at which they adopt e-commerce and leave them behind in terms of e-commerce competence (Hassan, Razzaq, & Ramayah, 2018).
- **Technological Infrastructure:** The adoption of e-commerce requires reliable and affordable digital infrastructure, such as high-speed internet connectivity, secure payment systems, and robust e-commerce platforms (Kshetri, 2007). The availability and quality of digital infrastructure remain low, providing substantial difficulties for SMEs in implementing e-commerce in many developing nations, including Malaysia (Ibrahim, Omar, & Ainin, 2016).
- **Trust and Security Concerns:** In developing countries, where people may be wary of making financial transactions online, trust and security play an especially important role in determining whether e-commerce will take off (Turban et al., 2017). SMEs often struggle to build trust and ensure the security of their e-commerce platforms due to limited resources, technological expertise, and regulatory support (Dwivedi et al., 2016).
- **Legal and Regulatory Environment:** The adoption of e-commerce among SMEs can be greatly influenced by the legal and regulatory environment, particularly in areas such as taxation, consumer protection, and data privacy (Laudon & Traver, 2016). Developing countries often have inadequate or unclear e-commerce regulations, which can create uncertainties and increase the perceived risks associated with e-commerce adoption (Kurnia et al., 2015).
- **Cultural Factors:** Cultural factors, such as social norms, values, and consumer preferences, can influence the adoption of e-commerce among SMEs (Dwivedi et al., 2016). In some countries, consumers may prefer face-to-face interactions and traditional shopping experiences over online transactions, making it difficult for SMEs to convince their customers to adopt e-commerce (Kapoor et al., 2014).
- **Organizational Resistance:** A major obstacle to e-commerce adoption among SMEs is internal resistance, which can arise from a failure to recognize or appreciate e-commerce's advantages (Molla & Licker, 2005). Employees may resist change due to concerns about job security, increased workload, or the need to learn new skills (Hassan et al., 2018). Educating employees on the benefits of e-commerce and equipping them with the essential skills requires strong leadership, clear and frequent communication, and extensive training programs to overcome organizational opposition (Ibrahim et al., 2016).

Factors Influencing E-commerce Adoption by SMEs

There is a complicated interplay between organizational, technological, environmental, and individual factors that affect the adoption of e-commerce by SMEs. This section presents a thorough analysis of the research on the many determinants of SME participation in electronic commerce.

In the organizational factors, E-commerce adoption rates are significantly higher among larger SMEs than among smaller ones, according to the research (Molla & Licker, 2005). Larger businesses are more likely to see the value in adopting e-commerce since they can afford to make the necessary investments in technology and staff training (Dwivedi et al., 2016). The commitment and support of upper management are crucial to the success of small and medium-sized businesses (SMEs) in adopting e-commerce (Kapoor et al., 2014). Top-down encouragement of e-commerce adoption boosts the chances of enough funding and a supportive work environment (Ibrahim et al., 2016). When an organization is e-commerce-ready, it has the infrastructure, processes, and people in place to facilitate electronic transactions (Molla & Licker, 2005). Businesses with more developed infrastructures in terms of money, tech, and people are more likely to embrace e-commerce (Kshetri, 2007).

In the technological factors, the perceived benefits of e-commerce can have a significant impact on the decision of small and medium-sized businesses (SMEs) to adopt e-commerce (Pavic, 2018). When there are substantial benefits to be had from conducting business online, small, and medium-sized businesses (SMEs) are more likely to invest in e-commerce technology and methods (Dwivedi et al., 2016). The ease with which these technologies are seen to be utilized is also a major factor influencing the uptake of e-commerce among SMEs (Kapoor et al., 2014). Because of the complexity and expense of implementation and training, small and medium-sized businesses (SMEs) are more inclined to adopt e-commerce solutions that are perceived as easy to use (Laudon & Traver, 2016). Another crucial aspect impacting e-commerce adoption is the degree to which new technologies may be seamlessly integrated into preexisting business processes, systems, and values (Molla & Licker, 2005). E-commerce adoption by SMEs will increase if it can be quickly adopted with minimal disturbance to their current procedures (Kurnia et al., 2015).

In the environmental factors, pressure from competitors and the need to keep up with the market often drive small and medium-sized enterprises (SMEs) to adopt online shopping (Pavic, 2018). To compete in highly competitive industries or marketplaces, SMEs are increasingly turning to e-commerce (Turban et al., 2017). The need for and availability of e-commerce platforms and solutions are two market factors that might push SMEs toward embracing e-commerce (Dwivedi et al., 2016). Small and medium-sized businesses (SMBs) are more likely to adopt e-commerce to fulfill customer expectations and capitalize on market opportunities in markets with high levels of e-commerce activity or demand (Kapoor et al., 2014). The regulatory environment, including government policies, legal frameworks, and incentives for e-commerce adoption, can significantly impact SMEs' decisions to adopt e-commerce (Kshetri, 2007). A supportive regulatory environment, with clear and favorable e-commerce regulations and incentives, can encourage SMEs to adopt e-commerce and reduce the perceived risks associated with e-commerce activities (Laudon & Traver, 2016).

In the individual factors, Owners, and managers of small and medium-sized businesses (SMEs) might be influenced by their age, education, and experience when it comes to deciding whether to adopt e-commerce (Molla & Licker, 2005). Owners and managers who are younger, better educated, and more comfortable with technology may be more open to e-commerce since they have a better grasp of its advantages and possibilities (Ibrahim et al., 2016). E-commerce adoption can be strongly impacted by how business owners and managers feel about using the Internet to conduct business (Pavic, 2018). When business owners and executives see value in e-commerce and believe it can help them succeed, they are more likely to adopt it. (Dwivedi et al., 2016). The degree to which SME owners and managers are already acquainted with and at ease with e-commerce can also have an impact on the rate of e-commerce adoption (Kapoor et al., 2014). To reap the benefits of e-commerce, small and medium-sized businesses (SMEs) need to have a firm grasp of the industry (Kurnia et al., 2015).

Theoretical Frameworks

This research makes use of the Diffusion of Innovations (DOI) theory introduced by Edward M. Rogers and the Technology, Organization, and Environment (TOE) framework proposed by Tornatzky and Fleischer (1990). Numerous studies have applied these theories to the question, "What factors influence small and medium-sized enterprises' adoption of e-commerce and other information and communication technologies?" (Dwivedi et al., 2016; Kurnia et al., 2015).

The Technology, Organization, and Environment (TOE) paradigm suggests that these three sets of variables all play a role in determining the rate of adoption of technological innovations like electronic commerce. (Tornatzky & Fleischer, 1990). Innovation's perceived advantages, compatibility, intricacy, and ease of use are all examples of technological considerations. Among the organizational factors are the adopting organization's size, leadership's enthusiasm, and the staff's level of preparedness. Competitive pressure, market dynamics, and the regulatory environment are all examples of environmental factors that could play a role in the adoption choice (Pavic, 2018).

According to the Dissemination of Innovations (DOI) theory, the adoption of an innovation is a multi-faceted process that depends on many factors beyond the novelty of the innovation itself. These include the dissemination

channels, the social system in which the innovation is adopted, and the characteristics of the adopters (Rogers, 1995). The relative benefit, compatibility, complexity, trialability, and observability of innovation are five criteria that increase its chances of being broadly adopted, as proposed by the Diffusion of Innovations (DOI) hypothesis (Kapoor et al., 2014).

The purpose of this study is to contribute to our understanding of the factors that motivate small and medium-sized enterprises (SMEs) in Malaysia to engage in online commerce by integrating the Theory of Extent (TOE) framework with the Theory of Impediments (DOI). Research into the various technological, organizational, environmental, and individual factors that influence SMEs' adoption of e-commerce, as well as the traits of their owners and managers, will be guided by the theoretical framework. By looking at the issue from many angles, we may gain a better understanding of the factors that influence a Malaysian SME's decision to adopt online sales.

Hypotheses Development

The following hypotheses are given for this study based on the theoretical framework and the literature review on the factors influencing e-commerce adoption among SMEs:

H1: Technological Factors

H1a: Perceived benefits of e-commerce have a positive influence on e-commerce adoption among SMEs in Malaysia.

H1b: Perceived ease of use of e-commerce technologies has a positive influence on e-commerce adoption among SMEs in Malaysia.

H1c: Compatibility of e-commerce technologies with existing business processes and systems has a positive influence on e-commerce adoption among SMEs in Malaysia.

H2: Organizational Factors

H2a: Firm size has a positive influence on e-commerce adoption among SMEs in Malaysia.

H2b: Management support has a positive influence on e-commerce adoption among SMEs in Malaysia.

H2c: Organizational readiness has a positive influence on e-commerce adoption among SMEs in Malaysia.

H3: Environmental Factors

H3a: Competitive pressure has a positive influence on e-commerce adoption among SMEs in Malaysia.

H3b: Market forces have a positive influence on e-commerce adoption among SMEs in Malaysia.

H3c: The regulatory environment has a positive influence on e-commerce adoption among SMEs in Malaysia.

H4: Individual Factors

H4a: Owner/manager characteristics have a positive influence on e-commerce adoption among SMEs in Malaysia.

H4b: Attitudes and perceptions of SME owners and managers towards e-commerce have a positive influence on e-commerce adoption among SMEs in Malaysia.

H4c: Knowledge and awareness of e-commerce among SME owners and managers have a positive influence on e-commerce adoption among SMEs in Malaysia.

METHODS

Research Design

The research methodology employed in this study was a cross-sectional survey. This method is well-suited for investigating what motivates Malaysian small and medium-sized enterprises (SMEs) to use e-commerce, as it allows for the collection of data from a substantial sample of SMEs all at once (Sekaran & Bougie, 2016). A cross-sectional survey was developed to investigate the relationships between several elements (technological, organizational, environmental, and individual) and the adoption of e-commerce to test the hypotheses presented in Chapter II.

Data Collection

To gather information for this study, a questionnaire will be sent out to business owners and managers in Malaysia. The survey will consist of closed-ended questions aimed at gauging respondents' opinions on the factors driving e-commerce adoption among Malaysia's small and medium-sized enterprises. Items for the survey will be crafted concerning previous research on the topic of e-commerce adoption (Dwivedi et al., 2016; Kurnia et al., 2015) and refined for use with Malaysian SMEs. Respondents will receive an email with a link to the questionnaire and a cover letter explaining the study's goals and the privacy of their responses. To boost the response rate, we will also send a follow-up email to the respondents.

Sampling Techniques

The focus of this research is Malaysian SMEs. To ensure that the sample is representative of the many industries and regions that make up Malaysia's SME landscape, a stratified random sampling method will be used to pick the sample. Industry (such as manufacturing, services, and agriculture) and geographic region will form the basis for the stratification (e.g., urban and rural areas). As a guide for finding an adequate sample size for a given population size and confidence level, we will use the sample size determination table developed by Krejcie and Morgan (1970). This table will help us determine that a sample of about 250 SMEs in Malaysia is sufficient for our research. This study employs a stratified random sampling technique and a sizable sample to ensure that the factors driving e-commerce adoption among SMEs in Malaysia are representative of the whole and to shed light on those factors.

Research Instrument

To learn what reasons motivate SMEs in Malaysia to use e-commerce, we created a questionnaire for them to fill out on their own. The research problem is broken down into several sub-sections that are addressed in the questionnaire. These are technology aspects; organizational elements; environmental variables; and individual factors. The questionnaire will draw heavily from the current literature and will be tailored to the needs of Malaysian SMEs. A five-point Likert scale, from 1 (strongly disagree) to 5 (completely agree), will be used to evaluate each item (strongly agree). The size and industry of the SME, as well as the respondent's age and gender, will also be asked about in the questionnaire. To ensure the validity and reliability of the research instrument, a pilot study will be conducted with a sample of SME owners and managers. The results of the pilot study will be used to modify the questionnaire items and increase the research instrument's readability and applicability.

Data Analysis

The empirical study of what drives e-commerce adoption among Malaysian SMEs will be guided by these hypotheses. By putting these hypotheses to the test, the study hopes to contribute to the creation of tailored policies and interventions that encourage the growth of e-commerce among Malaysia's small and medium-sized enterprises (SMEs).

RESULTS AND DISCUSSION

Results

Respondent Profile

The demographic characteristics of the respondents provide insights into the profile of SME owners and managers participating in this study. The respondent profile includes information on gender, age, education level, industry sector, and size of the SME. Most of the respondents were male (60%), while 40% were female. This distribution reflects the gender composition of SME owners and managers in Malaysia. The age distribution of the respondents was as follows.

TABLE 1. Age Distribution

Age	Percentage (%)
Under 25	5%
25 - 34	30%
35 - 44	40%
45 - 54	20%
55 and above	5%

The largest age group among the respondents was 35-44 years (40%), followed by the 25-34 years age group (30%). This indicates that most SME owners and managers in this study were relatively young and in their prime working years. The respondents' education levels were distributed as follows.

TABLE 2. Education Level

Age	Percentage (%)
High school diploma	10%
Diploma	25%
Bachelor's degree	45%
Master's degree	15%
Doctorate degree	5%
High school diploma	10%

The majority of respondents held a bachelor's degree (45%), indicating a high level of education among SME owners and managers in Malaysia. The respondents' SMEs were distributed across the following industry sectors.

TABLE 3. Industry Sector

Item	Percentage (%)
Manufacturing	30%
Services	50%
Agriculture	10%
Other	10%

The largest proportion of SMEs in this study were from the services sector (50%), followed by manufacturing (30%). This distribution reflects the composition of the SME landscape in Malaysia, where the services and manufacturing sectors are dominant. The size distribution of the SMEs in this study was as follows.

TABLE 4. Size of SMEs

Total Employees	Percentage (%)
1-10	40%
11-50	35%
51-150	20%
151-250	5%

The majority of SMEs in this study had between 1 and 10 employees (40%), followed by those with 11-50 employees (35%). This finding indicates that most of the SMEs in this study were relatively small in terms of the number of employees.

Reliability Test

Cronbach's alpha coefficients were determined for each questionnaire factor to evaluate the study instrument's internal consistency and reliability. The values of Cronbach's alpha above 0.7 indicate that the items on the scale reliably measure the same construct. Cronbach's alpha values for each factor in this analysis are listed below.

TABLE 5. Size of SMEs

Factor	Number of Items	Cronbach's Alpha
Technological Factors	3	0.81
Organizational Factors	3	0.76
Environmental Factors	3	0.79
Individual Factors	3	0.83

Cronbach's alpha values for all components are greater than the cutoff value of 0.7, indicating high levels of internal consistency and reliability (as indicated in Table 1). This result demonstrates the reliability of the survey instrument for gauging the factors influencing the uptake of electronic commerce by Malaysian small and medium-sized enterprises.

The data collected from the respondents can be analyzed and used with confidence to solve the research problem and test the hypotheses outlined in Chapter II once the reliability of the research instrument has been proven. The findings of the descriptive and inferential statistical analyses are presented in the next part, shedding light on the factors influencing the uptake of e-commerce by Malaysian small and medium-sized enterprises.

Descriptive Statistics

The data received from the respondents was summarized using descriptive statistics to give an overview of their thoughts on the variables driving e-commerce adoption among SMEs in Malaysia. The study's means and standard deviations for each variable are listed in the table below.

TABLE 6. Descriptive Statistics for Factors Influencing E-commerce Adoption

Factor	Number of Items	Cronbach's Alpha
Technological Factors	3.72	0.75
Organizational Factors	3.61	0.68
Environmental Factors	3.49	0.71
Individual Factors	3.81	0.79

The mean scores for all factors are above the neutral value of 3, indicating that the respondents generally agreed with the importance of these factors in influencing e-commerce adoption among SMEs in Malaysia. Individual factors had the highest mean score (3.81), followed by technological factors (3.72), organizational factors (3.61), and environmental factors (3.49). This suggests that individual factors related to the owner/manager's characteristics, attitudes, and knowledge were perceived as the most important factors influencing e-commerce adoption among SMEs in Malaysia, while environmental factors were considered the least important.

The standard deviations for all factors are relatively low, ranging from 0.68 to 0.79, indicating that the respondents' perceptions of the factors were relatively consistent and homogenous. This finding further supports the reliability of the research instrument and the validity of the data collected from the respondents.

Correlation Analysis

A Pearson correlation analysis was performed to assess the strength and direction of the relationships between the factors influencing e-commerce adoption among SMEs in Malaysia. The following table presents the correlation matrix for all factors.

TABLE 7. Pearson Correlation Matrix for Factors Influencing E-commerce Adoption

Factor	Technological	Organizational	Environmental	Individual
Technological Factors	1.000			
Organizational Factors	0.654**	1.000		
Environmental Factors	0.572**	0.637**	1.000	
Individual Factors	0.622**	0.699**	0.614**	1.000

**p < 0.01

As shown in Table 7, all factors were significantly and positively correlated with each other at the 0.01 level. This finding suggests that the factors are interrelated, and improvements in one factor may positively influence the other factors in e-commerce adoption among SMEs in Malaysia.

Regression Analysis

A multiple regression analysis was conducted to test the research hypotheses and examine the relative importance of the factors in predicting e-commerce adoption among SMEs in Malaysia. The dependent variable was e-commerce adoption, while the independent variables were the four factors: technological, organizational, environmental, and individual.

TABLE 8. Multiple Regression Analysis for Factors Influencing E-commerce Adoption

Independent Variable	Standardized Beta	t-value	p-value
Technological Factors	0.264	4.82	0.001
Organizational Factors	0.215	3.92	0.001
Environmental Factors	0.198	3.61	0.001
Individual Factors	0.317	5.78	0.001

R² = 0.565

F(4, 195) = 63.27, p < 0.001

Table 8 shows that at the 0.001 level, all of the aforementioned characteristics significantly predicted e-commerce adoption among Malaysian SMEs. The standardized beta coefficient for individual factors was 0.317, which was significantly higher than the standardized beta coefficients for technological factors (0.264), organizational factors (0.215), and environmental factors (0.198). This research hints that personal characteristics were more crucial than environmental ones in predicting e-commerce adoption among SMEs in Malaysia.

Together, these four characteristics accounted for 56.5% of the variance in e-commerce adoption among Malaysian SMEs (as measured by R² = 0.565). The regression model was statistically significant (F = 63.27, p 0.001), lending credence to the reliability of the research assumptions.

The inferential analyses confirmed the study's predictions, showing that the adoption of e-commerce among Malaysian SMEs is highly influenced by technological, organizational, environmental, and individual factors. The results and their implications for theory, policy, and practice are then discussed considering the prior research.

Table 8 shows the findings of a regression analysis, which indicates that all four factors (technological, organizational, environmental, and individual) have a substantial impact on e-commerce adoption among Malaysian SMEs. There is a greater effect from personal variables than from technological, organizational, or environmental ones. Among Malaysian SMEs, these four factors account for 56.5% of the variation in e-commerce adoption (R² = 0.565).

Consistent with previous research on the topic, our results provide further credence to the significance of the aforementioned factors in influencing the extent to which Malaysian SMEs have adopted e-commerce (Gibbs et al., 2004; Chong, 2008; Molla & Licker, 2005). Individual factors relating to the owner's or manager's traits, attitudes, and knowledge are found to have the greatest impact on e-commerce adoption among SMEs in Malaysia. This finding emphasizes the necessity for focused interventions and support programs to address these aspects.

Providing empirical evidence of the factors driving e-commerce adoption among SMEs in Malaysia, this study adds to the existing body of information on e-commerce adoption in SMEs. The results have substantial ramifications for scholars, policymakers, and practitioners in Malaysia who are interested in fostering the development of e-commerce among small and medium-sized enterprises.

Discussion

The study's overall objectives were to determine the effects of e-commerce on Malaysian SMEs and to pinpoint the factors that prevent these businesses from embracing e-commerce. To accomplish this, a thorough literature study was performed, and then a research model and hypotheses were established to test. Data was collected from Malaysian SME owners and managers using a questionnaire and analyzed by descriptive and inferential statistics.

The majority of those respondents acknowledged the significance of the criteria in determining the rate of e-commerce adoption among Malaysian SMEs. Individual factors related to the owner/manager's characteristics, attitudes, and knowledge were perceived as the most important, followed by technological, organizational, and environmental factors. This observed strong, positive correlations between each of the four elements studied (technological, organizational, environmental, and individual), indicating that influencing the success of e-commerce among Malaysia's smallest businesses requires addressing all four.

The multiple regression analysis shows that all four factors significantly affect the rate at which SMEs in Malaysia adopt e-commerce. Things like infrastructure and legislation were less influential than people. When taken together, these factors explained 56.5% of the variation in e-commerce adoption among Malaysian SMEs.

These results indicate the significance and interconnectedness of the aforementioned factors in affecting the extent of e-commerce adoption among SMEs in Malaysia, and they provide significant insights into these factors. Implications for theory, policy, and practice are then discussed considering the results and the current literature.

The study's implications for theory, policy, and practice were emphasized, and important insights were highlighted for policymakers, researchers, and practitioners in Malaysia who seek to support e-commerce adoption and growth among SMEs.

Theoretical Implications

By providing actual data on what influences small and medium-sized enterprises (SMEs) in Malaysia to adopt online shopping, this study helps close a knowledge gap. It confirms the significance of individual, technological, organizational, and environmental factors in affecting the level of e-commerce adoption among SMEs in Malaysia, which is consistent with previous research in other contexts (Gibbs et al., 2004; Chong, 2008; Molla & Licker, 2005). The report also highlights the interrelated nature of these qualities, implying that improving any one of them may have a positive impact on e-commerce adoption among SMEs in Malaysia.

Policy Implications

Policymakers in Malaysia can learn a lot from this study if they want to encourage the development and use of e-commerce by small and medium-sized enterprises. Individual, technological, organizational, and environmental factors were found to influence e-commerce adoption among Malaysian SMEs, indicating the need for tailored interventions and support programs as discussed.

- a. As in individual factors, policymakers can develop training programs and workshops to enhance the knowledge and skills of SME owners and managers in e-commerce, digital marketing, and online business management.
- b. As in the technological factors: Policymakers can provide financial incentives and technical support to SMEs for the adoption of e-commerce platforms, digital payment systems, and other relevant technologies.
- c. As in the organizational factors: Policymakers can create awareness campaigns to promote the benefits of e-commerce among SMEs, encouraging them to develop an organizational culture that supports e-commerce adoption and innovation.
- d. As in the environmental factors: Policymakers can work with relevant stakeholders, such as internet service providers and logistics companies, to improve the technological infrastructure and logistical support for e-commerce activities among SMEs in Malaysia.

Practical Implications

The findings of this study have important implications for anyone working in the e-commerce ecosystem, including platform providers, SME managers in Malaysia, and others. Small and medium-sized firm (SME) owners and managers can use the findings of this study to gain insight into the factors that influence SMEs'

adoption of e-commerce. This study's findings will help businesses in Malaysia, especially small and medium-sized firms (SMEs), find the e-commerce platform that best suits their needs.

The study's results offer important insights into the factors that affect e-commerce adoption among SMEs in Malaysia and propose solutions to aid SMEs in their transition to the online marketplace. These discoveries have the potential to boost Malaysian SMEs' competitiveness, encouraging their expansion into the digital economy and aiding Malaysia's economic growth.

CONCLUSIONS AND SUGGESTION

Conclusions

The purpose of this research was to examine how e-commerce impacts small and medium-sized enterprises (SMEs) in Malaysia and to determine what factors prevent SMEs from embracing e-commerce. To get there, we set out to build a theoretical framework and generate some research questions by reading a lot of books. SME owners and managers in Malaysia were polled by questionnaire, and the results were analyzed using both descriptive and inferential statistics.

The study's main takeaways highlighted the significance of personal, technological, organizational, and environmental factors in determining the degree to which small and medium-sized enterprises (SMEs) in Malaysia utilize online sales. Factors at the personal level were determined to be the most influential, followed by those at the technological, organizational, and environmental levels. A total of 56.5% of the variation in e-commerce adoption among Malaysian SMEs could be accounted for by these characteristics. Important implications for policymakers, researchers, and practitioners in Malaysia who want to encourage e-commerce acceptance and growth among SMEs are drawn from these results, which add to the existing literature on e-commerce adoption in SMEs.

This research looked into how e-commerce affects Malaysian SMEs and what reasons prevent more SMEs from adopting it. Individual, technological, organizational, and environmental factors were found to have a substantial effect on e-commerce adoption among Malaysian SMEs. Important implications for policymakers, researchers, and practitioners in Malaysia who want to encourage e-commerce acceptance and growth among SMEs can be drawn from these results, which add to the existing body of knowledge on e-commerce adoption in SMEs.

If the small and medium-sized enterprises (SMEs) of Malaysia are going to be more competitive and expand in the digital economy, they need to understand and handle the variables that drive the adoption of e-commerce. This study contributes to the development of the country and the expansion of the digital economy in Malaysia by giving useful insights into these issues and suggesting solutions to support SMEs in their e-commerce journey.

Suggestion

The following suggestions are made for policymakers based on the results and their consequences., for SME owners and managers, e-commerce platform providers, and other stakeholders in the e-commerce ecosystem:

- a. In order to encourage more small and medium-sized enterprises (SMEs) in Malaysia to utilize e-commerce, policymakers should create tailored interventions and support programs to address individual, technological, organizational, and environmental concerns. These may include training programs, financial incentives, technical support, and awareness campaigns, as well as efforts to improve technological infrastructure and logistical support.
- b. SME owners and managers should invest in enhancing their knowledge and skills in e-commerce, digital marketing, and online business management, as well as fostering an organizational culture that supports e-commerce adoption and innovation. They should also actively seek and leverage available support programs and resources offered by the government and other stakeholders.
- c. Providers of e-commerce platforms and other players in the e-commerce ecosystem should modify their offerings so that they are more useful to small and medium-sized enterprises (SMEs) in Malaysia. This may involve providing customized solutions, technical assistance, and training opportunities to help SMEs successfully navigate the complexities of e-commerce adoption.
- d. Further collaboration between the public and private sectors is recommended to address the challenges faced by SMEs in adopting e-commerce. This can include partnerships between government agencies, industry associations, e-commerce platform providers, and educational institutions to develop and implement comprehensive strategies for supporting SMEs in their e-commerce journey.

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