

# **E-Business Privacy and Security Concerns among Women-Owned Small and Medium Enterprises (WOSMES) in Malaysia – A Conceptual Paper**

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## **Abstract**

**Purpose:** This study aims to identify the privacy and security factors of e-business adoption in relation to the performance of women-owned small and medium enterprises (WOSMEs) in Malaysia. The resource-based view (RBV) is used to understand WOSME's capabilities to achieve a competitive advantage via e-business. In addition, the introduction of the mediating role of e-business adoption and the moderating role of government support in this paper enhances the understanding of WOSME's performance.

**Design/methodology/approach:** This conceptual paper recommends a cross-sectional quantitative research methodology using random sampling of the WOSME population in Malaysia.

**Findings:** The findings may contribute to WOSMEs by providing them e-business adoption strategies that address their privacy and security concerns to improve their business performance and growth in Malaysia. The conceptual framework may be used as a foundation for future empirical research and offers practitioners insights into the benefits of e-business adoption for WOSME businesses.

**Research limitations/implications:** This research focuses only on the service sector of WOSMEs in Malaysia. As a result, it is unable to represent other countries that vary in the definition, culture, and policies of their SMEs.

**Practical implications:** Based on a critical review of the literature and supporting theories, the present paper increases the understanding of how perceived privacy and perceived security influence e-business adoption and business performance among WOSMEs in Malaysia.

**Originality/value:** This paper's conceptual framework may be a reference and guidance for policymakers and government agencies that seek to develop a more comprehensive ecosystem for better WOSME performance in Malaysia.

**Keywords:** E-business, perceived security, perceived privacy, small and medium enterprises, Resource-Based View (RBV), performance

## Introduction

The adaptation of business to the digital economy is imperative for organizations to grow and sustain in this challenging environment. Digital business is now suitable for all sectors, sizes, and organizations. Furthermore, internet connection has become a primary necessity for businesses to transform from traditional to digital platforms. In particular, for Malaysia to become a developed country by 2030, women-owned small and medium enterprises (WOSMEs) need to equip themselves with digital knowledge for digital transformation. This is because e-business adoption provides various benefits such as control of cost and quality (Chandak & Kumar, 2020), improved process innovation (Abbad et al., 2021), enhanced competitive advantage (Shehata & Montash, 2020) and increased performance (Migdadi et al., 2016; Popa et al., 2018; Wu et al., 2003). Therefore, it is inevitable that some part of business production and/or process must eventually be affected by digital transformation (Soto-Acosta, 2020).

According to British tech website Comparitech's survey in 2019, Malaysia ranked 42 out of 47 countries in terms of data protection (Tang, 2019). Malaysia has also been involved in a few high-profile cases of data breaches, including the theft of 46 million mobile subscribers' data in 2017 (Tang, 2019), the sale of 30 million Malindo Air passengers' data on the dark web in 2019 (Tang, 2019), the leak of four million individuals' myIDENTITY application data in 2021 (Yeoh, 2021), and personal data leaks of 22.5 million in 2022 (Nik Anis, 2022). Furthermore, the overall amount of ransomware discovered in the first quarter of this year has exceeded that of 2021 (Williams, 2022). Due to these incidents, WOSMEs are reluctant to adopt e-business on the basis of privacy and security concerns. The enhancement and improvement of protection and privacy laws are therefore vital in Malaysia, especially given the rapid rate of technological advancement.

Digital transformation has increased businesses' dependency on e-business adoption across all industries, particularly since the worldwide coronavirus outbreak in 2019. However, according to the Malaysia Digital Economy Corporation (MDEC), 84 per cent of SMEs are vulnerable to cyber-attacks, with 76 per cent having experienced several attacks (MDEC, 2022). In addition, The Mastercard Index of Women Entrepreneurs 2020 reported that more than 50 per cent of WOSMEs will not survive the coronavirus pandemic (Mastercard, 2020). In fact, most WOSMEs are categorized under the hardest-hit service sectors. Digital transformation has since accelerated to the point that many businesses have moved online to survive without understanding the fundamentals of e-business. Hence, WOSMEs are more vulnerable to cyberattacks due to a lack of digital literacy (United States Agency for International Development, USAID, 2018). In line with this, Metawa et al. (2021) opined that cybersecurity is one of the most significant challenges for digital transformation in SMEs.

According to the Department of Statistics Malaysia (DOSM), females represent 48.62 per cent of the Malaysian population (DOSM, 2021). In 2021, WOSMEs in Malaysia made a significant contribution of approximately RM70 billion to the country's GDP, with a total of over 180,000 such enterprises (Noraini, 2022). Hence, WOSMEs contribute significantly to economic development in Malaysia. The Malaysia Plan has served as the guidance and direction for SMEs' strategy planning and development for the past six decades. Indeed, the 12<sup>th</sup> Malaysia Plan (12MP) focuses on gender empowerment in the economic sector via increased access to funding and training programs, specifically for technology adoption among women entrepreneurs. The 12MP is also inclusive of strategies on the Shared Prosperity Vision (SPV) 2030, the Fourth Industrial Master Plan (IMP4), the New SME Master Plan (2021-2030), and the Malaysia Digital Economy Blueprint.

The characteristics of WOSMEs, which are relatively small with limited resources, have made them overlook the importance of cybersecurity, such as privacy and security in e-business

adoption. According to Michota (2013), women have been labelled as 'technophobic' due to their fear of using technology. Moreover, WOSMEs are at a higher risk of cyberattacks due to weak security countermeasures (Oi, 2022). WOSMEs also often neglect cybersecurity elements in digital transformation due to several factors such as a lack of cybersecurity knowledge, limitations in resources, and illiteracy in the risk associated with e-business (Moorthy, 2022).

In recent years, the number of WOSMEs has increased tremendously (Noor et al., 2022). However, WOSMEs appear to be underperforming compared to male-owned SMEs (Crane, 2021; Fischer et al., 1993; Ghouse et al., 2021; Watson, 2006). The emergence of e-business adoption thus provides many opportunities for female-owned SMEs. Unfortunately, the understanding of the implications of e-business for WOSME performance is limited (Costin et al., 2021). Therefore, this paper strives to identify the privacy and security factors that drive the e-business adoption and performance of WOSMEs in Malaysia.

The previous literature reveals that many researchers have investigated e-business adoption. However, existing models do not provide sufficient insight into the successful e-business adoption of WOSMEs, as this group has frequently been overlooked as a disproportionate sample size in e-business adoption research (Ndubisi & Kahraman, 2005). In addition, WOSMEs are unsure about how to evaluate the effectiveness of e-business on their organizational performance (Alsufyani & Gill, 2022). This paper thus aims to address the performance and e-business adoption of WOSMEs in Malaysia. Four research questions have been developed to address the research gap on WOSMEs in Malaysia, as follows:

- RQ1. How do perceived privacy and perceived security factors affect e-business adoption among WOSMEs?
- RQ2. What is the relationship between e-business adoption and WOSME performance?
- RQ3. Does e-business adoption mediate the effects of perceived privacy and perceived security on WOSME performance?
- RQ4. To what extent does government support strengthen the relationship between e-business adoption and WOSME performance?

Specifically, this conceptual study focuses on perceived privacy and perceived security as factors affecting e-business adoption among WOSMEs in Malaysia. The absence of WOSMEs in the e-business landscape due to digital threats must be overcome. Furthermore, the Malaysian government aims to provide a digitally inclusive environment for everyone with the improvement of digital infrastructure through the Malaysia Digital Economy Blueprint. Hence, e-business adoption is necessary for WOSMEs to drive business growth and competitiveness in the digital economy.

## **Literature Review**

### ***Resource-Based View (RBV) Theory***

The present study incorporates the Resource-Based View (RBV) to explain the effects of perceived privacy and perceived security on WOSMEs' e-business adoption and performance in Malaysia. The RBV enables the understanding of WOSMEs' e-business adoption as a capability to achieve performance improvement. According to Hanifah et al. (2021), the RBV is known for clarifying how firms utilize limited resources to gain competitive advantages and organizational performance. The characteristic of WOSMEs as relatively small firms with limited resources makes it crucial to explore this sample so that future WOSME achievers can be created. In addition, firm resources are a critical contributor to business growth and profitability (Barney, 1991; Eller et al., 2020; Popa et al., 2018). The RBV theory is relevant to this research context because it suggests that the adoption of e-business can act as a resource

to enhance the performance of WOSMEs in terms of productivity, efficiency, and innovation (Yeong et al., 2022). In this regard, e-business has been recognized as a business resource by serving as a part of business strategy that enhances organizational performance (Li et al., 2020; Yang et al., 2022).

### ***WOSME Performance***

WOSME performance refers to a firm's productivity following the successful incorporation of e-business into the organization. E-business adoption is capable of supporting and enhancing WOSMEs via coordination and facilitation. It also improves cost, efficiency, and resource utilization, which may translate into process improvement and innovation (Abbad et al., 2021). According to Alsheyadi (2020), e-businesses can successfully manage communication through high-quality interactions across diverse departments with less effort, time, and expenditure. As such, previous studies concur that firm performance is linked to e-business (Abbad et al., 2021; Alsheyadi, 2020; Chandak & Kumar, 2020; Eller et al., 2020). In this paper, WOSMEs' performance in the service sector encompasses efficiency, sales performance, customer satisfaction, and relationship development (Migdadi et al., 2016). The performance of WOSMEs is important as a key contribution to Malaysia's aspiration to become a high-income country by 2025 (Yeong et al., 2022). Nonetheless, Sajjad et al. (2020) pointed out the lack of research on WOSME performance in developing countries

### ***Perceived privacy***

A firm's privacy includes its personal and confidential information, such as business contracts, employment agreements, customer details, and individual property or transaction details (Michota, 2013; Rath & Kumar, 2021). Perceived privacy dictates how confidential data is to be maintained and restricted from disclosure to the public (Rath & Kumar, 2021). WOSMEs need to understand the risk associated with e-business adoption in terms of privacy and prevention. According to Michota (2013), the revelation of personal information sacrifices privacy at the altar of profit, preventing women from dynamically entering e-business adoption. Hence, privacy has become a challenge for WOSMEs to adopt e-business (Alsheyadi, 2020; Narwane et al., 2020). However, Ilin et al. (2017) explained that when privacy and e-business are involved, non-adopters experience higher anxiety and risk than adopter firms.

### ***Perceived security***

Perceived security is a risk for e-business, which is viewed as an unsecured internet platform for exchanging data and conducting transactions (Zhu et al., 2006). Any security breaches on this platform can result in organizational disasters (Rath & Kumar, 2021). Due to cyberattacks that can result in irreversible damage, such as the leakage of confidential information and commercial trade secrets, perceived security has become one of the most debated issues surrounding the adoption of e-business (Ghouchani et al., 2020). According to Thottoli & Ahmed (2021), organizations are concerned with perceived security due to its impact associated with business reputation. However, Alsheyadi (2020) opines that e-business adoption can increase security in planning and control among users. Concurrently, security is regarded as one of the key attributes for ensuring the effective implementation of e-business (Mkansi, 2021). Qi & Che Azmi (2021) further stated that an organization would be more attracted to implementing e-business if it believes that the process will provide better security and increase protection.

### ***E-business Adoption***

E-business adoption is defined as the usage of the internet to facilitate business processes in an organization (Shehata & Montash, 2020; Wang & Cheung, 2004). Based on previous studies, e-business adoption can enhance the effectiveness and efficiency of an organization (Alsheyadi, 2020; Migdadi et al., 2016). Furthermore, with the implementation of e-business, organizations are able to acquire access to new customers and geographically extend their markets (Ahmad et al., 2015). Soto-Acosta (2020) pointed out that e-business creates value for both back-end and front-end activities. E-business adoption also allows authorized personnel to access information anywhere (Thottoli & Ahmed, 2021) while ensuring that data stored in off-site locations is safe from natural disasters like floods, landslides, and mudslides due to heavy rain. However, Michota (2013) opines that privacy and security have become concerns for WOSMEs to adopt e-business. Ultimately, the success of e-business adoption relies on the factors of perceived privacy and perceived security, among other factors.

### ***Government support***

The government plays a vital role in ensuring the success of e-business adoption among WOSMEs. According to Rupeika-Apoga et al. (2022), successful e-business adoption requires government support in the form of tax rebates, skilled labor, financial assistance, and security policies. For example, the Malaysian government launched Matrix Cybersecurity SMEs (Matrix) to facilitate the successful deployment of e-businesses and address issues that arise during e-business adoption (MDEC, 2022). Additionally, the introduction of the Cybersecurity Strategy 2020-2024, the Malaysia Digital Blueprint, the National 4IR Policy, Wawasan Kemakmuran Bersama 2030 (WKB 2030), and Budget 2022 emphasizes the importance of digital transformation to the government. However, Hanifah et al. (2019) underscored that Malaysian SMEs' contribution to Gross Domestic Product (GDP) is relatively low compared to other Asia Pacific countries such as Indonesia, Singapore, and Japan. Past research has also failed to consistently demonstrate that government support enhances SME performance (Crane, 2021; Zeb & Ihsan, 2020). Nonetheless, according to Digital News Asia (2021), a partnership with a local e-commerce enabler has shown that government support may increase local brand sales. Hence, government support has been introduced as a moderator that strengthens WOSME performance in this paper's framework.

### ***Research Hypotheses***

Six hypotheses have been established to examine the relationships among all the variables, as depicted in Figure 1. First, this study examines the influences of perceived privacy and perceived security on e-business adoption. This is followed by the relationship between e-business adoption and WOSME performance. Finally, to fully understand WOSME performance in Malaysia, e-business adoption is introduced as a mediator while government support is posited as a moderator.

### ***Perceived privacy and e-business adoption***

The increased use of computers, networks, and mobile devices in communications, business process automation, and other sectors has made privacy a fundamental consideration for organizations to adopt e-business (Rath & Kumar, 2021). However, there is a lack of legal protection for personal data in Malaysia. The Personal Data Protection Act 2010 has been the sole regulation since 2013 to safeguard commercial data transactions (PDP, 2022). Undeniably, privacy serves as a critical element for WOSMEs to adopt e-business adoption; hence, the hypothesis below is put forth:

*H1: Perceived privacy has a positive impact on e-business adoption.*



***Perceived security and e-business adoption***

Security is highly important for WOSMEs because cyberattacks are often launched to gain illegal access to the system (Metawa et al., 2021). Cyberattacks include destroying files and confidential data, such as when a firm's financial information is stolen and tainted (Thottoli & Ahmed, 2021). Several studies have examined perceived security in the contexts of e-business and SMEs (Abed, 2020; Zhu et al., 2006). For example, the findings of Ali et al. (2020) indicate that perceived security significantly influences adoption. This is reinforced by Zhu et al. (2006), who discovered that perceived security is a concern for developing nations when it comes to e-business adoption. Likewise, according to Priyadarshinee et al. (2017), perceived security is a barrier to adopting e-business using third-party solutions. Hence, it is hypothesized that:

*H2: Perceived security has a positive impact on e-business adoption.*

***E-business adoption and WOSME performance***

As discussed earlier, e-business adoption plays a vital role in enhancing WOSMEs' performance. The transformation from brick-and-mortar to e-store happens due to digital transformation (Goyal et al., 2019). As a result, Abbad et al.'s (2021) findings show that e-business adoption positively affects firm performance. This is consistent with the works of Popa et al. (2018) and Migdadi et al. (2016) on financial performance as well as the work of Wu et al. (2003) on non-financial performance. In addition, WOSMEs that adopt e-business gain quality improvement and economic benefits (Hong et al., 2021). Apart from that, e-business can improve relationship development via online communications tools that enrich the quality of interaction between supplier and partner on real-time product planning and inventory information (Migdadi et al., 2016). Organizations with e-business knowledge can further transform data and facilitate information dissemination to improve performance (Maroufkhani et al., 2020). Overall, prior research suggests that a company that uses e-business is more likely to enhance its performance (Migdadi et al., 2016; Putra & Santoso, 2020). Therefore, the hypothesis below is proposed:

*H3: E-business adoption has a positive impact on WOSME performance.*

***The mediating role of e-business adoption***

Based on previous research, e-business adoption exhibits a positive relationship with performance, bringing benefits like cost reduction, improved customer service, increased data accessibility, supported partnerships, time efficiency, and competitive advantages (Abdullah et al., 2018; Migdadi et al., 2016; Zhu et al., 2020). In view of this, Qalati et al. (2021) concluded that firms improve performance by integrating e-business. Delving deeper into this relationship, previous scholars have employed several constructs as mediators between e-business and firm performance, including entrepreneurial orientation (Ciampi et al., 2021), social media (Qalati et al., 2021), operational performance (Alsheyadi, 2020), and business strategy and business value (Rodrigues et al., 2021). However, minimal studies have examined the indirect impacts of perceived privacy and perceived security on business performance through the mediation of e-business adoption. Thus, the following hypotheses are developed:

*H4: E-business adoption mediates the relationship between perceived privacy and WOSME performance.*

*H5: E-business adoption mediates the relationship between perceived security and WOSME performance.*

***The moderating role of government support***

As previously stated, the government has a crucial role in strengthening e-business adoption among WOSMEs. In Malaysia, the government has initiated several policies and roadmaps to assist digital adoption (MDEC, 2022). For example, the Matrix program was established to facilitate the identification of potential cybersecurity vulnerabilities by providing solutions that act as a catalyst for successful e-business adoption. Indeed, Digital News Asia (2021) reported that government support is necessary to assist WOSMEs during the e-business transformation process, specifically by offering security advice and protection. In addition, intergovernmental cooperation among the Association of Southeast Asian Nations (ASEAN) members can strengthen security defense for the benefit of WOSMEs. According to Hasan et al. (2021), security awareness campaigns launched by the government can make organizations capable of combating cybercrime and improving performance. Thus, e-business adoption is supported by various favorable government legislations and practices (Zhu et al. 2006). In turn, Zulu-Chisanga et al. (2021) opined that government support in terms of tax breaks, loans, financial capital, digital training, and digital assistance would be able to enhance WOSMEs’ performance. Accordingly, it is hypothesized that:

*H6: Government support strengthens the relationship between e-business adoption and WOSME performance*

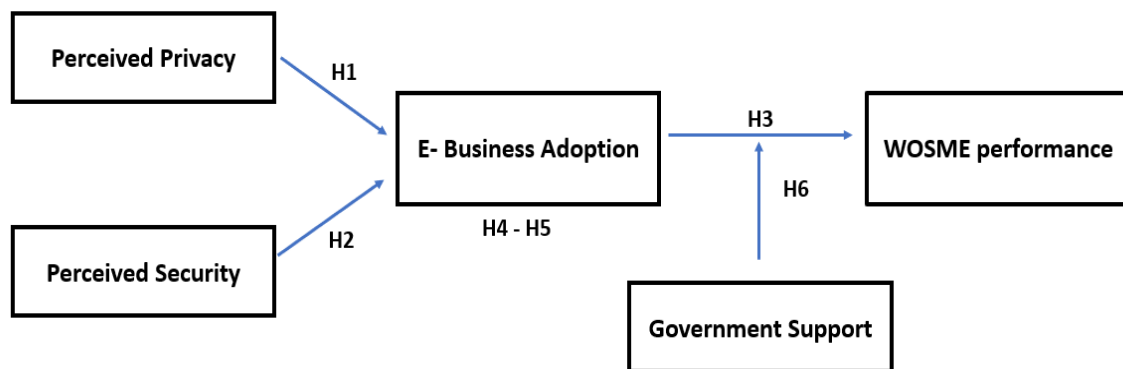


Figure 1: Conceptual Framework

**Method**

This study proposes a cross-sectional quantitative research method using random sampling of the WOSME population in Malaysia. The target respondents are required to fulfill the following criteria to participate in this study:

- a) WOSMEs from service sectors across Malaysia which fulfil the national definition of a Small and Medium Enterprise (SME) with at least 51 per cent of its equity held by women or with leadership positions such as Chief Executive Officer (CEO) or Managing Director (MD) held by women.
- b) Service sector WOSMEs with fewer than 75 full-time employees and less than RM20 million in sales turnover.

A link to a bilingual questionnaire (i.e., containing English and Bahasa Melayu versions of the survey) will be distributed to the target respondents using electronic methods such as WhatsApp, Telegram, Facebook, and email. The questionnaire items would be rated on a five-point Likert scale measurement. This self-administered online questionnaire method can cover a more comprehensive geographical location in Malaysia at a lower cost. Moreover,

respondents have the flexibility to answer the questionnaire based on their availability and convenience. A reminder will be sent to respondents who have not completed the survey after two weeks.

### ***Preliminary On-Site Interview***

Prior to quantitative data collection, preliminary interviews with five female SME owners will be conducted as part of a pilot research to gain a fresh perspective on their management experiences, particularly regarding privacy, security, e-business, and performance. This is in line with the argument of Morse and Richards (2002) that using a qualitative method is suitable if the goal is to learn from the participants in a setting and process the way they experience a phenomenon, assign meaning to it, and interpret their experience. Data obtained from the preliminary on-site interviews will be used, when necessary, to (1) modify the framework on the importance of privacy and security factors to enhance organizational performance via e-business and (2) develop/refine the survey instrument based on the local context.

### **Discussion**

The adoption of e-business appears to highly influence the performance of WOSMEs in service industries. Zulu-Chisanga et al. (2021) indicated that WOSME performance in developing countries has received increasing attention from scholars, policymakers, and the general public because of WOSMEs' contribution to economic growth. One rationale is that e-business adoption is crucial for WOSMEs to enhance competitive advantage in the digitalizing business landscape. Additionally, perceived security and perceived privacy have emerged as essential components in developing WOSMEs' confidence in the adoption of e-business. Even though previous research has demonstrated the advantages of e-business, limited resource availability has been a concern in its adoption among WOSMEs in Malaysia. Nevertheless, the Malaysian government has committed to supporting technology adoption with the launch of the Malaysia Digital Economy Blueprint (MDEB) plan, which focuses on digital transformation. Even so, government support must come with a caveat to ensure funding or assistance is channeled effectively to WOSMEs. Furthermore, organizations should prioritize cybersecurity to develop a competitive advantage through technology while enhancing visibility and control.

### **Conclusion**

The conceptual model of this paper was constructed based on the RBV and past empirical findings. The model proposes six hypotheses to explain WOSME e-business adoption and performance, including mediating and moderating relationships. The impacts of perceived privacy and perceived security on the activities that influence e-business adoption are well-acknowledged in the previous literature, such as cloud computing (Ali et al., 2020), M-payment (Johnson et al., 2018), and computer-based information systems (Rath & Kumar, 2021). When WOSMEs implement e-business, perceived security and perceived privacy are unquestionably among the most important factors to take into account. Further, e-business adoption provides a wide range of options and commercial value by connecting firms to suppliers, customers, and business partners for collaboration and real-time information exchange (Soto-Acosta, 2020). Hence, e-business adoption is introduced as a mediator to better understand the influences of perceived privacy and security on WOSMEs' performance. As per Abbad et al. (2021) and Qalati et al. (2021), e-business adoption significantly impacts performance. Hence, the mediating role of e-business adoption is essential in facilitating WOSMEs' performance. In addition, the inconsistent findings on the effects of e-business adoption on performance by Thompson et al. (2013) and Malik & Khan (2020) call for the exploration of government support as a moderator that strengthens WOSMEs' performance.



***Theoretical Implications***

This study offers a valuable theoretical viewpoint on the influence of e-business adoption on the performance of Malaysian service sector WOSMEs. Typically, the Technology-Organization-Environment (TOE) framework (Bala & Feng, 2019), the Technology Adoption Model (TAM) (Gamage, 2019), and the Diffusion of Innovation (DOI) Theory (Zhu et al., 2006) have been widely applied in e-business adoption studies to explain firm performance. However, the RBV was chosen in this study because firms that effectively leverage resources and capabilities like e-business can gain a competitive advantage (Putra & Santoso, 2020). Furthermore, the RBV considers resource capabilities that help firms enhance performance (Salisu & Abu Bakar, 2020). In addition, applying the RBV to specific populations and gender groups, such as WOSMEs, could offer new perspectives to the literature.

***Managerial Implications***

The study offers a broader knowledge of how perceived privacy and security impact performance via e-business adoption in Malaysia's WOSME service industry. Consequently, WOSMEs should ensure good privacy and security practices in order to enhance business performance. E-business adoption is necessary for WOSMEs to achieve efficiency, competitive advantages, and performance improvement. In fact, e-business is safer than traditional business due to safety features that can monitor and provide access to key personnel. All the transactions in e-business are even retrievable and error-free. As such, WOSMEs need to ensure their employees are skilled by providing proper training in this area. To encourage WOSMEs to adopt e-business, the government must also provide a supportive environment and e-business-friendly regulations. Therefore, this study benefits WOSMEs, government agencies, and policymakers in outlining development plans to promote growth, competitiveness, and innovation in Malaysia. Ultimately, it is hoped that the results of this study will inspire more WOSMEs to adopt e-business.

***Limitations and Future Suggestions***

Despite its theoretical contributions and practical implications, this research is based only on WOSMEs in Malaysia. Therefore, the proposed model does not represent other countries that have different SME definitions, cultures, and policies. Another limitation is that this paper only focuses on perceived privacy, perceived security, and government support as factors related to e-business adoption. Future research should consider adding other factors for more in-depth e-business adoption research. Apart from that, future studies can consider analyzing WOSMEs' e-business adoption from the industry context. The differentiation of industries can provide a new perspective on e-business adoption among WOSMEs. Additionally, a comparison study of e-business adoption with theories such as the Self Efficacy Theory or the Unified Theory of Acceptance and Use of Technology (UTAUT) can provide novel insights. Next, more comprehensive research on e-business adoption in terms of opportunity, policy, and access to resources among WOSMEs is recommended. Finally, considering the current debate on WOSMEs' lack of technology adoption, this study hopes to encourage more discussion and development of theories on WOSMEs' e-business adoption and firm performance.

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