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Competitive Advantages amongst Travel Agencies in Malaysian SMEs: The Role of IOE Factors and Web Technologies & E-Business Adoption

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Abstract: In response to the volatile industrial landscape, particularly about Small and Medium-sized Enterprises (SMEs), organizations have extensively embraced electronic business (e-business) as a strategic initiative aimed at enhancing their competitive advantage mechanisms. Nevertheless, the adoption of e-business amongst local Small and Medium Travel Agency (SMTAs) is still negligible. This study seeks to introduce a comprehensive model encompassing the factors driving and the consequences resulting from the adoption of e-business within SMTAs. The determinants of e-business adoption and the adoption of web-based technologies were empirically examined by employing data obtained from a sample of 323 managerial personnel. The collected data was subjected to analysis through structural equation modelling methods. The findings revealed the significance of specific determinants in influencing the adoption of e-business. Particularly, owner support, perceived ease of use, and government support emerged as critical factors influencing the decision to adopt e-business within SMTAs. In contrast attitude, competitive pressure, and relative advantage were found not significant. While e-business adoption has a major impact on SME functioning and operational progress, it also influences competitive advantage. This study's exploration of the factors influencing, and the consequences associated with the adoption of e-business offers valuable insights. These findings offer e-business practitioners and managers practical guidance for enhancing the efficiency and effectiveness of e-business adoption within their respective organizations. The results also provided a basis for more precise e-business studies to be conducted for small and medium companies in developing countries.

Keywords: *Web-Technology & E-Business Adoption; competitive advantage; travel agencies; Malaysia; SMTAs.*

1. Introduction

The advent of the internet has transformed traditional business models into online settings, giving rise to Online Travel Agents (OTAs) that have become pivotal in the tourism industry's growth. Consequently, travel agencies have witnessed a paradigm shift as consumers increasingly prefer e-commerce for their travel needs. This study underscores the importance of small and medium travel agencies (SMTAs) in Malaysia in adopting web technology and e-business strategies, grounded in the potential of Innovation, Organisational factors, and Environmental considerations (IOE factors), to secure and strengthen their competitive positions.

Furthermore, realizing the potential of Information and Communication Technology (ICT) through network technologies is contingent on a clear web technology and e-business strategy. Given that travel agencies fall within the SME services sector in Malaysia, a comprehensive study on web technology and e-business adoption is imperative, given the sector's vital role in contributing to the country's wealth and prosperity. This study aims to uncover the reasons behind the lag in web technology and e-business adoption amongst Malaysian SMTAs, shedding light on their failure to integrate, develop, and measure these technologies to harness their competitive advantage potential.

The service sector, recognized as a major contributor to the country's Gross National Income (GNI) in the Twelfth Malaysia Plan (2021-2025), underscores the urgency of addressing these issues. Acknowledging the significance of business development, policymakers have undertaken measures to promote ICT diffusion by offering support and incentives across business operations. To enhance market access, boost ICT adoption amongst SMEs, and empower local service firms to gain competitive advantages, strategies aimed at raising awareness, investing in human capital, and safeguarding intellectual property rights are essential.

Reassessing the current state of web technology and e-business adoption is paramount in guiding SMEs to strengthen their e-business segments.

Despite promising opportunities and advanced technological options in the tourism industry, the Malaysian tourism sector remains entrenched in traditional offline booking systems. Astonishingly, only one-third of registered Malaysian travel agents employ e-commerce websites, trailing behind the global tourism market's full utilization of online databases. It is expected that Malaysian small and medium travel agencies will gradually evolve in response to shifting consumer demands and expectations. To mitigate the risk of disintermediation, industry experts recommend investments in ICT tools like e-commerce, e-business applications, and digitalization.

This paper aims to deepen our understanding of web technology and e-business adoption's role as a source of competitive advantage amongst small and medium travel agencies in Malaysia. The study examines the contributions of IOE factors to web technology and e-business adoption and how these factors correlate with six critical dimensions of competitive advantage: product development, quality of products and services, price competitiveness, accessibility and connectivity, firm branding, and human resources development. This study enriches our knowledge of the latest trends in web technology and e-business use, particularly amongst small and medium-sized enterprises.

In conclusion, this research aims to bridge existing knowledge gaps and provide insights to guide SMTAs in their web technology and e-business investments, subsequently improving the quality of services offered to modern tourists. From a strategic management perspective, gaining competitive advantages necessitates strategic initiatives led by general managers or owners. Efficient resource utilization, continuous growth, exploration of innovative technologies, software applications, and new product development are critical components of success in an increasingly technology-driven and globalized tourism industry.

The Contribution of IOE Characteristics and Web Technology and E-Business Adoption in Achieving Competitive Advantage Literature

The Impact of Innovational Characteristics on Web Technology & E-Business Adoption: This paper explores the innovational characteristics of relative advantage, compatibility, complexity, and social influence on the degree of adoption of innovation within a social system, following Roger's framework from 1995. Previous research findings have revealed inconsistencies in these factors. Khemthong and Roberts (2006) found that relative advantages of ICT adoption enhance communication with stakeholders, improve business efficiency, and strengthen relationships. However, Kilangi (2012) discovered an insignificant relationship between the relative advantages and web-technology and e-business adoption, although usage was significantly related. Overall, SMTAs are inclined to adopt web-technology and e-business when they perceive these innovations as superior to existing methods. This perception brings benefits such as enhanced communication, efficiency, market expansion, and the ability to offer a wide range of online travel services, ultimately facilitating real tours and travel transactions.

Recent research on the relationship between compatibility and web adoption has produced varying results. Some studies, including those by Kilangi (2012), Grandon and Pearson (2004), and Ghobakhloo et al. (2012), have identified a significant positive relationship, suggesting that compatibility enhances web adoption. However, Hussein et al. (2012) noted inconsistent findings in previous research regarding the impact of compatibility on innovation adoption. Houghton and Winklhofer (2002) and Poorangi et al. (2013) have examined the impact of complexity in ICT adoption. While some studies indicate a negative relationship between complexity and adoption, others show no significant correlation. For SMTAs, perceiving web-technology and e-business as complex can hinder adoption, especially when facing financial constraints. Meanwhile, Lee and Runge (2001) and Kilangi (2012) found no significant effects of social influence on ICT adoption in Malaysia. However, the evolving landscape of networking and communication technologies may require a re-evaluation of social influence's role. Understanding these factors, as identified by previous research, is essential for SMTAs to make informed decisions about adopting web-technology and e-business. These factors collectively shape the adoption process and impact the competitiveness of businesses in the dynamic tourism industry.

The Impact of Organisational Characteristics on Web Technology & E-Business Adoption: Information and Communication Technology (ICT) adoption has become a critical determinant of competitiveness and sustainability for Small and Medium Enterprises (SMEs) across industries. In the context of the tourism sector, Small and Medium Tourism Enterprises (SMTAs) are increasingly recognizing the potential benefits of ICT adoption, including web technology and e-business, to enhance their operations, reach a wider market, and provide better services. However, the adoption of these technologies is not a straightforward process and is influenced by various Organisational Characteristics (OCs).

This paper delves into the multifaceted relationship between OCs and the readiness of SMTAs in Malaysia to embrace ICT innovations. We explore how specific OCs, including firm location, organizational e-resources, top management support, data secrecy and confidentiality, and training and human capital investment, interact to shape the readiness of SMTAs for ICT adoption.

The geographical location of the firm is a crucial OC that significantly impacts ICT adoption in SMTAs. The digital divide between urban and rural areas in Malaysia is a stark reality. Firms situated in rural areas face limited access to ICT vendors, Internet service providers, ICT technicians, and institutions offering ICT support and training. In contrast, urban-based SMTAs tend to have better access to these resources, facilitating their ICT infrastructure and support services. The geographical context, therefore, plays a pivotal role in determining the readiness for ICT adoption in SMTAs (Zaremohzzabieh et al., 2016).

Meanwhile, organizational e-resources encompass human, technological, and business properties that are pivotal in influencing ICT adoption. The availability of financial resources, in-house ICT expertise, and other critical resources significantly determines the ability of SMEs, including SMTAs, to adopt and implement ICT solutions effectively. Financial constraints and resource scarcity can impede the adoption process, particularly among small enterprises (Kilangi, 2012).

For top management support, particularly from owner-managers, is a critical determinant influencing the adoption of modern technology. Owners and managers hold significant sway over the adoption rate of technology within their organizations. Their commitment, attitude, and leadership qualities play a crucial role in inspiring or discouraging technology adoption. Numerous studies have highlighted the positive correlation between TMS and successful technology adoption across organizations, both large and small (Bennett & Savani, 2011; Bruque & Mayano, 2007).

In an era marked by increasing digitalization, concerns about data secrecy and confidentiality are paramount. Security and trust issues, along with the legal framework surrounding data protection, significantly influence adoption decisions. These concerns are particularly relevant in the tourism sector, where sensitive customer information is managed regularly (Hussin et al., 2008).

Training and human capital, encompassing competencies, attitudes, and intellectual agility, is increasingly recognized as an asset for organizations. Training and skill development initiatives are instrumental in enhancing ICT adoption, especially amongst SMEs. The level of education, the cost of ICT-related training, and the availability of skilled personnel all weigh heavily on the decisions of SME owners and managers regarding ICT adoption. Well-trained employees are more likely to have informed perceptions of new ICT and can drive successful adoption (Venkatesh & Bala, 2008; Mughal, 2011).

In conclusion, the readiness of SMTAs in Malaysia to adopt ICT innovations, specifically web technology and e-business, is intricately linked to a range of organizational characteristics. These characteristics include firm location, organizational e-resources, top management support, data secrecy and confidentiality, and training and human capital investment. Recognizing the role of these OCs in shaping adoption readiness is crucial for formulating effective strategies to promote ICT adoption within the tourism sector. This comprehensive analysis sheds light on the multifaceted dynamics that underpin ICT adoption amongst SMTAs and underscores the importance of considering these factors in the digital transformation of small and medium enterprises in Malaysia's tourism industry.

The Impact of Environmental Characteristics on Web Technology & E-Business Adoption: In light of current trends and the evolving tourism business landscape, the preparedness of Malaysian Small and Medium Tourism Enterprises (SMTAs) to embrace Information and Communication Technologies (ICTs), with a particular focus on web technology and e-business, is markedly shaped by Environmental Characteristics (ECs).ECs encompass various external pressures, such as industry and customer demands, as well as vendor support. Several researchers have highlighted the role of these factors in shaping ICT adoption (Premkumar & Roberts, 1999; Andreu et al., 2010; Iacovou et al., 1995; Mehrtens et al., 2001; Gono et al., 2013). While previous studies have explored the impact of governmental support (Seyal et al., 2007; Alam et al., 2009), the Malaysian government's initiatives to promote ICT adoption, like the eCommerce Initiative, were also discussed. Competitive pressure, another EC, has shown mixed results in influencing ICT adoption (Thong, 1999; Premkumar & Roberts, 1999). However, it can encourage SMTAs to embrace ICT, facilitating global market access and alliances (Mamaghani, 2009). The adoption status of trading partners also plays a role (Beck et al., 2005). Previous studies also recorded external support, both formal and informal, in SMEs' ICT adoption (Levy & Powell, 2003; Poon & Swatman, 1999; Parker, 2009). It is posited that ECs, including competitive and governmental support, is significantly related to Web-Technology and E-Business Adoption (WEA) amongst Malaysian SMTAs.

Therefore, due to the important contributions of Innovational, Organisational, and Environmental factors (IOE characteristics) to the development of web technology and e-business adoption amongst small and medium travel agencies, it is posited that:

H1a: Innovation characteristics are significantly related to SMTA's Web and e-business adoption.
H1b: Organisational characteristics are significantly related to MTA's Web Technologies and e-business adoption.
H1c: Environmental characteristics are significantly related to MTA's Web Technologies and e-business adoption.

Web-Technology & E-Business Adoption and Competitive Advantage Literature: The adoption of web technology has become a crucial competitive advantage for travel agencies (Mihajlovic, 2012). Internet applications have transformed how tourism products are purchased, demanding user-friendly experiences and convenience (Álvarez, Martín. Mamaghani (2009) further mentioned that to stay viable in today's competitive business, future travel agents must compete with destinations that offer user-friendly activities, values, and convenient travel services. Failing to embrace technology leaves travel agencies at a competitive disadvantage. Technological innovation offers a competitive edge, while agencies that systematically ignore modern technologies and their benefits will, unfortunately, lag in the competition. This paper will examine how web technology and e-business adoption can help small and medium travel agencies to achieve competitive advantages, via product development, quality of services, price competitiveness, accessibility and connectivity, and human resource development.

Several authors have confirmed that web technology and e-business adoption offer numerous benefits to businesses, including access to worldwide suppliers, improved quality, and delivery options (Croom & Johnson, 2003). These technologies also reduce carrying costs, expand cash flow, and provide discounts (Ferguson, 2010), leading to better transaction value (Afzal, 2007), and cost-effective service delivery compared to traditional methods (Lorette, 2013). Additionally, they increase sales and broaden market coverage (Abu Abid et al., 2011), potentially enabling Small and Medium Travel Agencies (SMTAs) to compete globally by leveraging technology as a valuable tool (Lorette, 2013). In light of these advantages, it is proposed that SMTAs can enhance their product development for travel and tour agency services by actively engaging in web technology and e-business activities.

Quality of service is a critical factor in the success of the tourism industry. Research has identified quality as a key determinant of competitive advantage in various tourism sectors, such as hotels, cruise ships, and special events. The advent of e-business and web technologies offers opportunities to enhance service quality by providing a broader range of services to meet evolving customers' expectations. However, despite its importance, service quality has sometimes been overlooked by travel agencies. To remain competitive, travel agencies must prioritize service quality by focusing on aspects like product offerings, value-added services,

efficiency, promptness, and overall service excellence, using web technologies and e-business tools to adapt to changing customer demands.

In the ever-evolving landscape of e-business and tourism, the quality of services provided to customers stands as a pivotal factor for success. Over the past decades, researchers have delved into the multifaceted relationship between e-business and service quality, unearthing valuable insights that shed light on the industry's transformation. Mihajlovic (2013), in his study, focused on a strategic perspective emphasizing the significance of service quality in shaping strategic development plans for tourism. He highlighted the importance of a low-cost strategy and delivering value in services as key elements for improving service quality. However, Mihajlovic cautioned that such a strategy might require substantial investments due to seasonality and capacity utilization fluctuations. In a different study, Lam and Zhang (2019) focused on customers' perceptions of service quality within the travel agent sector, particularly in Hong Kong. Their research revealed a gap between customer expectations and their perceptions of reliability, signalling room for improvement in aligning service quality with customer needs. These findings provide a comprehensive and evolving understanding of how e-business shapes service quality in tourism. This journey through a decade of research exemplifies the dynamic nature of the industry, continually adapting to meet the ever-changing needs and expectations of travellers in the digital age.

Price Competitiveness: SMEs need to set a competitive price range for tour and travel services in a longer-term pricing strategy to attract volume and credibility and to establish agency brands with the capability to establish a regular competitive range of online booking prices. For e-business opportunities, pricing strategies help SMEs win over customers, develop competitiveness, and grow margins for tour and travel services. This proposition is seconded by a study by McCormick (2018) which stated that according to The Global Business Travel Association (GBTA) in 2018, worldwide travel prices dramatically grew by 3.5 % due to high demands and rising oil prices. Anent this, Chang (2007) discovered that the Internet makes it easier for SMEs to compare prices that otherwise require physical visits to stores which is a time-consuming and costly process.

Accessibility and Connectivity: With regards to accessibility and connectivity, Croom and Johnson (2003) affirmed that e-business allows firms to access worldwide suppliers, thus enjoying better prices, better quality, and better delivery. In a different study, Zakaria and Hashim (2004) think that e-business allows for effective multiple concurrences of order handling compared to telephone orders, which is time-saving. Additionally, e-business allows firms to be able to cast a wider net of markets and increase their sales (Abu Abid et al., 2011), aids customer service, and helps increase sales (Kidd, 2001). Furthermore, because of wide and fierce competition, SMEs must work hard to achieve a competitive advantage to grab a solid market share. Any business aiming to compete on the larger or global stage must set gaining competitive advantage as a major goal and must realize technology can be of great assistance (Lorette, 2013).

Human Resource Development: E-business can upgrade the facilities and equipment, keep and expand market share, encounter and avert competition, enhance employees' compensation and benefits, and use novel promotional strategies to entice more customers. Vucetic (2012) his study identified the relationship between human resources and servicing of travel agencies' market niches which is an effort to develop superior values for consumers via qualification structure, improvement of employees, provision of high-quality training, advocating accepting the lifelong learning concept, engagement in the motivational concepts, stimulation of innovativeness of the employees were recorded as the contributing competitive advantages factors for Montenegro travel agencies. Training and development activities have led to better performance and are considered essential tools for developing employees and the organization's future growth (Omar et al., 2009). Malaysia faces the challenge of a lack of workforce planning and insufficient investment in staff training and development. However, human resources transformation can be achieved via three strategies technological investment, cross-border talent recruitment and human resources shared services (Pain, 2015). On top of that Al Hrou and Mohamed (2014) mentioned in their study that it is important to encourage productivity and employees' attitudes to further improve the human resources of the hospitality and tourism sector.

Therefore, recognizing the importance of web technology and e-business adoption in achieving competitive advantage, it is posited that:
H2: Web technology and e-business adoption are related to competitive advantage.

Innovational, Organisational and Environmental (IOE characteristics) and Competitive Advantage (CA) Literature: This paper explores the intricate relationship between three dimensions of IOE characteristics and their impact on achieving Competitive Advantage (CA). Innovation, defined as changes in products, processes, or organizations derived from existing technologies applied in new contexts, is a significant determinant of CA. Innovation relies on human capital, creativity, and research work. Successful innovation necessitates focusing on customers and adding value, making it vital for organizations (Zizlavsky, 2011; Zemplinerova, 2010; Molina-Morales et al., 2011; Martin-de Castro et al., 2013; Hana, 2013; Bartes, 2009). Travel agencies can gain CA by embracing technological innovations like web technologies and e-business, leading to cost-effective products, improved branding, and enhanced quality (Mihajlovic, 2012; Braun, 2008).

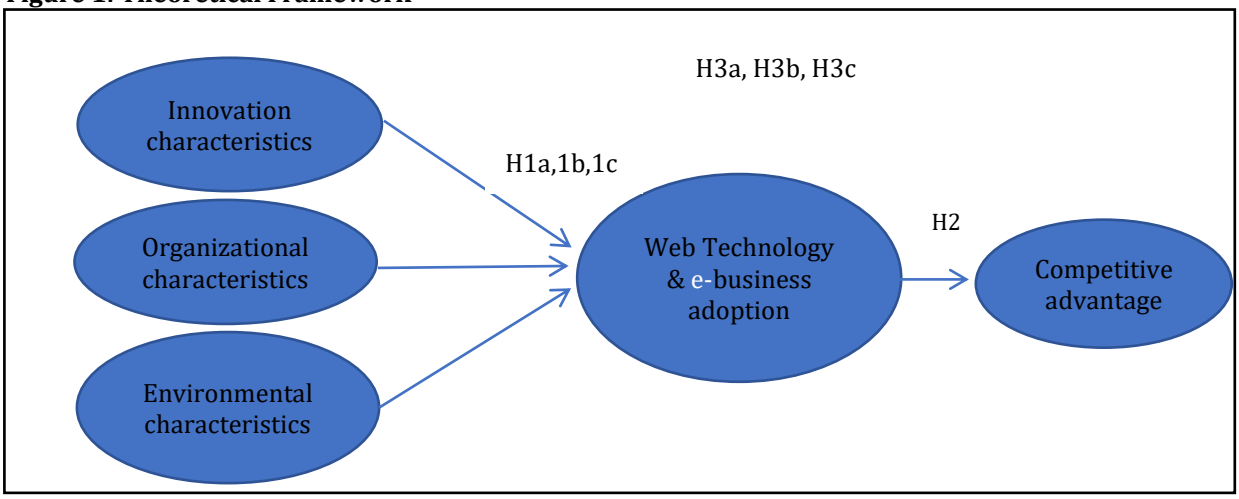
Organisational CA is achieved through tourism managers' acceptance of modern technology in their planning processes, emphasizing internal knowledge-based resources, and competencies (Moutinho, 2002; Ziethamal, 2001; OECD, 2013). Shared understanding within an organization plays a vital role in focusing efforts and increasing the likelihood of success (King, Fowler, & Ziethamal, 2001). The adoption of web technologies and e-business can help traditional travel agencies access global markets, expand services, and meet customer expectations (Golob & Regan, 2001; Mamaghani, 2009; Kenneth et al., 2012).

Environmental characteristics require an innovative culture, specialist teams, flexibility, openness to change, and effective internal communication (Molina-Morales et al., 2011). Achieving commendable work performance and employee engagement is closely linked to loyalty and fulfilling organizational goals (Lukasova, 2010). Adopting ICT and integrating it into the global supply chain can help SMEs in developing nations remain competitive (Kushwaha, 2011). Incorporating these three dimensions of IOE characteristics can significantly influence CA for Small and Medium Travel Agencies (SMTAs). By fostering innovation, optimizing organizational resources, and adapting to environmental changes, SMTAs can enhance their competitive positions in the tourism industry. Therefore, based on several inconsistent findings of previous researchers and the importance of incorporating IOE characteristics in achieving competitive advantage for SMTAs, it is hypothesized that:
H3a: Innovational Characteristics significantly influence Competitive Advantage.
H3b: Organisational Characteristics significantly influence Competitive Advantage.
H3c: Environmental Characteristics significantly influence Competitive Advantage.

2. Theoretical Framework

Based on the research objectives, a literature review on IOE determinants on web technology & e-business adoption, and the analysis of the relationship with competitive advantage supported by previous researchers, the framework on which this research is founded is shown below:

Figure 1: Theoretical Framework



3. Methodology

A quantitative analysis has been employed for the study. Data were collected through a formal survey using a structured questionnaire method. After the questionnaire had undergone a pilot study, some of the tools were enhanced to confirm that the instrument was able to yield high internal reliability. The finalized version of the survey set was then disseminated to selective respondents.

As an attempt to obtain more data, the questionnaire was also disseminated in hard copy to selected companies via the drop-and-pick method of collection by visiting their business premises. These companies had been engaged via phone calls before the visit to prevent any potential inconvenience. Interestingly, it is learned that paper-based survey instruments recorded a higher percentage of respondents compared to their online counterparts. Overall, the entire response rate for this study is 71.7 %, representing 323 respondents from both online and paper-based instruments from 450 selected travel agencies in Malaysia. For the inferential analysis, this study used analysis of the AMOS program using several multivariate techniques such as confirmatory factor analysis, correlation analysis, and multiple regression analysis. The questionnaire consists of 139 items from 23 constructs; therefore, factor analysis is useful to be deployed to avoid any redundant factors by focusing on key items (factors) rather than considering meaningless factors for the study.

Table 1: KMO and Bartlett's Test of All Constructs

Bartlett's Test of Sphericity				
Construct	**KMO**	**Approx. Chi-Square**	**Distance of Freedom (df)**	**P value (0.00)**
ICs	0.770	527.872	6	0.000
OCs	0.877	1059.561	10	0.000
ECs	0.709	388.826	3	0.000
WEA	0.864	1056.034	10	0.000
CA	0.897	1501.100	15	0.000

SPSS Version 23 was used to perform an Exploratory Factor Analysis (EFA) on a sample of 323 respondents, according to Hair et al.'s (2010) recommendation for a sample size of 100 or more. The Kaiser-Meyer-Olkin (KMO) and Bartlett's test of Sphericity were employed to evaluate sample adequacy, with KMO values surpassing the 0.5 threshold, indicating data suitability. Bartlett's test demonstrated statistical significance.

Data analysis followed a two-step Structural Equation Modelling (SEM) procedure, as per Enderson and Gerbing's (1988) proposal. SEM is a statistical method for modelling multivariate relationships amongst latent constructs, enabling confirmatory assessment of measurement and structural models.

The study confirmed convergent validity as all item loadings exceeded the acceptable threshold. Confirmatory Factor Analysis (CFA) was conducted on responses from five Malaysian regions to assess construct homogeneity. A second-order CFA confirmed WEA as the main construct with three underlying sub-constructs related to IOE characteristics. Items with loadings below 0.5, recommended by Hair et al. (2010), were removed. To enhance model fitness, item parcelling techniques were employed due to the large sample size. Overall, the study employed a rigorous approach, combining EFA, CFA, and SEM, to revalidate the measurement model for the WEA construct and its dimensions.

Table 2: Model Fit Indices for the WEACA model

Indicators*	Chi-Square	Df	Chi-Square/df	CFI	TLI	GFI	AGFI	RMSEA
	684.205	220	3.110	.917	.904	.840	.799	0.082

Notes: *model fit indicators

After several modifications were made for both first and second-order CFA, the Measurement Model yielded a good model fit of indices as follows: Chi-Square (2) = 696.660, df = 220, p = .000, Relative 2 (2/df) = 3.167, AGFI = .797, GFI = .838, CFI = .913, IFI = .913, NFI, .878, TLI = .900, RMSEA = .082. From these Goodness-of-Fit indices, it is decided that the Measurement Model fits the data for this analysis as mentioned by Hair et al.

(2010), as it was suggested that, if any 3 – 4 of the Goodness-of-Fit indices (any of the values from Dff, Chi-Square, CFI, TLI, GFI, AGFI or RMSEA) as in the case of this study shown in Table 2, showed data fit for the development of MM. Moreover, the Cronbach's Alpha values for the entire measured variables were above .70 signifying the reliability of the data.

Table 3: Standardised Regression Weight in the Hypothesised Path Model

Hypothesised Relationships			B	S. E	β	*CR*	*P*	*Results*
WEA_ADPT	<---	INNO_XTICS (ICs)	.495	.214	.259	2.310	.021	S
WEA_ADPT	<---	ORG_XTICS(OCs)	.770	.172	.369	4.465	.000	S
WEA_ADPT	<---	ENV_XTICS (ECs)	-.100	.178	-.064	-.562	.574	NS
COM_ADV	<---	ENV_XTICS (ECs)	.239	.092	.233	2.609	.009	S
COM_ADV	<---	INNO_XTICS (ICs)	.758	.120	.599	6.313	.000	S
COM_ADV	<---	ORG_XTICS (OCs)	-.235	.087	-.170	-2.683	.007	S
COM_ADV	<---	WEA_ADPT (WEA)	.146	.033	.220	4.470	.000	S

R^2 for WEA_ADPT = .27; R^2 for COM_ADV = .65

Note: WEA_ADPT: - Web-technology & E-Business Adoption; COM_ADV: - Competitive Advantage; INNO_XTICS: - Innovation Characteristics; ORG_XTICS: - Organisation Characteristics; ENV_XTICS: - Environmental Characteristics; B: - Unstandardised Regression Weight; S.E: - Standard Error; β: - Standardised Regression Weight; CR: - Critical Ratio; p: - Significant – *p*.

The Modified Structural Model (Table 3) shows that ICs significantly predict WEA (β = .259, CR = 2.310, p < .05), supporting H1a. Likewise, OCs, including location, e-resources, top management support, data security, confidentiality, and training, significantly contribute to WEA (β = .369, CR = 4.465, p < .05), validating H1b. However, ECs do not have a significant relationship with WEA (β = -.064, CR = -.562, p > .05), refuting H1c. Conversely, WEA is a significant predictor of CA (β = .220, CR = 4.470, p < .05), confirming H2.

Furthermore, ICs significantly predict CA (β = .599, CR = 6.313, p < .05), supporting H3a. OCs also contribute significantly to CA (β = -.170, CR = -2.683, p < .05), endorsing H3b. Finally, ECs are significantly related to CA (β = .233, CR = 2.609, p < .05), validating H3c. This indicates that competitive pressure, external support, and government support all play a role in enhancing the competitive advantage of SMTAs in Malaysia.

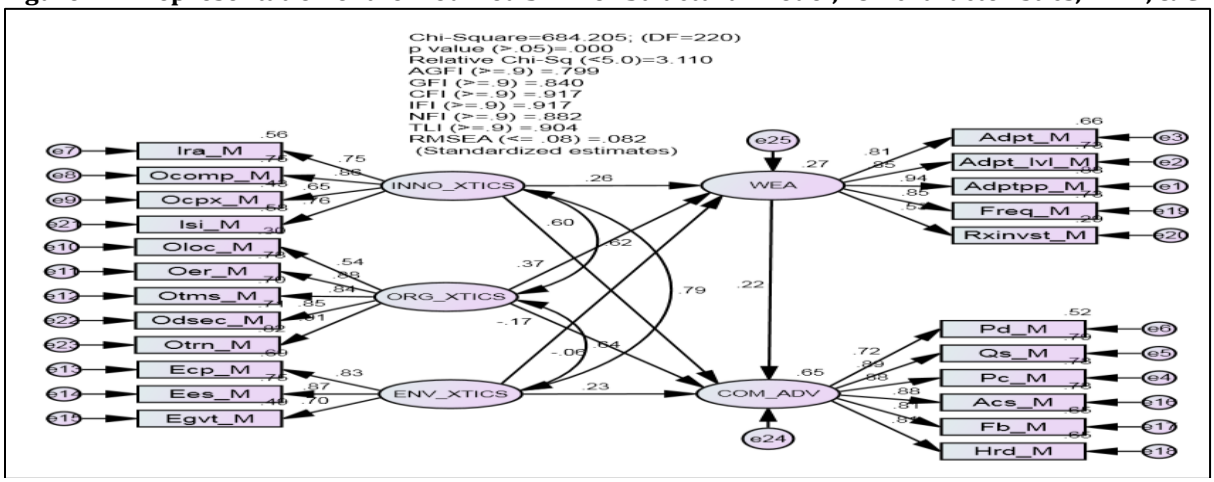
4. Results and Discussion

Descriptive Analysis of the Company Profile: The descriptive analysis of the company profiles in this study involved data collection from 323 owners-managers of Small and Medium Tourism-Related Businesses (SMTAs) across five regions in Malaysia. Google Forms and site visits were used to engage respondents, achieving a commendable 71.7 percent response rate out of 450 distributed questionnaires (including 100 via Google Forms). Roughly 28 percent of respondents did not fully answer the questions, largely due to missing values or uncertain responses, which were addressed using Missing Value Analysis (MVA) in SPSS, revealing no missing value cases.

The analysis of business profiles showed that the participating companies are predominantly engaged in both online and offline operations (68%) and are typically micro-businesses with 1-5 employees. The primary focus of these businesses is on Inbound, Outbound and Ticketing Services (41%). A significant portion holds private limited company status (34%) and has been in operation for six to twenty years (50%). Geographically, 39% of these businesses are located in the central region of the country. In terms of investment, 47% have invested up to five million, with the majority reporting annual revenues of less than RM 300,000. Additionally, 35% of respondents reported generating internet sales in addition to offline sales and payment systems.

The Contribution of IOE Characteristics to Web Technology & E-Business Adoption and Competitive Advantages: This study achieved two objectives. Firstly, it investigated the impact of IOE characteristics on the correlation between six web technology dimensions and e-business adoption. Secondly, it examined the relationship between web technology, e-business adoption, and six competitive advantage dimensions, providing a comprehensive analysis of these interconnected factors.

Figure 2: A Representation of the Modified SEM for Structural Model; IOE characteristics, WEA, & CA



The validity of the model was evaluated through SEM analysis, displayed in Figure 2. Findings revealed that standardized path coefficients provided substantial support for the proposed hypotheses, signifying significant connections between predictor and criteria variables. Consequently, hypotheses H1, H2, and H3 were substantiated.

Moreover, the Structural Model disclosed that around 27% of the variance in WEA and a substantial 65% of the variance in CA could be elucidated by the predictor variables linked to IOE characteristics within the Structural Equation Modelling.

Objective one of this paper is derived from the examination of determinants of web technology adoption amongst Small and Medium-sized Technology-based Enterprises (SMEs) in Malaysia's travel and tour industry. It delves into factors within the innovational context (ICs), organizational context (OCs) and environmental context (ECs), and the relationship between web technology adoption (WEA). The study aims to provide insights into the factors influencing technology adoption and their implications for the industry.

Three key determinants within the innovational context of relative advantage, complexity, and social influence were tested. Relative advantage refers to the perception that web technology adoption offers a competitive edge. The findings suggest that SME owner-managers in Malaysia understand the significance of internal factors of IOE characteristics and web technologies and e-business practices for business growth, consistent with previous research (Agarwal & Prasad, 1997; Kwon & Zmud, 1987). Relative advantage is a robust predictor of WEA amongst SMEs (Chong & Pervan, 2007).

Compatibility is significantly attributed to WEA. Web technology and e-business are said to be compatible with a firm's values, beliefs, and business needs. The findings of this paper are under previous studies by Kilangi (2012) and Khemthong & Roberts (2006), as it has been revealed that SME owner-managers are concerned with WEA and are constantly updating business needs based on digital technology via sophisticated gadgets, smartphones, travel port, and digital information kiosk. The findings are, however, in contrast with Hussein et al (2012) who discovered a non-significant relationship between compatibility and innovation adoption. It is believed that those SME firms that ignore innovative technologies will minimize their changes to strive and adapt to the dynamic needs of the market environment. Complexity is a significant determiner of WEA related to the perceived difficulty of adopting web technologies. While web technologies are user-friendly, challenges arise due to a lack of skills and training. SMEs need to invest in employee

training to overcome these challenges. Notwithstanding, Kilangi (2012) found no significant relationship between complexity and web technology adoption. Social influence, such as the preferences of modern travellers, significantly predicts WEA. Social media not only enables tourists and travellers to access and share information but also fosters meaningful connections and networking, facilitates thought-sharing, supports product and service evaluation, and influences tourism-related decision-making (Mariani et al., 2019; Wang et al., 2002). This is aligned with findings by Kilangi (2012) and Khemthong and Roberts (2006), emphasizing SMEs' concern for WEA to stay relevant in the market.

From the organizational perspective, three determinants within the organizational context are examined: location, e-resources, and top management support. Location significantly influences WEA, with the Malaysian government promoting ICT initiatives and providing widespread broadband access. Telecommunication providers offer high-speed internet, but affordability remains a concern.

Consistent with prior research (Kuan & Chau, 2001; Ramdani et al., 2009), it has been discovered that e-resources, including IT infrastructure and online databases, have a substantial impact on WEA, and they enable businesses to provide updated information and personalized experiences to travellers. Top management support is a crucial determinant, reflecting the commitment of management to technology development. It promotes user support, training, and incentives, echoing findings by Bennett and Savani (2011), and Thiesse et al. (2011). Data confidentiality is also significant, as consumers in Malaysia prefer online payments due to reliable banking services (Tan et al., 2008). However, challenges related to data protection and legal frameworks hinder WEA adoption (Hoi, 2006).

Training and human capital investment significantly predicts WEA. Training programs improve competency and help employees respond to online orders and traveller inquiries effectively. These findings conform to previous research done by Dakhli and De Clercq (2004), and Barczak and Wilemon (2003). The profound changes ushered in by Information and Communication Technologies (ICT) have significantly reshaped business operations, subsequently prompting alterations in administrative processes and procedures (Hooi, 2012).

From an environmental perspective, the environmental context includes competitive pressure, external support, and government support. Competitive pressure positively influences WEA, pushing SMTAs to adopt web technologies for cost efficiency and improved services, as suggested by Porter and Millar (1985). External support from business partners, suppliers, and associations, does not significantly predict WEA. SMEs do not rely on external support for technology adoption, as they often lack resources and prefer localized operations. Government support also lacks a significant relationship with WEA. Despite the government's initiatives to promote technology adoption, domain and technology registration costs remain barriers.

This updated the multifaceted determinants of web technology adoption amongst SMTAs in Malaysia's travel and tour industry. Relative advantage, complexity, social influence, location, e-resources, top management support, data confidentiality, training, competitive pressure, and government support, all play distinct roles in influencing WEA.

While some determinants are aligned with previous research, such as relative advantage and top management support, others, like location and e-resources, reflect the unique challenges and opportunities faced by Malaysian SMEs. These findings underscore the need for tailored strategies to promote web technology adoption in the travel and tour industry, the result of which may enhance competitiveness and meet the demands of modern travellers in the digital age.

The Relationship between Web Technology Adoption and Competitive Advantage: Objective two of the study investigates the relationship between Web Technology Adoption (WEA) and Competitive Advantage (CA) in Small and Medium-sized Technology-based Enterprises (SMTAs) in Malaysia. Using linear regression analysis, the research demonstrates a significant and positive correlation between WEA and CA across various dimensions, including product development, service quality improvement, effective communication, wider distribution channels, enhanced firm branding, and market expansion.

The findings highlight the pivotal role of technology adoption in gaining a competitive edge. To succeed in the travel and tour industry, SMTAs should prioritize building ICT capabilities, diversifying products, refining services based on real-time feedback, optimizing online pricing, and enhancing firm branding. Challenges remain, primarily due to limited online business development knowledge and skills, but the study recommends strategic planning, training, and incentives to overcome these hurdles.

In conclusion, embracing web technology and e-business is crucial for SMTAs to excel globally, with user-friendly systems, comprehensive training, and profit optimization as key factors for success.

5. Conclusion and Recommendations

The travel industry is no stranger to the winds of change, and today, the digital revolution is sweeping through the sector. Small and Medium Travel Agencies (SMTAs) in Malaysia, a crucial segment of this industry, find themselves at a pivotal juncture. A recent study sheds light on their adoption of web technology and e-business practices, revealing intriguing insights into their current state, growth potential, and the challenges they face.

The study's findings underscore both the opportunities and challenges faced by SMTAs. Notably, many of these agencies have been relatively conservative in their investments in web technology and e-business, primarily conducting business within local boundaries. However, the positive aspect appears when we learn that over 50% of respondents have embraced web technology and e-business at a more advanced level, leveraging it for communication, order management, and customer updates. They have even embraced online booking and payment systems.

One of the primary challenges lies in the knowledge gap and skill shortage when it comes to developing online business platforms. Bridging this gap appears as a crucial step toward realizing the full potential of web technology and e-business for SMTAs.

To succeed in the ever-changing tourism industry, Small and Medium Travel Agencies (SMTAs) in Malaysia must consider several critical recommendations. Firstly, they should prioritize skills development, ensuring their teams are proficient in online business platforms and digital marketing. Additionally, engaging with external stakeholders – including government agencies and suppliers, is essential to garner support for web technology adoption. Higher Learning Institutions should revise their curricula to include ICT-related subjects, preparing future graduates for the industry's digital demands. Industry players must invest in comprehensive training programs to bridge the knowledge gap and promote digital innovation. Lastly, developing a clear strategic business plan, emphasizing Innovational, Organisational, and Environmental (IOE) characteristics, can significantly enhance competitiveness.

In an era defined by digital transformation, SMTAs in Malaysia have a choice to embrace web technology and e-business as catalysts for growth or risk falling behind in a rapidly evolving industry. The path forward is clear; the tools are at their disposal. The future belongs to those who can adapt and innovate, and for SMTAs, that future starts with embracing the potential of web technology and e-business. This study's findings supply valuable insights and a roadmap for them to embark on this transformative journey.

References

Abu Abid, A., Rahim, M. M. & Scheepers, H. (2011). Experienced Benefits and Barriers of E-Business Technology Adoption by SME Suppliers. Communications of the IBIMA, 1–11. https://doi.org/10.5171/2011.791778

Afzal, H. (2007). EC Adoption and Critical Success Factors of EC in SMEs in Iran. Lulea University of Technology Division of Industrial Marketing and E-Commerce.

Al Hrou, S. A. & Mohamed, B. (2014). Human Resource Management Practice Tourism and Hotel Industry. *SHS Web of Conferences*, 12, 01076. https://doi.org/10.1051/shsconf/20141201076

Alam, S. S. & Mohammad Noor, M. K. (2009). ICT Adoption in Small and Medium Enterprises: An Empirical Evidence of Service Sectors in Malaysia. *International Journal of Business and Management,* 4(2). https://doi.org/10.5539/ijbm.v4n2p112

Alvarez, S. A. & Busenitz, L. W. (2007). The entrepreneurship of resource-based theory. In Entrepreneurship: Concepts, Theory and Perspective (pp. 207–227). https://doi.org/10.1007/978-3-540-48543-8_10

Andreu, L., Aldás, J., Bigné, J. E. & Mattila, A. S. (2010). An analysis of e-business adoption and its impact on relational quality in travel agency–supplier relationships*. Tourism Management*, 31(6), 777–787. https://doi.org/10.1016/j.tourman.2009.08.004

Barczak, G. & Wilemon, D. (2003). Team member experiences in new product development: views from the trenches. *R and D Management,* 33(5), 463–479. https://doi.org/10.1111/1467-9310.00311

Beck, R., Wigand, R. T. & König, W. (2005). The Diffusion and Efficient Use of Electronic Commerce amongst Small and Medium-sized Enterprises: An International Three-Industry Survey. *Electronic Markets*, 15(1), 38–52. https://doi.org/10.1080/10196780500035282

Bennett, R. & Savani, S. (2011). Retailers' preparedness for the introduction of third wave (ubiquitous) computing applications: A survey of UK companies, *International Journal of Retail & Distribution Management*, 39(5), 306-325. https://doi.org/10.1108/09590551111130748

Braun, P. (2008). Creating values to tourism products through tourism networks and clustering: uncovering destination value chain. Business Networking-Trends and Cases. Icafai Press.

Bruque, S. & Moyano, J. (2007). Organizational determinants of information technology adoption and implementation in SMEs: The case of family and cooperative firms. *Technovation,* 27(5), 241–253. https://doi.org/10.1016/j.technovation.2006.12.003

Chong, S. & Pervan, G. (2007). Factors Influencing the Extent of Deployment of Electronic Commerce for Small and Medium-Sized Enterprises. *Journal of Electronic Commerce in Organizations*, 5(1), 1–29. https://doi.org/10.4018/jeco.2007010101

Croom, S. & Johnston, R. (2003). E-service: enhancing internal customer service through e-procurement. *International Journal of Service Industry Management*, 14(5), 539-55.

Dakhli, M. & De Clercq, D. (2004). Human capital, social capital, and innovation: a multi-country study. *Entrepreneurship & Regional Development,* 16(2), 107–128. https://doi.org/10.1080/08985620410001677835

Dupeyras, A. & Maccallum, N. (2013). Indicators for Measuring Competitiveness in Tourism: A guidance document. OECD Tourism Papers, 2013/02, 1–62. https://doi.org/10.1787/5k47t9q2t923-en

Ferguson, N. (2010). E-Commerce-e-Business Cost Benefit Remarkable Ideas Ltd. PO Box 633, Tokoroa 3444, Waikato, New Zealand

Ghobakhloo, M., Hong, T. S., Sabouri, M. S. & Zulkifli, N. (2012). Strategies for Successful Information Technology Adoption in Small and Medium-sized Enterprises. *Information*, 3(4), 36–67. https://doi.org/10.3390/info3010036

Golob, T. F. & Regan, A. C. (2001). Impacts of information technology on personal travel and commercial vehicle operations: Research challenges and opportunities. *Transportation Research Part C: Emerging Technologies*, 9(2), 87–121. https://doi.org/10.1016/S0968-090X(00)00042-5

Gono, S., Harindranath, G. & Berna Ozcan, G. (2013). Challenges of ICT Adoption by South African SMEs: A study of Manufacturing and Logistics Firms. Annual Conference of The Institute for Small Business and Entrepreneurship, 1–23. https://doi.org/10.1080/15332860802086367

Grandon, E. E. & Pearson, J. M. (2004). Electronic commerce adoption: An empirical study of small and medium US businesses. *Information and Management,* 42(1), 197–216. https://doi.org/10.1016/j.im.2003.12.010

Hair, J. F., Anderson, R. E., Tatham, R. L. & Black, W. C. (2010). Multivariate Data Analysis: A Global Perspective (7th Edition). Pearson Prentice Hall, New Jersey.

Hooi, L. W. (2006). Implementing e-HRM: The readiness of small and medium-sized manufacturing companies in Malaysia. *Asia Pacific Business Review,* 12(4), 465–485. https://doi.org/10.1080/13602380600570874

Houghton, K. A. & Winklhofer, H. (2004). The effect of websites and e-commerce adoption on the relationship between SMEs and their export intermediaries. *International Small Business Journal*, 22(4), 369–388. https://doi.org/10.1177/0266242604044305

Hussein, R., Ennew, C. & Kortam, W. (2012). The Adoption of Web-Based Marketing in the Travel and Tourism Industry: An Empirical Investigation in Egypt. Journal of Innovation Management in Small & Medium Enterprises, 2012, 1–23. https://doi.org/10.5171/2012.143325

Iacovou, C. L., Benbasat, I. & Dexter, A. S. (1995). Electronic data interchange and small organizations: Adoption and impact of technology. *MIS Quarterly,* 19(4), 465–485. Retrieved from http://www.jstor.org/stable/249629.

Khemthong, S. & Roberts, L. M. (2006). Adoption of The Internet and Web-technology for Hotel Marketing: A Study of Hotels in Thailand. *Journal of Business Systems, Governance and Ethics,* 1(2), 47–66. https://doi.org/688992359828482

Kidd, P. (2023, September 16). eBusiness Benefits [Review of eBusiness Benefits]. Cheshire Henbury. https://www.cheshirehenbury.com/ebusiness/ebbenefits.html

Kilangi, A. M. (2012). The Determinants of ICT Adoption and Usage among SMEs: The Case of Tourism Sector in Tanzania. PhD Thesis, Vrije Univ.

Kuan, K. K. Y. & Chau, P. Y. K. (2001). A perception-based model for EDI adoption in small businesses using a technology-organization-environment framework. *Information and Management*, 38(8), 507–521. https://doi.org/10.1016/S0378-7206(01)00073-8

Kushwaha, G. S. (2011). Competitive Advantage Through Information and Communication Technology (ICT) Enabled Supply Chain Management Practice. *International Journal of Enterprise Computing and Business Systems,* 1(2).

Lee, J. & Runge, J. (2001). Adoption of Information Technology in Small Business: Testing Drivers of Adoption for Entrepreneurs. *Journal of Computer Information Systems,* 42(1), 44–57. https://doi.org/10.1080/08874417.2001.11647038

Levy, M. & Powell, P. (2003). Exploring SME, the Internet adoption: towards a contingent model. *Electronic Markets*, 13(2), 173–181. https://doi.org/10.1080/1019678032000067163

Lorette, K. (2013). The Advantages of E-Business, Houston Chronicle P.O. Box 4260 Houston, Texas 77210-4260

Mamaghani, F. (2009). Impact of E-commerce on Travel and Tourism: An Historical Analysis*. International Journal of Management*, 26(3), 365–376.

Mariani, M., Styven, M. E. & Ayeh, J. K. (2019). Using Facebook for travel decision-making : an international study of antecedents. International Journal of Contemporary Hospitality Management https://doi.org/10.1108/IJCHM-02-2018-0158

Martin, F. M., Ciovica, L. & Cristescu, M. P. (2013). Implication of Human Capital in the Development of SMEs through the ICT Adoption. *Procedia Economics and Finance,* 6, 748–753. https://doi.org/10.1016/S2212-5671(13)00198-6

Mehrtens, J., Cragg, P. B. & Mills, A. M. (2001). A model of Internet adoption by SMEs*. Information & Management*, 39(3), 165–176. https://doi.org/DOI: 10.1016/S0378-7206(01)00086-6

Mihajlović, I. (2012). The Impact of Information and Communication Technology (ICT) as a Key Factor of Tourism Development on the Role of Croatian Travel Agencies. *International Journal of Business and Social Science,* 3(24), 151–159.

McCormick, M. (2018, June 27). Pricing Strategies for Tour Operators and Online Travel Agents. Blog.blackcurve.com. https://blog.blackcurve.com/pricing-strategies-for-tour-operators-and-online-travel-agents

Moutinho, L. (2002). Strategic Management in Tourism. CABI Publishing, UK.

Pain, R. (2015, May 6). Malaysia's Untapped Competitive Advantage: HR Transformation. SSON. 2015

Parker, C. M. & Castleman, T. (2009). Small firm e-business adoption: a critical analysis of theory. *Journal of Enterprise Information Management*, 22(1/2), 167–182. https://doi.org/10.1108/17410390910932812

Poon, S. & Swatman, P. M. C. (1999). An exploratory study of small business. The Internet commerce issues. *Information and Management,* 35(1), 9–18. https://doi.org/10.1016/S0378-7206(98)00079-2

Poorangi, M. M., Khin, E. W. S., Nikoonejad, S. & Kardevani, A. (2013). E-commerce adoption in Malaysian small and medium enterprises practitioner firms: A revisit on Rogers' model*. Anais Da Academia Brasileira de Ciencias*, 85(4), 1593–1604. https://doi.org/10.1590/0001-37652013103512

Porter, M. E. (1985a). Competitive Advantage. Competitive Advantage: Creating and Sustaining Superior Performance. https://doi.org/10.1182/blood-2005-11-4354

Premkumar, G. & Roberts, M. (1999). Adoption of new information technologies in rural small businesses. *Omega*, 27(4), 467–484. https://doi.org/10.1016/S0305-0483(98)00071-1

Ramdani, B., Kawalek, P. & Lorenzo, O. (2009). Knowledge management and enterprise systems adoption by SMEs: Predicting SMEs' adoption of enterprise systems. *Journal of Enterprise Information Management*, 22(1/2), 10–24. https://doi.org/10.1108/17410390910922796

Seyal, A. H. & Rahman, Mohd. N. A. (2003). A Preliminary Investigation of E-Commerce Adoption in Small & Medium Enterprises in Brunei. *Journal of Global Information Technology Management,* 6(2), 6–26. https://doi.org/10.1080/1097198x.2003.10856347

Tan, K. S. & Eze, U. C. (2008). An Empirical Study of the Internet-Based ICT Adoption Among Malaysian SMEs. *Communications of the IBIMA,* 1, 1–12.

Thiesse, F., Staake, T., Schmitt, P. & Fleisch, E. (2011). The rise of the "next-generation bar code: an international RFID adoption study. Supply Chain Management: *An International Journal*, 16(5), 328–345. https://doi.org/10.1108/13598541111155848

Thong, J. Y. L. (1999). An Integrated Model of Information Systems Adoption in Small Businesses. *Journal of Management Information Systems*, 15(4), 187–214. https://doi.org/10.1080/07421222.1999.11518227

Twelfth Malaysia Plan, 2021-2025. (n.d.). Rmke12.Ekonomi.gov.my. https://rmke12.ekonomi.gov.my/en

Venkatesh, V., Morris, M. G., Davis, G. B. & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a unified view. *MIS Quarterly,* 27(3), 425–478. https://doi.org/10.1017/CBO9781107415324.004

Zakaria, M. & Hashim, M. K. (2004). Perceptions of E-business among Malaysian SMEs: A recent survey. *Malaysian Management Review,* 39(1), 86-93.

Zaremohzzabieh, Z., Samah, B. A., Muhammad, M., Omar, S. Z., Bolong, J., Hassan, S. B. H. & Mohamed Shaffril, H. A. (2016). Information and Communications Technology Acceptance by Youth Entrepreneurs in Rural Malaysian Communities: The Mediating Effects of Attitude and Entrepreneurial Intention. *Information Technology for Development,* 22(4), 606–629. https://doi.org/10.1080/02681102.2015.1128384