บทความวิจัย

ปัจจัยหลักที่มีอิทธิพลต่อการยอมรับใช้เทคโนโลยีการพาณิชย์อิเล็คทรอนิกส์ของผู้ประกอบการในโครงการ WOW สงขลา

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บทคัดย่อ

การศึกษาวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาโมเดลสมการเชิงโครงสร้างของปัจจัยที่มีผลต่อการยอมรับเทคโนโลยีพาณิชย์อิเล็กทรอนิกส์ของบริษัทขนาดกลางและขนาดย่อมในจังหวัดสงขลา เนื่องด้วยในปัจจุบันธุรกิจขนาดกลางและขนาดย่อมบางส่วนในประเทศไทยยังคงขาดการตระหนักถึงการใช้เทคนิคและเทคโนโลยีทางพาณิชย์อิเล็กทรอนิกส์ งานวิจัยนี้ใช้การประยุกต์ทฤษฎีการยอมรับและการใช้เทคโนโลยี เพื่อวิเคราะห์องค์ประกอบที่ส่งผลต่อการพาณิชย์อิเล็กทรอนิกส์ และได้ใช้แบบจำลองทฤษฎีการยอมรับและการใช้เทคโนโลยี (UTAUT) ในการทดสอบการยอมรับและการใช้เทคโนโลยีใหม่ โดยใช้แบบสอบถามในการเก็บข้อมูลเชิงปริมาณจากบริษัทที่มีพนักงานมากกว่าสิบคนในจังหวัดสงขลา และใช้โปรแกรม SmartPLS ในการวิเคราะห์ข้อมูล ผลการวิจัยพบว่า ปัจจัยความคาดหวังด้านประสิทธิภาพมีผลต่อความตั้งใจใช้เทคโนโลยีในอนาคตมากที่สุด นอกจากนี้ ปัจจัยความคาดหวังในการใช้งานและปัจจัยการรับรู้ความน่าเชื่อถือก็ส่งผลในเชิงบวกต่อความตั้งใจใช้เทคโนโลยีเช่นกัน แต่ในทางตรงกันข้าม ปัจจัยความสมัครใจไม่ส่งผลต่อการยอมรับใช้เทคโนโลยี ผลจากงานวิจัยนี้ชี้ให้เห็นถึงความสำคัญในการเข้าใจปัจจัยที่ส่งผล

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ต่อบริษัทในการใช้เทคโนโลยี และมีข้อเสนอแนะสำหรับบริษัทท้องถิ่นในการที่จะใช้พาณิชย์อิเล็กทรอนิกส์เพื่อสร้างโอกาสและความได้เปรียบในการแข่งขันต่อไป

คำสำคัญ: การพาณิชย์อิเล็กทรอนิกส์ การยอมรับใช้เทคโนโลยี โมเดล UTAUT ธุรกิจขนาดกลางและขนาดย่อม

RESEARCH ARTICLE

The Main Factors Influencing E-Business Technology Adoption of Entrepreneurs in WOW Project Songkhla, Thailand

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Abstract

This study aims to determine the factors that influence the adoption of E-business technology among SMEs in Songkhla, Thailand. The Unified Theory of Acceptance and Use of Technology model (UTAUT) was used to test the adoption and usage of the e-business technology. Questionnaires were distributed and quantitative method was utilized. The organizations with more than ten employees in Songkhla were chosen using database version. Moreover, the SmartPLS program was used to analyze the collected data. Based on the results, performance expectancy was the main reason for the use of technology in the future. In addition, effort expectance and perceived credibility have positive impact on the intention to use future technology. Voluntariness, on the other hand, does not affect this decision. The implications of this study

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reveal the important to understand why some companies choose to use technology. The study recommends the local companies in maximizing the E-business opportunities in order to gain competitive advantage.

Keywords: E-Business, Technology Adoption, UTAUT model, SMEs

Introduction

Electronic business (hereafter, E-business) has become a major driving force in today's economy with many businesses adopting this technology to ease their operations (Zhu & Kraemer, 2005). This is mainly because there is an increased number of an individual using the internet for shopping, social networking, communication and banking making this a resourceful platform for business growth (Kfouri & Skyrius, 2016). This has brought individuals together to interact and share business ideas through websites and emails. It has been reported that 96% of organizations in Organizations of Economic Cooperation Development (OECD) operate with E-business technology and half of these firms have their own websites (Zhu & Kraemer, 2005).

However, the widespread adoption of E-business in Thailand has been dominated by large businesses. Many small and medium-sized businesses in Thailand lag in adoption of E-business despite its huge potential to transform business operations. The operations of most of these businesses are poor since the management is not well informed on IT adoption (Abou-Shouk, Lim, & Megicks, 2016). Some of the factors that have contributed to this scenario include the cost that is associated with IT investment and this has left many businesses operating manually. The fear of failure in the adoption of this technology is also holding back many organizations from progressing (Vatanasakdakul, Tibben, & Cooper, 2004). This technology phobia and the lack of knowledge on the advantages that can be experienced from the application of this revolutionizing technology have resulted in the lack of strategic direction in many small businesses in Thailand.

The Rationale of the Study

Information from Thailand Development Research Institute (TDRI) indicates that there are more than 700,000 businesses that are utilizing internet services (Khemthong & Roberts, 2006). However, this did not improve the number of computerized organizations that are trading online on digital platforms. The medium sized organizations greatly contribute to the GDP of the country which makes this issue one of the major concerns (Saekow & Samson, 2011).

With a general understanding and process of implementation, any business can attain a competitive advantage by capturing a huge customer base with great interest and preference in e-business. Leaders with adequate knowledge in e-business can reinforce the adoption of this technology due to their ability to make decisions on behalf of the organization (Hart & Saunders, 1997). Despite lots of studies having been conducted on the deterrents of e-business adoption, little has been researched about the critical features that determine the decision of integrating this expertise for small and medium sized businesses in the twenty first century. The study aims to discover the factors contributing to the huge gap in the technology adoption in Thailand where the willingness is comparably low (Saekow & Samson, 2011). The results will contribute to the already published information and enhance literature and the knowledge body on the discrepancies that exist and the possible ways to address them.

It was a resolution of the provincial government cabinet to establish the Songkhla Provincial Development Plan that works to implement issues to do with development in agriculture, expansion

of tourism, trade and investment and promotion of product marketing strategies (Frambach & Schillewaert, 2002). To ensure consistent development of the country the cabinet saw the need to promote start-up, small-scale businesses that requires innovative management and incorporation of trending ideas that encourage the use of advanced technology in production (Zainab, Awais & Alshagawi, 2017). The interest of the cabinet to invest in building the capacity of local entrepreneur with the launch of Wow project has necessitated this study to understand what factors influence the adoption of e-commerce in Songkhla province.

According to the Thailand policy 4.0, the concept of technology-driven operations and results, such as the creation of online business plans, is fully supported by the Thai government (Oliveira & Martins, 2010). These digital marketing technologies require the implementation of appropriate information technology that can sustain online business operations successfully (Kumar, Luthra, & Haleem, 2015). This will also enable the application of product development strategies and innovations and consequently contribute to the expansion of the business. Therefore, Songkhla Province supports the idea of innovative technology in the agricultural manufacturing and production industries, to enhance the provision of quality raw materials (Shaharuddin, Rahman, Aziz, & Kassim, 2018). The agricultural sector is the core contributor to the gross value product of the country giving more reasons for the necessity to promote the effectiveness of this technology adoption in all aspects of the economy.

The local entrepreneurs in Songkhla province has plenty of resources including fertile lands and availability of water that can

generate substantial production (Sin, Choy, Lin, & Eze, 2009). The required practice that can make this possible is the knowledge that incorporates creative thinking and innovation, to address product development issues. The lack of sustainable business concepts and effective approaches to support this development is the main hindrance behind the quality agricultural results (Kumar et al., 2015). There is a need to develop a comprehensive strategy that will address the issue of production, product marketing and general management of local businesses. This project targets local entrepreneurs in the SMEs businesses.

The objective of this study is to study the main factors that influences the adoption of E-business technology among growing organizations in Songkhla, Thailand.

Literature Review

One of the studies conducted to address the true nature of this business discovered some major challenges that are currently facing e-business such as E-business markets (Cao, Ajjan, Hong, & Le, 2018). The importance of this market was stressed to ensure that businesses take advantage of all the available partnerships and alliances for the purpose of growth. The importance of e-business activities was recognized in New Zealand, during a government summit that was held to discuss the e-commerce plans for the businesses in the country (Surbakti, Wang, Indulska, & Sadiq, 2019). More of this information was in cooperated in the policymaking and this data has been useful in the economy benchmarking and the provision of guidelines to managers.

Studies that focused on the relationship that exists between the performance of the business and technology has indicated that technology affects productivity, profitability and marketing success. It has also been discovered that different types of IT investments create different value in the organization (Ajao, Oyebisi, & Aderemi, 2018). The main factor that hinders ICT adoption is the availability of resources. Limited finance, technology, and skilled IT human resource can prevent the integration of new technologies.

The Unified Theory of Acceptance and Use of Technology

To understand the acceptance of new technologies, researchers have used various theories as their ground theory leading to diversity and competing theories in the field of technology acceptance. To harmonize the various theories, Venkatesh, Morris, Davis, and Davis (2003) developed the unified theory of acceptance and use of technology (UTAUT). UTAUT is a combination of eight main models and theories which are Social Cognitive Theory, Adoption Innovation and Diffusion Theory (AIDT), the PC Utilization Model, the Theory of Planned Behavior (TPB), the Motivation Model, the Technology Acceptance Model (TAM), the Theory of Reasoned Action (TRA), and the combined TAM and TPB. The UTAUT theory proposes that performance expectancy, social influence and effort expectancy are direct determinant of behavioral intention and that the behavioral intention with facilitating condition directly influence use behavior of technology (Williams, Rana, & Dwivedi, 2015).

Conceptual Framework

The diagram below shows a conceptual framework that was developed through the extension of the UTUAT theory with the additions of customer's attitude and social influence. UTUAT has been proven to be a relevant research tool in the prediction of adoption behavior with the emphasis on expected performance and social influence. This framework can be further extended to include the risks that are associated with the technology used and the consumer needs. Even though this model has been extensively employed to explain the concept of technology adoption, there is a need to find out other factors that apply to a context based on customer environment.

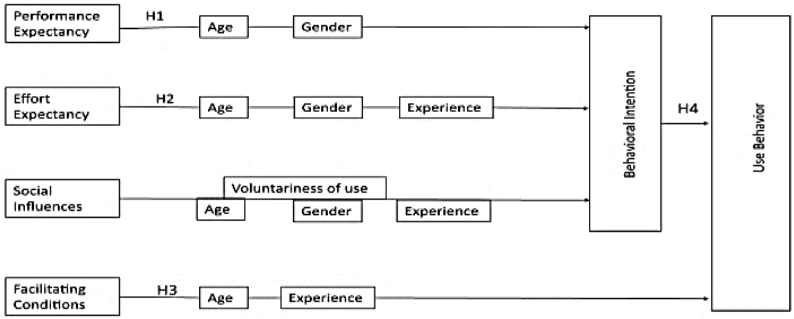

Figure 1. Conceptual Framework of the UTAUT Model in the current study.

(Adapted from UTAUT Models presented in Venkatesh et al., 2003 and Yu, 2012).

Performance Expectancy Factor

In review, the performance expectancy factor of UTAUT model refers to "the degree to which an individual believes that using a particular technology will help him or her to attain gains in

business performance" (Venkatesh et al., 2003, p.447). This factor captures the constructs of perceived usefulness and motivation Venkatesh et al. (2003) define performance expectancy as the level or percentage to which the person considers that usage of a system will contribute in gaining the improved performance in a business.

Alkhunaizan and Love (2012) assessed the success and growth of mobile commerce using UTAUT model and concluded the role of performance expectancy was one of the main drivers in customer intention to use mobile commerce. In line with this preceding study, the following hypothesis is proposed for this study:

Hypothesis 1: Performance expectancy is directly inclined to the behavioral intention.

Effort Expectancy Factor

Effort expectancy is the degree of ease associated with the use of the system (Venkatesh et al., 2003, p. 450) or, more precisely, it refers to the extent, to which an individual believes (expects) a new system will be easy to use (Venkatesh et al., 2003). Consequently, it has a significant positive influence on staff intension to exploit the ICT for better performance. According to the Venkatesh et al. (2003), the effort expectancy factor is the level of ease or efforts required in integrating system within the workplace. This factor is also included in the behavioral intention combination of UTAUT model. Dulle and Minishi-Majanja (2011) state that effort expectancy factor plays an increasingly important role in the acceptance of technology by the people while AlAwadhi and Morris (2008) revealed the dominant role of UTAUT's component including effort expectancy in students' intention to use the e-business

services. San Martín and Herrero (2012) in their study stated that effort expectancy is notably like the factor defined as perceived ease of use in the TAM's model. Hence, the following hypothesis has been developed:

Hypothesis 2: Effort expectancy is directly inclined to the behavioral intention.

Facilitating Conditions Factor

Facilitating conditions refers to the extent to which an individual believes that organizational and social conditions exist to support a new system (Venkatesh, 2000). They play an important role in examining the impact of external factors or variables in exploring the behavior towards technological usage. According to Venkatesh, Davis, and Morris (2007), the facilitating conditions refer to the importance given by the subjects to the factors like organization and related infrastructure-based support of the system usage. Venkatesh (2000), in a study, assessed the role of facilitating conditions along with different factors as anchoring factors and adjustment perspective for determining the perceived ease of use (PEOU) with respect to the online help system. The study claims an important role of anchoring factors in developing PEOU with increased experience, the role of the adjustment perspective increases in determining the PEOU specific to the system. Hence, the following hypothesis has been developed:

Hypothesis 3: Facilitating conditions is directly inclined to the behavioral intention.

Use behavior

The behavior generally determines the intention to use certain technology by the respondents. It defines the level of acceptance of technology by the organization (Al Awadhi & Morris, 2008). Behavior also determines the intention to perform certain task. This extension is endorsed by the study of Venkatesh et al. (2007), in which it has been determined that success of the UTAUT model also requires the inclusion of this dependent variable. Its importance is asserted in the context, where the basic model can prove its viability in terms of validity and development of the future prospect. It is very important to consider this variable in the model in this study, as eventually it conditions the success of the whole process of technology acceptance.

Behavioral intention

As mentioned earlier, use behavior is an antecedent of behavioral intention in the UTAUT model, because people had better cope with the task of accepting and using new technologies, when they have a positive intention to use future technologies (Legris, Ingham, & Collerette, 2003). To have such an intention, people usually must understand why they need it and what benefits they will receive from it, which accounts for the motivation behind adoption of new technology (Venkatesh et al., 2007). Hence, the following hypothesis is proposed:

Hypothesis 4: Behavioral intention is directly inclined to the use behavior

Voluntariness

When people are forced to use and accept technology without understanding why they need it or what benefit they could gain from it, usually the process of acceptance goes with major difficulties (Mathieson et al., 2001). It is the same with any innovation in all the spheres of knowledge, as it is a tendency of people's psychology to eagerly do something when they know why they need it.

Methodology

Quantitative method was used for data collection with the use of questionnaire adapted from previous studies. SmartPLS program was utilized to analyze the collected data. The software employs the use SEM and PLS modeling path to give out the output from the analysis. The SEM modeling technique will help to find relationship between technology systems and performance by looking on the outputs of the least square model.

The sample of organizations involved in this research project were chosen from a database version that was updated with organizations in Songkhla, Thailand that have more than 10 employees. The reason or choosing larger companies is to target companies that have the knowledge and resources to implement e-business and make the study much easier in identifying the objectives of the project. The survey method was used and approximately 55 survey questionnaires were administered to all entrepreneurs who participated in the WOW project. Out of the 55 questionnaires administered, six were incomplete and removed. Hence, the total observation for this study was 49. The data collected were further analyzed using smart PLS software that is

easy, fast and reliable to come up with the results. The main advantage of using PLS-SEM is the ability to keep track of all the files used and data analyzed, creates path model faster and provides deeper insight on the data (Shaharuddin et al., 2018). Another advantage of PLS-SEM is the ability to analyse small sample size data (Hair, Hult, Ringle, & Sarstedt, 2016).

Constructs Reliability and Validity

The reliability and validity of the measurement model was checked with Cronbach's alpha, composite reliability and average variance extracted (AVE) and the result is presented in the table 1 below.

Table 1

Assessment of Constructs Reliability

Constructs	Cronbach's alpha	Composite Reliability	Average Variance Extracted
Effort Expectancy	0.937	0.96	0.888
Facilitating Condition	0.724	0.879	0.784
Intention to Use Future Technology	0.935	0.958	0.885
Perceived Credibility	0.970	0.978	0.916
Performance Expectancy	0.946	0.961	0.860
Use Behaviour	0.908	0.943	0.846
Voluntariness	0.781	0.872	0.697

The result revealed that all the constructs' measurements are reliable with all the Cronbach's alpha greater than 0.7. The composite reliability which is more appropriate measure of internal consistency reliability since it considers the different outer loadings of the measuring items (Hair et al., 2016) is higher that the satisfactory level of 0.7. The outer loading of the measuring items of a construct (as shown in figure 1) is higher that the AVE for the construct which indicate that there is convergent validity. The least AVE is for Voluntariness which is 0.697 and it indicates that the construct explains about 69% of the variance in the reflective items that are used to measure the construct, and this is above the acceptable 50%. It also means that the items have common factor and has been adequately captured by the construct. There are no redundant items as well. The bootstrapping of the measurement model revealed that the T-statistics of all the items are significant.

To check that each construct is truly different from other constructs in the structural model discriminant validity was checked. The Fornell-Larcker criterion analysis (Fornell & Larcker, 1981) was used the check the discriminant validity. According to Hair, Ringle, and Sarstedt (2011), using the Fornell-Larcker criterion, the construct is considered distinct from other constructs in the structural model when the square root of the construct's AVE is greater than the constructs correlation with other constructs. The result of the discriminant validity is presented in the Table 2.

The result of the Fornell-Larcker criterion analysis indicate that the constructs in the structural model are all valid. Multicollinearity was checked with VIF and the values for all the constructs are lower than 5 which is the acceptable level (Hair et al.,

2011). According to Hock, Ringle, and Sarstedt (2010), once the measurement model is satisfactory, the structural model can then be analyzed.

Table 2

Discriminate Validity (Fornell-Larcker Criterion Analysis)

Constructs	1	2	3	4	5	6	7
Effort Expectancy (1)	0.943						
Facilitating Condition (2)	0.679	0.885					
Intention to Use (3)	0.807	0.726	0.940				
Perceived Credibility (4)	0.812	0.769	0.845	0.957			
Performance Expectancy (5)	0.856	0.749	0.854	0.841	0.927		
Use Behaviour (6)	0.671	0.715	0.795	0.764	0.853	0.92	
Voluntariness (7)	0.720	0.731	0.829	0.835	0.810	0.806	0.835

Note: the square root of the AVE is presented in the diagonal axis and the rest are inter-construct correlations.

Results and Discussion

To test the hypothesis, the third version of Smart-PLS software (Hair et al., 2016) was used to analyze the data obtained. The Smart-PLS software uses the partial least square structural equation modelling (PLS SEM) method to analyze the data obtained. The choice of PLS SEM over covariance-based SEM is because PLS SEM is a nonparametric statistic as the data did not assume normal distribution. More so, PLS SEM is the best option when the number

of observations is small (Hair et al., 2016). Path analysis is used to examine the influential relationship between the latent variables.

There are seven latent variables (five exogenous and two endogenous variables) in the model as shown in Figure 1. The parameter estimates are also shown in Figure 1. The bootstrapping of 5,000 samples revealed the t-statistics and the two-tailed significance level. The result of the parameter estimates, and their t-statistics value are presented in Table 3.

Table 3
Structural Path Estimate

Independent Variable	Dependent Variable	Parameter Estimate	t-statistics	Standard Error
Effort Expectancy	Intention to Use	0.174	1.971*	0.088
Facilitating Condition	Use Behaviour	0.292	3.338**	0.087
Intention to Use	Use Behaviour	0.584	5.437***	0.107
Perceived Credibility	Intention to Use	0.232	2.353*	0.099
Performance Expectancy	Intention to Use	0.283	2.822**	0.100
Voluntariness	Intention to Use	0.281	1.742	0.161

Note: * parameter is significant at $p < .05$, ** parameter is significant at $p < .01$, *** parameter is significant at $p < .001$

The result presented in Table 3 above revealed that performance expectancy has the strongest effect on intention to use future technology out of all the four independent variables. While effort expectancy, perceived credibility, and performance expectancy have significant effect on intention to use future

technology, voluntariness does not have a significant effect on intention to use. This is because voluntariness does not have a direct effect on intention to use but moderate the effect of social influence on intention to use (Venkatesh et al., 2003*).* Overall these independent variables explain 81.1% of the variance in intention to use future technology. According to Hair et al. *(*2016*)*, R^2 of 0.811 is considered substantially high. Intention to use has the stronger influence on use behavior than facilitating condition and the two latent constructs *(*intention to use and facilitating condition*)* can explain 67.3% in the variance in use behavior. This result is important to the usage and acceptance of E-business technology. The implication is that when E-business technology is designed the focus should be on improving the performance expectancy, perceived credibility and the effort expectancy in order to improve the intention to use**.** This is because intention to use given a good facilitating condition will result in actual usage of the technology**.** All these concepts suggest why individual will choose to use a technology**.**

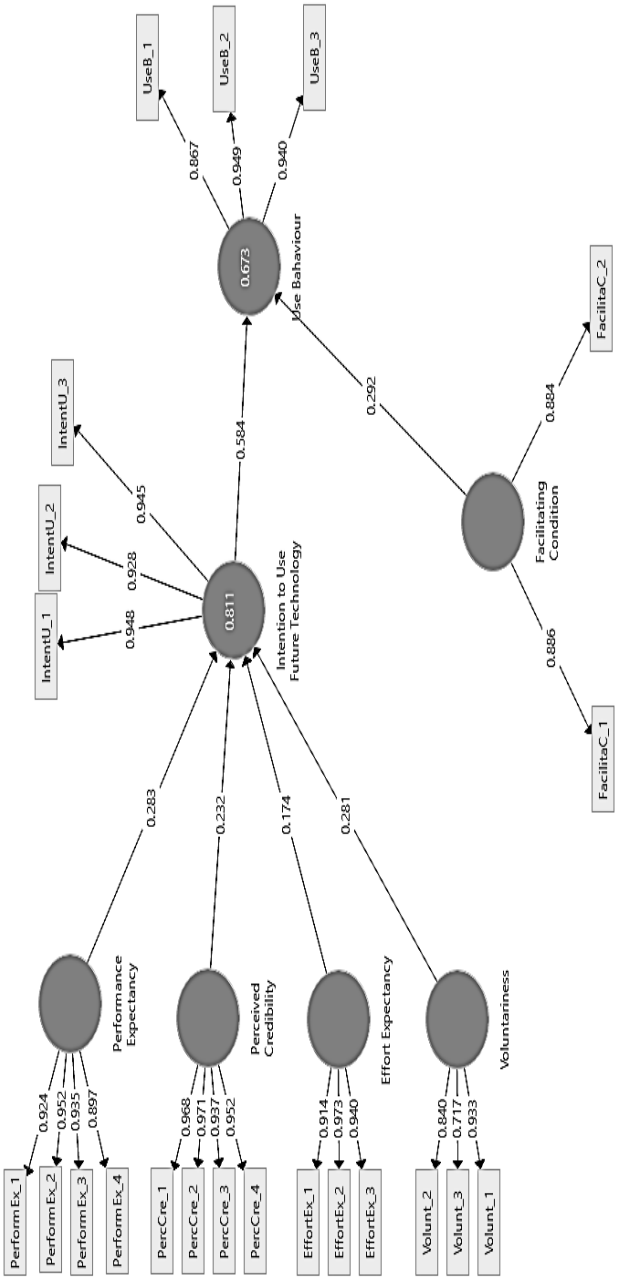

Figure 2. Derived Structural Model

Conclusion

This study adds an important empirical result to the acceptance of E-business by local entrepreneurs. All over the world there is a shift from the tradition way of doing business to E-business. Therefore, predicting the factors that influence the acceptance of E-business from the entrepreneurs' perspective provides a better understanding of the reasons for using or intending to use E-business by entrepreneurs.

The findings of this study revealed that performance expectancy has the highest influence on the intention to use future technology. This is consistent with the findings of Alkhunaizan and Love (2012). This means that the strongest factor the influences entrepreneurs in choosing to use E-business is the level of performance expected from the use of the new E-business technology. The second strongest factor the influence the intention to use future technology is the perceived credibility. Due the financial relation to E-business adoption by the entrepreneur, the credibility of the E-business technology is important to the entrepreneur and most especially to SMEs. Therefore, the perceived credibility or trustworthiness of the technology is a deciding factor for entrepreneurs to use E-business technology. The least but important factor that influence the intention to use E-business technology by the SMEs is effort expectancy. This shows that compared performance expectancy and perceived credibility, effort expectancy is the least deciding factors for SMEs. This explains that entrepreneurs of small business do not mind to still put in little effort when using a new technology because of the small scale of their business. The results may however be different if the study

was conducted on large business. Voluntariness has no significant influence on the intention to use E-business technology. This shows that the relation between voluntariness and intention to use technology in this study is not a cause and effect relationship. This may be because the study surveyed entrepreneurs who cannot be coerced to use the technology. The entrepreneurs have the free will to use E-business technology and therefore, it is not a deciding factor for them. Finally, the intention to use E-business technology giving the right facilitating condition positively influence the actual usage of the E-business technology for the entrepreneurs.

The results suggest the important of the usage and acceptance of E-business technology amongst local entrepreneurs in Songkhla, Thailand. The implications of the study reveal that when E-business technology is designed the focus should be on improving the performance expectancy, perceived credibility and the effort expectancy in order to improve the intention to use. This is because intention to use given a good facilitating condition will result in actual usage of the technology. All these concepts suggest why individual will choose to use a technology. As such, it is recommended that managers assist in applying IT skills. Also, hiring employees with IT knowledge and experience would be a good start in maximizing the E-business opportunities. Employees must be exposed to IT and its implementation so businesses could gain competitive advantage. The limitation of the study, however, is that since the study was conducted among the local entrepreneurs in Songkhla, the result cannot be generalized for the consumers' adoption of the E-business technology. Future studies would be expanded the scope of study to test the model in a wider area.

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