International Journal of Information Technology and Business Management
29th May 2016. Vol.49 No.1

ISSN 2304-0777 www.jitbm.com

APPLICATION OF TOE FRAMEWORK IN EXAMINING THE FACTORS INFLUENCING PRE- AND POST-ADOPTION OF CAS IN MALAYSIAN SMES

[1]Wan Ismail, W.N. and [2]Mokhtar, M.Z.
[1]Universiti Sultan Zainal Abidin, Kuala Terengganu, Malaysia
[2]Universiti Malaysia Terengganu, Malaysia
Email: [1] wannursyahida@unisza.edu.my ,[2] zulkifli@umt.edu.my

Abstract

The adequacy and reliability of an accounting system is important to the survival of small-and-medium sized enterprises (SMEs) business. Today, with efficient computer operations such as computerised accounting systems (CAS), an adequate accounting system could be raised more easily than through manual method. However, many of Malaysian SMEs have not yet ready for this innovation. In fact among adopters, the software was still underutilized. For the important role plays by CAS in improving the practices of accounting system in a firm and the significant role plays by SMEs in country economy, this paper attempts to examine the CAS adoption factors in Malaysian context. The objective of this paper is to discuss and propose the application of TOE framework in examining the factors influencing pre-and-post adoption of CAS in Malaysian SMEs. Based on previous literatures, hypotheses and a conceptual model is also developed. It is expected that all factors under Technological, Organizational, Environmental and Owner-Manager Context will have a significance effect on CAS adoption of Malaysian SMEs. Instead of using other innovation theories, TOE is the choice in this conceptual paper as this framework provides a comprehensive view regarding the factors that shape the influence of innovation adoption among SMEs. The proposed conceptual model then is hoped to provide a basis for further empirical research.

Keywords: *Small-and-medium enterprises; Computerised Accounting System; TOE Framework; Innovation Adoption.*

1. Introduction

Small-and medium-sized enterprises (SMEs) are considered as main economic players and an influential source of national, regional and local economic development in many countries (Ramdani et al., 2009). They are large heterogeneous group of businesses which usually operating in service, trade, agriculture and manufacturing sectors. SMEs constitute more than 90% of total business establishment in many countries. In Malaysia, the share of SMEs to total establishments is 98.5% (SME Corp, 2015).

The definition of SMEs differs from each country. However, three commonly used criteria for defining SMEs were number of annual sales, employees and fixed assets. In Malaysia context, as depicted in Table 1, the definition has been simplified under two categories; Manufacturing and Services and Other Sector. For manufacturing, the company is categorized under SMEs if its sales turnover are not exceeding RM50 million or full-time employees not exceeding 200 workers. While for services and other sectors, the sales turnover should not exceed RM20 million or full-time employees not exceed 75 workers (Bank Negara Malaysia, 2013).

International Journal of Information Technology and Business Management
29th May 2016. Vol.49 No.1

ISSN 2304-0777 www.jitbm.com

Table 1: Definition of SMEs in Malaysia

Category	Micro	Small	Medium
Manufacturing	Sales Turnover of less than RM300,000 OR full-time employees less than 5.	Sales turnover from RM300,000 to less than RM15 million OR full-time employees from 5 to less than 75.	Sales turnover from RM15 million to not exceedingRM50 million OR full-time employees from 75 to not exceeding 200.
Services & Other Sectors		Sales turnover from RM300,000 to less than RM3 million OR full-time employees from 5 to less than 30.	Sales turnover from RM3 million to not exceeding RM20 million OR full-time employees from 30 to not exceeding 75.

Source: Bank Negara Malaysia (2013)

In Malaysia, SMEs had been recognized as the backbone of Malaysian economy as they provide large employment opportunities, about 57.5% of the total employment market, contributed 33.1% of the gross domestic product (GDP) and supplied 19% of the total export value of the country (SME Corp, 2015). These data demonstrate that SMEs are essential for prosperity of Malaysia. They also aid to large companies, stimulate competition and serve as seed-bed from which large companies grow (Hashim, 2003).

However, regardless of country, SMEs face common problems which impair both their survival rate and performance (Ahmad & Seet, 2009). In some countries, statistics suggest that the failure rate of small businesses in their first five years is more than 50% (Lussier & Halabi, 2010; Zhang et al., 2009; Bowen et al., 2009; Temtime & Pansiri, 2004).

SMEs in Malaysia have also faced great challenges especially in trying to survive in the competitive market. Past statistics indicated that the estimated failure rate for Malaysian SMEs was 60 percent (Ahmad & Seet, 2009). One of the significant questions from this situation is why some firm succeeded while others failed. Given the importance of SMEs for the stability and strength of the economy, understanding of why SMEs fail and succeed is essential (Lussier & Halabi, 2010). For that reason, SMEs have been adopted as a subject for this study.

2. Literature Review

2.1 SMEs and Accounting System.

Bornstein (2007) stressed that 90 percent of failures are owed to inadequate management. It may come either from inadequate financial management or general management or may also from mishmash of those two. Therefore Bornstein (2007) agreed that improved management is as important as financial aid. Other researchers (e.g., Bowen et al., 2009; Temtime & Pansiri, 2004) also agreed that poor management is the major cause of SME failure. Moreover, Temtime & Pansiri (2004) pointed that whether the causes are characterised as competition, financing, inventory, marketing, etc, they can be avoided if good management was in position.

Improved financial management in smaller growth enterprises can and should come through upgrading of their financial information (McMahon , 2001) or accounting system (Wan Ismail & Ali, 2013). Dyt & Halabi (2007) pointed that most startling distinctions and the clearest border between successful and discontinued small businesses lie in their approach and use of accounting information. In fact, Dyt & Halabi (2007) stressed that the lack of accounting reports by SMEs provides implications for the role of the economy. Hamby (1992) noted that most of the SMEs failure causes are directly related to the accounting system such as miss or inaccurate

ISSN 2304-0777 www.jitbm.com

accounting record, fraud, inadequate accounting experience, lack of an adequate accounting system and management's lack of accounting knowledge. Therefore many researchers such as Lussier and Halabi (2010), Blackwood and Mowl (2000), Stokes and Blackburn (2002) and Lussier (1995) agreed that accounting record is one of the factors that important in determining the failure of the SMEs. These studies also indicated that one of the characteristics that will increase the chances of SMEs to success is to maintain good record keeping and financial control. Therefore, the importance of the accounting system for SMEs cannot be omitted.

Despite the theorized performance benefits of doing so, previous researches however found that not all smaller firms produce accounting reports (e.g. Dyt & Halabi, 2007; Che Rose, 2006; Fadhil & Fadhil, 2010). Hence, if the SMEs adopt CAS, there should be fewer obstacles to improved record keeping practices in their firms (Breen et al., 2003). Nowadays, there are many range of commercial accounting software in the market. Furthermore, many of the packages are easy to use even by those who are not trained accountants (Halabi et al., 2010). All statements are produced automatically by the software by just entering the data and pressing the keyboard. Therefore, inaccurate and ineffective accounting information due to lack of knowledge of accounting is no longer a significant reasons. Furthermore many of the accounting commercial software have been produced as cost effective solutions for SMEs. This system is known as computerised accounting system (CAS).

Previous discussions therefore suggest that users can make wise decisions if the SMEs accounting systems or financial information are adequate. Consequently, failure rate among SMEs would be reduced and high firm performance would be generated. With CAS, accounting information is easily produced which then could help the SMEs owner-manager to make faster decision. Hence, investment in sophisticated IT such as CAS is now considered vital for firms of all sizes to support, sustain and develop the business (Ismail & King, 2007). However, despite the importance of information technology especially CAS, SMEs have been slowed in adopting these technological innovations (Fadhil & Fadhil, 2010). Since SMEs constitute over 98 percent of all businesses in Malaysia, this slow adoption rate is a critical issue. As CAS is seemed to be relevant in today's business environment, this paper aims to propose the factors that influence the adoption of CAS in Malaysian SMEs. As there is still lack of research that focus on CAS adoption, the model is conceptualised by adapting the factors that commonly used in innovation adoption literatures.

2.2 Theoretical background

To gain an inclusive view regarding the factors that shape the influence of CAS adoption among Malaysian SMEs, this study adopt the TOE framework established by Tornatzky and Fleischer (1990). Some researcher used the word TOE framework interchangeably with TOE theory (e.g. Oliveira & Martins 2010b).

Many theoretical models have been used to study the adoption of technological innovations among SMEs such as Innovation Diffusion Theory, Resource-Based View, Technology Acceptance Model (TAM), Stage Theory, Theory of Planned Behaviour (TPB), Combined TAM and TPB, and Unified Theory of Acceptance and Use of Technology (UTAUT) (Wan Ismail & Ali, 2013). However, Ramdani & Kawalek (2008) concluded after reviewing prior literatures that IS innovations' adoption/diffusion research normally evaluates various technologies, organisational and environmental factors that facilitate or inhibit adoption/diffusion of innovation technology.

Chau and Tam (1997) pointed that the theoretical framework suggested by Tornatzky and Fleischer (1990) permits us to assess the importance of different factors which affect the propensity to adopt IT/IS. Therefore provides a useful preliminary point to look into innovation adoptions. This is in line with Kuan and Chau (2001) when they specified that the decision to adopt an IT and inter-organizational systems is not predominantly based on the characteristics of the technology itself. The decision may also rest on other factors related to the internal organization and the external environment.

Many researchers (e.g., Chau & Tam, 1997; Kuan & Chau, 2001; Raymond & Uwizeyemungu, 2007; Ramdani et al., 2009) also agreed that TOE provide an outstanding theoretical

ISSN 2304-0777 www.jitbm.com

foundation for exploring IS adoption behaviour within SMEs. Hence it has been a choice of many IT/IS adoption studies in various disciplines. Moreover, Teo et al. (2004) demanded that in SMEs context, a framework for classifying IT adoption factors which has been used more successfully is TOE. Hence it has been applied in many previous SMEs studies. Among pioneer researcher which use TOE in studying innovation adoption within SMEs was Thong. Thong (1999) adopted this framework in studying IS adoption in Singaporean SMEs and found significant relationships between IS adoption and technological and organizational characteristics.

TOE has also been demanded to be a generic theory of technology adoption/diffusion. Sarkar (2008) proposed that beside studies in IT adoption stage, this theory may also be useful in developing a model for the IT implementation stage studies. In other word, this framework is applicable to be used in both pre and post-adoption research. Montazemi and Qahri-Saremi (2015) noted that pre-adoption stage of the innovation adoption process encompasses the consumer's decision concerning whether to admit or reject the innovation adoption. It begins with the consumers' consciousness, which leads to mental evaluation. In turn, it may lead to the innovation adoption. While post-adoption stage of the innovation adoption process implicates the consumer's choice regarding whether to continue or discontinue using the innovation. It consists of an experience or trial that may lead to the continuous usage of the innovation (Montazemi & Qahri-Saremi, 2015)

2.3 Technological-Organizational-Environmental Framework (TOE)

The TOE framework recognises three aspects of a firm's contexts that stimulus the adoption and implementation of a technological innovation. The technological context comprises the internal and external technologies that are related to the firm, the organizational context refers to the features and resources of the firm and the environmental context is the arena in which a firm runs its business, referring to its competitors, industry and dealings with the government.

These three aspects of contextual factors influence the likelihood of a firm to adopt an innovation, effect the assimilation process and eventually the impacts of the innovation on organizational performance (Zhu et al., 2004). However, after the time elapsed, the TOE framework has been revolutionised by a number of studies such as Thong (1999) and Kuan and Chau (2001).

As specified previously, in TOE framework, the process of how a firm adopts and implements technological innovations is influenced by three aspects: the technological context, the organizational context, and the environmental context. Thong (1999) on the one hand applied TOE framework in four dimensions when studying SMEs sectors.

The earlier definition by Tornatzky and Fleischer (1990) mentioned organizational context as the characteristics and resources of the organization including the organization's size and managerial structure. Therefore, despite the internal processes, most of the studies added together the characteristic of the decision makers in the organizational dimension (e.g., Chang et al., 2007; Ramdani & Kawalek, 2008; Scupola, 2009; Kuan & Chau, 2001; Premkumar & Roberts, 1999).

However, extending TOE theory, Thong (1999) reasoned that based on SMEs significantly centralized structures, the CEOs or owner-manager make most of the critical decisions. Accordingly, Thong (1999) conceptualized and verified the prominence of a fourth dimension (besides technological, organizational and environmental) which has been classified as CEO's characteristics. Besides Thong (1999), Seyal and Rahman (2003) also distinguished decision-maker context from the organizational context, causing TOE framework in four dimensions: technological, organizational, and environmental and decision-makers characteristics. Some researcher as Wan Ismail and Ali (2013) referred Thong's Model as DTOE framework.

Previous thoughts have demonstrated TOE as an excellent theoretical foundation for exploring IS adoption behaviour within SMEs. Therefore, it is clear from the preceding discussion that this theory is suitable to be adapted in CAS domain. The framework which focusing more than only on technological and perception sides (such as TAM Theory) provide a comprehensive view regarding

ISSN 2304-0777 www.jitbm.com

the factors that shape the influence of CAS adoption among SMEs. Therefore this study resolves to use TOE framework in examining the factors that influence the pre- and post-adoption of CAS in Malaysian SMEs. Meant for the significant role played by the owner-manager's in SMEs, this study adapts Thong (1999) model by including the owner-manager characteristics as one of the main dimension together with technological, organizational and environmental context. Yet, the variables within these four contexts were identified from previous literatures and differ from Thong. The choice has been made over the commonly used variables in TOE literatures.

2.4 Hypotheses development

Despite the lack of research which particularly focused on CAS adoption factors and SMEs (Ismail & Ali, 2013), general information technology and information system adoption studies however have been extensively researched (e.g., Thong, 1999; Chang et al., 2007; Raymond & Uwizeyemungu, 2007; Al-Qirim, 2007; Seyal et al., 2007; Ramdani & Kawalek, 2008; Scupola, 2009; Ramdani et al., 2009). As CAS is an important subset of IT research (Premkumar & Robert, 1999), the finding of IT/IS adoption literatures have been adapted to be matched with current study. Those studies were adopted as a guide for hypotheses development.

2.4.1 Factors influence CAS adoption among Malaysian SMEs

a) Technological Characteristics

In TOE theory, the technological context refers to the innovation that is to be taking on by the organisation (Teo et al., 2004). Hence, it relates to the technologies available to an organization (Chau & Tam, 1997). Its main attention is on how technology characteristics themselves can affect the adoption process (Chau & Tam, 1997). In relation to the theoretical basis for studying the impact of technological factors on firms, Roger's (1995) model of technological innovation is widely recognised in information systems research. Roger (1995) identified five critical characteristics that influence innovation adoption: Relative advantage, compatibility, complexity, trialability and observability. However, among them, compatibility, relative advantage and complexity were found to have consistent associations with innovation behaviours (Kuan & Chau, 2001).

This is consistent with Tornatzky and Klein (1982) which identified only three characteristics of an innovation which would be the most important: relative advantage; compatibility; and complexity. According to the finding of meta-analysis studies on 75 innovation articles, Tornatzky and Klein (1982) pointed that there are ten characteristics which were most frequently addressed in articles, (1) compatibility, 2) relative advantage, 3) complexity, 4) cost, 5) communicability, 6) divisibility, 7) profitability, 8) social approval, 9) trialability and 10) observability. However, only 3 from those innovation characteristics (compatibility, relative advantage, and complexity) had the most consistent significant interactions to innovation adoption. Thus, they suggested the future research should consider these three areas. However among three, relative advantage is the only variable that has been constantly identified as an important adoption factor and as the most important factor for IT growth in SMEs.

In addition to the characteristics of innovation, some study included other factors to the technological context for example Zhu *et al.* (2004) put forward technological readiness, Scupola (2009) added related technologies, Chang *et al.* (2007) included security protection, Seyal *et al.* (2007) included task variety, and Pan and Jang (2008) added IT infrastructure and technology integration. However among all, cost is the most frequent variable which has been adopted by previous researchers (e.g., Ali et. al. 2012; Ozturk, 2010; Al Qirim, 2007; Zhu et al., 2006),

After reviewing prior researches, this study decides to suggest four commonly used technological characteristics; relative advantage, compatibility, complexity, and cost as the factors contributing to CAS adoption. For the significant influence role of those technological variables on CAS adoption, this study hypothesizes that:

H1: There is a relationship between the technological context and CAS adoption in Malaysian SMEs in term of relative advantage, compatibility, complexity and cost.

International Journal of Information Technology and Business Management
29th May 2016. Vol.49 No.1

ISSN 2304-0777 www.jitbm.com

b) Organizational context

In IT adoption, organizational factors play an important role in the adoption decision (Seyal et al., 2007). The organizational context refers to the characteristics and resources of the organization (Tan & Felix, 2010). It looks at the process and structure of an organization that constrains or facilitates the adoption and implementation of innovations (Chau & Tam, 1997).

The characteristics in the organisational context seem to be the primary focus of many studies in the context of small business. Research on IT adoption identifies many organizational factors that may influence IT adoption. However, financial readiness (e.g., Chang et al., 2007; Scupola, 2009; Ifinedo, 2011; Chong & Chan, 2012), organizational culture (e.g., Scupola, 2009; Alatawi et al., 2012), technological readiness (e.g., Oliveira & Martins, 2010a; Low et al., 2011), satisfaction with existing system (e.g., Alatawi et al., 2012) and IT experience (e.g., Ghobakhloo *et al.*,2011; Chuchuen & Chanvarasuth, 2011; Chong & Chan, 2012; Picoto et al., 2012) were considered to be common factors that influence SMEs to adopt technological innovation. For the important role of organizational context in innovation adoption decision, this study hypothesizes that:

H2: There is a relationship between the organizational context and CAS adoption in Malaysian SMEs in term of financial readiness, organizational culture, technological readiness, satisfaction with existing system and IT experience.

c) Environmental context

The environmental context is the area in which the firm organizes business (Tornatzky and Fleischer, 1990) or in other words concerns the surroundings of the organisation, looking at how external influences affect the motivations or obstacles to adopt an innovation (Teo et al., 2004).

The adoption of IT can be the consequence of pressure and support exerted on the enterprise by its environment. One of the practical and pressing reasons for SMEs to adopt IT comes from government policies (Kuan & Chau, 2001; Yang et al., 2012). Government regulation can have a favorable or negative impact on organizations, depending on whether its policy encourages or discourages innovation (Alatawi et al., 2012). The support from vendors also repeatedly showed to be significant in influencing innovation. Hence, external support from consultants and vendors are also considered as important factors in IT adoption (Sarkar, 2008; Alatawi et al., 2012). Finally, the external environmental incorporates the structure of the industry, such as the extreme competition are also frequently found encourages the adoption of innovation (e.g., Awa et al., 2012; Chong & Chan, 2012). Therefore based on the IT/IS adoption literature in both pre and post adoption stages, such adoption drivers (government policies, vendor support, competition) were assumed to be most suited for analyzing the CAS adoption in Malaysian SMEs. This study therefore hypothesized that:

H3: There is a relationship between the environmental context and CAS adoption in Malaysian SMEs in term of government policies, vendor support and competitive pressure.

d) Owner-manager context

In SMEs, IT adoption process is directly affected by top management or owner-managers. In most cases CEOs and owner-manager is the same person. The owner-managers have a major impact on the firms themselves (Nguyen, 2009) since all decisions from daily functions or activities to future investments are made by them (Thong, 1999). This is also refers to IT adoption decision. Since the owner-manager is the main decision maker, the characteristics of the owner-manager are crucial in shaping the innovation attitude of the SMEs (Thong, 1999).

According to the literature, several characteristics including owner-manager's innovativeness (e.g., Thong, 1999), owner-manager's IS/IT knowledge (e.g., Thong, 1999; Ismail & King, 2007) and owner-manager's attitude towards IT (e.g., Nguyen, 2009; Alam, 2009; Thong & Yap, 1995) directly impact the process of IT adoption in SMEs. And since this study is focusing in accounting area, the owner-manager accounting knowledge is another factor which possible to be considered. This variable has also been used by Ismail and King (2007). For the role play by the owner-managers in determining the

ISSN 2304-0777 www.jitbm.com

innovativeness of the SMEs, this study hypothesizes that:

H4: There is a relationship between the owner-manager context and CAS adoption in Malaysian SMEs in term of owner-manager's innovativeness, owner-manager's IS/IT knowledge, owner-manager's attitude towards IT and owner-manager's accounting knowledge.

2.5 Conceptual Model

Based on previous TOE literatures, a proposed model for CAS adoption in Malaysian SMEs is developed. As suggested by Thong (1999), there are 4 context of SMEs innovation adoption, the technological context, organizational context, environmental context and owner-manager context. As showed by Figure 1, the conceptual model proposes that there are significant relationships between those factors and CAS adoption decision. CAS adoption in this study covers both pre and post adoption stages which are proxied by the likelihood of CAS adoption (for non-adopters) and the extent of CAS usage (adopters). In specific, the model suggests that there are significant relationships between the technological, organizational, environmental and owner-manager context with the likelihood of CAS adoption. The model also suggests that there are significant relationships between the technological, organizational, environmental and owner-manager context with the extent of CAS usage. Although none of the constructs were found to be directed specifically to CAS, these variables have been gathered from the contemporary IS/IT field of research. Since CAS is a subset of IT/IS area, these selected variables are deemed significant to be considered as factors for describing the adoption of CAS in Malaysian SMEs.

International Journal of Information Technology and Business Management
29th May 2016. Vol.49 No.1

ISSN 2304-0777 www.jitbm.com

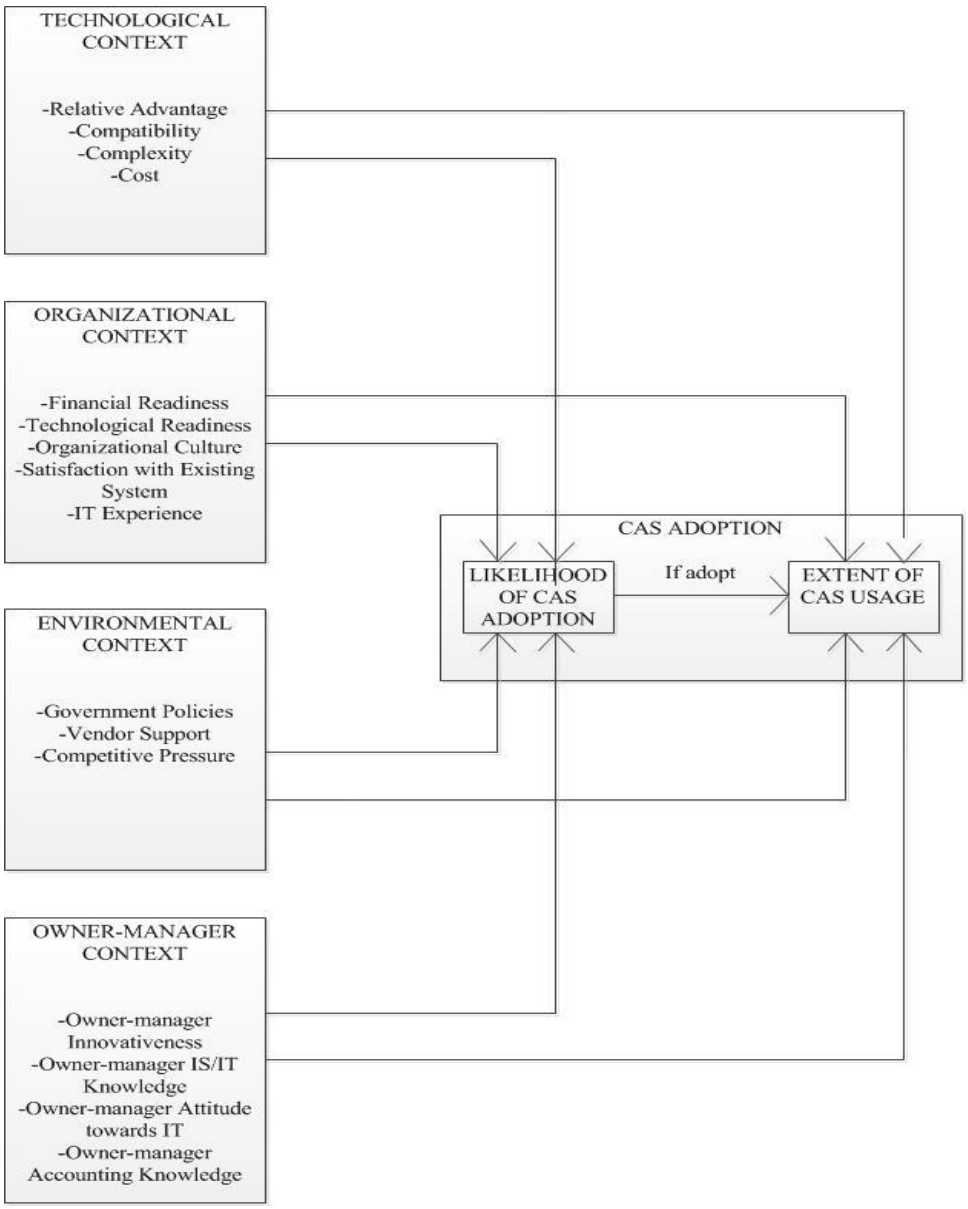

Figure 1: Proposed Conceptual Model

3. Conclusion and Recommendation

This paper reveals a number of interesting issues about CAS in SMEs. It also helps to provide a better understanding of the important role plays by CAS in improving accounting system of the firm. By using TOE framework as a background, this paper aimed to propose the factors that are important in influencing CAS adoption in Malaysian SMEs. Gaining from literature reviews, the factors then have been summarized in the hypotheses development. This paper ends with the construction of the conceptual model which is hoped to provide a basis for further research.

ISSN 2304-0777 www.jitbm.com

Future research is recommended to validate this conceptual model empirically. By examining the adoption factors, the results of future study may give some hints for the owner-managers and policy makers towards the factors that influence the CAS adoption, and hence ensure the success of innovation investment. Moreover, examining the same variables for both non-adopters and adopters groups in future studies will give more insight to the related parties on whether the adoptions of CAS in both pre-and-post adoption stages are influenced by the same factors.

References

1. Ahmad, N.A. & Seet, P. (2009). *Dissecting behaviours associated with business failure: A qualitative study of SME owners in Malaysia and Australia.* Asian Social Science, 5(9): 98-104.

2. Alam, S.S. (2009). *Adoption of internet in Malaysian SMEs.* Journal of Small Business and Enterprise Development, 16(2), 240–255. http://dx.doi.org/10.1108/14626000910956038

3. Al-Qirim, N. (2007). *The adoption of eCommerce communications and applications technologies in small businesses in New Zealand.* Electronic Commerce Research and Applications, 6(4): 462-473. http://dx.doi.org/10.1016/j.elerap.2007.02.012

4. Alatawi, F.M.H., Dwivedi, Y.K., Williams, M.D., & Rana, N.P. (2012). *Conceptual model for examining knowledge a management system (KMS) adoption in public sector organizations in Saudi Arabia.* Proceeding Paper for tGOV Workshop '12 (tGOV12), May 8-9, Brunei University, West London.

5. Ali, A., Abdul Rahman, M.S., & Wan Ismail, W.N. (2012). *Predicting continuance intention to use accounting information systems among SMEs in Terengganu, Malaysia.* International Journal of Economics and Management, 6(2), 295-320.

6. Awa, H.O., Ukoha, O., & Emecheta, B.C. (2012). *Integrating TAM and TOE frameworks and expanding their characteristic constructs for E-Commerce adoption by SMEs.* Proceedings of Informing Science & IT Education Conference (InSITE 2012), June 22-27, Montreal, Canada.

7. Bank Negara Malaysia. (2013). *Circular on New Definition of Small and Medium Enterprises (SMEs).* Development Finance and Enterprise Department, Bank Negara Malaysia.

8. Bornstein, S.D. (2007). *Addressing small-business failure rates.* New Jersey Banker, Spring 2007.

9. Bowen, M., Morara, M. & Mureithi, S. (2009). *Management of business challenges among small and micro enterprises in Nairobi-Kenya.* KCA Journal of Business Management, 2(1): 16-31. http://dx.doi.org/10.4314/kjbm.v2i1.44408

10. Breen, J., Sciulli, N. & Calvert, C. (2003a). *The use of computerized accounting systems in small business.* Paper presented at 16th Annual Conference of Small Enterprise Association of Australia and New Zealand, 28th September-1st October 2003.

11. Chang, I., Hwang, H., Hung, M., Lin, M. & Yen, D. (2007). *Factors affecting the adoption of electronic signature: Executives' perspective of hospital information department.* Decision Support Systems, 44: 350-359.

12. Chau, P.Y.K. & Tam, K.Y. (1997). *Factors affecting the adoption of open systems: An exploratory study.* MIS Quarterly, 21(1), 1-24. http://dx.doi.org/10.2307/249740

13. Chong, A.Y-L., & Chan, F. T. S. (2012). *Structural equation modeling for multi-*

ISSN 2304-0777 www.jitbm.com

stage analysis on Radio Frequency Identification (RFID) diffusion in the health care industry. Expert Systems with Applications, 39(10), 8645–8654. http://dx.doi.org/10.1016/j.eswa.2012.01.201

14. Chuchuen, C., & Chanvarasuth, P. (2011). *The adoption of E-CRM in service sector of Thai SMEs.* Proceedings of the 2nd International Conference on Networking and Information Technology, Singapore.

15. Dyt, R. & Halabi, A.K. (2007). *Empirical evidence examining the accounting information systems and accounting reports of small and micro business in Australia.* Small Enterprise Research, 15(2): 1-9. http://dx.doi.org/10.5172/ser.15.2.1

16. Ghobakhloo, M., Arias-Aranda, D., & Benitez-Amado, J. (2011). *Adoption of e-commerce applications in SMEs.* Industrial Management & Data Systems, 111(8), 1238–1269. http://dx.doi.org/10.1108/02635571111170785

17. Halabi, A.K., Barret, R., Dyt, R. (2010). *Understanding financial information used to assess small firm performance.* Qualitative Research in Accounting & Management, 7(2): 163-179.

18. Hashim, M. K., & Osman, I. (2003). *An evaluation of the business practices in Malaysian SMEs.* Malaysian Management Review, December 2003.

19. Ifinedo, P. (2011). *Internet/e-business technologies acceptance in Canada's SMEs: an exploratory investigation.* Internet Research, 21(3), 255–281. http://dx.doi.org/10.1108/10662241111139309

20. Ismail, N.A. & King, M. (2007). *Factors influencing the alignment of accounting information systems in small and medium sized Malaysian manufacturing firms.* Journal of Information Systems and Small Business, 1(1-2): 1-20.

21. 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 & Management, 38:507-521.

22. Low, C., Chen, Y., & Wu, M. (2011). *Understanding the determinants of cloud computing adoption.* Industrial Management & Data Systems, 111(7), 1006–1023. http://dx.doi.org/10.1108/02635571111161262

23. Lussier, R.N. & Halabi, C.E. (2010). *A three-country comparison of the business success versus failure prediction model.* Journal of Small Business Management, 48(3): 360-377.

24. Mcmahon, R.G.P. (2001). *Growth and performance of manufacturing SMEs: The influence of financial management characteristics.* International Small Business Journal, 19(3): 10-28.

25. Montazemi, A. R. & Qahri-Saremi, H. (2015). *Factors affecting adoption of online banking: A meta-analytic structural equation modeling study.* Information & Management, 52, 210-226. http://dx.doi.org/10.1016/j.im.2014.11.002

26. Nguyen, T.H. (2009). *Information technology adoption in SMEs: an integrated framework.* International Journal of Entrepreneurial Behaviour & Research, 15(2): 162-186.

27. Oliveira, T., & Martins, M.F. (2010a). *Understanding e-business adoption across industries in European countries.* Industrial Management & Data Systems, 110(9), 1337-1354.

28. Oliveira, T, & Martins, M, F. (2010b). *Firms Patterns of e-Business Adoption: Evidence for the European Union- 27.* The Electronic Journal Information Systems Evaluation, 13(1), 47 – 56.

ISSN 2304-0777 www.jitbm.com

29. Ozturk, A.B. (2010). *Factors affecting individual and organizational RFID technology adoption in the hospitality industry.* Published PhD Dissertation. Oklahoma State University, USA.

30. Pan, M. & Jang, W. (2008). *Determinants of the adoption of enterprise resource planning within the technology-organization-environment framework:* Taiwan's communications industry. Journal of Computer Information Systems, 48(3), 94-102.

31. Picoto, W., Belanger, F., & Palma-dos-Reis, A. (2012). *Leveraging on mobile business to enhance firm performance: An organizational level study.* Proceeding of European Conference on Information Systems (ECIS 2012), June 10-13, Barcelona, Paper 113.

32. Premkumar, G. & Roberts, M. (1999). *Adoption of new information technologies in rural small businesses.* Omega.The International Journal of Management Science, 27(4): 467-484.

33. Ramdani, B. & Kawalek, P. (2008). *Predicting SMEs willingness to adopt ERP, CRM, SCM & E-Procuremen systems.* Proceeding of ASPECIS. Paper available at http:is.2.lse.ac.uk/asp/aspecis/20080082.pdf.

34. 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.

35. Raymond, L. & Uwizeyemungu, S. (2007). *A profile of ERP adoption in manufacturing SMEs. Journal of Enterprise Information Management.* 20(4): 487-502. http://dx.doi.org/10.1108/17410390710772731

36. Rogers, E.M. (1995). *Diffusion of innovations.* The Free Press, New York, 1995.

37. Sarkar, A. (2008). *E-Commerce adoption and implementation in SMEs: An analysis of factors.* Paper presented at 21st Annual Conference of the National Advisory Committee on Computing Qualifications (NACCQ 2008), Auckland, New Zealand.

38. Scupola, A. (2009). *SMEs' e-commerce adoption: perspectives from Denmark and Australia.* Journal of Enterprise Information Management, 22(½): 152-166. http://dx.doi.org/10.1108/17410390910932803

39. Seyal, A.H. & Rahman, M.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.

40. Seyal, A.H., Rahman, M.N.A., & Mohammad, A.Y.A. (2007). *A quantitative analysis of factors contributing electronic data interchange adoption among Bruneian SMEs. A pilot study.* Business Process Management Journal, 13(5): 728-746.

41. Sian, S. & Roberts, C. (2009). *UK small owner-managed businesses: accounting and financial reporting needs. Journal of Small Business and Enterprise Development,* 16(2): 289-305. http://dx.doi.org/10.1108/14626000910956065

42. SME Corp Malaysia (2015). *SME Development Framework: The Malaysian Case.* Paper presented at Cairo AMC-CBE-WBG SME Conference, 14 - 15 January 2015. Cairo, Egypt.

43. Tan & Felix, T.C. (2010). *A perception-based model for technological innovation in small and medium enterprises.* Paper presented at 18th European Conference on Information Systems (ECIS).

ISSN 2304-0777 www.jitbm.com

44. Temtime, Z.T. & Pansiri,J. (2004). *Small business critical success/failure factors in developing economies: some evidences from Botswana.* American Journal of Applied Sciences, 1(1): 18-25.

45. Teo, T.L., Chan, C., & Parker, C. (2004). *Factors affecting e-Commerce adoption by SMEs: A Meta-analysis.* ACIS 2004 Proceedings. Paper 54. Paper available at http://aisel.aisnet.org/acis2004/54.

46. Thong, J.Y.L. & Yap, C.S. (1995). *CEO characteristics, organizational characteristics and information technology adoption in small businesses.* Omega. The International Journal of Management Science, 23(4): 429-442. http://dx.doi.org/10.1016/03050483(95)00017-I

47. Thong, J.Y.L. (1999). *An integrated model of information systems adoption in small businesses.* Journal of Management Information Systems, 15(4): 187-214.

48. Tornatzky, L.G. & Fleischer, M. (1990). *The process of technology innovation.* Lexington Books, Lexington, MA, 1990.

49. Tornatzky, L.G. & Klein, K. (1982). *Innovation characteristics and innovation adoption-implementation: A meta-analysis of findings.* IEEE Transactions on Engineering Management, 29(1):28-43.

50. Wan Ismail, W. N. & Ali, A. (2013). *Conceptual model for examining the factors that influence the likelihood of computerised accounting information system (CAIS) adoption among Malaysian SMEs.* International Journal of Information Technology and Business Management, 15(1), 122-151.

51. Yang, S., Chao, Z., Lin, G., & Chen, G. (2012). *The role of top management and dynamic capability in inter-organizational information system assimilation.* Business and Information, 313-336.

52. Zhang, J., Li, H. & Ziegelmayer, J.L. (2009). *Resource or capability? A dissection of SMEs' IT infrastructure flexibility and its relationship with IT responsiveness.* Journal of Computer Information Systems, 46-53.

53. Zhu, K., Kraemer, K.L., Xu, S. & Dedrick, J. (2004). *Information technology payoff in E-business environments: an international perspective on value creation of E-business in the financial services industry.* Journal of Management Information Systems, 21(1): 17-54

54. Zhu, K., Dong, S., Xu, S. X., & Kraemer, K.L. (2006). *Innovation diffusion in global contexts: Determinants of post-adoption digital transformation of European companies.* European Journal of Information Systems,15(6),601-616.