CONCEPTUAL MODEL FOR EXAMINING THE FACTORS THAT INFLUENCE THE LIKELIHOOD OF COMPUTERISED ACCOUNTING INFORMATION SYSTEM (CAIS) ADOPTION AMONG MALAYSIAN SMES

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Abstract

The purpose of this study is to propose and discuss a conceptual model for investigating the influential factors of computerised accounting information systems (CAIS) adoption in Malaysian SMEs. This study examines the existing empirical studies in information technology (IT) and information systems (IS) adoption research related to adoption at organizational level. In particular, the Technological-Organizational-Environmental (TOE) framework has been widely used in examining the factors influencing IT adoption. However, studies attempted to use this framework to measure CAIS adoption are limited. In contrast to other theories commonly used for explaining innovation adoption, TOE framework does not only cover the technological aspects but more importantly also explores their organizational and environmental contexts. Hence, this model provides a complete analysis of the possible aspects to be considered. The inclusion of Diffusion of Innovation (DOI) theory in the technological context and the application of Thong’s SME model make the proposed model more robust. A summary and conclusion along with research contribution, limitations, and the direction for future research are also presented in this paper.

Keywords: Computerised Accounting Information System, Information technology, TOE framework, DOI theory, Thong’s Model, Small-and medium enterprises.

1.0 INTRODUCTION

Small- and Medium-sized Enterprises (SMEs) have grown in importance in the global economy (Ang & Hussin, 2012). They also have high potential to expand to a larger scale. Previous research repeatedly showed that financial management is crucial for the continuity of SMEs (e.g., Halabi et al., 2010; Fadhil & Fadhil, 2010; Ahmad & Seet, 2009; Dyt & Halabi, 2007; McMahon, 2001; Peel & Wilson, 1996). According to McMahon (2001), financial management in SMEs could be improved through upgrading of their financial reporting systems. As such, SMEs’ owner-managers need a good record-keeping system that allows them to maintain control of their finance, and the most important use is to aid the owner-managers in making decisions about the firms (Davis et al., 2009). This accounting report also provides financial information which could inform owners of the consequences of their firms’ operations and the effects of their past decisions. Therefore, it serves as a good basis for realistic future plans (Butkevicius, 2009). The system that
records all the financial transactions of a business or organizations is known as accounting information systems (AIS).

Information technology (IT) offers many benefits in order to keep the financial information sharp, clean and well organized. The important question raise from this issue is whether firms ready to implement changes in order to have effective financial management that will enable them to analyze results, to interpret, to forecast future performance and improve their business decisions. Therefore this study is conducted to examine the factors that influence the SMEs in Malaysia to adopt IT in their accounting processes since effective financial management could easily be obtained today with the help of related IT such as computerized accounting information systems (CAIS).

The previous studies on AIS are mainly focused on issues of CAIS effectiveness (Kouser et al., 2011; Ismail 2009), CAIS threats (Abu-Musa, 2005), selection of CAIS software (Adhikari et al., 2004; Adhikari & Zhang 2003) and user satisfaction (Illias et al., 2009; Nazem 1990). Only a handful of studies (Fowzia & Nasrin, 2011; Breen et al., 2003) explore the factors that influence the CAIS adoption. However, none of them have empirically validated a conceptual framework that can consider all the aspects of the organizational level to represent the case of CAIS adoption in general and SMEs in particular.

Therefore, the basis for selection of the hypotheses for this research was based on previous IT and information system (IS) adoption literature at the organizational level. The justification and formulation of subsequent hypotheses have been made on adequate evidence of the significance of the relationships in prior studies with a probability that they will be proven significant when implementing the adoption of CAIS.

2.0 THEORIES USED IN IT/IS ADOPTION

Information technology is a key driver of many technological innovation and organizational evolution including CAIS (Liang et al., 2010). Liang et al. (2010) has listed several theories that have been proposed to explain the widespread issues of IT such as Resource-based View (RBV), Transaction Costs, Media Richness Theory and Coordination Theory. Each theory has different applicable research domains.

Regarding IT adoption, many theoretical models have been used to examine the adoption of IT/IS innovations such as Technology Acceptance Model (TAM) (e.g. Li et al., 2011; Vance et al., 2008; Grandon and Pearson, 2004; Igbaria et al., 1997), Theory of Planned Behaviour (TPB) (e.g. Grandon et al., 2011; Harrison et al., 1997), Combined TAM and TPB (e.g. Riemenschneider et al., 2003; Chatzoglou et al., 2010); TAM2 (e.g. Venkatesh 2000), Diffusion of Innovation Theory (DOI) (e.g.Premkumar 2003), Resource-Based View (RBV) (e.g. Ramanathan et al., 2012; Jacks et al., 2011; Mehrtens et al. 2001), Stage Theory (e.g. Poon & Swatman, 1999), and Unified Theory of Acceptance and Use of Technology (UTAUT)(e.g. Kijsanayotin et al., 2009; Fowzia & Nasrin, 2011; Anderson & Schwager, 2003).

However, according to Alam (2009) and Alatawi et al. (2012), the literature on technology adoption by businesses suggests that most research are based on the Theory of Planned Behaviour (TPB) (Ajzen, 1991), Technology Acceptance Model (TAM) (Davis, 1989), The diffusion of Innovation (DOI) (Rogers, 1995), The Technology-Organization-Environment Model (TOE) (Tornatzky & Fleischer, 1990) and the Resource-based Theory (RBV) (Wernerfelt, 1984). The DOI, TPB, TAM and TOE theory are highly applicable in predicting adoption behaviour of the firm in considering new technology while RBV has been used to provide the
theoretical underpinning to understand how the adoption of innovation is linked to firm performance (Ramanathan et al., 2012).

As TAM and TPB only focus on technological perspective which based on perceptions and attitudes, they have commonly been used as groundwork for IT research at the individual level (Salleh and Rohde, 2005). As the purpose of this study is to examine the CAIS adoption among SMEs, the theories and models at the organizational level are more applicable. After carefully reviewing the literatures, this study found that the TOE framework is a suitable framework for the study of factors influencing the adoption of IT/IS in any stages as it allows us to evaluate the importance of different factors which affect the propensity to adopt IT (Lin & Lin, 2008). The TOE framework also is consistent with Rogers’ (1983) theory (Orturk, 2010) which is one of the dominant theory used to examine organizational adoption of IT over the prior two decades (Yoon, 2009).

2.1 Technological-Organizational-Environmental (TOE) framework

Tornatzky and Fleischer (1990) are credited with being the first to develop the TOE framework to study the adoption of technological innovations. Tornatzky and Fleischer (1990) developed a framework for organizational adoption based on Contingency Theory of Organizations (Arpaci et al., 2012). According to Arpaci et al. (2012), the former theory postulates that an effective organization should have a structure which is consistent with its environmental needs. The effectiveness of an organization is based upon its fitness towards both internal and external factors. Tornatzky and Fleischer (1990) believed that the adoption and assimilation of new technologies in a company were under the influence of three major dimensions – Technological-Organizational-Environmental. Therefore they developed the TOE framework to determine what factors influence a firm’s adoption decision. The TOE framework identifies three aspects of a firm’s contexts that influence the adoption and implementation of a technological innovation, namely technological, organizational and environmental aspects.

The technological context describes both the existing technologies in use and new technologies relevant to the firm; the organizational context refers to characteristics of the organization; and the environmental context is the arena in which a firm conducts its business, referring to its industry, competitors, and dealings with the government (Oliveira & Martins, 2010). These three groups of contextual factors influence a firm’s intent to adopt an innovation, effect the assimilation process and eventually the impacts of the innovation on organizational performance (Zhu et al., 2004) and therefore has been the choice of many prior studies in technological adoption.

Many researchers also agreed that TOE provide an excellent theoretical foundation for exploring IS adoption behaviour within SMEs. For example, Mehtens et al. (2001) adopt TOE framework for investigating the adoption of internet in seven SMEs. Lertwongsatien and Wongpinunwatana (2003) show the suitability of the TOE framework for studying the e-commerce adoption study in Thailand SMEs. Ramdani et al. (2009) adopt the TOE framework for predicting the potential enterprise systems adopters in SMEs in England. Drawing upon the empirical evidence detailed above, the TOE framework is an appropriate theoretical foundation for investigating CAIS adoption in Malaysian SMEs.

TOE does, however, not aim to offer a concrete model describing the factors that influence the adoption process; it is rather taxonomy for classifying factors in their respective context (Ven & Verelst, 2011). The main contribution of this
framework is that it encourages the researcher to take into account the broader context in which the adoption takes place (Ven & Verelst, 2011). The constructs used under each context usually were selected from previous studies which were found suitable with the condition of the technology that was studied. However some researchers suggested that to identify specific technological, organizational and environmental factors and to establish the causal relationships needed for hypothesis development, the TOE framework should be combined with other theories (Awa et al., 2011; Henderson et al., 2012; Chong & Chan, 2012; Alatawi et al., 2012). According to Awa et al. (2011), integrating TOE with other models offering larger number of constructs than the original and provides richer theoretical lenses to the understanding of adoption behavior (Awa et al., 2011). Literatures have proved that many studies combined TOE frameworks with other theories to better explain IT adoption (Alatawi et al., 2012).

From the literature review, the present study revealed that DOI theory is the main theory that is used together with the TOE framework (e.g. (e.g. Chong & Chan, 2012; Picoto et al., 2012; Hossain & Quaddus, 2011; Low et al., 2011; Wang et al., 2010; Ramdani et al., 2009). One of the main contributions of DOI is its set of innovation attributes. DOI suggests that innovations possess certain attributes, which as perceived by adopters, regularly determine the adoption of innovation (Ozturk, 2010). The innovation attributes include relative advantage, compatibility, complexity, trialability and observability (Roger, 1995). Each characteristic helps to reduce a potential adopter’s uncertainty regarding the perceived benefits of innovation adoption (Yoon, 2009). Consequently, innovations which are perceived as having more relative advantage, compatibility, trialability, observability and having less complexity will be adopted more rapidly than other innovations (Rogers, 1995).

Among these characteristics, the most frequently adopted factors are relative advantage, compatibility and complexity. They were chosen by many studies due to frequently found as significance factors in IT/IS adoption in many empirical researches (e.g. Ramdani et al., 2009; Thong, 1999; Al-Qirim, 2007b; Premkumar & Roberts, 1999). 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. This is based on the finding of their meta analysis studies on 75 innovation articles.

The more frequent use of DOI with TOE framework also seems to be driven by the fact that this framework is consistent with TOE, where Rogers (1995) highlighted individual as well as internal and external characteristics of the organization (Alatawi et al., 2012). Based on the DOI theory at
firm level, innovativeness is related to such independent variables as individual (leader) characteristics, internal organizational structure characteristics and external characteristics of the organization (Rogers, 1995).

Accordingly, this study uses the TOE framework to specify the categories of factors (Technological, Organizational and Environmental) affecting CAIS adoption. The technological factors are taken from DOI theory, while the organizational and environmental are adapted from previous literatures. As the area in CAIS adoption using this framework is among pioneer studies, the basis for the selection of the construct and formulation of subsequent hypotheses have been made on adequate evidence of the widely known significance constructs in previous studies, with the assumption that they will be proven significant when implementing the adoption of CAIS.

Derived from a strong theoretical background, satisfactory empirical validations, and suitability for the contexts examined for SMEs and CAIS, it was decided that TOE supplemented with DOI theory would serve as a guiding framework for this research.

2.3 DTOE framework for SMEs (Thong’s (1999) Model)

As stated previously, in TOE framework, the process by which 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 other hand suggested TOE theory in four dimensions when studying SMEs sectors.

Extending the TOE theory, Thong (1999) argued that based on SMEs highly centralized structures, the CEOs or owner-managers make most of the critical decisions. As such, Thong (1999) conceptualized and verified the importance of a fourth dimension (besides technological, organizational and environmental) which has been classified as CEO’s characteristics. Thong’s study distinguished from others as most of the study added together the characteristic of the decision makers in organizational context (e.g. Scupola, 2009; Chang et al., 2007; Premkumar & Roberts, 1999; Kuan & Chau, 2001).

Following Thong (1999), Al-Qirim (2007a) and Seyal and Rahman (2003) also distinguished decision-maker context from the organizational context, consequences TOE framework in four dimensions: decision-makers, technological, organizational and environmental context (DTOE).

In agreement with the significant role played by the owner-manager’s in SMEs, this study shall apply Thong’s (1999) model by including the decision-maker characteristics as one of the main variables together with technological, organizational and environmental context. However, this study does not adopt all the variables in Thong’s model. Several modifications have been made on original model. By reviewing previous technological innovation literature, this study integrated and developed its own variables which identified as suit with the CAIS condition.

3.0 PROPOSED CONCEPTUAL MODEL

The objective of this study is related to the likelihood of CAIS adoption which is targeted to CAIS non-adopters. As shown in figure 1, using DTOE and DOI theory, the model proposes that there are significant relationships between decision maker, technological, organizational and environmental contexts and the likelihood of CAIS adoption among non-adopters.

This conceptual model describes the factors that are hypothesized to influence the CAIS adoption. The decision-maker
contexts comprised of the owner-manager IT knowledge, owner-manager attitude towards IT and owner-manager commitment. The organizational context contains factors such as organizational readiness, employees IT knowledge and satisfaction with manual systems. Although none of the studies were found to be related specifically to CAIS, these variables have been gathered from the contemporary IS/IT field of research and deemed significant to be considered as the factors in the organizational context for describing the adoption of CAIS in Malaysia. The environmental context relates to the factors such as vendor support, competition and government influence.

4.0 HYPOTHESES DEVELOPMENT

Despite the lack of research which particularly focused on CAIS adoption factors and SMEs, general IT and IS adoption studies however have been extensively researched. Since CAIS is an important sub-set of overall small business IT research (Premkumar & Robert, 1999), this study will adapt the finding of IT/IS adoption literature to suit the current study.

In this research, the endogenous variable is the likelihood of CAIS adoption which is defined as the willingness of non-adopters to adopt and utilize the CAIS to support daily recording of business transaction and decision making in the business.

There are many adoption factors have been studied in prior research. However, it is not possible to study all the factors identified in the technological innovation literatures. Furthermore, innovation researchers have argued that it may not be possible to develop a unifying theory of innovation due to the fundamental differences between innovation types (Thong & Yap, 1995). Hence, as previously mentioned, this study has selected factors that are more applicable to the adoption of CAIS. These selected factors were based on the DTOE context. Each of the factors is discussed below, and a corresponding hypothesis enunciated.

4.1 Decision-maker context

In organization, the decision for IT adoption process is directly affected by top management. In SMEs, top management usually refers to the chief executive officers (CEO’s) or owner-managers of the firm. In SMEs studies, CEO and the owner-manager was used interchangeable since in most cases CEO and owner-manager is the same person (Hussin & Noor, 2005; Thong, 1999).

In SMEs, it is often difficult to separate SMEs owners from their firms since all decisions from daily functions or activities to future investments are made by them (Thong, 1999). This also refers to IT adoption decision from planning to implementing and afterwards, maintaining and upgrading the system. According to Awa et al. (2011), IT adoption depends
largely on the functional, and/or emotional feelings of decision makers, which reflect their attitudes, perceptions and motivations towards IT adoption. As revealed in Antlova’s (2009) study, he found that one of the significant barriers to innovation acceptance in SMEs is resistance to organizational changes, especially in connection with older owner-managers. For this reason, Thong and Yap (1995) suggested the rate at which a small business changes depends not only on factors like business size or market forces, but also on the abilities and inclinations of the owner-manager and the extent to which he is able to prepare to devolve management. The owner-manager therefore is an entrepreneur figure who is crucial in determining the innovativeness of the business. Hussin and Noor (2005) pointed that the role of owner-manager undoubtedly is very important in SMEs, especially in a developing country like Malaysia. This is because there is a large power distance in the Malaysian culture and therefore, the decision making will be centered on the owner-manager (Hussin & Noor, 2005).

Decision-maker’s characteristic is a key adoption predicator of Thong’s (1999) DTOE model. Thong (1999) separated decision-makers characteristics from organization in TOE and gave it boost to bring the model to decision-maker, technology-organization-environment (DTOE). He proposed that the four conceptual adoption predicators assume a more detailed set of factors that assist to predict the likelihood of IT adoption among SMEs.

This study adopted three decision-makers characteristics from previous TOE/DTOE literatures that showed some relevance strength to this study which include owner-manager’s IS/IT knowledge, owner-manager’s attitude towards IT and owner-manager’s commitment.

4.1.1 Owner-manager’s IT Knowledge (OM_IK)

Lack of understanding about IT is a frequently cited reason for failure of small businesses to consider computer opportunities since decades ago (DeLone, 1988). Thong and Yap (1995) noticed that many SMEs rejected the notion of IT in their business as they had no idea of the benefits that IT could potentially offer. This is due to lack of basic knowledge and awareness of IT among owner-manager.

According to Hameed and Counsell (2012), IT knowledge of owner-manager is important to realize the benefits of an innovation adoption. Some knowledge of IT possessed by the owner-manager also can add value to the organization in order to select the software with the information that they require from the vendor (Proudlock et al., 1999). Study by Caldeira and Wald (2002) indicated that the lack of expertise to select and adopt the software was one of the reasons why the adoption has not succeeded.

The significant relationship between the owner-manager IT knowledge and the adoption of innovation technology has been revealed by many studies. Study by DeLone (1988) suggested that in firms where the CEO is familiar with computers and is involved in computerization, the computer operations are more successful. Thong and Yap (1995) found that small businesses are more likely to adopt IT when the owner-manager possessed greater IT knowledge. Nguyen (2009) found the understanding of IT and innovation skills contribute substantially to the likelihood of IT adoption. Later, Antlova (2009) stressed that one of the barriers preventing acceptance of IT by SMEs is connected to a missing information strategy and an insufficient knowledge of IT on the part of the owner or manager of the organization. And recently, Huy (2012) suggested the knowledge of the information technology possessed by owner-manager has an effect on the adoption of IT and has a positive influence on the degree of use of innovation technology.
Regarding CAIS, based on the above reason, this study predicted that the greater the understanding the owner-manager has of IT, the more likely that they will adopt CAIS. Therefore, this study hypothesizes that:

\[ H1a: \text{There is a positive relationship between owner-manager's IT knowledge and the likelihood of CAIS adoption.} \]

4.1.2 Owner-manager’s Attitude towards IT (OM_AI)

Owner-managers’ attitude towards IT refers to the owner-managers’ perception of IT to the degree of which they are agree or disagree with the benefits that IT could offer to their firms (Thong & Yap, 1995). According to Rogers’ (1983), formation of a favourable or unfavourable attitude towards an innovation takes place before a decision to adopt is made. In the case of SMEs, as the main decision-maker is from the owner-manager, his/her perception of the adoption of IT is of prime importance (Rogers, 1983).

The owner-manager’s attitude towards IT could relate to the IT knowledge of the owner-manager. As such, a number of studies suggested the greater the understanding that the top management or owner-manager has of IT, the more likely that they will adopt IT and the more successful the adoption (Nguyen, 2009; Alam, 2009; Thong & Yap, 1995). The explanation might be the owner-manager who has been using the computer for some time is able to know the advantages and disadvantages of the technology (Alam, 2009). Consequently, computer skills of the owner-manager could influence the attitude towards IT and in turn increase the intention to adopt innovation system among SMEs.

In another perspective, implementing a new system requires financial commitment. This includes the initial cost of software and hardware, the cost of personnel training and development and the post implementation costs (Nguyen, 2009). For these reasons, the owner-managers have to see or at least believe that new IT will bring advantages to the firm. Awa et al. (2011) argued from RBV point of view, SMEs develop internal skills, competences and capabilities subject to top management perspectives and attitudes towards IT adoption.

Therefore, many studies suggested that owner-manager’s perception of IT is that such tools that can provide them with some advantage in the business environment (Harrison et al., 1997; Lee & Runge, 2001; Thong, 1999; Thong & Yap, 1995; Poon & Swatman, 1999). For this point many researchers have stressed the importance of the attitudes of owner-managers towards innovation in the adoption of the IT (Thong & Yap, 1995; Grandon & Pearson, 2004; Caldeira & Ward, 2002; Seyal & Rahman, 2003; Mehrzens et al., 2001; Kuan & Chau, 2001).

From the above discussion, it can be said that the more positive perception that the owner-manager have towards IT, the higher the chances that they will adopt the CAIS. This study therefore predicted that:

\[ H1b: \text{There is a positive relationship between owner-manager's attitude towards IT and the likelihood of CAIS adoption.} \]

4.1.3 Owner-manager’s Commitment (OM_CM)

Owner-manager’s commitment refers to the level of commitment by the owner-manager towards the CAIS adoption. Varukolu and Park-Poaps (2009) defined owner-manager commitment as the degree to which the values and perceptions of the management are in favour of and open to technology adoption.

DeLone (1988) noticed that top management’s commitment is not only important for initial decisions regarding computerization, but also for ongoing
computer decisions because computerization is a continuous and evolving process. In addition, the owner-manager’s commitment in a variety of information and participation in the implementation of CAIS encourages users to develop positive attitudes towards the use of CAIS (Kouder et al., 2011).

Ifeinde (2012) used the term owner-manager’s support and owner-manager’s commitment interchangeably and his study found support for the relevance of this factor in the successful adoption of e-business. As such, when the owner-manager of SMEs perceived an innovation technology to be valuable, they would manage IT-related activities within the organization and outline things that would affect the performance of the system adopted, such as the strategies, policies and future directions of the organization (Wang et al., 2006). Therefore on many occasions, failed implementation of technological innovation was attributed to the lack of top management’s commitment and support (Yang et al., 2012; Varukolu and Park-Poaps, 2009).

At the same time, if the owner-manager has greater interest in IT, they will give full commitment and could do a better job in strengthening the prospect brought by the adopted IT/IS and could encourage their employees to utilize the IT/IS to generate superior performance (Yang et al., 2012). This is because owner-manager acts as change agents in the adoption process of technological innovations. Where such commitment and support lacking, the acceptance of technologies such as CAIS tend to suffer (Ifeinde, 2011; Chatzoglou et al., 2010; Igbaria, 1990; Igbaria et al., 1997).

Study by Hussin and Noor (2005) proved that there was a linear relationship between owner-manager’s commitment to IT and e-commerce adoption. Past studies have also shown that owner-manager commitment’s and support to favour the acceptance of technological innovations in adopting organizations, including SMEs (e.g. Ifinedo, 2012; Grandon & Pearson, 2004; DeLone, 1988; Iacovou, 1995; Premkumar & Roberts, 1999).

Regarding CAIS, it could be assumed that top management’s vision for the use of technologies determines the levels of support and policies for this technology adoption. This means when owner-manager understands the importance of technological innovations such as CAIS in their organizations, they tend to play a crucial role in influencing other organizational members to accept the use of such innovations. Consequently, this study believes that owner-manager’s commitment is likely to shape the firm’s technology adoption activities. At this point, owner-manager’s commitment is suggested to influence system success, with regard to the new adoption. Based on the arguments, the following hypotheses therefore formulated:

\[ H1c: \text{There is a positive relationship between owner-manager's commitment and the likelihood of CAIS adoption.} \]

4.2 Technological Context

As per TOE/DTOE, the technological context of an organization is important in influencing the adoption and implementation of new IT/IS. Tornatzky & Fleischer (1990) describes technological context as both internal and external technologies relevant to the firm. In more detail, technological context refers to the innovation that is to be adopted by the organization (Teo et al., 2004) or characteristics that relates to the technologies available to an organization (Chau & Tam, 1997). Its main focus is on how technology characteristics themselves can influence the adoption process (Chau & Tam, 1997). It includes current practices and equipment internal to the firm, as well as the pool of available technologies external to the firm (Tornatzky & Fleischer, 1990).
The technological context in which a firm operates plays an obvious role in determining the firm’s adoption activity. Decisions to adopt technology depend on what is available, as well as how the available technology fits with the firm’s current technology (Tornatzky & Fleischer, 1990).

This research considers three innovation characteristics in the context of CAIS adoption: relative advantage, compatibility and complexity. All these constructs have been identified on the basis of a Diffusion of Innovation (DOI) theory by Roger (1983). Researchers have combined aspects of DOI with TOE to increase understanding of organizational IT adoption (Oliveira & Martins, 2011). Specifically, they suggested that the technological context in TOE includes the knowledge of innovation characteristics from DOI (Rogers, 1995).

Roger’s (1983) model of technological innovation in DOI Theory is widely accepted in information systems research. Roger (1983) identified five critical characteristics of the innovation that influences its 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 (Tornatzky & Klein, 1982; Kuan & Chau, 2001).

Following the suggestion, this study decides to examine these three technological characteristics as the factors contributing to the likelihood of CAIS adoption. Therefore, the constructs will be analyzed one by one for the formulation of the hypotheses.

4.2.1 Relative Advantage (R_ADV)

According to DOI theory, Roger (1995) defined relative advantage as the degree to which an innovation is perceived as being better than the idea it supersedes. The degree of relative advantage is generally expressed as the degree of perceived benefits that the innovation may provide to the organization, and thus, relative advantage and perceived benefits are used interchangeably in IT adoption literature (Henderson et al., 2012; Oliveira & Martins, 2010; Iacovou et al., 1995; Yoon, 2009). In CAIS context, it refers to the degree to which the CAIS is perceived as providing greater benefit for firms compared to the manual system. DOI theory suggests that the relative advantage of an innovation positively influences an organization’s propensity to adopt the innovation.

Since being proposed by Rogers in DOI as a key factor affecting the adoption of innovations, relative advantage has been consistently found to have a significant influence on SMEs adoption of innovation technologies. For examples, Premkumar and Roberts (1999) found that organizations adopt the innovation technology because they perceive a relative advantage of the technology compared to traditional methods. Many other prior IT adoption studies that employ the TOE framework also suggested relative advantage as one of most important factors that affects firm adoption of an IT innovation (e.g. Chau & Tam, 1997; Thong, 1999; Ramdani et al., 2009; Seyal et al., 2007; Al-Qirim, 2007b; Premkumar & Roberts, 1999; Ghobakhloo et al., 2011; Low et al., 2011; Ifinedo, 2011; Shiau et al., 2009; Hung et al., 2010). Based on these studies, it is highly possible that when organization perceived the benefits of the new systems, they are more willing to adopt the technology.

The above discussions were in line with the argument from Premkumar et al. (1994) who suggested that positive perception of the benefits of the technology should provide an incentive for users to use the technology. As in the CAIS context, firms that recognize the true potential of CAIS should realize the need to fully adopt CAIS to realize the benefits. From the discussion, this study posits:
H2a: There is a positive relationship between relative advantage and the likelihood of CAIS adoption.

4.2.2 Compatibility (COMP)

Likewise, compatibility is another technological characteristics perceived by individual which was suggested by DOI theory as a driver of the decision to adopt a new system. DOI theory defines compatibility as the extent to which an innovation is perceived as being consistent with the existing values, needs, and past experiences of potential adopters (Rogers, 1983). In most organizations, it is realized as compatibility with IT infrastructure (Henderson et al., 2012). In order to adopt new technology, Shaharudin et al. (2012) described that the existing infrastructure should be compatible with the new technology. This means the existing infrastructure is important to the firm’s adoption decision, in which, the more an innovation is perceived as consistent with present systems, procedures and value systems of the potential adopters especially in term of infrastructure, the more likely it will be adopted (Henderson et al., 2012).

Prior research has discussed how compatibility influences the IT/IS adoption. Several prior researches on IT adoption found that IT adoption and usage is significantly affected by IT compatibility (Alam, 2009; Al-Qirim, 2007b; Hong and Zhu, 2006). In addition, prior IT adoption studies based on the TOE framework suggest that a high level of compatibility between the technology to be adopted and existing technologies (e.g. IT infrastructure) motivates an organization to adopt an IT innovation (Premkumar et al., 1994; Thong, 1999).

Compatibility is an important consideration in a firm’s IT innovation adoption decision because, with a high level of compatibility, the organization needs to make minimal adjustments and changes, which implies less resistance to adoption (Thong, 1999). Furthermore, compatibility suggests lesser risk to potential adopter and makes the innovation more meaningful to the organization (Yoon, 2009). However, lack of incompatibility may cause low adoption and utilization (Alam, 2009). When technology is viewed as significantly incompatible, major adjustments in processes that involve considerable learning are required (Low et al., 2011). Sharing this view, Huy (2012) described the incompatibility of a new technologies with existing procedures, value systems and infrastructure negatively affects the attitudes of users and increases their resistance to change, which in turn hinder the adoption of the technology.

Compatibility is important in the context of CAIS as CAIS has the potential to change the business reporting system. Adopting CAIS also can introduce additional systems integration issues. The incompatibility of CAIS with current processes and legacy system is a significant factor for non-adoption of CAIS. The incompatibility of the software in term of data format with the business nature might be a barrier to the use of CAIS. These incompatibilities could result in encountering resistance in the CAIS adoption.

Another barrier is that CAIS adoption replaces many of the manual work procedures used in firm transaction recording systems and can lead to significant changes in work practices and procedures. According to Premkumar et al. (1994), organizations’s resistance to change due to changes in work procedures and possible loss of jobs as a result of automation of document processing functions is a major inhibiting factor in the use of technological innovation.

For the above reasons, compatibility is an essential factor that affects the adoption and utilization of the CAIS. When the firms have adequate infrastructure for the adoption and it is
compatible then the adoption and utilization of the innovation is usually high because the firms are not require to invest large sum on the infrastructure. When a technology is recognized as compatible with internal values and work application systems, firms are usually likely to consider the adoption of new technology. Therefore, this study expects:

H2b: There is a positive relationship between compatibility and the likelihood of CAIS adoption.

4.2.3 Complexity (CMPX)

In the DOI theory, complexity is another important technological factor that needs to be studied in depth in innovation adoption. Complexity refers to the degree to which an innovation is perceived as difficult to use (Roger, 1983).

Generally, complexity is widely recognized as a key barrier to IS adoption (Thong, 1999). Henderson et al. (2012) suggested that the complexity of innovation technology originates from systems integration issues and the tagging process. For example, in the case of CAIS, the difficulty of the tagging process stems from the specialized financial knowledge required to tag financial data. Lack of basic accounting knowledge might cause difficulty in keying in data. In Davis et al. (2009), manual AIS users stated that the complexity of CAIS system and that no one in their firm knew how as one of the reasons for not using CAIS. And for adopters, the most influential factor that encouraged them to maintain the usage of CAIS was ease of use. Thus, complexity of an innovation can act as a barrier to the implementation of new technology such as CAIS. As well, complexity of one particular system during implementation will become the inhibitor that discourages the greater usage of the innovation (Low et al., 2011).

In another point, Henderson et al. (2012) described that some technological innovation is not perceived to be complex; however, the changes in the business processes, organizational culture and environment introduce additional complexity. Earlier, Ramamurthy et al. (1999) has argued that integrating a new system with various internal applications can be complex due to the uniqueness of individual firm’s system environment. As such, many researchers perceived complexity as reflecting a match between the technical skill required to use the innovation and skills the organization possessed (Rui, 2007; Low et al., 2011; Premkumar et al., 1994; Lin, 2008). For that reason, an innovation could be considered as complex by some firms who lack associated knowledge and skill, but not complex by some firms who have the necessary knowledge and skill (Rui, 2007). Hence, it could be suggested that complexity is a fit-based concept between the technical skill required and skills firms possess (Rui, 2007).

SMEs, due to lack of in-house expertise and large information systems staff may make new technology seem complex, difficult to implement and may take a long time to understand (Premkumar et al., 1994). Although an innovation may appear to be useful to the firm, it may not have necessary expertise to use it, thereby increase the risk in the adoption decision and also creates greater uncertainty for successful implementation (Huy, 2012). In other words, firms may not have confidence in this innovation if they assume the technology is a complex system.

CAIS could be perceived as a complex innovation, especially for SMEs, since it is a hybrid innovation with record keeping (changes in method of recording) and technological (require IT infrastructure) implication. Previous studies have indicated that a complex innovation requires greater resources and skills to adopt, and requires increased cognitive effort on the potential adopter, thus, the perceived complexity of the innovation technology is expected to
influence the decision to adopt them negatively (Lin, 2008)

Many other prior IT adoption literatures that employ the TOE framework also suggested relative complexity as one of most important factors that affects firm adoption of an IT innovation. For example, Al-Qirim (2007b) found that complexity negatively affected the e-commerce adoption in Jordan. Teo et al. (1995) revealed complexity to be a strong predictor of intention to adopt financial EDI in Singapore. Azam and Taylor (2011) study showed complexity of the technology is significantly related to the likelihood of standard business reporting (SBR) adoption in Australia.

From the discussion this study believes that complexity of an innovation can function as an inhibitor to adoption, and is usually negatively related to adoption (Premkumar et al., 1994). Thus, the next hypothesis will be:

**H2c:** There is a negative relationship between complexity and the likelihood of CAIS adoption.

### 4.3 Organizational Context

According to the TOE framework, organizational adoption of technological innovation can be influenced by the organizational context. The organizational context refers to the characteristics and resources of the organization (Tan & Felix, 2010). It looks at the structure and processes of an organization that constraint or facilitates the adoption and implementation of innovations (Chau & Tam, 1997).

The previous IT adoption literature based on TOE has proposed various organizational factors that are significant determinants of innovation technology adoption. Example of these factors included business size, top management support and organizational readiness. Based on the IT/IS system adoption literature, two organizational variables were selected and assumed to be most suited for analyzing the CAIS adoption in Malaysian SMEs. These organizational variables are organizational readiness and employees IT knowledge. Furthermore this study tries to examine a new construct, satisfaction with manual accounting system as it is predicted to be a barrier in CAIS adoption.

#### 4.3.1 Organizational Readiness (O_REA)

The DOI theory in organizations suggests that organizational resource availability positively influences organizational adoption of innovations (Rogers, 1983). This theory emphasizes the importance of organizational readiness in the context of organizational adoption. Organizational readiness is defined by Iacovou et al. (1995) as the availability of the needed organizational resources for adoption.

Review of this study on IT/IS adoption literature suggests that organizational readiness in many studies primarily concerns the technological (hardware or software resources) and financial resources of the organization (Gemino et al., 2006; Chau & Hui, 2001; Grandon & Pearson, 2004; Iacovou et al., 1995; Chewlos et al., 2001; Nelson & Shaw, 2003; MacKay et al., 2004; Yoon, 2009). In the case of SMEs in particular, even if the owner-managers perceive the adoption of new technologies as important, the enterprises often do not have sufficient resources to adopt them (Yang et al., 2012). This is the major obstacles to the integrating of new technologies in SMEs. Chau (2001) pointed that only realizing potential benefits may not be enough for an organization to decide to adopt new innovation technology. In this case, SMEs may be reluctant to adopt innovation if they do not feel “ready” to adopt. This lack of readiness may come from certain organizational resources such as financial readiness and technological
readiness (Iacovou et al., 1995; Ramdani & Kawalek, 2007). Therefore financial and technological readiness is the important issues to be considered in innovation adoption as the organizational readiness indicator.

Prior studies of IT/IS adoption also found that technological and financial readiness positively influences organizational adoption of different types of innovation technology. For example, Mehrzens et al. (2001) find that an organization’s decision to adopt the Internet is positively influenced by financial and technological readiness. Mackay et al. (2004) also find that technical and financial readiness has a positive influence on an organization’s decision to establish a website. Iacovou et al. (1995) and Chewlos et al. (2001) find that organizational readiness positively influences an organization’s intent to adopt Electronic Data Interchange (EDI). Another example is found in Khalifa and Davidson (2006), who found that organizations with higher levels of organizational readiness have greater intent to adopt electronic trading systems.

However, in some cases, while the technological and financial resources are ready, it is also often the case that the employees refuse to adopt the new technology due to various reasons, such as dangers of job loss and reluctant to change the work practices (Tan & Felix, 2010). Some employees may not believe that the new system will change or improve the way the business functions. As innovation process will affect every function and organizational stakeholder, it requires fluidity of coordination (Powell & Dent-Micaleff, 1997). As for CAIS, many alterations might significant in the adoption process such as organizational structures, communications patterns, and other practices in daily processes. All these in the first order require incremental modification of existing behaviours. If people in organization are readily to change and have open behaviour on the new systems, than the firms will be more likely to accept the innovation (Ifinedo, 2012). Powell and Dent-Micallef (1997) termed this condition as organizational flexibility.

Inspired from Tan and Felix (2010), Nguyen (2009) and Powell and Dent-Micallef, this study decided to term this third organizational readiness indicator as organizational flexibility culture. As a result, this study moves a step further than prior studies as organizational readiness in this study will be measured in term of financial readiness, technological readiness and organizational flexibility culture. Drawing from the above lines of theoretical argument, it can be visualized that the organization must require financial, technological as well as flexibility culture to adopt CAIS. In other words, the firm should have financial, technological and organizational flexibility culture as influential factors to the CAIS adoption. The foregoing discussion then permits the prediction that:

H3a: There is a positive relationship between organizational readiness and the likelihood of CAIS adoption.

4.3.2 Employees IT Level (E_ITL)

Nguyen (2009) suggested top management or the owner-managers are not only people who contribute to the success of the business. It is clear that in most firms, employees also make a contribution and they have a major impact on the rise or fall of the businesses (Nguyen, 2009). From this point of view, employees are assets, as a firm’s success depends on them. They are a resource that needs to be developed (Nguyen, 2009). This is also refers to IT adoption success. At this point many studies suggested that the level of employees IT knowledge influence the adoption of technological innovations (Ifinedo, 2012; Thong & Yap, 1995; Zhu et al., 2006)
Employees IT level refers to the level of IT knowledge or experience that the employees have (Hung et al., 2010). Relevant IT knowledge and experience variables have been investigated in many studies. Kuan and Chau (2001) found that prior IS experience influences the adoption of new technologies. Study by Caldeira and Ward (2002) proved that the firms that revealed the lowest levels of satisfaction with IT/IS adoption and use did not have sufficient IS/IT knowledge to implement their systems. Also Antlova (2009) suggested one of the main barriers preventing acceptance of ICT, especially by SMEs is knowledge and skills regarding IT. Many other studies also found IT knowledge and technical skills are the important factors in the adoption of new technologies. This factor also has been found to be positively related to IT adoption (e.g. Scupola, 2009; Thong, 1999).

However, since typically SMEs lack of this expertise, many of them unaware of new technologies (Thong, 1999; Premkumar and Roberts, 1999) or tempted to postpone adoption of the innovation until they have sufficient internal expertise (Hung et al., 2010). Ramdani et al. (2009) mentioned that those organizations that do not have much IT/IS experience may not be aware of new technologies and may not desire to the risk by adopting them. Therefore, Premkumar and Roberts (1999) suggest that keeping employees informed or aware of the new IT allows them to maximize the resources that can help be more productive. Hence, if employees of SMEs are knowledgeable about IT, the businesses may be more willing to adopt technological innovations (Ifinedo, 2012; Thong & Yap, 1995; Zhu et al., 2006).

Based on these discussions, the employees IT level can be seen as important to the technological innovation adoption including CAIS. The evidence from previous literature suggests that the availability of IT knowledge among employees will help a firm to adopt CAIS systems. Therefore the next hypothesis of this study is:

\[ H3b: \text{There is a positive relationship between employees’ IT knowledge and the likelihood of CAIS adoption.} \]

4.3.3 Satisfaction with Manual System (S_WMS)

Satisfaction is one of the most important concepts especially in marketing and information system, and has attracted much of research interest (Limayem & Cheung, 2008). Lots of researchers have suggested that user satisfaction is one of the key influencers leading to system success (Chen et al., 2009).

Zhuo et al. (2012) refer satisfaction as an effective state representing an emotional response to the service encounter. For Bokhari (2005), satisfaction is a sum of one’s feelings and attitudes towards a variety of factors affecting the situation. While Winnie and Low (2012) mentioned satisfaction as the response and outcome of using processes which generate a comfortable feeling and a positive attitude to use the systems (Winnie & Low, 2012). Satisfaction represents an individual emotive state following first-hand experience with the target object or behaviour (Premkumar & Bhattacherjee, 2008). From the definition, it is clear that researchers consider satisfaction to be synonymous with attitude and one of the psychological construct.

Satisfaction as a psychological construct has been studied in various contexts, including job satisfaction, satisfaction with product or service consumption, and end-user satisfaction with IT usage (Premkumar & Bhattacherjee, 2008). Prior research on user satisfaction typically use this variable (satisfaction) to predict future intention to continue a service (continuance intention), hence this variable is more synonym in post-adoption stage studies (Bhattacherjee, 2001; Ali et al., 2012; Zhuo et al., 2012; Hossain &

This implies that there is still lack of sufficient research effort to establish a conclusive relationship between satisfaction and technological innovation in pre-adoption stage. Insufficient research however is in some ways offering the opportunity for researchers to further investigate the issues and collaborate to the literatures (Bokhari, 2005).

Satisfaction construct differs in pre and post adoption studies in several aspects. Post adoption stage studies usually reporting the influence of satisfaction on continuance intention, meaning the focus is on the same existing systems. In contrast, pre-adoption stage studies attempt to show the influence of satisfaction with existing system towards the adoption of new innovation, meaning the focus is on the new or alternative system. As such, satisfaction with existing system is believed to influence post-adoption attitude and continuance intention positively. It different in pre-adoption stage studies as satisfaction with existing system is predicted to have negative influence on adoption of new system. However, review of this study on previous literatures indicated that satisfaction issues in post-adoption stage and satisfaction issues in pre-adoption stage owing to the similarity concept.

Bhattacherjee (2001) pointed that user’s intention to continue service use is determined primarily by their satisfaction with prior use of that product or service. Therefore, satisfaction is viewed as the key to building and retaining a loyal base of long-term usage. On this point, Bhattacherjee (2001) mentioned that satisfied users continue using the existing services, while dissatisfied users discontinue it or switch to alternative services.

Users are satisfied if their actual experience exceeds their prior expectations (Winnie & Low, 2012). Anderson and Sullivan (1993) found that in the long-run, firms that consistently providing high satisfaction were less sensitive to the change of satisfaction, that is, satisfied users tend to use the same system (Zhuo et al., 2012). Conversely, if system usage does not meet user needs, satisfaction will decrease and restrict further use (Bokhari, 2005). Bokhari (2005) argued that in low satisfaction level condition, dissatisfied users may discontinue system usage and seek alternatives.

According to Chau and Tam (1997), low satisfaction level with existing system which generally referred to as performance gap, will provide the impetus to find new ways to improve performance. In an organization, a performance gap may result from a low satisfaction level with existing performance of the existing systems or inability to serve the organization’s new needs (Chau & Tam, 2000). This means that the greater the satisfaction with the existing systems, the lower the incentive to change to a new system (Chau and Tam, 1997). Using the organizational context of a TOE framework and on the basis of the above arguments, in their study on organizational adoption of open system, Chau and Tam (1997) hypothesized that higher levels of satisfaction with the existing systems will negatively influence the possibility of open systems adoption. The result showed that satisfaction level with the existing systems has a negative relationship with the open systems adoption decision, thus support their hypothesis.

This study builds upon this line of argument and posits an equivalent relationship in the CAIS context. However, in contrast to Chau and Tam’s (1997) study which measured satisfaction with existing system in term of the evaluation on existing computer system, and as a new contribution, this study developed new items specifically refers to the satisfaction with manual accounting information systems practices.
At the same time, this study attempt to examine the openness to change from non-computerised to computerised system.

Satisfaction with manual systems may be defined as a positive attitude and response towards a manual system. In the CAIS context, satisfaction with manual system associates with the extent to which users believe the manual system meet their information requirements.

Using CAIS could improve the financial management and record keeping practices (McChlery et al., 2005), thus problems in or with manual system may lead to the likelihood of CAIS adoption. Therefore, in the context of adopting CAIS, the satisfaction level with manual systems should be closely related to the need for improvement and thus, the adoption decision. In this case, whenever the manual systems satisfy the needs of the organization, the propensity to change should be lower. This means that if the manual system meets the requirements of the users, the users’ satisfaction with the system will increase, thus resulting in refusal of adopting CAIS. This suggests that deferring using CAIS might be a result from high satisfaction from using the manual system. Thus, satisfaction with manual system was introduced for the first time and especially developed for non-adopters model in this study. This variable was predicted as negatively affecting the willingness of CAIS adoption among non-adopters. The above arguments lead this study to this hypothesis:

\[ H3c: \text{There is a negative relationship between satisfaction with manual systems and the likelihood of CAIS adoption} \]

4.4 Environmental Context

According to the TOE framework, factors that pertain to the environmental context influence organizational adoption of technological innovations. The environmental context is the area in which the firm does business (Tornatzky and Fleischer, 1990) or in another words concerns the surroundings of the organization, looking at how external influences affect the motivations or barriers to adopt an innovation (Teo et al., 2004).

Although the decision to adopt IT is depending on the owner-manager and internal organizational need as previously suggested, the actions and decisions of owner-manager would be affected by external environment and they make policy decision accordingly (Alatawi et al., 2012). Therefore, the adoption of IT can be the result of pressure exerted on the enterprise by its environment.

The review of organizational IT/IS adoption studies suggests that pressures and supports from an organization’s external environment are found to be significant in influencing the decision to adopt innovation technology. The external environmental incorporates the structure of the industry, such as the extreme competition was frequently found encourages the adoption of innovation. The support from vendors also repeatedly showed as significant in influencing innovation. Finally, government regulation can have a favourable or negative impact on organizations, depending on whether its policy encourages or discourages innovation (Alatawi et al., 2012). Based on the IT/IS adoption literature, such adoption drivers (vendor support, competition and government influence) were selected and assumed to be most suited for analyzing the CAIS adoption in Malaysian SMEs.

4.4.1 Vendor Support (V_SPT)

One of the important aspects of the IT adoption process is the assistance of external support such as IT/IS vendors. Vendor support refers to the existence of support from IT/IS vendor for employing and using the systems (Ramdani et al., 2009). This construct has not only been found to be a significant construct in IS success, but also a determinant that positively influences IS innovation adoption.
Many researchers agreed that the availability of IS vendor can mitigate the lack of IT expertise in most SMEs. Thong et al. (1996) noted that due to the nature of SMEs, which generally lack of IT expertise and skills, firms should seek professional vendors when it comes to IT adoption. Ramdani et al. (2009) suggested that with increasing support from the third party, firms are more willing to adopt IS innovations. Nguyen (2009) pointed that quality advice from IT professional such as IT vendors is always useful for management or owner-manager as many of them do not have sufficient experience or understanding of IT. Ifinedo (2012) then stressed that vendor support should be considered in the planning process and implementation of IT adoption. And recently Yang et al. (2013) also supported the crucial role of external vendor for the implementation of IT innovations, especially when the organization is unfamiliar with the technology (Yang et al., 2013). According to Proudlock et al. (1999), the employment of such external support can overcome knowledge gaps and guide firms in implementing appropriate IT.

The availability of external support especially vendor also has been shown to be an important factor in several adoption studies, especially in small organizations. Study by Thong et al. (1996) of 114 small businesses in Singapore found that external IT expertise plays an important role in the IT implementation process. One year after, study by Igbaria et al. (1997) also indicated that external support is a significant variable influencing system satisfaction and usage. More recently, the results from Ellis and Belle’s (2011) study on open source software adoption in South African identified technical support as a facilitator to the ongoing operation of the ICT infrastructure. Most organizations in their study felt they could not function without reliable ICT support services.

Regarding CAIS, the introduction of CAIS may expose the firms with new skill requirements. With little internal IT/IS expertise, SMEs in Malaysia are believed to rely on the advice and support from CAIS vendors. The degree to which a vendor possesses CAIS skills may make it easier for SMEs to adopt and use the CAIS without extensive in-house expertise, thus can help lower the barriers in adopting CAIS. Furthermore, researchers elsewhere have found vendor support to be an important factor in the adoption and usage of innovation technologies; therefore, this study also predicts the same effect on CAIS. Thus, it is predicted that:

\[ H4a: \text{There is a positive relationship between vendor support and the likelihood of CAIS adoption.} \]

4.4.2 Competition (CPTN)

It has long been empirically recognized that competition can put pressure on organizations to adopt an innovation (Thong, 1999; Zhu et al., 2003; Yoon, 2009). In high competitive markets, IT innovation adoption is necessary to maintain and achieve competitive advantage (Yoon, 2009). Non-adoption of an IT innovation that is adopted by others in such an environment may result in competitive disadvantage.

Porter and Millar (1985) argue that IT adoption can enable an organization to achieve competitive advantage in either cost or differentiation. In other words, by adopting IT, an organization can lower its costs and differentiate itself from competitors. The argument by Porter and Miller can be applied to the context of CAIS. Adopting CAIS may enable firms to differentiate it in several ways especially from competitors who have not adopted CAIS. For example, CAIS may help a firm to provide a standard and proper preparation of financial information, thereby allowing financial data to be automatically extracted and efficiently analyzed by the top
management. This benefit thus enhancing its differentiation in term of accurate information for decision making compared to their non-adopters counterpart.

In addition, competition is an important factor driving firms to adopt a new technology in order to avoid competitive decline which many studies refer as competitive pressure (Zailani et al., 2009; Hameed & Counsell, 2011; Zhu et al., 2006; Chwelos et al., 2001). Ghobakhloo et al. (2011) defined competitive pressure as the extent to which firms perceive themselves threatened by their counterparts within their industry or substitute sector.

Many researchers who applied Institutional Theory (alatawi et al., 2012; Yoon, 2009) believed that when firms face pressures from their external environments, they are likely to adopt innovations that others in their environment have already adopted. In other words, firms are likely to adopt a technology when they perceive that the number of their competitors that have already adopted the technology increases (Yoon, 2009). They also intend to adopt the technology if they perceive that competitors that have adopted the technology have benefited or succeeded from using it. Because their competitors have already adopted the technology, firms will then intend to do the same in order to achieve organizational legitimacy. Organizational legitimacy is referred to the acceptance of an organization within its external environment (Yoon, 2009). Those who choose not be follow the trend, risk themselves from being left behind and may at a disadvantaged position as opposed to their competitors (Chong & Ooi, 2008; Chong & Chan, 2012; Ghobakhloo et al., 2011b).

It is reasonable therefore to assume that the more a company feels a pressure in its operating environment, the more likely it will adopt a ‘best practice’. In some instances, these pressures force companies to look for best practices in the future (Zailani et al., 2009). For that reason, competitive pressure is generally perceived to have a positive influence on the adoption of innovation technology and is one of the widely mentioned reasons for organizations to adopt IT. It has driven many researchers to analyze the strategic rationale underlying the relationship between competition and technology innovations (Ghobakhloo et al., 2011; Zailani et al., 2009; Hameed & Counsell, 2011; Varukolu & Park-Poaps, 2009; Chwelos et al. 2001).

In the CAIS context, the SMEs is predicted to be more likely to adopt the technology if they find that many of their competitors have started using it. Salwani et al. (2009) noted that decisions to engage in a particular behaviour depends on perceived number of similar others in an environment that have already done likewise. It seems therefore competition is one of the main reasons for SMEs to adopt CAIS. It also seems rational to believe that the competition affects the adoption of CAIS when SMEs perceive that the technology may differentiate them from others and assist them to achieve superior firm performance. The SMEs also may consider adopting CAIS when they perceived themselves threatened of losing competitiveness to their counterparts within the industry. Derived from the above discussions this study predicts that:

\[ H4b: \text{There is a positive relationship between competition and the likelihood of CAIS adoption} \]

4.4.3 Government Influence (G-INF)

Above discussion in environmental context described that competition and external support from vendors are important in technological innovation adoption. The other pressing and practical reasons for SMEs to adopt IT might also come from government influence (Kuan & Chau, 2001). Government influence refers to the commitment and assistance provided by the authority to encourage the spread of IT/IS innovation in its context (Ifinedo, 2012).
Government influence can also referred as government support in many studies (e.g. Ifinedo 2012; McKenzie, 2006; Hameed & Counsell, 2012).

Government has great influence over any kind of companies (Yang et al., 2012). For instance, Yang et al. (2012) suggested that the formulation of related regulations can become limitations or entry barriers for companies’ investments, or subsidies that can motivate the companies to adopt information technologies or to develop new techniques. However, McKenzie (2006) described that governments around the world are eager to see small businesses to adopt technological innovations. Governments from various countries also understand how important IT is to their nation’s growth (Chong & Ooi, 2008). As such, many researchers agreed that government play a indispensable role in firms’ adoption of technological innovation (Yang et al., 2013; Hameed & Counsell, 2012; Yang et al., 2012; Riyard et al., 2009; Chong & Ooi, 2008; Thatcher et al., 2006; Looi, 2005; Lee & Kim, 2004; Scupola, 2003).

The development of digital technology and the emergence of new products and services require formulation of a new policy and regulatory framework. These policies include direct research and development (R&D) funding, agency level research policy, investment tax credits, industry policy and R&D tax credits (Yang et al., 2012). This is because without parallel development of laws, policies and strategic directions by government can result in abuses and discourages the adoption and use of technological innovation (Riyard et al., 2009). Sharing this view, many studies suggested government through regulations can encourage the adoption of innovation in organizations. Thatcher et al. (2006) pointed out that the existence (or non-existence) of government policies and incentives are influential in encouraging (or discouraging) companies to adopt technology. Riyard et al. (2009) mentioned that government through setting up infrastructure and enacting rules and regulations can create environment for SMEs for technological intake. Recently, Yang et al. (2013) suggested government involvement through policies and support can influence the decision to adopt new systems to a large extent.

Besides regulatory framework, many researchers agreed government support in terms of providing incentives would facilitate innovation adoption and usage. In Looi’s (2005) study, government initiatives like the e-government programme, entrepreneurship development programme and the information support programme were found to be the dominating factors for internet growth and IT adoption (Looi, 2005). More recently, Hameed and Counsell (2012) mentioned that by providing training, guideline, financial assistance, technical support, independent advice and other incentives government can encourage adoption of IT in organizations. Yang et al. (2012) when discussed the role of government in influencing adoption of IT suggested the subsidies that the government offers will encourage the companies to accelerate the pace of their introduction of new IT so that they can improve the condition of their operations and, in turn, influence the performance of the IT implemented by the companies. This is to say that government can stimulate the introduction of new IT in the companies through the institution of certain regulations or the provision of related assistances.

Many studies also suggest the important of government role as one of the external related factors that is very important to break through the barriers of ICT adoption. Study by Lee & Kim (2004) on driving factors and barriers of e-business in Korea found that the government related factors are very important in the reduction of the main barriers and the creation of the atmosphere of ICT adoption in SME sector especially related to the cost issues. Lee and Kim (2004) stressed that the cost issue seems to be difficult to solve by SMEs, per
se, because of the inferiority of the SMEs’ environment. Their study also revealed the type of government support that SMEs wished in their study are mostly related to the reduction of cost burden such as financial support of development of ICT service platform, funds for training and tax cuts. Lee and Kim (2004) suggested that the main role of government is to open the way for using IT without the burden cost and to create the atmosphere of IT usage through systematic support to let the SMEs realize benefits of IT and to give more motivation in all possible areas.

It is clear therefore, government involvement plays an important role in promoting technological innovations, facilitate the adoption and break through the barriers of innovation adoption in organizations (Tan et al., 2009). Several researchers in recent years have studied the role of government in the adoption of innovation technology and it is generally agreed that the government support has a positive relationship on adoption of innovation technology (Dhurbakula & Kim, 2011; Riyard et al., 2009; Lin, 2008; Iacovou et al., 1995; Kuan & Chau, 2001). The important of government influence also made some studies expand the TOE framework to four dimensions in which government dimension has been extracted as another important dimensional factor (e.g. Riyard et al., 2009; Durbhakula & Kim, 2011).

According to the literature review as discussed above, government entities are among the most powerful institutional forces affecting innovation. One can see that the more appealing the government’s assistance is the more contribution the government can make toward innovation technology adoption in a firm. Regarding CAIS, this is to say that government can stimulate the introduction of this technology in the firms through the institution of certain regulations or provision of related assistances. Based on the influence government factor has on technology adoptions in previous literatures, this study hypothesizes that:

\[ H4c: \text{There is a positive relationship between government influence and the likelihood of CAIS adoption} \]

### 5.0 SUMMARY AND CONCLUSION

The SMEs have always been recognized as an important segment of the economy and will remain as a backbone of economic development in many economies throughout the world (Tan et al., 2008). As a developing country, SMEs represent a vital segment of Malaysian economy. Therefore, the financial stability of SMEs is very important to the health of Malaysian economy, and the impact of SMEs failures on the economy is a very important concern.

Several factors are important in determining the failure of the SMEs, one of which is accounting records. Accounting reports are the principle source of information for the management of SMEs. Therefore, the importance of the accounting system for SMEs cannot be disregarded.

Today, with efficient computer operations such as CAIS, an adequate accounting system could be achieved more easily than through traditional methods. Moreover, with the introduction of lower-cost and more user-friendly accounting softwares in the market, there appears to be fewer obstacles to improved record keeping practices. However, some SMEs are not yet ready for this innovation. For the roles play by the CAIS in improving financial management in SMEs, it is important to examine the factors that influence the likelihood of CAIS adoption among non-adopters in Malaysian SMEs. For that purpose, this study proposes the conceptual model to be used in future research.

The proposed research model has been devised on careful consideration of the models used in previous IT adoption studies.
at the organizational level. The developed research model was based on the TOE framework using the DOI theory in its technological contexts. The DOI theory has been used by many innovation researchers since more than two decades ago. The use of this framework therefore will not only empirically validate its usefulness but will also test the performance of the DOI theory which has been used for a long time. More importantly, based on the works by Thong (1999,) a TOE resource-based model for SMEs is developed. This further complements the use of DTOE framework for SMEs. For the integration of TOE framework, DOI theory and Thong’s model, this conceptual model is hoped to produce useful combination especially in constructing specialized model for SMEs.

5.1 Limitation and Future Research Directions

The formulation of the proposed research model is based on the empirical validation of the constructs taken from different research studies of IT adoption at the organizational level and not fully exploited from the extant research on CAIS adoption. Therefore, the constructs proposed for this model is need to be empirically validated. The next direction for this research is to collect data from the various types of SMEs in Malaysia in the future in order to support the hypotheses of the proposed research model. In addition, if this model is proven to be one of the accepted models for the adoption of CAIS, it can be tested further to see whether its result remains similar in the contexts of other countries and other IT innovations.

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