Predicting Continuance Intention to Use Accounting Information Systems Among SMEs in Terengganu, Malaysia

AZWADI ALI[a*], MOHD SHAARI ABDUL RAHMAN[b] AND WAN NUR SYAHIDA WAN ISMAIL[c]

[a,b,c]*Universiti Malaysia Terengganu*

ABSTRACT

This research examines the key drivers of users' intention to continue using Accounting Information Systems. Commonly used Information Systems theoretical models including diffusion of innovation, expectation-confirmation theory and technology acceptance model are synthesized in conceptualizing the research model. The model is validated empirically through partial least squares analysis using a sample collected from 146 Small and Medium Enterprises in Terengganu, Malaysia. The results demonstrate that relative advantage is the strongest antecedent of attitude towards AIS and satisfaction, both of which have significant mediating effects on the continuance intention. Implications of these findings are discussed at the end of this paper.

Keywords: Continuance intention; Accounting information systems; Systems adoption; Small and Medium Enterprises

INTRODUCTION

Small and Medium Enterprises (SMEs) have been acknowledged as one of the main drivers of a nation's economy (Enright, Ffowcs-Williams and Nolan, 2001). While driven by the motive of maximizing business value, some of these enterprises may not be able to keep pace with the increasing use of information technology which may enable market leaders expanding the competition gaps. Therefore, many countries including Malaysia have been assisting SMEs in many aspects including in promoting increasing use of information systems in businesses. Examples of such initiatives in Malaysia include the *green lane* facility, financial guide for SMEs and *enterprise 50 award* programme (SMEcorp, 2012).

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*   Corresponding Author: E-mail: azwadi@umt.edu.my.
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In leveraging the facilities and incentives available for them, SMEs are encouraged to effectively use information technology (Andam, 2003). Particularly, the accounting information systems (AIS) have been seen as an important enabler to achieve sustainable competitive edge. For example, AIS can produce proper and timely financial information and accounting reports which can inform SMEs the consequences of their firm's operations and the impacts of their past decision making on performance (Halabi, Barret and Dyt, 2010). When used strategically, AIS make execution of data processes and financial transactions easy to provide the decision makers of SMEs, who typically are the owner-managers themselves with the information they need to plan, control, and operate their businesses effectively (Dalci and Tanis, 2002).

Effective AIS can provide owner-managers of SMEs important information to monitor and control short-term issues including costing, expenditure and cash flows (Ismail, 2009). When short-term issues are resolved, managers can concentrate on integrating operational considerations with long-term strategic aims. Furthermore, effective AIS in providing timely and errorless information through quick data retrieval can support competitive dynamism of a business to compete and survive in today's rapid and volatile economy.

The danger of not keeping pace with the use of latest business technology may not only cause businesses to lose market share but also they may also cease from the market. With regard to AIS, failures of small businesses have been found to be highly related to their approach to the uses which can be made of accounting information (Dyt and Halabi, 2007). In addition, most causes of SME failures are found to be directly related to the accounting systems including fraud, inadequate accounting experience, lack of an adequate accounting system and management's lack of accounting knowledge (Hamby, 1992). Conversely, maintaining good accounting records and financial control are important to increase chances of SMEs to succeed (Lussier and Halabi, 2010; Blackwood and Mowl, 2000).

Despite the inherent benefits of AIS, not all SMEs are quick in adopting them. Surprisingly, not all SMEs produce accounting reports (Dyt and Halabi, 2007). This failure is found to be associated with money as not always be a prime motivator for SME owner-managers (Sian and Roberts, 2009), no compulsion to report financial transactions (Halabi *et al.,* 2010) and no statutory requirement to do so (Smith, 1999). Furthermore, many SMEs do not keep proper financial records and accounts as they are not aware or convinced of the usefulness of accounting and financial reporting requirements for control and decision-making purposes (Jayabalan *et al.,* 2009).

Owner-managers of SMEs may not have the same motivator to keep their accounting information in accordance to proper accounting requirements. A study

by Sian and Roberts (2009) on 299 small businesses in the UK found that the owner-managers do not have adequate financial record because the financial statements were too complex, too long term, not timely enough or simply not particularly relevant. Apart from private limited companies which are required to file annual reports to the local business registrar (Malaysia Companies Act, 1965), many other SMEs in the form of sole-proprietorship and partnership in Malaysia do not need to comply with such requirement. Therefore, there are rooms for inadequacy in accounting records as well as gaps of accounting practices among them can exist. For example, record keeping and documentation are found to be among major tax difficulties faced by SMEs in Malaysia despite tax filing is their annual activity (Pope and Abdul-Jabbar, 2007). However, of-the-selves AIS are more or less standardized in terms of their functions and the information produced by them. Hence, such discrepancies in accounting practices can be mitigated by using AIS (Kuan and Chau, 2001).

In short, AIS provides great benefits to SMEs but its adoption by SMEs is still unclear. Non-adopters may still doubt its usefulness or perchance there are other reasons for not adopting it including cost, organizational readiness and lack of government support. Nevertheless, this study takes a stance where if a system is truly useful, then its continued use among adopters will likely motivate non-adopters to start using it. Therefore, this study examines continuance intention in using AIS among adopters by synthesizing diffusion of innovation (DOI), expectation-confirmation theory (ECT) and technology acceptance model (TAM).

THEORETICAL BACKGROUND AND HYPOTHESES

The topic of understanding the adoption of technology-based products including AIS has long been considered an important research area for information system (Salehi, Rostami and Mogadam, 2010). However, a mere adoption is not considered equivalent to continuous use as the latter confirms the satisfaction from using it (Hsu, Chiu and Fu, 2004). Therefore, understanding the factors that influence user's intention to continue using the technology is a critical issue for researchers and practitioners.

AIS and Continuance Intention

Previous studies reported that accounting reports were the principle source of information for the management of SMEs. Therefore a more sophisticated financial reporting system is necessary to ensure that the enterprise's economic resources are used effectively and efficiently in pursuit of its goals (McMahon, 2001). Accounting reports or financial information can inform owners of the

consequences of their firm's operation and the impact of their past decision making (Halabi *et al.*, 2010). In addition, financial information serves as a good basis for realistic future plans (Butkevicius, 2009). As information technology expands, such financial information is now easily produced by computerised accounting information systems. Therefore, many researchers agreed that having improved AIS would permit SME owners to manage their firms better (Ismail and King, 2007; McMahon, 2001).

To date, most studies on AIS in Malaysia have dealt with various factors of adoption (e.g., Kharuddin, Ashhari and Nassir, 2010) and implementation (e.g., Ismail and Mat Zin, 2009; Ismail and King, 2007) but these studies did not go beyond the adoption and implementation stage. Nevertheless, in other types of IS, many researchers have looked into the continuance intention of the various technology such as in e-commerce (Bhattacherjee, 2001a; Chen*,* Chen and Chen, 2009), radio frequency identification technology (Hossain and Quaddus, 2011), e-shopping (Al-Maghribi and Dennis, 2011), the Internet (Hsu *et al.,* 2004) and e-learning (Lee, 2010). Therefore, these studies serve as literature basis for our research as they are relevant to the context of continuance intention.
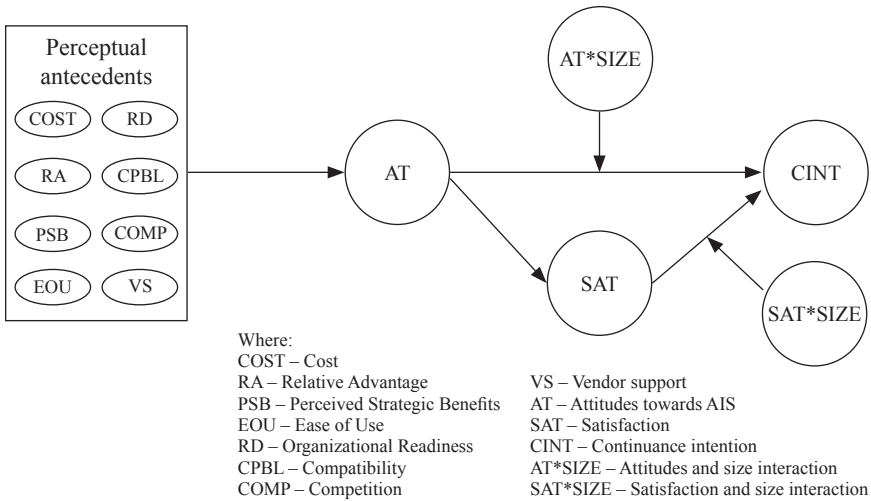
Research Model

Our research model is shown as Figure 1. This model can be seen as a modified and extended version of the expectation-confirmation theory (Oliver, 1980) by adding continuance intention as the ultimate behavioural variable as conceptualized by Bhattacherjee (2001b).

Drawing from related behavioural models, our research model in Figure 1 suggests that there are antecedent variables of attitude, and that attitude precedes satisfaction and continuance intention. This approach is consistent with Liao, Chen and Yen (2007) who suggested that during the implementation stage of a technology, the effects of perceptual antecedents on behaviour are mediated by attitude and satisfaction. In this notion, users are confirming the benefits accruing from using it and weighing it against cost and difficulties encountered before and during its implementation. Similarly, the perceived level of overall satisfaction of customer towards automated banking is the result of their perceptions, developed attitudes and degree of usage associated with the service (Mautinho and Smith, 2000).

Antecedent Variables

Many new technologies including AIS can be purchased at low cost due to rapidly declining hardware and software prices and the availability of ready-to-use, user-friendly software packages (Kuan and Chau, 2001). However, as SMEs

Figure 1 Research model

usually have very limited budget, the cost of hardware/software can still be a big deterrent to adoption (Premkumar and Roberts, 1999). For example, the cost of an innovation is found to be negatively related to the adoption and implementation of the innovation (Al-Qirim, 2007; Ghobakhloo, Arias-Aranda and Benitez-Amado, 2011; Premkumar and Roberts, 1999). In the context of continued use of AIS, users may form negative attitude towards it when found that the benefits achieved from using it are not worth the price they had paid for it. For this reason, this study forms the following hypothesis related to cost:

H₁: Cost is negatively related to attitude towards AIS

When adopting a new technology, many organizations take into consideration the advantages that stem from using it (To and Ngai, 2006). This is consistent in the concept of relative advantage in DOI which Rogers (1995) defined as the degree to which an innovation is perceived as being better than its precursor. In the AIS context, it is referred to the degree to which AIS is perceived as providing greater benefits than not using it. If the owner-managers of SMEs perceive that the benefits of new systems adoption outweigh the associated risks, then they are more likely to adopt them (Thong and Yap, 1995). Moreover, Premkumar and Roberts (1999) identified that the primary motivation for small businesses to adopt new technologies is the anticipated advantages these technologies will bring to the company. Similarly, relative advantage was found to be one of the determinants of

e-commerce adoption (Beatty, Shim and Jones, 2001) and Shih and Fang (2004) found significant relationship between relative advantage and attitude towards Internet banking. In the same vein, this study hypothesizes that:

H_2: *Relative advantage is positively related to attitude towards AIS*

Perceived strategic benefit is related to a perception of an owner-manager to the impact of innovation on his/her business processes and relationship including competitive advantage, customer services and relationships with business partners (Chau, 2001). A positive perception of IS strategic benefits can cause an owner-manager to favour a quick adoption and continued use of the technology. In many technology adoption studies, perceived usefulness instead of strategic benefit was used as the former originates from the technology acceptance model (e.g., Bhattacherjee 2001a; Tan and Teo 2000). While having the same intended purpose, we contend that perceived strategic benefit suits better for AIS than perceived usefulness as it relates to managing business operations and decision making processes. Given that AIS automates many manual tedious tasks, its usefulness is very much apparent. In the same manner, e-commerce adoption was found to be influenced by its perceived strategic value to the companies (Grandon and Pearson, 2004). In addition, Narayanan, Marucheck and Handfield (2009) reviewed literature on strategic benefits of Electronic Data Interchange (EDI) including competitive, cost-saving and communication benefits and concluded that anticipated benefits are a driver of EDI adoption. Since our study asserts that during implementation, attitude should precede respective behaviours, we propose that:

H_3: *Perceived strategic benefit is positively related to attitude towards AIS*

Perceived ease of use (EOU) is described by Davis (1986) as the degree to which a person believes that using a particular system would be free of effort. When the technology is easy to use, it will not be too much a burden for the user. Ndubisi and Jantan (2003) argued that the perceptions about the ease or difficulty of using the technology are often partly the result of users computing self-efficacy and partly the result of the make-up or nature of the system. Despite the moderating effect of self-efficacy, many researchers view a positive relationship to exist between EOU and subsequent behaviour (e.g., Karahanna, Straub and Chervany, 1999; Venkatesh and Morris, 2000; Venkatesh et al., 2003). For example, Ramayah and Lo (2007) found that EOU has both direct and indirect effects on benefit beliefs in Enterprise Resource Planning (ERP). Therefore, we hypothesize that:

H_4: *Ease of use is positively related to attitude towards AIS*

Having potential benefits however may not be enough for an organization to decide adopting a new technology. There are inherent risks associated with using a new technology; therefore, businesses are willing to use a new technology effectively when they are ready (Chau, 2001). In the context of SMEs, they may be reluctant to adopt AIS if they are not ready to face the potential risks from using it. This lack of readiness may come from certain organizational financial and technological resources (Ramdani and Kawalek, 2007). Owing to scarce financial and technological resources, SMEs might think twice to adopt a new technology. Abdinnour-helm *et al.* (2003) argued that employee positive attitude before implementation of a new system is necessary for the readiness of the organization to face arising challenges during its implementation. Similarly, Grandon and Pearson (2004) identified organizational readiness as one of the significant determinants of e-commerce adoption. In the same vein, we considered organizational readiness as important in AIS adoption; hence, the following hypothesis is formed:

H_5: *Organizational readiness is positively related to attitude towards AIS*

Compatibility is a technological characteristic perceived by individuals as conceptualized in the diffusion of innovation theory as a driver of the decision to adopt a new innovation (Shih and Fang, 2004). It is related to the degree to which an innovation is perceived as being consistent with the existing values, needs, and past experiences of potential adopters (Rogers, 1995). When technology is recognized as compatible with work application systems, firms are usually likely to consider the adoption of a new technology (Low, Chen and Wu*, 2011). For example, when a business views e-commerce to be compatible with its existing value, culture and preferred practices, then it is more likely to be adopted (Grandon and Pearson, 2004). In addition, when an innovation is considered rather new relative to other existing tools, potential adopters are likely to match its compatibility with their lifestyles (Vijayasarathy, 2004). Thus our next hypothesis is stated as:

H_6: *Compatibility is positively related to attitude towards AIS*

The pressure to survive in the market may prompt businesses to keep pace in the competition. Ramdani and Kawalek (2007) suggested that if an SME is willing to continue operating, it has to be up-to-date with IT market offerings. Their study also stressed that if direct competitors are quicker in adopting a system, they have a better chance to increase their market share. Similarly, increased competition tends to put pressure on an organization to adopt a new system in order not to lose market share (Ifinedo, 2011; Premkumar and Robert, 1999). Such pressure may

come directly from competitors or indirectly from customers who prefer better and quick services from the competitors. Further, Grandon and Pearson (2004) utilized external pressure variable which consisted of competition, social factors and government pressures in explaining adoption decision of e-commerce. Consistent with these studies, our next hypothesis is formed as:

H_7: *Competition is positively related to attitude towards AIS*

IT knowledge and technical skills are important factors in the adoption of new technologies and has been found to be positively related to adoption. However, SMEs are typically lack of such expertise (Thong, 1999) and many of them are unaware of new technologies (Premkumar and Roberts, 1999). In addition, many adopters tend to delay using an innovation until they have sufficient internal expertise. For example, most managers interviewed by Caldeira and Ward (2002) viewed vendor support as significant issue when internal expertise was available. Therefore, vendor supports are deemed necessary for organizations to adopt the technology and to continue operate the system. In addition, in ensuring the quality of business process re-engineering (BPR), adequate vendor support should be a criterion when selecting a BPR package (Nah, Lau and Kuang 2001). Similarly, Ifinedo (2007) asserted that vendor quality as a determinant of ERP success. Based on these arguments, our study hypothesizes that:

H_8: *Vendor support is positively related to attitude towards AIS*

Endogenous Variables

SMEs are different from large organizations in terms of their small number of employees and the significant role play by a single person, typically the owner-manager in running a business (Looi, 2004). As such, all decisions from daily function to future activities are normally made by the owner-managers (Thong, 1999). Therefore their attitude towards a technology is important in influencing the technology adoption.

Bhattacherjee (2001a) argues that the continued usage behavior is different from and possibly more important than its initial adoption. Many adopters can initially be driven by mandatory pressure but may discontinue its use in a later stage (Hossain and Quaddus, 2011). Therefore, satisfaction can significantly influence post-adoption attitude (Bhattacherjee, 2001a, 2001b; Limayem and Cheung, 2008). Nevertheless, as the present study synthesizes related concepts into the expectation-confirmation theory, attitude should precede satisfaction since satisfaction in post-

consumption stage is an evaluation of pre-consumption attitude (Liao *et al*., 2007). Therefore, the hypotheses related to attitudes tested in our study are:

H_9: *Attitude towards AIS is positively related to satisfaction*.

H_{10}: *Attitude towards AIS is positively related to continuance intention*.

Continuance intention to use a particular IT is an important implication of positive experience and satisfaction from using it. It is also the result of users confirming the expected results or benefits from using it (Bhattacherjee, 2001b). Hence, the ultimate success of a system is said to depend largely on its continued use followed by adopters' satisfaction (Bhattacherjee, 2001a; Hussain and Quaddus, 2011). Therefore, we can expect that the intention to continue using AIS can only be strong when satisfaction from using it has been positive and thus the final hypothesis is stated as:

H_{11}: *Satisfaction is positively related to continuance intention*.

Moderator

In the research model size is included as a moderator. Findings in the extant literature tend to support the notion that larger enterprises have strong resources to adopt high-end information technology that can enhance experience and satisfaction in using it (e.g., Laukkanen, Sarpola, and Hallikainen 2005; Low, Chen and Wu, 2011; Premkumar and Roberts, 1999). Conversely, small companies were found to experience more knowledge constraints than their larger counterparts in ERP adoption (Laukkanen *et al.*, 2005). Therefore, we hypothesize that;

H_{12}: *Size moderates the relationship between attitude towards AIS and continuance intention*.

H_{13}: *Size moderates the relationship between satisfaction and continuance intention*.

RESEARCH METHOD

This study synthesizes commonly used theoretical models in predicting users' intention and extents of adoption of information systems. Consistent with previous studies in similar context, we adopted a standard survey approach in collecting data. The survey questionnaire was based on validated measures in previous studies.

Data Collection

The unit of analysis in our study was owner-managers of small and medium enterprises in Terengganu, Malaysia. Study population of 916 registered SMEs in Terengganu was gathered from the business directory available from SMECorp website (SMECorp, 2011). Since our focus is to study AIS related to common accounting applications, SMEs that involve only in manufacturing products were avoided since information systems in these companies would include specific information systems including enterprise resource planning and electronic data interchange; hence, their responses may be biased towards multiple systems.

Trained enumerators were hired to administer the survey questionnaire to the owner-managers of the stipulated sample of 269 based on Krejcie and Morgan (1970) for a sample population of 900 to 950. The actual survey was administered to 293 to account for potential unusable responses. Whenever possible, we would ask

Table 1 Description of samples

Sample profiles		Number	Percentage
Use of AIS	General Ledger	67	46%
	Credit Transactions	92	63%
	Inventory	97	66%
	Trial Balance	57	39%
	Balance Sheet	77	53%
	Income Statement	90	62%
	Point-of-sale (POS)	48	33%
	Budget	45	31%
	Variance Analysis	28	19%
	Salary	43	30%
	Personnel Information	67	46%
	Others	11	8%
Type of business	Retailing	50	34%
	Services	49	41%
	Wholesale	12	8%
	Others	25	17%
Age of business	1-5 years	58	40%
	6-10 years	34	23%
	11-20 years	26	18%
	More than 20 years	28	19%
Number of employees	1-5 people	50	34%
	6-10 people	41	28%
	11-20 people	22	15%
	More than 20 people	33	23%

for survey participation from the owner-managers. In some instances, participations from representatives of the businesses' management were sought after. Of this sample, about 80 enterprises declined to participate, 38 indicated that they did not use AIS in their businesses and 24 were failed to be found. A total of 151 responses were successfully gathered during the 6-week of survey administration. However, two responses were considered inadequate responses while three responses had many outliers, resulting in 146 usable responses used in the data analysis. The descriptive characteristics of the sample are shown in Table 1.

Construct Operationalization

In defining the measures of each construct, a thorough procedure was followed to ensure reliability and validity of the survey instrument. We developed all of our measures based on the relevant literature. Some of the measures were adapted from existing studies to suit the context of our study. Since most of the measures have been empirically validated, we did not pre-test our questionnaire prior to the survey administration. Table 2 indicates the measures of the study variables used in our study. Size as a moderator variable was measured on a scale of 4 (1 = 1-5 employees, 2 = 6-10 employees, 3 = 11-20 employees and 4 = more than 20 employees). This measure was adopted in accordance to Bhaird (2010) and Wu and Li (2012) who classified firm size into a categorical variable. The interaction variables to denote the size as moderator were mean-centered before the final analysis was performed to reduce the multicollinearity problem.

Table 2 Operationalization of constructs

Construct	Item	Measure	Sources
Cost	COST1	Cost of using AIS is far greater than its benefits.	Premkumar and Robert (1999)
	COST2	Maintenance and support cost of AIS is very high for our business.	
	COST3	The amount of money and time invested in employees to use AIS are very high.	
Relative advantage	RA1	Using AIS can reduce our operation cost.	Premkumar and Robert (1999); Rogers (1995)
	RA2	Using AIS can reduce our operation time.	
	RA3	Using AIS can provide useful information to make decisions.	

Table 2 (Cont'd)

Perceived strategic benefits	PSB1	AIS usage helps our business to compete.	Ifinedo (2011)
	PSB2	AIS usage helps us to provide effective customer services.	
	PSB3	AIS usage is in line with current business trend.	
Ease of Use	EOU1	Using AIS is easy for our employees.	Premkumar and Bhattacherjee (2008)
	EOU2	Information produced by AIS is easy to understand.	
	EOU3	Time taken to master the use of AIS is short.	
Organizational readiness	RD1	We are financially ready to use AIS.	Grandon and Pearson (2004)
	RD2	We have enough technological resources to use AIS.	
	RD3	Our employees have adequate knowledge to use AIS.	
Compatibility	CPBL1	Using AIS is compatible with our business culture.	Rogers (1995); Grandon and Pearson (2004)
	CPBL2	Using AIS is compatible with our business values.	
	CPBL3	Using AIS is compatible with our preferred work practices.	
Competition	COMP1	Our competitors are also using AIS.	Grandon and Pearson (2004); Ifinedo (2011)
	COMP2	Our business will be left behind if not using AIS.	
	COMP3	Our customers will switch to competitors if we do not use AIS.	
Vendor support	VS1	AIS vendor provides support services if difficulties in using AIS are encountered.	Ifinedo (2011)
	VS2	AIS vendor provides training in using AIS.	
	VS3	AIS vendor are concerned with potential problems in using AIS.	

Table 2 (Cont'd)

Attitude towards AIS		We feel that having used AIS in our business is:	Ajzen (1991); Bhattacherjee and Premkumar (2004)
	AT11	Bad ↔ Good	
	AT2	Useless ↔ Useful	
	AT3	Troublesome ↔ Helpful	
	AT4	Wasteful ↔ Beneficial	
Satisfaction		Our experience in using AIS is:	Bhattacherjee (2001a); Limayem and Cheung (2008)
	SAT1	Dissatisfied ↔ Satisfied	
	SAT2	Displeased ↔ Pleased	
	SAT3	Terrible ↔ Delighted	
	SAT4	Frustrated ↔ Contented	
Continuance intention	CINT1	We intend to continue using AIS.	Premkumar and Bhattacherjee (2008); Lee (2010)
	CINT2	Continue using AIS is a good idea.	
	CINT3	We are going to continue using AIS and not returning to the manual accounting system.	
	CINT4	We are open to new AIS that is better to our current system.	

Data Analysis

Due to the sample size obtained being less than the benchmark of 200 sample size for co-variance based structural equation modeling considered to be reliable (Hoelter, 1983); we had opted for the Partial Least Squares approach to test the research model and stipulated hypotheses. The software used was SmartPLS developed by Ringle, Wende and Will (2005). A confirmatory factor analysis (CFA) was first run before the utilization of PLS analysis.

RESULTS

In utilizing a PLS path modeling technique, the similar two-step procedure normally conducted in the structural equation modelling was followed (Anderson and Gerbing, 1988). Through this technique, results of both confirmatory factor analysis of the model and path effect were obtained. In completing this procedure, a model validation analysis was also performed.

Validity and Reliability of Measures

Prior to testing the model in PLS analysis, results of the CFA were first investigated (see Table 3). The initial hypothesized eight independent variables were not supported and in particular, the items of the competition construct demonstrated low and cross loadings. Only five independent variables that satisfactorily explain 65% of variance of the model were used in the final analysis. Items making up perceived strategic benefits and ease of use were combined with relative advantage items to make up only one construct. In addition to the competition items, only EOU3 failed to load in the relative advantage construct due to low and cross loadings. Hence, these items were removed in the final research model used to test the stipulated hypotheses (see Figure 2).

Table 3 Results of confirmatory factor analysis

Items	Factors							
	1 RA α=0.886 EV=9.13	2 RD α=0.864 EV=2.30	3 CPBL α=0.914 EV=1.78	4 VS α=0.814 EV=1.39	5 COST α=0.804 EV=1.08	6	7	8
COST1	-.005	.023	-.145	.055	**.757**	-.048	-.011	-.194
COST2	-.042	-.037	.079	-.128	**.825**	.062	.014	.139
COST3	-.027	-.070	-.179	.088	**.710**	.063	-.042	-.004
RA1	**.371**	.127	.179	.280	-.160	.122	.211	-.032
RA2	**.474**	.300	.170	.237	-.056	.073	.007	.248
RA3	**.688**	.188	.193	.249	.085	-.044	-.005	.172
PSB1	.681	.094	.101	.111	-.019	.101	-.017	-.039
PSB2	**.691**	.189	.146	.081	-.144	.161	.035	-.126
PSB3	**.772**	.149	.229	.088	.012	-.034	.195	.097
EOU1	**.495**	.299	.279	.164	-.051	-.111	.135	.413
EOU2	**.619**	.124	.246	.160	-.099	-.065	.162	.399
EOU3	.162	.163	.140	.225	-.027	.090	**.852**	.047
RD1	.228	**.834**	.139	.178	-.033	-.037	.093	.030
RD2	.353	**.659**	.316	.237	-.062	.062	.108	.111
RD3	.236	**.590**	.305	.229	-.069	.128	.098	.021
CPBL1	.231	.284	**.724**	.219	-.206	.070	.137	.083
CPBL2	.309	.225	**.753**	.333	-.095	.023	.085	.002
CPBL3	.378	.196	**.701**	.234	-.127	.028	.056	.154
COMP1	.423	.332	.015	-.026	.112	.160	.085	.035
COMP2	.428	.423	.198	.221	-.115	.351	-.045	.347
COMP3	.127	.078	.045	-.083	.101	**.954**	.086	-.023
VS1	.176	.298	.314	**.534**	-.121	.201	.062	.118

Table 3 (Cont'd)

VS2	.211	.126	.145	**.763**	.065	-.090	.065	.058
VS3	.132	.193	.246	**.777**	.060	-.088	.188	.015

KMO: 0.868
Bartlett: 0.00974 (0.000)
Extraction method: Principal axis factoring with Varimax rotation

Measurement Model

The measurement model for all constructs was evaluated through their convergent validity and discriminant validity. The convergent validity of a construct is established when items measuring the construct have levels of item reliability above 0.70, and both composite reliability and average variance extracted (AVE) of the construct exceeding 0.70 and 0.5 respectively (Henseler, Ringle & Sinkovics, 2009). Further, discriminant validity of a model was assessed by comparing the square root of the AVE of each construct against its bi-variate correlations with other constructs, and checking cross-loading cases (Chin, 1998).

Measurement model was evaluated by running a PLS algorithm (300 maximum iteration, standardized values and centroid weighting scheme). The results of this analysis displayed in Table 4 suggested that all constructs are reliable with loadings above the desired level of 0.70 except for RA1 and PSB1, which are retained because we contend that the loadings of these items as reliable and adding important variation in the endogenous variables. In addition, the minimum construct composite reliability is 0.98 (COST) while the minimum construct Average Variance Extracted (AVE) is 0.56 (RA). These measures are all above the stated thresholds. Thus, we concluded that the research model has achieved satisfactory convergent validity.

Table 4 Convergent validity of constructs

Construct	Items	Item reliability	Composite reliability	AVE
COST	COST1	0.8358	0.8842	0.7180
	COST2	0.8700		
	COST3	0.8357		
RA	RA1	0.6374	0.9111	0.5631
	RA2	0.7348		
	RA3	0.8152		
	PSB1	0.6831		
	PSB2	0.7347		
	PSB3	0.8189		
	EOU1	0.7644		
	EOU2	0.7955		

Table 4 (Cont'd)

RD	RD1	0.8912	0.9171	0.7869
	RD2	0.9137		
	RD3	0.8553		
CPBL	CPBL1	0.9018	0.9463	0.8545
	CPBL2	0.9350		
	CPBL3	0.9272		
VS	VS1	0.8119	0.8898	0.7294
	VS2	0.8573		
	VS3	0.8912		
AT	AT1	0.9200	0.9503	0.8272
	AT2	0.9413		
	AT3	0.9036		
	AT4	0.8720		
SAT	SAT1	0.9620	0.9734	0.9014
	SAT2	0.9440		
	SAT3	0.9460		
	SAT4	0.9455		
CINT	CINT1	0.9289	0.9437	0.8076
	CINT2	0.9332		
	CINT3	0.8482		
	CINT4	0.8817		

Table 5 provides the results of discriminant validity analysis. As can be seen, the square roots of the AVE on the diagonal elements are greater than the bi-variate construct correlations on the off-diagonal elements, suggesting that the model has achieved acceptable discriminant validity. In addition, item cross loadings were examined (not reported here) and although several cases of cross loadings were found, they were considered not a major concern to the measurement model validity.

Table 5 Construct correlation

	COST	RA	RD	CPBL	VS	AT	SAT	CINT
COST	0.85*							
RA	-0.15	**0.75**						
RD	-0.14	0.64	**0.89**					
CPBL	-0.25	0.65	0.65	**0.92**				
VS	-0.06	0.53	0.57	0.61	**0.85**			

Table 5 (Cont'd)

AT	-0.13	0.66	0.58	0.57	0.52	**0.91**		
SAT	-0.21	0.68	0.64	0.73	0.62	0.82	**0.95**	
CINT	-0.23	0.68	0.65	0.69	0.55	0.75	0.79	**0.90**

*Diagonal elements are square roots of AVE.

Structural Model

In the next step of data analysis, the structural model was investigated by applying the same PLS algorithm. As shown in Figure 2, our structural model explained 51%, 68% and 67% of the variances for attitudes towards AIS, satisfaction and continuance intention, respectively. These values of variance explained are considered acceptable for a model to have substantive explanatory power of an endogenous variable (Kankanhalli, Lee and Lim, 2011).
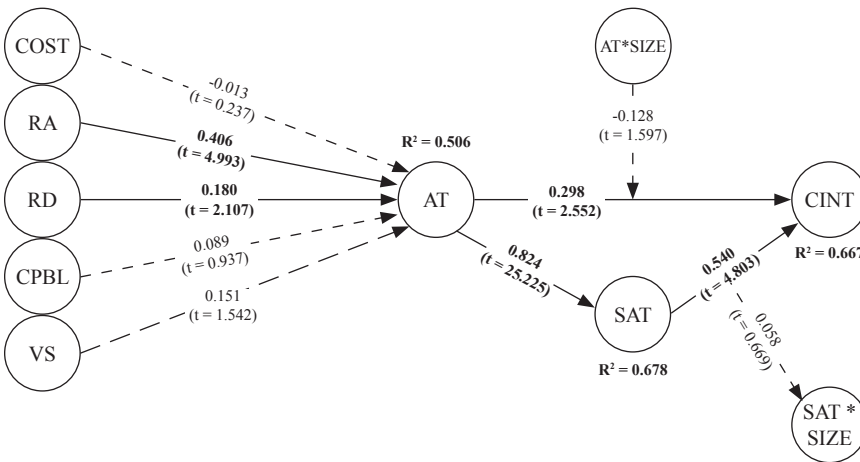

Figure 2 Results of structural model

Figure 2 also shows the effect of each path connecting each variable. From the results of the structural model, we found that only five hypotheses were supported from the original eleven hypotheses. Note however that three original hypotheses related to PSB, EOU and COMP constructs were discarded in the final model. As can be seen in Figure 2, CINT is significantly predicted by SAT ($\beta = 0.54$) and AT ($\beta = 0.298$) and AT has a significant effect on SAT with β of 0.824. Only two antecedents of AT were significant with β of 0.406 for RA and β of 0.180 for RD. In addition, size being hypothesized as a moderator was not supported by our findings. The summarized results of hypothesis testing are given in Table 6.

Table 6 Results of hypothesis testing

	Hypothesis	Path Coefficient (t value)	Result
H_1	Cost is negatively related to Attitude towards AIS	- 0.013 (- 0.237)	Not supported
H_2	Relative Advantage is positively related to Attitude towards AIS	0.406 (4.993)	Supported
H_3	Perceived Strategic Benefit is positively related to Attitude towards AIS	combined	N/A
H_4	Ease of Use is positively related to Attitude towards AIS	combined	N/A
H_5	Organizational Readiness is positively related to Attitude towards AIS	0.180 (2.107)	Supported
H_6	Compatibility is positively related to Attitude towards AIS	0.089 (0.967)	Not supported
H_7	Competition is positively related to Attitude towards AIS	Discarded	Not supported
H_8	Vendor Support is positively related to Attitude towards AIS	0.151 (1.542)	Not supported
H_9	Attitude towards AIS is positively related to Satisfaction	0.824 (25.225)	Supported
H_{10}	Attitude towards AIS is positively related to Continuance Intention	0.298 (2.552)	Supported
H_{11}	Satisfaction is positively related to Continuance Intention	0.540 (4.803)	Supported
H_{12}	Size moderates the relationship between attitude towards AIS and continuance intention	-0.128 (-1.597)	Not supported
H_{13}	Size moderates the relationship between satisfaction and continuance intention	0.058 (0.669)	Not supported

DISCUSSION

Overall, the research model has satisfactorily explained the continuance intention to use AIS with 66% variance being explained by the direct effect of attitude and partially mediated effect of satisfaction. This satisfactory level of explained variance suggests that synthesizing theories of diffusion of innovation and technology acceptance model into expectation-confirmation theory can be a valid approach to understand AIS continued use.

For hypothesized perceptual antecedents of attitude towards AIS, the relative advantage and organizational readiness constructs have significant effects on the attitudinal variable. Note that perceived strategic benefit and ease of use were combined into the relative advantage variable; as such, they are also significant in explaining AIS continuance intention. These results are consistent with (Al-Qirim, 2007) who found relative advantage as a significant factor that lead to extranet adoption

Conversely, our findings failed to support the effects of cost, compatibility and vendor support on attitudes being formed as a result of using AIS. These findings can be explained by the weakened relationships between these factors and attitudes during post-implementation stage. One explanation is that, although cost can be a major consideration during making the AIS purchase, users may weigh its cost against its benefits during the later stages of adoption. For example, Kuan and Chau (2001) found that adopters perceived cost lower than non-adopters of EDI, and that early adopter perceived compatibility more important than its being perceived by late adopters.

Our finding on vendor support is consistent with Al-Qirim (2007) who found the adoption of electronic data interchange as not determined by it. A possible explanation to this finding is that vendor support may be viewed necessary during the very early stage of AIS implementation but after users have become familiar with operating the system, its importance may wear off. Despite this finding, a concern also arises about whether or not many SMEs in Malaysia can easily access pirated AIS; therefore, vendor support is not available for them and as such price would not a major consideration in adopting them.

With regard to size as moderator, our findings failed to support the stipulated hypotheses. Regardless of the differing 'affordability' among SMEs, AIS seem to be easily acquired. This leveled market segments may be due to many AIS have becoming cheaper over time as a result of strong competition (Kuan and Chau, 2001).

In summary, the research model was found to be valid with five stipulated hypotheses were supported. The implications of these findings would be of interest to academia and practitioners.

Implications of Findings

The findings of this study have important implications to both theoretical and practical considerations. First, it was found that a research model based on the concept of attitude and satisfaction as mediators can be used to predict intention to continue using accounting information systems. Users of AIS are found to exhibit

strong intention to further use AIS when they have formed positive attitudes towards the systems they are using and having had positive experience from using them.

Second, there are specific perceptual antecedents to attitude that shape users' overall affective evaluation of the accounting system they are using. From the eight conceptualized antecedents, this study has found that relative advantage as the main determinant of positive attitude. Although previous studies have identified perceived strategic benefits and ease of use as distinct variables, we have combined them together into relative advantage variable because the CFA carried out failed to extract the anticipated factors. Therefore, future studies in a similar nature may consider conceptualizing them as one factor or consider relative advantage as a second order latent variable.

Third, size does not moderate the relationships between attitude and intention, and between satisfaction and intention; therefore, segmenting AIS products according to different levels of applications and functions should not be the focus of AIS developers. Instead, producing standard AIS package with options for users to add on extra applications would suffice the need to 'customize' AIS products.

Fourth, from a pragmatic perspective, vendors of AIS should focus on improving their products in terms of providing maximum usefulness of the AIS applications in contrast to traditional accounting systems and previous versions of their products. In addition, although vendor support was not found to be a significant determinant of attitude, we contend that adequate and proactive after-sale services are still important because users may still consider continuing using AIS despite of poor support from vendors due to considerable negative consequences from not using AIS at all.

Limitations and Future Directions

There are a few limitations to this study. First, the research setting for the study was limited to the state of Terengganu and respondents from manufacturing sectors were avoided. As such, the 146 samples collected was not an adequate representative of SMEs in Terengganu. Therefore, the study's findings may not be generalized to all SMEs in Malaysia.

Second, the research model used in this study relied on a number of pre-identified antecedent variables of the attitudinal construct. As such, these antecedents explain only a portion of the variances in the attitudinal construct and in the outcome variable. There may be other factors which, although not part of this study, may have significant influence on respective attitudes, satisfactions and users' intentions. Furthermore, this study has not looked into the possibility of better alternative models including conceptualizing attitudes and satisfaction

as parallel mediators and respondents' characteristics such as age and industry as moderators. In addition, measure of size using actual number of employees may be more suitable than a categorical scale used in our study. Therefore, future research may include these suggested models in order to increase robustness of the findings.

Third, the study's findings are based on a modest sample size of 146 responses. Future research may verify the findings of this study by employing a larger sample that will permit the use of covariance-based SEM which can provide more robustness in the findings.

CONCLUSIONS

This study has synthesized several related theories to form a research model based on the concept of attitudinal and satisfaction as mediators in predicting continuance intention to use AIS by actual users. The computerized accounting technology has for a while penetrated the market in Malaysia; therefore, high adoption rate among SMEs can be expected. Therefore, it is more suitable to study the continuance intention to use the AIS instead of concentrating on the motives of adopting them. True to human nature, users of AIS form certain attitudes towards a technology they are using and only intend to continue using it when they are satisfied with the usefulness it has provided them with. Therefore, AIS developers should consider aspects that can encourage positive affects in users to inculcate loyalty in their products when designing and improving their systems.

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