THE MEDIATING EFFECTS OF BEHAVIOURAL INTENTION OF THE ACCEPTANCE AND USE OF E-COMMERCE AMONG SMES IN KEDAH, MALAYSIA

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ABSTRACT: *This study aims to examine the effect factors on the acceptance and use of electronic commerce among SME's in Kedah, Malaysia. This research paper is perhaps of the first to investigate acceptance and adoption of e-commerce particularly among the SMEs in Kedah using comprehensive set of variables through TRA, TPB and TAM model in investigating their influence on acceptance and adoption of e-commerce. A questionnaire survey consists of 33 items was distributed to 350 identified respondents in Kedah. A total of 104 valid responses were obtained. Simple random sampling was adopted over other techniques to enhance representativeness. Data analysis shows that significant relationship exists between each of the three independent variables and electronic commerce adoption among consumers in Kedah, Malaysia. Security issues emerged as the most important factor influence the acceptance and adoption of e-commerce. This factor is followed by government support and knowledge in information technology. The Partial Least Squares Structural Equation Modelling (PLS-SEM) results indicated that IT knowledge and Government support have significant influence on the acceptance and adoption of e-commerce by the SMEs in Kedah, Malaysia. The results provide insights to the Malaysian consumers of how they could improve the e-commerce acceptance and adoption of e-commerce particularly when they are situated in the area away from the cities.*

Keywords – Behavioural intension, Electronic Commerce, SMEs, Kedah, Malaysia

BACKGROUND OF E-COMMERCE IN MALAYSIA

Almost 20 million people have an internet connection in Malaysia and the government plans to bring the figure to 22.5 million by the end of 2015. This means internet penetration in Malaysia will be 75 per cent. One of the main reasons is to fulfil Malaysia's goal of having a strong e-commerce and digital economy by 2020 under the Digital Malaysia program. In 2015, total e-commerce transactions in Malaysia may be worth as much as RM5 billion (US$1.4 billion), according to *Forbes*. E-commerce sales worldwide, are estimated to hit US$2 trillion in 2015[1].

According to the report titled "Malaysia E-commerce Industry Outlook to 2019, a major factor which will be responsible for the unprecedented growth of the e-commerce industry is the rise of mobile internet [2]. The country's current Internet penetration rate is 66% and mobile phone penetration rate is 140%. It must be noted that the penetration rate and growth in popularity will keep expanding. The country's network transmission technology has been increasingly maturing with wider coverage and broader penetration areas [3].

Malaysia looks set to be a huge player in e-commerce. The big boys in online retail see this and that is why Japan's Rakuten and Germany's Rocket Internet-backed companies are among the retailers that already have a strong presence in Malaysia [4]. The question revolved around whether the strong push into Malaysia, by deep-pocketed players such as Rocket Internet's Lazada and Zalora, would sweep away small e-commerce players enjoying a relatively good income from their niche offerings and the established home country players [5].

Economics, Editorial, Malaysia [1] reported that 70 per cent of SMEs do not have a website and in the retail segment particularly for SMEs, is lagging far behind. It is sufficient to reflect that SME operators have been apathy towards the trend. A 2012 survey by the Associated Chinese Chambers of Commerce & Industry of Malaysia showed that SMEs had a poor online presence. The survey also shows that main reason SMEs are shying away from e-commerce is because of poor bandwidth, high cost of online involvement and security concerns over e-payment.

Would the SMEs grab the opportunities and find their own piece of grassland, or just turn a blind eye to it and shut themselves away in the conservative old space? An important characteristic of the Malaysian B2C E-Commerce market is that convenience is the key motivation for consumers to shop online [6]. However, the main discouraging factor is lack of interest or the behavioural intension in online shopping, holding back the majority of over three-quarters of Internet users who do not yet make purchases online.

Hence, this research paper will study on the acceptance and adoption of e-commerce by the SMEs (as business operators) in Malaysia. It will look from the perspective of security over e-payment, IT knowledge, government support and behavioural intention of the business operators. The main reasons are low security over e-payment, the low knowledge of information technology in terms of online presence and poor bandwidth, and also government support will affect the behavioural intention. Due to these problems, SMEs in Malaysia is lagging behind in the e-commerce business opportunities and growth. This research is important to study and identify the background of these barriers, in order to recommend a solution to solve the issues and also to improve the usage level of e-commerce among SMEs in Malaysia.

UNDERPINNING THEORIES

Technology Acceptance Model (TAM) [7]

Many studies have researched the benefits of the adoption of e-commerce by the SMEs. While the potential benefits have been established, a number of inhibitors to the adoption of these new business models still exist. For small businesses the advantages of e-commerce adoption are often not perceived to be applicable and few success stories are

available to convince owners of such firms that e-commerce offers a real benefit to their organizations. There has been a marked change in perceptions towards e-commerce before the dotcom crashes of 2000 and thereafter. E-commerce can deliver the tools to provide cost effective ways for SME's to market themselves, launch new products, improve communications, gather information, and identify potential business partners. Due to the fact that the ownership and decision making power in an SME is held by just one or two people, adoption of e-commerce into such an organization is heavily reliant on these people's acceptance of the technology. It is important, therefore, to understand what factors lead to an individual's acceptance of a technology. The Technology Acceptance Model (TAM) [12] is an appropriate tool for this study. The Technology Acceptance Model (TAM) is an information systems theory that models how users come to accept and use a technology. The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it, notably:

- *Perceived usefulness* (PU) - This was defined by Fred Davis as "the degree to which a person believes that using a particular system would enhance his or her job performance".
- *Perceived ease-of-use* (PEOU) - Davis defined this as "the degree to which a person believes that using a particular system would be free from effort". The technology acceptance model specifies the causal relationships between system design features, perceived usefulness, perceived ease of use, attitude toward using, and actual usage behaviour.

Overall, the TAM provides an informative representation of the mechanisms by which design choices influence user acceptance, and should therefore be helpful in applied contexts for forecasting and evaluating user acceptance of information technology.

Technology Adaption Model (TAM) [7]

It is important to recognize that e-commerce activities range from entry-level variables behavioural activities such as having web browsers, web sites, and email, to sophisticated activities such as online payments, making purchases online, customer services, and video conferencing, amongst others. [14] stated that the adoption of e-commerce practices is a progression, and therefore sophisticated technologies are unlikely to be adopted before entry level technologies have been successfully adopted. These entry-level activities provide the necessary technological infrastructure from which more sophisticated e-commerce activities can be developed. The factors that affect e-commerce adoption are useful in determining the reason why an SME is at a certain level. These adoption factors are a result of the owner's business outlook as well as the organization's characteristics The economic benefits of moving business transactions from fax, telephone and post to the Internet are well documented in many publications[23]. Also noted that the forces of economic rationalism and globalism have enhanced the market as the final arbiter of price and service with the balance of power tilting from the manufacturer towards the consumer. Given this erosion of margins, companies need to reduce costs, both in production and transaction, in order to make their products and services more competitive. This again points to the Internet as a vehicle to reduce costs and to assist in obtaining a competitive advantage in the short term. The traditional value chain has become virtualized to a great extent due to the fact that users of the Internet are able to order products and services online, without intervention of the purchasing department, while payment is made electronically using electronic funds or purchase cards. The primary activities in the Porter Value Chain, namely incoming logistics, outgoing logistics, marketing and sales, are being redefined in terms of how they are carried out and interact with each other, as technology provides for more sophisticated methods of business interactions [21] [22]. Researchers have further identified a number of additional issues that impact the adoption of e-commerce.

Low use of E-commerce by Customers and Suppliers. This means that there is little incentive for SME's to engage e-commerce until their customers and suppliers are also using it.

i. Concerns about security aspects.
ii. Concerns about legal and liability aspects.
iii. High costs of development and computer and networking technologies commerce.
iv. Limited knowledge of e-commerce models and methodologies.
v. Unconvinced of benefits to the company.

Technology acceptance model has extended and modified to incorporate the construct that reflect beliefs and attitudes, social or normative influence and end user characteristics on acceptance and adoption. It includes organizational, individual as we11 as system characteristics, and many of them have received empirical support as moderators of IT acceptance.

Table I: Proposed improvements to Davis's (1986) and Agarwal and Prasad's (1999) model

Gaps existed in Davis's (1986) and Agarwal and Prasad's (1999) model	Suggested improvements to the proposed model
1. The absence of important variables such as security over e-payment, IT knowledge and Government (institutional support) that could have significant influence on behavioural intension	1. The inclusion of three new independent variables.
2. In the existing TAM theory, the dependent variable only measures technology adoption	2. Adding the acceptance to the adoption of technology (e-commerce)
3. The absence of moderator variable which could have a strong contingent effect on the relationship between IT knowledge- Government support and Acceptance	3. IT knowledge-Government support is included as a moderator variable to test whether its inclusion could modify the original relationship between the

and adoption of E-commerce by SMEs   independent and the dependent variables.

The Theory of Planned Behaviour (TPB)

The theory proposes a model which can measure how human actions are guided. It predicts the occurrence of a particular behaviour, provided that behaviour is intentional.

The theory of planned behaviour, introduced by Ajzen (1991), is an extension of the theory of reasoned action made necessary by the original model's limitation in dealing with behaviours over which people have incomplete volitional control [19]. The theory of reasoned action proposed that behavioural intention (BI) leads to behaviour (B), and that BI is determined by the consumer's attitudes toward purchasing or using a brand and by a normative value or subjective norm (SN) [20]. Attitude toward behaviour is defined as "an individual's positive or negative feeling about performing the target behaviour". Subjective norm refers to "a person's perception that most people who are important to him or her think he or she should or should not perform the behaviour in question. The theory of planned behaviour adds one more variable, perceived behavioural control (PBC), to the two existing determinants of intention, attitude toward the behaviour and subjective norm. The degree of PBC refers to an individual's perceptions of the presence or absence of the requisite resources or opportunities necessary for performing a behaviour [15] [16]. PBC has two dimensions: an internal factor and an external factor. The internal factor refers to the extent of confidence that a person has in his/her ability to perform a certain behaviour, which is grounded in one's self-efficacy[17]. The external factor refers to resource constraints. These constraints are facilitating conditions available to an individual – such as money, time, or technology – that are required to perform a behaviour [18]. The theory of planned behaviour is a theory which predicts deliberate behaviour, because behaviour can be deliberative and planned.

It is a social psychology model that has been extensively used in research related to consciously intended behaviours. TRA model posits that a person's performance in a particular behaviour is highly influenced by their behavioural intention to conduct that particular behaviour. The behavioural intention is also believed to be influenced by the person's subjective norm and attitude. In the TRA model, behavioural intention is believed to be an indicator of a person's intention to conduct a particular behaviour in min [20]. Further elaborated that attitude is a person's positive or negative feelings when it comes to perform the particular behaviour. In this model, the subjective norm is defined as the person's perception of the people whom influences him the most would think whether he should perform the behaviour in mind or not. In the model, the beliefs are characterised as the person's assumptions that by performing the specified behaviour it will impact the later consequences. The TRA model also theorises that a person's subjective norm is influenced by an increase of their normative beliefs [20].

RESEARCH MODEL
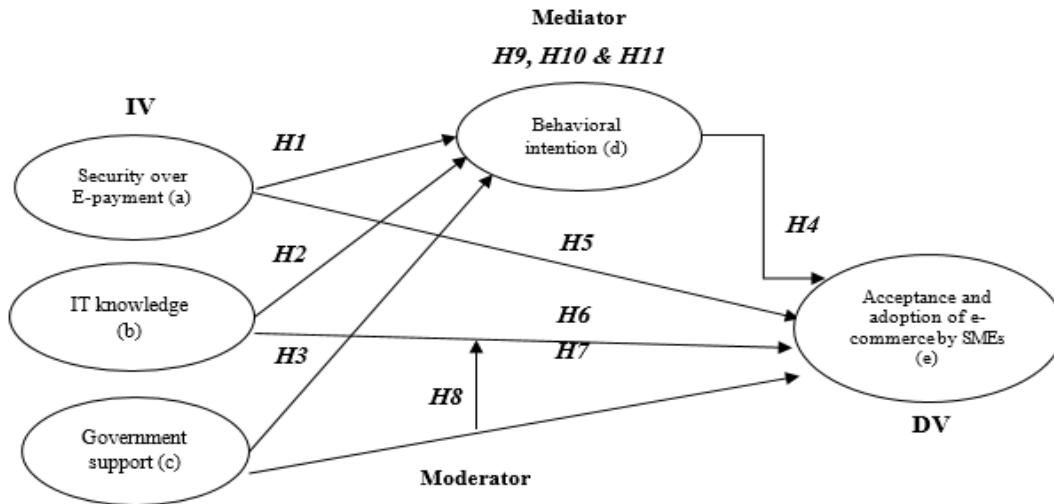
HYPOTHESES DEVELOPMENT
Summary of Hypotheses
H1 – Security over E-payment having significant impact on Behavioural intention

H2 – IT knowledge having significant impact on Behavioural intention

H3 – Government support having significant impact on Behavioural intention

H4 – Behavioural intention having significant impact on the acceptance and adoption of e-commerce by SMEs

H5 – Security over e-payment having significant impact on acceptance and adoption of e-commerce by SMEs

H6 – IT knowledge having significant impact on acceptance and adoption of e-commerce by SMEs

H7 – Government support having significant impact on acceptance and adoption of e-commerce by SMEs

H8 – Government support moderate between IT knowledge the acceptance and adoption of e-commerce by SMEs

H9 – Behavioural intension mediate the relation between security over e-payment to acceptance and adoption of e-commerce by SMEs

H10 – Behavioural intension mediate the relation between IT knowledge to acceptance and adoption of e-commerce by SMEs

H11 – Behavioural intension mediate the relation between government support to acceptance and adoption of e-commerce by SMEs

METHODOLOGY
Instrument Design [7&8]

Item	Variables	References
1.	Security over e-payment	Yahya, S.A. (2011); Luthfi, H.M. (2014)
2.	IT knowledge	Yahya, S.A. (2011)
3.	Government support	Yahya, S.A. (2011)
4.	Behavioural intention	Luthfi, H.M. (2014)
5.	Acceptance and adoption of e-commerce	Yahya, S.A. (2011)

Sampling procedures
Consumers of SMEs in Kedah, Malaysia constitute the population of interest. These consumers were chosen because of location which is far from the facilities and products offered in the big cities. Their involvement in e-commerce initiatives are required in order to grasp the open opportunity. The researcher distributed 350 questionnaires and managed to collect 104 from the targeted respondents (30% responses).

Data collection and analysis procedures
In the study, a 5-point Likert scale was used, as it is also commonly used in marketing research and tested time and again in marketing and social science fields [24] [25] [26] [27] [28]. This study makes use of a 5-point Likert scale to measure the study variables with: 1 strongly disagree, 2 disagree, 3 neutral, 4 agree, and finally, 5 strongly agree. The returned questionnaires were entered for analysis into SPSS. Since some data found was incomplete, besides deleting them, the researcher may replace them with the mean value in case the missing value is not over 5% of the total data required [9].

Validity of constructs
The study uses statistical validity tests, PLS-SEM and SPSS analysis, to conduct convergent validity and discriminant validity test.

a)   Convergent validity
In this paper, Cronbach's α was performed through SPSS 16.0 on each construct to measure internal consistency reliability for the individual scales and the overall measures. [10] argued that 0.60 is an acceptable level benchmark for accepting the Cronbach`s alpha and composite reliability of a construct. As shown table II below, all constructs indicated Cronbach's α value above 0.60, considered reliable in all aspects except for government support and behavioural intention scored below 0.60, which considered as questionable and poor for scientific research. However, the results of the second reliability test, the composite reliability (CR), ranging from estimates value between 0.7593 and 0.818, is depicted in table II; the estimates were higher than the acceptable value of 0.60 as stated by [11]. Since the measurement model aims to improve the model before the estimation of the hypothesized model, the standard regression weights for the research indicators were first examined by conducting confirmatory factor analysis (CFA). All items in table II have loaded more than 0.50 which is acceptable. Therefore, all indicators in this study are related to their particular constructs, and this there is satisfactory proof of the convergent validity of the model.

b)   Discriminant validity
An average variance extracted (AVE) value of at least 0.5 indicates sufficient convergent validity, which means, the respective variable is able to explain more than half of the variance of its indicators on average. Acceptance & adoption of e-commerce and Security over e-payment are the two variables with AVE value very close to 0.5, which are 0.475 and 0.489, respectively.

Table II: Validity of constructs

Construct	Item	Factor loadings / Estimates	Cronbach's alpha	Composite reliability CR>0.6	Average variance extracted (AVE)
Acceptance & adoption of e-commerce	**AAE24**	0.688	0.727	0.8181	*0.475*
	AAE25	0.660			
	AAE26	0.717			
	AAE31	0.615			
	AAE33	0.757			
Behavioural intention	**BI19**	0.829	*0.534*	0.7593	0.517
	BI21	0.598			
	BI22	0.712			
Government support	**GS12**	0.919	*0.500*	0.7856	0.652
	GS16	0.678			
IT knowledge	**IT10**	0.551	0.691	0.8121	0.525
	IT6	0.848			
	IT8	0.705			
	IT9	0.762			
Security over e-payment	**S2**	0.745	0.651	0.7923	*0.489*
	S3	0.723			
	S4	0.660			
	S5	0.664			

Evaluation of model fit

Table III: Goodness of fit (GOF)

Construct	R Square	AVE	GOF
Acceptance & adoption of e-commerce	0.595482	0.475	
Behavioural intention	0.440786	0.517	
Government support		0.652	
IT knowledge		0.525	
Security over e-payment		0.489	
Average	0.518	0.532	52%

The GOF value, 52% which is more than 0.36 (36%) therefore it can be concluded that the model used in this paper is valid in all aspects.

RESULTS

From seven (7) hypotheses developed, only two hypotheses are not support. In other words, these two do not have significant relationship. There are no direct relationship on government support to behavioural intention and no direct relationship on IT knowledge to acceptance and adoption of e-commerce. Balance of five (5) hypothesized path are supported, where results are indicated as below table.

Table IV: Direct Relationship

Hypothesized Path	Path Coefficient	Standard Error (STERR)	T Value	P Value	Decision
BI -> AAdoption-e-commerce	0.170475	0.094529	1.796816	0.036	supported
GS -> AAdoption-e-commerce	-0.246435	0.095921	2.486881	0.007	supported
GS -> BI	0.049698	0.084012	0.627127	0.265	not supported
IT-Kn -> AAdoption-e-commerce	0.049392	0.12542	0.407407	0.342	not supported
IT-Kn -> BI	0.337489	0.08745	3.827708	0.000	supported
SOeP -> AAdoption-e-commerce	0.478113	0.108558	4.378951	0.000	supported
SOeP -> BI	0.437952	0.086528	5.019319	0.000	supported

Below table indicated the hypothesis testing on the Mediator effect. Behavioural intension shows no relationship between (1) Security over e-payment and acceptance and adoption of e-commerce; (2) IT knowledge and acceptance and adoption of e-commerce; and (3) Government support and acceptance and adoption of e-commerce.

Table V: Mediator

Hypothesis	Paths	Path coefficient	a*b	St.Dev (a*b)	t.value a*b/St.Dev (a*b)	Result
a-D-E	a-D	0.437	0.0481	0.0391	1.2294	non-supported
	D-E	0.111				
b-D-E	b-D	0.321	0.0356	0.0294	1.2099	non-supported
	D-E	0.111				
c-D-E	c-D	0.026	-0.0108	0.0140	-0.7710	non-supported
	D-E	0.111				

Table VI: Hypothesis Testing (Inner modelling analysis) - Moderator

No	Hypothesized Path	Path coefficient	Standard Error (STERR)	T Value	P Value	Decision
1	IT-Kn * GS -> Adoption-E-Comm	0.32158	0.08264	3.89140	0.00005	supported

***: P<0.001; **: P<0.01,*: P<0.05

From the above results, H8 has been developed as a moderator for this research.

CONCLUSION

About the topic of *"The Mediating effects of Behavioural Intention of the Acceptance and Adoption of E-commerce among SMEs in Kedah, Malaysia"*, the model that has been developed slightly gave the new contribution in terms of moderating factor which is the Government support moderate between IT knowledge the acceptance and adoption of e-commerce by SMEs. This factor gave impact on moderating the behavioural intention as well as the acceptance and adoption of e-commerce. This research faced not significant impact towards the mediators. Maybe in the future the combination of theory might be given more significant impact or extended research method would be contributing to new findings.

This study has established FIVE direct impacts: (1) Behavioural intention and Acceptance and adoption of e-commerce; (2) Government support and Acceptance and adoption of e-commerce (3) IT knowledge and Behavioural intention; (4) Security over e-payment and Acceptance and adoption of e-commerce; and (5) Security over e-payment and Behavioural intention.

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