

# The Determinants of Electronic Publishing in Malaysia

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## ABSTRACT

In the modern era of ICT revolution, the application of electronics medium and devices to every aspect of human life has become significant. Electronic publishing has emerged as a major development in the electronic media landscape and the adoption of this new media has become an important area of research. The continuance of electronic publishing depends on the adoption of this media by publishers and users. However, a research demonstrates that the rate of adoption of electronic publishing amongst Malaysian publishers is low. The main objectives of this study are: 1) to determine factors that facilitate the adoption of electronic publishing amongst Malaysian publishers from the perspectives of technological, organisational, environmental contexts; 2) to examine the effect of intention on electronic publishing adoption amongst Malaysian publishers; and 3) to examine the mediation effect of intention on the relationship between technological, organisational and environmental factors and electronic publishing adoption amongst Malaysian publishers. A research model is developed to identify and evaluate the key determinant factors influencing the adoption of electronic publishing amongst Malaysian publishers. This study draws on the organisation adoption theory, that is, the technology, organisation, and environment framework (TOE) to understand and explain the determinant factors of electronic publishing adoption. In addition, behavioural intention is adapted to explain the mediating effect between the independent variables (technology, organisation, and environmental factors) and the adoption of electronic publishing. Applying the quantitative method, the data collection employed a self-administered survey technique using questionnaire as the instrument.

**Keywords:** Electronic Publishing, Technology adoption, Publishing Industry

## 1.0 INTRODUCTION

The publishing industry has experienced a considerable growth in the last decades. Today, the tremendous growth of information and communication technologies has given an amazing boost to the developments in the publishing world (Gunter, 2005; Vasishta, 2011). Electronic publishing has paved new ways and created a new initiative for the publication of reading materials as users around the world turn to a more greener and portable means of reading (Wan Roslina, Syahrul Fahmy, Nurul Haslinda, Siti Fariha, Nur Sukinah, Nursuhana, 2013). Electronic publishing always attracts many readers due to its nature of mobility and dynamic features (Letchumanan & Tarmizi, 2010). As the aim of publishing is to make information and new knowledge available to the audience as widely as possible in a timely and efficient manner (K. H. Ng, 2009), users now have access to the information that print technology could not deliver. A new era of storing, promoting and distributing information has contributed to the unprecedented expansion of publishing (Ling, Yaacob, & Phang, 1996).

In Malaysia, publishers such as MPH, PTS, Sasbadi and Pelangi have taken one step ahead to venture into electronic publishing. However, there are many publishers who still prefer print publishing. It has been observed that Malaysian publishers are not really taking the opportunity presented by the new digital economy (Shamsudeen Ademola Sanni, 2014).

Moreover, it has been reported that the penetration of Internet in Malaysia in 2015 has now exceeded 20.1 million users (<http://www.thesundaily.my/news/1596517>). The penetration rate based on the country's broadband penetration rate has reached 72.2% and demonstrated that Malaysians are heading towards a digital lifestyle (<http://www.skmm.gov.my/>). Thus, the growth of the publishing industry must flow in sync with the advancement of information communication technology. If the publishers are keen on improvements in the publishing process and business development, then the adoption of innovative technology is vital. Therefore, this study is intended to examine the determinants factor that influences the adoption of electronic publishing amongst Malaysian publishers. It is also expected to give exposure to the publishers for implementation of electronic publishing in their business. The study was guided by the following research questions:

1. Do the technological, organisational and environmental factors influence the adoption of electronic publishing amongst Malaysian publishers?
2. Does intention influence the adoption of electronic publishing amongst Malaysian publishers?
3. Does intention mediate the relationship between technological, organisational environmental contexts and the adoption of electronic publishing amongst Malaysian publishers?

## **2. LITERATURE REVIEW AND HYPOTHESES**

### **2.1 Technological factors of electronic publishing adoption**

Technological context refers to the technology characteristics and availability of a firm. In the case of electronic publishing adoption, publishers need to know the availability of ICT infrastructures and the characteristics of electronic publishing such as its relative advantages, electronic publishing technology compatibility and complexity before adopting it.

The technological factors that are studied and measured in this research are ICT infrastructures, relative advantages of electronic publishing, complexity of electronic publishing, electronic publishing compatibility, trialability and observability. In order to adopt electronic publishing, publishers need to justify the availability and capability of the infrastructure in their organisation. For example, organisations have to be equipped with sophisticated computers that are able to execute the electronic publishing process. The computer software should be updated to be compatible with the current electronic publishing practices. It is important to examine the technological factors. The characteristics of available innovations are believed to influence the adoption of a new technology (Tornatzky & Fleischer, 1990). Thus, looking at technology characteristics is pivotal prior to an organisation's adoption decision process. In this essence, the researcher has attempted to understand why some organisations have already adopted electronic publishing and others have yet to adopt it by looking at the ICT infrastructures and characteristics of electronic publishing that may potentially facilitate the adoption of electronic publishing.

## 2.2 Organisational factors of electronic publishing adoption

Organisational factors describe organisation measures such as the decision-making structure and communication process by top management, IT expertise and organisational slacks. It could also reflect the organisation's human resource and IS capabilities, organisational IT infrastructure, organisation working culture, and readiness towards adopting new IT innovation. Aghaunor, Fotoh, & Lindh (2006) suggested that strong support and commitment to e-commerce from the top management are more likely to influence the Nigerian banks to adopt e-commerce. Jain et al. (2011) explored the TOE framework to study the adoption of enterprise resource planning in Taiwan's communication industry. They used logistic regression to analyse the three constructs and size dimensions in an organisational construct on what is considered as important for the adoption of ERP. Shahawai & Idrus (2010) proposed the TOE framework to study pre-considered factors affecting ERP system adoption in Malaysian SMEs. The result indicates that the size and type of company in organisational factors have contributed to the decision to adopt ERP among SMEs in Malaysia. Kuppusamy & Supramaniam (2010) studied the adoption of ERP among SMEs and MNCs in Malaysia. The analysis revealed that organisational factors have the greatest effect on the adoption of ERP samples. Martins, Oliveira, & Thomas (2013) proposed combining the TOE framework with the DOI theory to compare information systems outsourcing (ISO) between human resource and finance. The study found that top management's support as an organisational factor to be a determinant of ISO in both business areas. Chang, Liao, & Hsiao (2005) set out an empirical study on the e-CRM performance influence model for service sectors in Taiwan. Their structural equation modelling (SEM) analysis revealed that organisational support is positively related to e-CRM performance.

## 2.3 Environmental factors of electronic publishing adoption

Environmental factors cover the internal and external environments where the organisations run their business. These factors refer to the arena in which a firm conducts its business. These environmental factors are also known as external pressure where organisations may respond to these pressures by conforming to technology mandates, or modifying their business practices to fit the technology (Pishdad et al., 2012). Environmental factors could be the opportunities or threats to the adoption decision of technology innovation (Awa et al., 2012). For instance, regulatory environment and government institution have influenced upon the adoption of new technology. Adoption of a new technology was impacted by regulation of market structure, insurance environment, as well as environmental regulation. The environmental factors used in this study include competitive pressure, government support, and influence of trading partners. Oliveira & Martins (2008) proposed the TOE framework to study the adoption of e-commerce by small firms in Portugal. The result demonstrated that the impact of environmental factors is more important at the last adoption phase. Hung & Hsuan (2015) investigated the relationship between openness, service co-production, and digital resource readiness and firm performance in the IT industry. The use of partial least square to analyse the data has revealed that the environmental factors have positive contributions to firm performance.

As technological, organizational and environmental factors are said to influence the decision making of adopting electronic publishing. Thus, the following hypotheses are:

*Research hypotheses H1: There is a significant relationship between technological factors and the adoption of electronic publishing.*

*Research hypotheses H2: There is a significant relationship between organisational factors and the adoption of electronic publishing.*

*Research hypotheses H3: There is a significant relationship between environmental factors and the adoption of electronic publishing.*

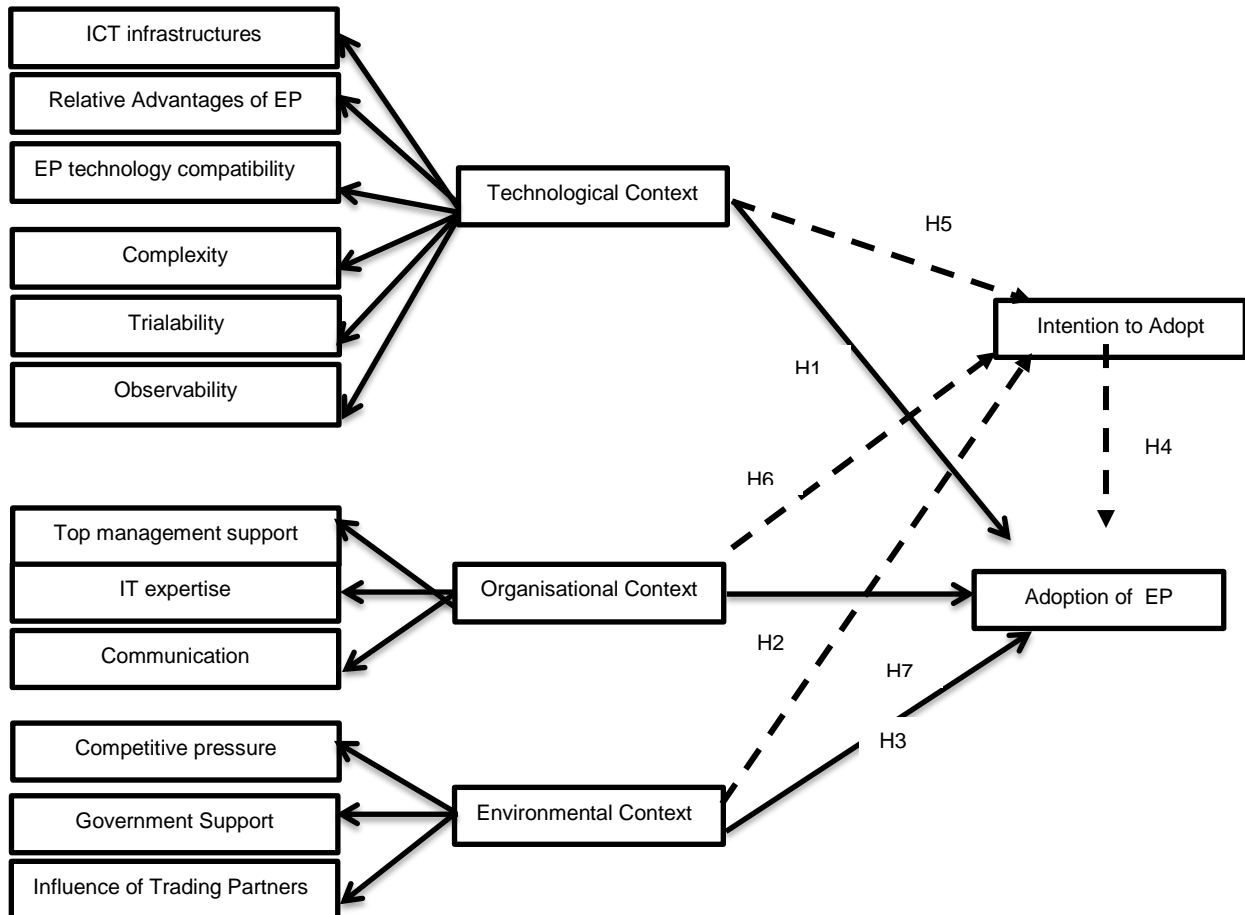


Figure 1 Research Framework

## 2.4 Intention

Intention in this study refers to the publishers' intention to adopt electronic publishing. However, there is limited knowledge on the effect of behavioural intention on the adoption of electronic publishing, specifically in Malaysia. This variable (intention) has also been correlated with the CEO's characteristics, organisational characteristics, technological characteristics, and environmental characteristics (Ramayah, Ling, Taghizadeh, & Rahman, 2016). (Cai & Shannon, 2012) found that behavioural intention influenced the mall shopping behaviour of Chinese consumers. The attitude and habit had a significant impact on behavioural intention, which in turn influenced users in the consumption of meat (Saba & Natale, 1999).

Ajzen (1991) believed that the best predictor of behaviour is intention. It is the cognitive representation of a person's readiness to perform a given behaviour, and it is considered the immediate antecedent of behaviour. Intentions are assumed to capture the motivational factors that influence behaviour. These intentions indicate the level of willingness of people to try and their level of effort planning to exert in order to perform the behaviour. He concluded that, the stronger the intention to engage in behaviour, the more likely should be its performance. Thus, in this study, the researcher is interested to investigate the effect of intention as a mediating role in the adoption of electronic publishing in Malaysia. Intention has been defined as the amount of effort one is willing to exert to attain a goal (Ajzen, 1991). The Theory of Planned Behaviour (TPB) and the Technology Acceptance Model (TAM) both suggest that a person's behaviour is determined by his/her intention to perform the behaviour (Sentosa, 2012). The researchers have revealed that attitudes can influence behaviour directly, as well as indirectly through intentions (Cai & Shannon, 2012; Dhaha & Sheikh Ali, 2014; Leong, 2015). Intention is also investigated as a role in decision making (Bagozzi, 1989). Hence in relation to this study, intention is believed to influence the adoption of electronic publishing in Malaysia. Therefore, the following preposition is presented:

*Research hypotheses H4: There is a significant relationship between intention and the adoption of electronic publishing.*

*Research hypotheses H5: Intention mediates the relationship between technological factors and the adoption of electronic publishing.*

*Research hypotheses H6: Intention mediates the relationship between organisational factors and the adoption of electronic publishing.*

*Research hypotheses H7: Intention mediates the relationship between environmental factors and the adoption of electronic publishing.*

### **3.0 RESEARCH METHODOLOGY**

Using the simple random sampling method is suitable for the sampling method. Moreover, it was chosen because of its accuracy and accessibility (Saunders, Lewis & Thornhill, 2009) and its least biasness offers the most generalisability (Sekaran & Bougie, 2010; Zainudin Awang, 2012). Using the abovementioned method, 120 questionnaires were distributed despite the required 92 samples. The seven-point Likert scale adopted in this construct contains a neutral midpoint which was claimed to increase the reliability of measurement (Tsang, 2012).

The researcher considered the structural equation model (SEM) with Partial Least Square (PLS) approach in order to achieve the research objectives and analyse the measurement. The measurement model was evaluated by examining the convergent validity which includes indicator loadings, average variance extracted (AVE), and composite reliability (CR). Indicators loading for all items which exceeded the recommended value of 0.5 suggested by Hair et al. (2013) will remain for further analysis. In this analysis, the result is considered adequate when the square roots of AVEs are greater in all cases than the off-diagonal elements in their corresponding rows and columns, suggesting that the required discriminant validity has been achieved. Therefore, the measurement model assessment is considered adequate when all the conditions mentioned above are fulfilled. In addition, to checking the measurement model, the structural model has to be properly evaluated before drawing into any conclusion.

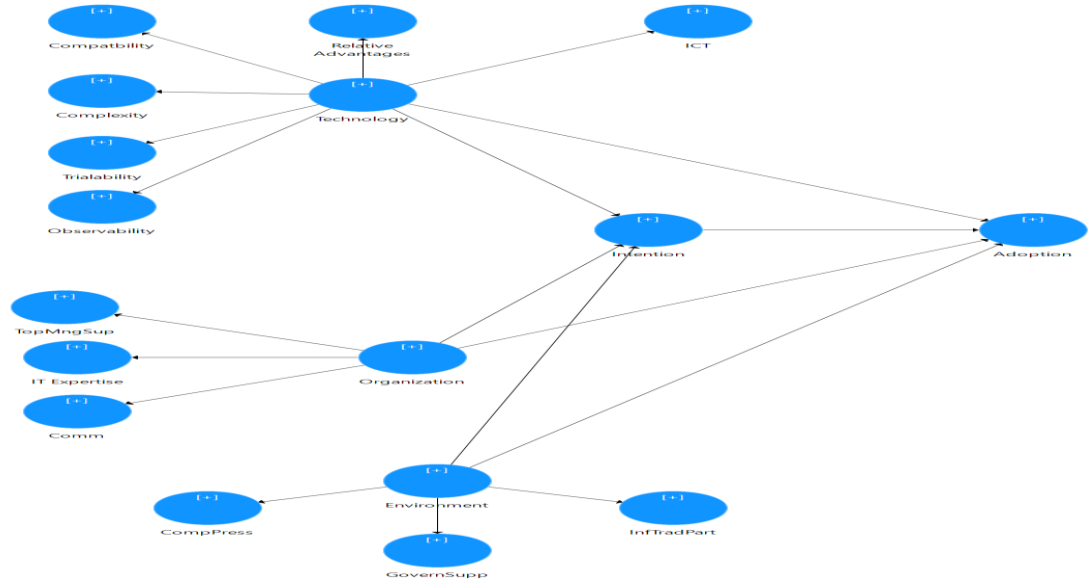


Figure 1 Research Model

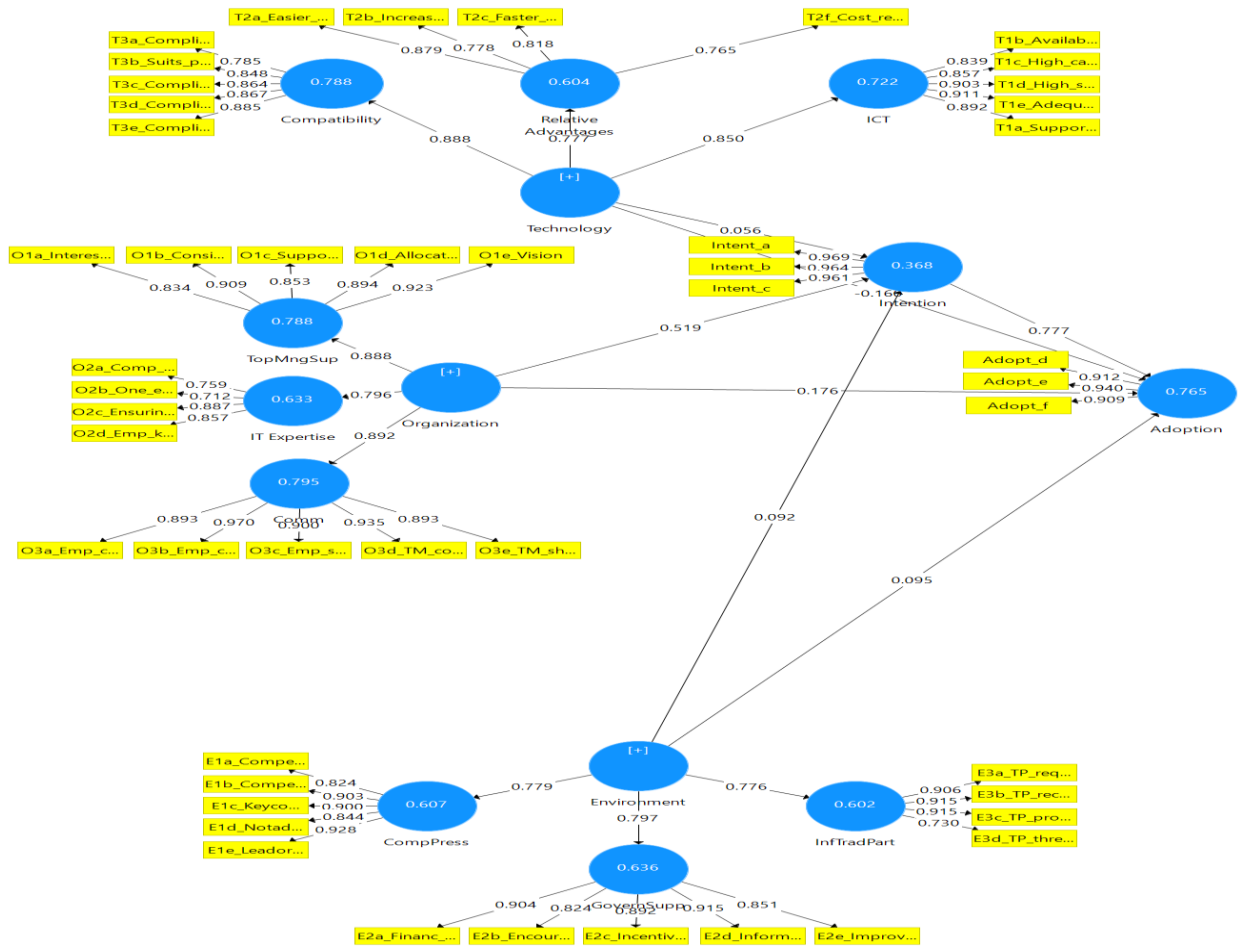


Figure 2 Structural Model

Table 3 indicates that all paths are statistically significant using two-tailed test, except for Environment -> Adoption. Thus, the significance level is assumed to be 5%. The result of analysis shows that the  $t$  values are larger than the critical values of 1.645 for a 5% probability of error. Therefore, the study concluded that the coefficient is significant at a level of 5%.

The PLS structural results conclude that intention has the strongest effect on adoption (0.777), followed by organisation (0.176) and technology (-0.16). Therefore, these constructs are significantly contributing to explain the relationship with the dependent variable. On the contrary, environment (0.095) is not significantly related to adoption, and therefore does not contribute to explaining adoption. (See table 4)

#### 4.0 FINDINGS AND DISCUSSION

The findings report that both technological and organisational factors do influence the adoption of electronic publishing amongst Malaysian publishers. The study observed that organisational factors have the strongest relationship with the adoption of electronic publishing. The study exhibits that environmental factors are insignificant in explaining the adoption of electronic publishing in Malaysia. The variables of technological factors are likely to have a positive relationship with electronic publishing adoption. Based on this deliberation, the hypothesis is performed; *H1: There is a significant relationship between technological factors and adoptions of electronic publishing.* Based on the analysis performed by bootstrapping as shown in Table 4.19, the result indicates that adoption is significantly influenced by technological factors ( $\beta = -0.16$ ,  $t = 2.04$ ,  $p < 0.05$ ). This result is consistent with previous studies (Ramdani et al., 2013; Hossain, Mohammed Alamgir & Quaddus, 2011). The result demonstrates that the technological variables (ICT infrastructures, relative advantages and compatibility) have significant relationship with technological factors.

The result suggests that organisational factors have significant relationship with adoption. As organisational factor is suggested as a determinant factor for technology adoption, thus, this study also hypothesised *H2: There is a significant relationship between organisational factors and adoption of electronic publishing.* The bootstrapping test found that the organisational factors have significant relationship with electronic publishing adoption ( $\beta = 0.176$ ,  $t = 1.907$ ,  $p < 0.05$ ). Therefore, *H2* is supported. The result is found to be similar with the previous studies which suggested that organisational factors facilitate the adoption of electronic publishing in Malaysia (Ramdani et al., 2013; Hossain, Mohammed Alamgir & Quaddus, 2011; Supramaniam & Kuppusamy, 2010; Te, Lin, & Wen, 2005; Hsiu, 2014; Bradford, Earp, & Grabski, 2014).

Environmental factors are also addressed in this study and hypothesised as *H3: There is a significant relationship between environmental factors and adoptions of electronic publishing.* The bootstrapping test demonstrated that environmental factors have no significant relationship with adoption of electronic publishing. The results show that *H3* is not significantly supported at the significance level of  $p < 0.05$  ( $\beta = 0.095$ ,  $t = 1.316$ ,  $p > 0.05$ ). The finding suggested that environmental factors variables (competitive pressure, government support and influence of trading partners) are not necessary in decision making for electronic publishing adoption amongst Malaysian publishers.

Previous studies have revealed that attitudes can influence behaviour directly, as well as indirectly through intentions (Cai & Shannon, 2012; Dhaha & Sheikh Ali, 2014; Leong, 2015). As there are limited studies of electronic publishing in Malaysia that investigated the role of

intention in determining the adoption of electronic publishing, this study hypothesised *H4: There is a significant relationship between intention and adoptions of electronic publishing*. The bootstrapping test exhibits that intention has significant effect on adoption at the level of ( $\beta=0.777$ ,  $t=11.65$ ,  $p<0.05$ ). Therefore, it implies that intention is significant in explaining its relationship with the adoption of electronic publishing adoption. The result also supports the hypothesis.

The finding of the analysis demonstrated that intention partially mediate the relationship between technological factors and the adoption of electronic publishing. The relationships are found to be significant with intention partially mediates the relationship between technological factors and adoption of electronic publishing. The result demonstrated that only 3.6% of technological factors have an effect on adoption of electronic publishing. Since the VAF is exceeding the 20% of the threshold level, intention is suggested to have mediating effect on the technology and adoption linkage.

Similarly, intention also partially mediates the relationship between organisational factors and adoption of electronic publishing. The finding exhibited that only 6.9% of organisational factors have an effect on adoption of electronic publishing. Since the VAF is exceeding the 20% of the threshold level, intention is suggested to have mediating effect on the organisation and adoption linkage.

From the bootstrap analysis, environmental factors are not directly affecting the adoption of electronic publishing ( $\beta=0.095$ ,  $t=1.316$ ,  $p>0.05$ ). Following Hair et al. (2014), mediator analysis procedure in PLS-SEM, in that kind of situation, no mediating effect is presented. Thus, the mediating analysis should not be conducted anymore. Therefore, it is argued that intention does not mediate the relationship between environmental factors and adoption of electronic publishing.

Table 1 Summary of Factor Loadings Result

Constructs (Latent variables)			Factor loadings
<b>Technology</b>			
ICT Infrastructure	0.850	ICT1	0.892
		ICT2	0.839
		ICT3	0.857
		ICT4	0.903
		ICT5	0.911
Relative Advantages	0.777	RA	0.879
		RA2	0.778
		RA3	0.818
		RA6	0.765
Compatibility	0.888	COMP1	0.785
		COMP2	0.878
		COMP3	0.864
		COMP4	0.867
		COMP5	0.885
<b>Organisation</b>			



Top Management Support	0.888	TMS1	0.834
		TMS2	0.909
		TMS3	0.853
		TMS4	0.894
		TMS5	0.923
IT Expertise	0.796	ITE1	0.759
		ITE2	0.722
		ITE3	0.887
		ITE4	0.857
Communication	0.892	COMM1	0.893
		COMM2	0.970
		COMM3	0.900
		COMM4	0.935
		COMM5	0.893

<b>Environment</b>			
Competitive Pressure	0.779	CP1	0.824
		CP2	0.903
		CP3	0.900
		CP4	0.844
		CP5	0.928
Government Support	0.797	GS1	0.904
		GS2	0.824
		GS3	0.892
		GS4	0.915
		GS5	0.852
Influence of Trading Partners	0.776	ITP1	0.906
		ITP2	0.915
		ITP3	0.915
		ITP4	0.730
Adoption		ADOPT1	0.912
		ADOPT2	0.940
		ADOPT3	0.909
Intention		INTENT1	0.969
		INTENT2	0.964
		INTENT3	0.962

Table 2 Summary of Reliability Statistics Average Variance Extracted Value (AVE) Result

<b>Constructs</b>	<b>Composite Reliability</b>	<b>Average variance extracted value (AVE)</b>
<b>Technology</b>	0.937	0.501
ICT Infrastructure	0.945	0.776

Relative Advantages	0.885	0.629
Compatibility	0.929	0.723
<b>Organization</b>	0.949	0.576
Top Management Support	0.944	0.780
IT Expertise	0.881	0.651
Communication	0.964	0.844
<b>Environment</b>	0.926	0.509
Competitive Pressure	0.945	0.814
Government support	0.944	0.771
Influence of Trading Partners	0.955	0.938
<b>Adoption</b>	0.943	0.848
<b>Intention</b>	0.976	0.931

Table 3 Significance testing results of the Structural Model Path Coefficient

Hypothesis	Path	Path Coefficients ( $\beta$ )	t Value	p Values	Hypothesis
H <sub>1</sub>	Technology Adoption	-> -0.16	2.04	0.042	Accepted
H <sub>2</sub>	Organization Adoption	-> 0.176	1.907	0.057	Accepted
H <sub>3</sub>	Environment Adoption	-> 0.095	1.316	0.189	Rejected

Table 4 The Results of Mediating Analyses

H <sub>4</sub>	Intention -> Adoption	0.777	11.65	0.000	Accepted
H <sub>5</sub>	Technology Adoption	-> -0.16	2.040	0.042	Accepted
H <sub>6</sub>	Organization Adoption	-> 0.176	1.907	0.057	Accepted
H <sub>7</sub>	Environment Adoption	-> 0.095	1.316	0.189	Rejected

## 5.0 RECOMMENDATIONS AND CONCLUSIONS

This study provides an insight on managerial implications for the electronic publishing business. A number of recommendations can be proposed to managers. Firstly, the managers should play important roles in determining the decision to adopt new technology in their business practices. Most importantly, they must realize that by adopting the new technology, they are still able to maintain cost reduction and employees' current responsibilities in executing their jobs. In addition, they need to provide sufficient information to make them understand the benefits of changing to electronic publishing. This will stimulate the interest of employees to support any changes made in the organisation. Therefore, the managers need to keep themselves informed

of the latest information regarding the new technology, digital devices or process in their industry.

Secondly, in order for the organisation to make changes, the managers should concentrate on the potential factors that would affect the adoption of a new technology. In this study, various factors were found to be a significant predictor of electronic publishing adoption such as ICT infrastructures, top management support and IT expertise, relative advantages, compatibility, and communication. The advancement of ICT infrastructures in an organisation is important for the changes that involve the new technology. The consideration should be compatible with the current organisational practices, electronic and technical feasibility. Apart from that, the managers should recognise potential benefits of the new technology which in turn leads to the success of its adoption. Their understanding on knowledge related to electronic publishing practices and supportive attitudes will motivate the adoption of a new technology in organisations. In addition, it is their responsibility to ensure that all employees are familiar with the technology that they wish to adopt and the organisation has enough budgets to be dedicated for the IT training as well as for obtaining technical devices that are related to the new technology. Likewise, they are able to innovate and utilise the new technology effectively. Above all, communication with the employees is vital. The managers need to convince their employees to support the decision made by the top management. Subsequently, they need to possess good communication skills in order to reduce uncertainty towards the new technology and to increase the tendency towards the adoption.

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