

PERCEIVED USEFULNESS AND PERCEIVED EASE OF USE OF E-COMMERCE ADOPTION AMONG ENTREPRENEURS IN SABAH

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Abstract

This research based its conceptual framework on the Technology Acceptance Model (TAM) which includes Perceived Usefulness and Perceived Ease of Use as the variables of the study. The external variable or independent variables chosen for this research were Demographic Profile and Entrepreneurial Characteristics. Age, Ethnicity and Education Level were chosen as the dimensions to be analyzed in Demographic Profile while Need for Achievement, Risk-taking Ability and Locus of Control were the chosen dimensions for Entrepreneurial Characteristics. A total of 290 questionnaires have been distributed via email to all the possible respondents whom are established business owners regardless brick-and-mortar, brick-and-click, or click only business in Kota Kinabalu, Sabah. However, only 170 useable responses were received and used for analysis. From the results obtained, demographic profile was not found to be significant while entrepreneurial characteristics were found to be related to Perceived Usefulness and Perceived Ease of Use of e-commerce.

1 INTRODUCTION

The exponential growth of the internet has changed the rules of competition in many industry sectors. Many big corporations including SMEs are integrating their business into the internet where they can reach a larger market scope online. Doing business online has been a new trend nowadays and many customers are switching to shopping online. Therefore, more and more entrepreneurs are doing business online as there are demands that initiate the business especially among SMEs.

With all the advantages and benefits offered by the Internet, e-commerce adoption by entrepreneurs is rising significantly in recent years. As noted by Ho *et al.* (2007), e-commerce has been blooming in the business cycle where the traditional brick-and-mortar business has undergone transition to now leading dotcom or click-only business. The e-commerce adoption has been a strategic use of the organization, despite the size of the organization, as it provides opportunities for various type of business to flourish in the maturing of e-commerce. Although smaller firms are slower in adopting the e-commerce compare to their larger counterparts at the first place, however, the usage of e-commerce among small firms are growing rapidly in the recent years (Drew, 2003), suggesting that e-commerce has a significant beneficial impact in the business practices.

The past literature has offered a great number of studies in the area of e-business and despite the large number of earlier studies; more research is needed in this area which will integrate multiple disciplines into a single study that will ultimately, offer a holistic view of the e-business as stated by Ozer (2005) as well. There are, still, very limited empirical research to evaluate the determinants that influence the adoption of e-commerce by a firm as stated by Lin & Lin (2008). Many unanswered questions in the e-commerce are still to be explored and how far into the

future will small business fully embrace e-business remains uncertain (Poon & Swatman, 1999). Hence, this research aims to contribute further towards e-commerce from the entrepreneurial perspective.

2 LITERATURE REVIEW

Demography and internet use. From a sociological point of view, internet is used by an individual to search for information online and stay connected to the world. As the individual grow older, the social network decreases and there is no point for them to stay connected, resulting in lower perceived usefulness of the internet. Moreover, individuals who are older tend to see themselves as having the limitation in learning due to reduction in cognitive capabilities. It is actually the lower self-efficacy they perceived in them as they believe cognitive functionality is decreasing as they age (Hertzog & Hultsch, 2000). “Since many older individuals have limited experience using computers and the internet, is it likely that they have self-efficacy concerns related to learning how to use the internet” as pointed out by Porter & Donthu (2006). The authors also added that “it is likely that learning to use the internet creates an anxiety-provoking situation that many would choose to avoid because of perceived difficulty associated with the task”. When they refused to learn on internet, older entrepreneurs are prone to maintain their traditional brick-and-mortar business. Thus, it can be concluded that age has a relationship with the degree of perceived usefulness and perceived ease of use of e-commerce respectively.

Individual difference, in terms of ethnicity, is seen as another factor influencing how individuals perceived usefulness and ease of use of e-commerce. Porter & Donthu (2006) has been using African-American and Hispanic-Americans as the race factor in internet adoption and the authors found out that these minorities in America tend towards collectivist behavior and thus, they are expected to have less favorable perceptions of the internet which yielded a lower usage rate as compared to their larger Americans counterpart. Therefore, differences in race or ethnicity will have impacts towards the degree of e-commerce adoption as well. Consequently, it can be concluded that ethnicity has a relationship with the degree of perceived usefulness and perceived ease of use of e-commerce respectively.

According to Lal (1999) and Lal (2005), entrepreneur’s qualification has a significant influence whereby the author measures the knowledge base as the qualification standard. The author also pointed out that the entrepreneur’s qualification will impose considerable relationship in the degree of e-commerce or information technology adoption and hence, perceived usefulness and perceived ease of use of e-commerce have a direct positive relationship to entrepreneur’s qualification. The fact provided by Lal (1995 & 2005) is supported by Porter & Donthu (2006) as well in which the authors suggested that the decision to adopt a new technology is related strongly to the amount of knowledge one has as adopters with higher educational levels tend to have the ability to understand “how to” knowledge more quickly than those with less education. As a result, it can be concluded that education level has a relationship with the degree of e-commerce perceived usefulness and perceived ease of use respectively.

Entrepreneurial characteristics. In a study done by Kirby (2004), the entrepreneurial characteristics discussed includes need for achievement, risk-taking ability and locus of control which have been chosen as the dimensions under the entrepreneurial characteristics. An entrepreneur will normally possess a high need for achievement and hence, entrepreneur is prone to adapt easily to the needs of emerging markets including adopting necessary technology to enhance the firm performance as discuss by Kirby (2004). Moreover, entrepreneurs with high need for achievement will basically anticipate for future possibilities and with this emerging demand in the new virtual market, the entrepreneurs are fond to embrace latest technology and innovation in order to keep them competitive in the market (Kirby, 2004; McClelland, 1961). With enough evidence from literature, need for achievement can be predicted to have a relationship with perceived usefulness and perceived ease of use of e-commerce.

According to Kirby (2004) as well, entrepreneurs that are classified as risk-takers tend to be more predisposed to take calculated risk. They are also more readily to tolerate ambiguity and uncertainty as compared to non-entrepreneurs. Thus, entrepreneurs will tend to adopt the latest technology or innovation although it is not certain that the technology will contribute to the higher firm performance or profit in order to keep the firm competitive. Entrepreneurs' self-confidence is believed to be a pre-requisite of successful entrepreneurship which tend to distort their perceptions of risks as well (Kirby, 2004; Koh, 1996). With enough evidence from the literature, risk taking can be predicted to have a relationship with perceived usefulness and perceived ease of use of e-commerce.

Entrepreneurs are believed to possess a high internal locus of control as suggested by Kirby (2004) in which they have faith to believe that the achievement of any goal they pursue deeply bonds them to their inner-self. In other words, they tend to believe that the main reason for their success depends singly on their behavior or individual characteristic whereby they earn what they sow. Hence, the act of adopting latest technology that leads to the success of their business can be linked closely as they believe that they are making the right choice to adopt e-commerce which will lead to the higher performance of their firm eventually. Therefore with this evidence from the literature locus of control can be predicted to have a relationship with perceived usefulness and perceived ease of use of e-commerce.

3 RESEARCH METHODOLOGY

The population in this research comprised of 170 entrepreneurs in Kota Kinabalu, Sabah. The entrepreneurs selected are established business owners regardless of whether they are brick-and-mortar, brick-and-click, or click only business. The population sampled consisted of respondents from adopters and respondents who represented diverse background in terms of the key demographic variables as suggested by Porter & Donthu (2006).

The data collection in this research project was carried out by using purposive sampling due to the unavailability of proper list of respondents in Kota Kinabalu. Purposive samples are selected based on some basis characteristics or attributes that are important to the evaluation as suggested by Smith (1983) and therefore, respondents selected must be entrepreneurs with established business regardless brick-and-mortar, brick-and-click, or click only business. Questionnaires were formed by using php and MySQL into an URL link

(<http://pennylane.byethost33.com/phpq/index.php>) and are distributed via email for online business owners in Kota Kinabalu area. Data collected from the link are stored in database and extracted into MSExcel form to be analyzed.

Closed-ended questionnaires were adapted from previous literatures which used TAM to measure the adoption IT and e-commerce usage and adoption. Questionnaires are divided into five sections in which variables are graded accordingly to scale items based on five-point Likert-type scales (1="strongly disagree", 5="strongly agree"). Some modification on respondent profile section was made to acquire the information and data related to this research.

4 RESULTS

The respondents consist of 91 females (53.5%) and 79 males (46.5%). The respondents were measured from six age categories. The six age categories were 19 years or younger with 4.7% (n=8), 20-24 years with 45.3% (n=77), 25-29 years with 34.1% (n=58), 30-34 years with 13.5% (n=23), 35-39 years with 2.4% (n=4) and no respondents are more than 40 years old. The age category from 20-24 years has the highest percentage of respondents while the age category from 35-39 years has the lowest percentage of respondents. Five ethnic groups were represented in which Chinese being the majority from the total respondents with 56.2% (n=69) follow by Sabahan Bumiputra with 22.9% (n=39), Malays with 20.0% (n=34) and Non-Bumiputra Sabahan being the minority from the total sample with only 16.5% (n=29). In terms of education, the respondents were categorized into seven categories. The majority of the respondents were degree holders with 51.8% (n=88) followed by graduates with Diploma which involved 28.2% (n=48) of the total respondents. Only 3.5% (n=6) of the respondents possessed a Master's Degree or Master in any field while 2.4% (n=4) of the respondents have the highest education level, Phd. There are 14 (8.2%) respondents with SPM or graduated from secondary school while 4.7% (n=8) of the respondents have acquired STPM certification or graduated from A-level/O-level. Only 1.2% (n=2) respondents have the lowest education level with PMR certification or lower.

Only 159 respondents revealed their annual income. A majority of the respondents were earning an annual income of RM19000 and lower with 41.2% (n=70); 32.9% (n=56) of the respondents were earning an annual income between the range of RM20000-RM39000 while 10.0% (n=17) of the respondents were earning in between the range of RM40000-RM59000. Only 1.2% (n=2) respondents who earned an annual income of RM80000-RM99000 while 3.5% (n=6) respondents earned RM100000 or more annually.

Besides the data collected regarding demographic profile, the years of experience in technology usage were collected as well in the questionnaire. The years of experience in technology usage was meant to provide some clear picture on the technology usage and adoption among the respondents. The technology experiences profile is generated according to three different types of technology which is corresponding to the research namely the information and communication technology (ICT), the internet and electronic commerce (E-commerce) as shown in Table 1.

Table 1: Experience in Technology

Types of Technology	Years of Experience (in categories)	Frequency	Percentage (%)
Information and Communication Technology (ICT)	3 years and less	35	20.6
	4-6 years	48	28.2
	7-9 years	17	10.0
	10-12 years	48	28.2
	13 years and above	22	12.9
Internet	3 years and less	2	1.2
	4-6 years	24	14.1
	7-9 years	33	19.4
	10-12 years	68	40.0
	13 years and above	43	25.3
Electronic Commerce (E-commerce)	3 years and less	118	69.4
	4-6 years	46	27.1
	7-9 years	2	1.2
	10-12 years	2	1.2
	13 years and above	2	1.2

Table 2: Descriptive Summary of Variables

Variables	Mean	Median	Mode	Max	Min	SD
E-commerce Usage and Intention to Use	4.20	4.17	4.00	5.00	1.00	0.59
Perceived Usefulness	4.17	4.00	4.00	5.00	1.25	0.61
Perceived Ease of Use	3.89	4.00	4.00	5.00	2.00	0.60
Need for Achievement	3.88	3.80	3.60	5.00	2.80	0.44
Risk-taking Ability	3.40	3.40	3.40	5.00	2.60	0.41
Locus of Control	3.65	3.60	3.60	5.00	2.20	0.49

Table 3: Multiple Regressions Summary for Demographic Profile, Perceived Usefulness and Perceived Ease of Use.

Demographic Profile	Perceived Usefulness			Perceived Ease of Use		
	Beta Coeff.	t-value	sig-p value	Beta Coeff.	t-value	sig-p value
Age	0.087	1.047	0.297	0.039	0.465	0.642
Ethnicity	0.085	1.099	0.273	-0.035	-0.446	0.656
Education Level	0.008	0.096	0.924	-0.063	-0.759	0.449
R2	0.014			0.008		

Table 4: Multiple Regressions Summary for Entrepreneurial Characteristics, Perceived Usefulness and Perceived Ease of Use

Entrepreneurial Characteristics	Perceived Usefulness			Perceived Ease of Use		
	Beta Coeff.	t-value	sig-p value	Beta Coeff.	t-value	sig-p value
Need for Achievement	0.133	1.766	0.079	0.215	3.074	0.002
Risk-taking Ability	0.100	1.168	0.244	0.208	2.596	0.010
Locus of Control	0.209	2.454	0.015	0.232	2.932	0.004
R2	0.107			0.227		

Perceived Usefulness and Perceived Ease of Use. Perceived usefulness and perceived ease of use are the mediators associated closely with Technology Acceptance Model (TAM) and they are also the linkage to connect external variables such as demographic profile and entrepreneurial characteristics to the degree of e-commerce adoption as well as to what extent the demographic profile and entrepreneurial characteristics will influence the degree of e-commerce adoption through the perceived usefulness and perceived ease of use of the e-commerce.

According to Davis *et al.* (1989) as well, both the perceived usefulness and perceived ease of use are the attitude towards new technology and in this context, e-commerce that greatly influence an individual's attitude in using the technology. In other words, the more the individual perceived the e-commerce as easy to use, the more that particular individual will find the e-commerce useful and thus, the propensity that individual adopting e-commerce will be soaring high as well.

Demographic Profile. The demographic profile which comprised of age, ethnicity and education level as the dimensions has been tested by using multiple regression analysis to determine the relationship between the demographic profile and perceived usefulness and ease of use. No significant relationship was found between demographic profile and perceived usefulness and ease of use based on the insignificant p-value. According to the research done by Porter & Donthu (2006), the tendency of adoption is vary significantly based on age, education and income and from the result of their finding, older individuals have lower perceived ease of use but higher perceived usefulness. Older people tend to face difficulties in learning new technology but it does not mean that older people perceived new technology as being useless to them. In this research context, no significant relationship was found between the ages of the entrepreneurs and the perceived ease of use and perceived usefulness of the e-commerce, indicating that age as one of the dimension in the demographic profile is debatable since there is no relationship found between them.

As supported by Porter & Donthu (2006) as well, perceived usefulness is favoring the majority whereby minority such as Hispanic American or African American has lower perceived usefulness of internet usage. Although it is indicated that ethnicity has a positive relationship with perceived usefulness, however, in this study no significant differences were found between the ethnicities. The finding found in this research is inconsistent with the finding from Porter & Donthu (2006).

Based on the results gained as well, the education level of the entrepreneurs was also not found to have any significant relationship with the perceived ease of use and perceived usefulness of the e-commerce. This finding is not consistent with the findings by Porter & Donthu (2006) whereby perceived usefulness are higher for highly educated individuals. In addition the finding of this study also contradict the empirical study by Agarwal & Prasad (1999) which show that there is a significant positive relationship between education level and perceived ease of use. Consequently, when individuals with adequate level of education encounter new technology such as e-commerce, they will find e-commerce easy to use and useful to them and prone to embrace e-commerce more readily due to their ability to understand “know-how” knowledge more quickly than those with less education (Rogers, 1995).

Entrepreneurial Characteristics as Determinants. The entrepreneurial characteristics which comprised of need for achievement, risk-taking ability and locus of control as the dimensions have been tested by using multiple regression analysis to determine the relationship between the entrepreneurial characteristics and e-commerce adoption. The entrepreneurial characteristics were found to have a relationship with perceived usefulness and perceived ease of use based on the beta coefficient values. Based on the results it was found that: (1) the perceived usefulness and perceived ease of use are positively associated with the need for achievement of entrepreneurs, (2) the perceived usefulness and perceived ease of use are positively related to the risk-taking ability of entrepreneurs, and (3) the perceived usefulness and perceived ease of use are positively connected to the locus of control of the entrepreneurs. According to Kirby (2004) and McClelland (1961), entrepreneurs with a high need for achievement are characterized by (1) individual responsibility, (2) moderate (not high) risk-taking, (3) knowledge of results of decisions, (4) novel instrumental activity, and (5) anticipation of future possibilities. The finding in this research has indicated that the need for achievement has a significant positive relationship with the degree of e-commerce adoption which is in line with the finding from Keh *et al.* (2007) in which the authors stated that business owners basically have proactive way to seek and utilize innovative information. In other words, entrepreneurs with high need for achievement will tend to be proactive in order to keep the firm’s performance high and by all means, readily to adopt e-commerce to make use of the innovative information from the virtual market.

Risk-taking ability has a positive relationship with perceived usefulness and a significant positive relationship with perceived ease of use. According to Keh *et al.* (2007) as well, entrepreneurs are equipped with risk-taking ways to seek and utilize innovative information and hence, this risk-taking ability has been closely associated with entrepreneurs as entrepreneurs cannot be risk adverse (Kirby, 2004; Koh, 1996). Entrepreneurs with high risk-taking ability are likely to adopt e-commerce readily due to the market demand even the benefits of e-commerce are not guaranteed. The finding in this research is consistent with the fact that risk-taking ability is positively associated with perceived ease of use significantly, but still, it is not statistically significant for perceived usefulness.

Locus of Control has a significant positive relationship with both the perceived usefulness and perceived ease of use. Entrepreneurs with high locus of control tend to believe that the achievement of a goal is dependent on their behavior or individual characteristics (Kirby, 2004). In other words, they tend to believe that the main reason for their success is depending singly on their behavior or individual characteristic whereby they believed that they earn what they sown.

Hence, they are more readily to adopt e-commerce as they believe that they are making the right choice to adopt e-commerce which will lead to the higher performance of their firm eventually.

5 CONCLUSION

Based on the discussion above regarding each of the findings yielded from this research, the findings are able to make some theoretical contributions academically. The validity of demographic variables as external variables is crucial due to their importance in the context of technology use, in this context, the e-commerce adoption need to be revised by using the basic technology acceptance model (TAM) since the findings have proven that demographic profile (age, ethnicity and education level) has no significant relationship with the perceived usefulness and perceived ease of use of the e-commerce.

The findings of this research have other implications as well for the entrepreneurial characteristics in the perspective of research on e-commerce adoption that described the determinants in e-commerce adoption among entrepreneurs. The determinants, entrepreneurial characteristics, also further verified the appropriateness and validity of technology acceptance model (TAM) and its application in measuring for the e-commerce adoption.

Besides theoretical implication, the findings of this research also suggest important practical implication for information systems managers or online business owners as well as organizations that are planning to adopt e-commerce. It is evident from this study that in order to avoid hindrance of e-commerce adoption in an organization, perceived ease of use and perceived usefulness of the e-commerce applications should be established by giving appropriate training and exposure (Zakariya Belkhamza & Syed Azizi Wafa, 2009).

The entrepreneurial characteristics are making an important contribution towards practical implication as well. By identifying the desired and necessary entrepreneurial characteristics of individuals, the human resource manager will be better off making the right decision in recruiting for the right candidate for entrepreneurial-based organization. Moreover, it is vital as well for marketer to focus their marketing resources on particular demographic segment in order to build profitable, long-term relationship with the right customers.

6 REFERENCES

- [1] Agarwal, R. & Prasad, J. 1999. Are Individual Differences Germane to the Acceptance of New Information Technologies? *Decision Sciences*, 30(2): 361-391.
- [2] Davis, F. D. 1989. Perceived Usefulness and Perceived Ease of Use and User Acceptance of Information Technology, *MIS Quarterly*, 13(3).
- [3] Drew, S. 2003. Strategic Uses of E-Commerce by SMEs in the East of England. *European Management Journal*. 21(1), Elsevier Science Ltd., 79-88.

- [4] Hertzog, C., Hulstsch, D. F. 2000. Metacognition in Adulthood and Old Age. In: Craik, F. &Salthouse, T. (eds). *The handbook of Aging and Cognition (2nd edition)*, Lawrence Erlbaum Associates, New Jersey.
- [5] Ho, S. H., Kauffman, R. J., Liang, T. P. 2007. A Growth Theory Perspective on B2C E-Commerce Growth in Europe: An Exploratory Study. *Electronic Commerce Research and Applications*. 6, Elsevier B. V., 237-259
- [6] Keh, H. T., Nguyen, T. T. M., Ng, H. P. 2007. The Effects of Entrepreneurial Orientation and Marketing Information on the Performance of SMEs.*Journal of Business Venturing*.22, Elsevier Inc, 592-611.
- [7] Kirby, D. A. 2004. Entrepreneurship Education: Can Business Schools Meet the Challenge? *Education & Training*, 46(8/9): 510-519.
- [8] Lal, K. 1999. Determinants of the Adoption of Information Technology: A Case Study of Electrical and Electronic Goods Manufacturing Firms in India. *Research Policy*.28, Elsevier Science Ltd, 667-680.
- [9] Lal, K. 2005. Determinants of the Adoption of E-Business Technologies.*Telematics and Informatics*.22, Elsevier Ltd, 181-199.
- [10] Lin, H. F. & Lin, S. M. 2008. Determinants of E-business Diffusion: A Test of the Technology Diffusion Perspective. *Technovation*. 28, Elsevier Ltd, 135-145.
- [11] McClelland, D. C. 1961. *The Achieving Society*, Van Nostrand, Princeton, New Jersey.
- [12] Ozer, M. 2005. Online Business: Tailoring Your Business Environment in order to compete. *International Journal of Information Management*. 25, Elsevier Ltd, 137-149.
- [13] Poon, S. & Swatman, P. M. C. 1999. An Exploratory Study of Small Business Internet Commerce Issues. *Information & Management*. 35, Elsevier Science Ltd, 9-18.
- [14] Porter, C. E. & Donthu, N. 2006. Using the Technology Acceptance Model to Explain How Attitudes Determine Internet Usage: The Role of Perceived Access Barriers and Demographic. *Journal of Business Research*.59, Elsevier Inc., 999-1007.
- [15] Rogers, E. M. Diffusion of innovations. Fourth Edition. New York: The Free Press; 1995.
- [16] Smith, M. F. 1983. *Sampling Considerations In Evaluating Cooperative Extension Programs*. Florida Cooperative Extension Service Bulletin PE-1.Institute of Food and Agricultural Sciences.University of Florida.

- [17] Zakariya N. Belkhamza& Syed Azizi Wafa. 2009. The Effect of Perceived Risk on the Intention to Use E-commerce: The Case of Algeria. *Journal of Internet Banking and Commerce*.14(1).