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Non-business E-Commerce in Malaysia: An Investigation of Key Adoption

[1]Oswald Aisat Igau, [1]Abdul Wahid Mohd Kassim, [1]Sulaiman Tahajuddin,
[1]Nelson Oly Ndubisi and [2]Mohamad Ghozali Hassan
[1]School of Business and Economics, University Malaysia Sabah, Malaysia
[2]College of Business, University Utara Malaysia, Technology Management Building,
06010 Sintok, Kedah, Malaysia

Abstract: Problem statement: Non-business EC is a relatively new research niche in the general e-commerce stream. Application of e-commerce by profit oriented organization already become bread and butter but still limited applied in non-business sectors such as academic institutions (as in the present study), non-profit organizations, religious organizations and government agencies. Nowadays e-commerce becomes crucially essential in reducing their expenses and improving their operations. Therefore, application of this new innovation should enhance to no non-business sectors to be livelier. Understanding the key factors of facilitating and adopting the e-commerce in non-business are still need to enrich in particularly within Malaysian context. A field survey was conducted to determine key factors that facilitate the adoption of non-business EC in Malaysian Universities. **Approach:** One main focus of IT implementation research has been to determine why people accept or reject new technology. The current research will explore why Non-business institutions will accept or reject e-commerce. Since e-commerce adoption decision is a strategic one, a comprehensive list of potential facilitators and non-facilitators for the strategic use of information technology was derived from past research. Thus factors used as the basis for collecting data from 65 schools, centers and units from 5 public universities in Kota Kinabalu and Kuala Lumpur. These data were factor-analyzed to determine the key underlying dimensions of facilitators. On the basis of the resulting 5 dimensions namely, relative advantage, network orientation, information efficiency, innovativeness and competitiveness, regression analysis was done to determine the impact of the 5 dimensions on adoption. **Results**: They suggest that relative advantage, network orientation and information efficiency are the most important facilitators to the used of e-commerce in non-business sectors. Inhibitors were not estimated eventually, as there were no non-users among the respondents. **Conclusion:** The results implies the non-business sectors should look into advantages, network orientation and information efficiency as a strategic based for implementing e-commerce in more effective manner to achieve their goals.

Key words: Potential facilitators, not-for profit organizations, e-commerce adoption, e-brochure adoption, regression analysis, practitioner literature, Value Added Networks (VANS), potential customers

INTRODUCTION

As we enter the second millennium, we experience one of the most important changes in our lives-the move to an Internet-based society (Lucian and de Farias, 2009). One of the most significant changes is in the manner business is conducted especially in how the marketplace and commerce is managed. Electronic commerce (henceforth e-commerce) describes the manner in which transactions take place over networks, mostly the Internet. It is the process of electronically buying and selling goods, services and information.

E-commerce could be classified based on the nature of transaction. Turban *et al*. (2008) distinguished the following types:

- Business-to-Business. This is the most common type of e-commerce today. It includes electronic market transactions between organizations
- Business-to-consumer. These are retailing transactions with individual shoppers
- Consumer-to-consumer. In this category, consumers sell directly to consumers

Corresponding Author: Mohamad Ghozali Hassan, College of Business, University Utara Malaysia Technology, Management Building 06010 Sintok, Kedah, Malaysia Tel: +6013-4056721 Fax: +604-9285762

- Consumer-to-business. This category includes individuals who sell products or services to organizations, as well as individuals who seek sellers, interact with them and conclude a transaction
- Non-business E-commerce. This includes Non-business institutions such as academic institutions, not-for profit organizations, religious organizations and government agencies using various types of e-commerce to reduce their expenses or to improve their operations and customer service
- Intrabusiness (organizational) e-commerce. In this category fall all internal organizational activities, usually performed on Intranets that involve exchange of goods, services, or information

The e-commerce revolution has brought a myriad of opportunities and risks each resulting in either facilitating or inhibiting its adoption. The global nature of the technology, low cost, opportunity to reach hundreds of millions of people, interactive nature, variety of possibilities and resourcefulness and rapid growth of the supporting infrastructures (especially the web) result in many potential benefits to organisations, individuals and society.

Potential benefits of e-commerce to organisations include: (1) expansion of the marketplace to national and international markets, (2) decreases the cost of creating, processing, distributing, storing and retrieving paper-based information, (3) ability for creating highly specialized businesses, (4) allows reduced inventories an overhead by facilitating "pull"-type supply chain management, (5) the pull-type processing enables expensive customisation of products and services which provides competitive advantage to its implementers, (6) reduces the time between the outlay of capital and the receipt of products and services, (7) initiates business processes reengineering projects, (8) lowers telecommunication cost-the Internet is much cheaper than Value Added Networks (VANS), (8) other benefits include improved image, improved customer service, new found business partners, simplified processes, compressed cycle and delivery time, increased productivity, eliminating paper, expediting access to information, reduced transportation costs and increased flexibility (Turban *et al*., 2008).

Turban *et al*. (2008) grouped the limitations of e-commerce into technical and non-technical. Technical limitations include: (1) lack of system security, reliability, standards and some communication protocols, (2) insufficient telecommunication bandwidth, (3) the software development tools are still evolving and changing rapidly, (4) difficult to integrate the Internet and e-commerce software with some existing applications and databases, (5) vendors need special Web servers and other infrastructures, in addition to the network servers, (6) some e-commerce software might not fit with some hardware, or may be incompatible with some operating systems or other components. Non-technical limitations are: (1) cost and justification-the cost of developing e-commerce in-house can be very high and mistakes due to lack of experience may result in delays, (2) security and privacy issues, (3) lack of trust and user resistance, (4) other limiting factors are lack of touch and feel online, government regulations and standards are not refined enough for many circumstances, there are not enough support services, in most applications there are not enough sellers and buyers for profitable e-commerce operations, could result in breakdown of human relationships and accessibility to the Internet is still expensive and/or inconvenient for many potential customers.

Research problem: Despite these limitations, e-commerce adoption and use continues to grow rapidly around the world. The Internet B2B space is gaining much attention, with valuation for publicly traded B2B companies escalating rapidly. Estimates for the size of this burgeoning space vary widely from Gartner Group's prediction of $7.29 trillion by 2004 to Goldman Sachs' estimation of $1.5 trillion (Kearney, 2000), shows that the future hold great promise for adopters. Similarly, McGaughey (2002) and Teltscher (2002) indicated the growth prospects of B2B are substantial and has outpaced all of other forms of EC. Furthermore, Teltscher (2002) based on data gathered from Forrester has predicted the revenues from EC to increase from US$657 billion in 2000 to US$12.8 trillion by 2006. From these two figures 80% of the EC revenue will be from B2B transactions (Pires and Aisbett, 2003). In Malaysia, one of the fastest growing economies of East Asia, the need to study e-commerce adoption and adoption facilitators and inhibitors in Non-business organisations is critical as it will help to create a more favourable environment for greater use of e-commerce as a tool for competitiveness, resilience and success in the global business environment.

The current research focuses on the Non-business E-commerce. Being the most un-common type of e-commerce (Turban *et al*., 2008), an understanding of its major drivers will help to create a favourable attitude and environment for adoption in Malaysian not-for-profit making organisations. Although there has been significant' research on e-commerce drivers, existing empirical research focusing on not-for-profit making organisations like institutions of higher learning is lacking (Hirzallah, 2007). Most studies concentrate on the marketing and bottom line benefit of e-commerce without much attention to a host of other factors that could be influential (Corti *et al*., 2010; Mendoza, 2010). In this research therefore, a broad spectrum of factors were investigated from IT drivers, to business needs,

innovative needs, competitive position, environmental factors, economies of scale, to top management guidance, Understanding the determinant structure of these variables will greatly push back the frontier of knowledge in the area of e-commerce application in not-for-profit making organisations, as well as help in technology management in these institutions, not to mention the immense benefits to systems designers and marketer and policy makers (Nasiri and Deng, 2009; Rizon *et al*., 2006).

Objectives of the study: One main focus of IT implementation research has been to determine why people accept or reject new technology. The current research will explore why Non-business institutions will accept or reject e-commerce. The objectives of this study are therefore many fold: (1) to identify a comprehensive list of potential facilitators and inhibitors from prior research and practitioner literature, (2) to identify those facilitators and inhibitors that significantly determine e-commerce acceptance or rejection in Non-business organisations in Malaysia, (3) to provide guidance to researchers and practitioners concerning the contingent factors and organisational processes that may facilitate or inhibit e-commerce development and diffusion in Malaysia, (4) to compare the drivers of e-commerce adoption in business organisations with Non-business organisations and (5) to understand the determinant structure of these key factors and e-commerce adoption in Malaysia.

Organisation of the study: Abstract of this research is provided in the beginning, followed by introduction which posed the whole idea about e-commerce for not-for-profit making organisations, defines the research problems, the objectives of the research, the theoretical framework, the hypothesis, materials and methods of this study. The results and discussions of the data analysis are presented before the conclusion remarks. List of references is provided in the final part.

Theoretical framework: Based on the resulting dimensions from factor analysing the list of items adapted from previous works, the following factors were examined to understand their influence on Non-business EC adoption in selected Malaysian public universities. They include; relative advantage, information-efficiency, network, innovativeness and competitiveness. These factors are schematised as Fig. 1.

Hypotheses: The following hypotheses are proposed for the research:

Hypothesis 1a: There is a positive relationship between the relative advantage of e-brochure and its adoption

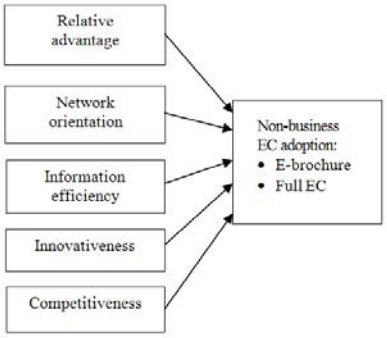

Fig. 1: The schema of the research model

Hypothesis 1 b: There is a positive relationship between the relative advantage of full e-commerce and its adoption

Hypothesis 2a: The greater the network of an organisation, the greater will be its adoption of e-brochure

Hypothesis 2b: The greater the network of an organisation, the greater will be its adoption of full e-commerce

Hypothesis 3a: Information efficiency is positively associated with e-brochure adoption

Hypothesis 3b: Information efficiency is positively associated with full e-commerce adoption

Hypothesis 4a: The greater the innovativeness of an organisation, the greater the likelihood of e-brochure adoption

Hypothesis 4b: The greater the innovativeness of an organisation, the greater the likelihood of full e-commerce adoption

Hypothesis 5a: The greater the need for competitiveness, the greater will be e-brochure adoption

Hypothesis 5b: The greater the need for competitiveness, the greater will be full e-commerce adoption

MATERIALS AND METHODS

Population of study: Unit heads, directors of centres, deans of schools and other senior administrators in public universities in Kuala Lumpur and Kota Kinabalu in Malaysia were surveyed to gain information on the extent of use of e-commerce in their various departments as well as the usage drivers. The earlier intention of this research was to investigate all the public and private universities in Malaysia, but the sponsor of the research reduced the scope. Nevertheless, the objectives of research were met. In all, 65 usable responses were received out of a total of 165 qualified respondents from 5 Universities in Kota Kinabalu and Kuala Lumpur.

Table 1: Demographic profile of respondents

Field of specialisation	Percent	Age of respondents	Percent
Management science	35.4	Below 30 years	26.2
Information science	15.4	31-40 years	30.8
Social science	12.3	41- 50 years	29.2
Physical science	12.3	51-60 years	13.8
Engineering	4.6	Above 60	0.0
Others	20.0		
Job Title		**Gender**	
Dean of school	29.2	Male	66.2
Centre director	6.2	Female	33.8
Unit head	61.5		
Others	3.0		
Job experience		**Number of students/clients**	
Below 5 years	21.5	below 300	23.1
5-10 years	26.2	300-500	16.9
11-20 years	21.5	501-1000	3.1
21-30	27.7	1001-2000	15.4
Above 30 years	3.1	2001-3000	15.4
		Above 3000	26.2
Years of computer experience		**Number of employee's**	
Below 5 years	3.0	below 5	12.3
5-9 years	37.0	5-50	53.8
10-14 years	37.0	51-100	15.4
15-20 years	21.6	101-300	9.2
Above 20 years	1.5	301-500	7.7
		Above 500	1.5

Data collection: In other to achieve the two main objectives of the research that is, to identify a comprehensive list of potential facilitators and inhibitors from prior research and practitioner literature and to examine their impacts on Non-business EC adoption, a list of facilitators for the use of IT was compiled from an extensive review of past literature. In compiling the list, we included all facilitators from previous work (Table 1). A corresponding list of inhibitors can be identified as the absence of factors that make up the facilitators, for example, if strong market position is a facilitator for adopters, then the lack of strong market position may be considered an inhibitor for non-adopters (King and Teo, 1996).

Clearly, the development of a list of inhibitors as the absence of facilitators may limit the range of applicability of the results. This approach is used because past research and existing literature do not treat inhibitors nearly as extensively as they do facilitators. This makes the list of inhibitors relatively short. In addition, it is felt that in deriving the list of inhibitors from the list of facilitators, one can directly examine whether the absence of a facilitator would necessarily function as an inhibitor. This would provide useful insight about the relative importance of each facilitator and inhibitor.

The initial list of facilitators and inhibitors was jointly reviewed by two of the authors in order to eliminate or combine repetitive items. From this list, a questionnaire was prepared using a 5-point Likert-type scale ranging from "greatly inhibitive" to "greatly facilitative". The scale also had a column marked "not applicable" to allow for items that are not relevant to a particular company. In line with Perry (2006) International Coalition of Library Consortia (1998), adoption was measured based on the number of job tasks undertaken with the e-commerce application. System usage for the sole purpose of promoting services is regarded as e-brochure (or partial adoption) and usage for promotion, reserving or ordering services, payment and order fulfilment online or offline denote full adoption. The questionnaire was pre-tested with 5 deans of schools and directors of centres and modified appropriately.

RESULTS

Demographic profile of respondents: The following is the profile of the demography of the respondents to the survey. The results in Table 1 show that various fields of academics are represented; deans of schools, directors of centres, unit heads and other senior administrators participated in the survey; majority of the respondents have been on the job for more than 5 years; majority of the respondents have general computer experience of between 5-30 years; respondents are below sixty years old; two-third of the respondents are male; there is a large variation in the number of students/clients being served and majority of the respondents employ between 5-50 staff.

Table 2: Influences on e-brochure adoption or web presence

Dimensions	Beta coefficients
Relative advantage	0.188
Network orientation	0.399*
Information efficiency	0.340*
Innovativeness	-0.034
Competitiveness	-0.011

R2 = 0.509 F = 11.83 Sig. F = 0.000*p<0.01

Table 3: Influences on full non-business e-commerce adoption

Dimensions	Beta coefficients
Relative advantage	0.249[m]
Network orientation	0.227[m]
Information efficiency	0.234*
Innovativeness	-0.027
Competitiveness	0.153

R2 = 0.426; F = 8.61; Sig. F = 0.000; [M]: p< 0.07 *: p<0.01

Test of relationships: Employing the multiple regression analysis, the study examines the presence of a statistical relationship among the construct's dimensions. As observable from Table 2, relative advantage, network orientation, information efficiency, innovativeness and competitiveness contribute significantly (F = 11.83; p<0.001) and predict 51% of the variations in e-brochure adoption or web presence. Results show that there is significant relationship between an organisation's orientation to its network of stakeholders (t-value = 3.48; p-value <0.01) and information efficiency (t-value = 3.34, p-value<0.01) and web presence or e-brochure adoption. There is no significant relationship between relative advantage, innovativeness and competitiveness and e-brochure adoption at 5% significance level. This result goes to show that the three variables are not significant drivers of e-brochure or the use of website solely for presentation of services information.

The second regression analysis was done using the 5 independent dimensions above and full e-commerce adoption as the dependent variable. Full Non-business e-commerce adoption in this study refers to the use of the application for all of the following tasks: (1) providing business and service related information (mere web presence or e-brochure); (2) on-line service ordering/reservation; (3) online payment and (4) online/offline delivery. The results of the second regression show that relative advantage, network orientation, information efficiency, innovativeness and competitiveness contribute significantly (F = 8.61; p<0.001) and predict 43% of the variations in full e-commerce adoption. Table 3 below shows the summary of the results.

Details of the results show that there is marginal relationship between relative advantage (t-value = 1.85; p-value<0.07), network orientation (t-value = 1.84; p-value<0.07) and full e-commerce adoption. Information efficiency is significantly associated with full e-commerce adoption (t-value = 2.15; p-value<0.05). No significant relationship is observed between innovativeness, competitiveness and adoption at 5% significance level.

The subsequent chapter discusses the details of these results, implications of the findings, future research directions and concluding remarks.

DISCUSSION

The research purposed to understand the adoption facilitators and adoption inhibitors. The facilitators concern current users while inhibitors concern non-adopters. However, the data collected from respondents clearly shown that there is non-adopters. In other words, all the respondents are adopters, at least of the partial model. Thus, since there are no cases of non-users, the study of inhibiting factors becomes non-applicable. To this effect, only facilitators were measures. The following are discussions of roles of these facilitators. Key Dimensions of Facilitating Factors of Non-Business EC. From the results of factor analysis, five factors were identified as facilitators of non-business e-commerce adoption denoted as relative advantage, network orientation, information efficiency, innovativeness and competitiveness.

The relative advantage of non-business e-commerce over the use of traditional method as an adoption factor is intuitively appealing and is consistent with the the results of a number of prior IS research on women (Nubisi, 2003) and men (Venkatesh and Morris, 2000). The visibility of EC in terms of perceived important, tangible benefits and other relative advantages often tend to be higher with increased system usage.

The organization "network' are including technical support staff, extensive information distribution network, communication between IS and management and integration of e-commerce with business planning. Generically, information technology has often been link up with network members (eg. Customer, suppliers, distributors etc), also usage of information technology has been reported to be enhanced by access to experiential knowledge of network member (Cragg and King, 1993; Laudon and Laudon, 2003).

Information efficiency, the key salience of information technology is its ability to speed up information collection, storage and dissemination cycle. E-commerce can be immense benefits to both suppliers and consumers of products and services based on its ability to provide detail information about an offering,

allow the buyer to order or reserve product and service, allow for payment electronically, order fulfilment and even post-transaction service in some instances. E-commerce can be used to facilitate paper work within the organization as well as with clients, students, customers, suppliers etc by eliminating or reducing the use of traditional methods of ordering, payment and delivery, which is slower. E-commerce application can help to collect, store and process information about orders more accurately and speedily than when manually executed. The salience of speed and accuracy of order handling has been recognised in a number of studies. Stock and Lambert (2001) for example, argue that the speed and accuracy of a firm's order-processing activities have a great deal to do with the level of customer service the company provides. The internet allows to transfer information inexpensively and effectively throughout the world, making e-commerce a key contributor to supply chain integration (Stock and Lambert, 2001).

The firm's innovative needs and capability Santos *et al*. (1993) found that innovative IT investment increase a firm's value. Richardson and Ndubisi (2003) found that more innovative users make greater usage of information technologies. This implies that the need to innovate and the organization's capability to innovate will drive the institution or unit to adopt e-commerce.

The firm's competitiveness which is includes strong market position and perceived need to lower cost of production could be enhanced through adoption of e-commerce. Many firms have used low cost production as a competitive strategy and to strengthen market position. Moreover, in order for the firm to survive in its competitive environment, it is essential improving or maintain its market position, lower cost and improve service. E-commerce can provide the organization (non-profit oriented) with the ability to fulfil these needs. The finding of study by Jantan *et al*. (2003) suggest that irrespective of the category of offering under consideration, importance of e-commerce is increase.

Estimating the impact of the resulting dimensions on adoption. The first regression analysis estimates the relationship between the resulting dimensions and e-brochure adoption. The results shows that network orientation and information efficiency have significant relationship with e-brochure adoption. The use of website for providing product information to an organization's stakeholders is the basic step in the electronic commerce. Nevertheless, the unprecedented power of the interne in helping to reach millions of surfers around the world with information that is individualised at the same time cannot be denied. The internet can be used to leverage customer information in a customer-centric environment in few ways including learning more about customers and devising strategies to acquire target customers. Organizations can use the internet technology to collect, analyse and exploit relevant information about customers to reduce uncertainty. The internet technology also allows interactivity between organization, customers, channels or stakeholders. The internet enables an unprecedented level of customer dialogue. With regards to academic institutions under study, suppliers, students and other clients could have conversations with the organization administrations or university reps, in a scale that no other medium can provide. Universities that are deploying e-learning will even more readily attest to this capability of interactivity. The need for an extensive distribution of information internally and externally commonly characteristic of educational institutions, as well as the quest for efficient information collection, processing and dissemination, clearly drives e-brochure usage. The volume of date generated and processed by academic institutions may push for increased IT usage. According to Thong and Yap (1994) and Kimberly and Evanisko (1981), large amount of data and voluminous transactions are likely to acts as a push factor for the organization o adopt or use the technology that can help to streamline the operations and offer process efficiencies within the organization. Current research unveils that the more intensive the data handed by the organization or unit, the more it will adopt the internet technology. This is because all things being equal, voluminous data are generally more cumbersome to handle especially without a technology than lesser amount of data.

Another facilitator for e-brochure adoption is the internal interaction existing or needed among members of the organization and organizational arms. The study show the strong internal network manifested in the availability and accessibility of internal technical expertise, communication between information technology units, as well as the incorporation of information system with planning bring about usage of e-brochure. This finding corroborates the outcome of earlier studies. Igbaria (1993), Thong and Yap (1994) and Igbaria *et al*. (1997) are some of the works that have studied the influence of internal support on technology usage in organizations. In big organizations like academic institutions, where the number of employees and clients are often large, support of technical staff may be more crucial to the success of system than in smaller organization where the clientele base is smaller.

E-brochure adoption is not statistically associated with relative advantage, innovativeness and competitiveness. It is important to highlight that there is

little or no treat of rivalry among Malaysian Universities. In fact there is even need for more universities, which is to say that demand for university education is higher than supply, hence there is or no competition among the existing institutions. This 'seller market' situation could be a plausible explanation why e-brochure is not driven be competitiveness. The need to be competitive may have been a determinant factor if there is keen competition among the existing universities for students and other clients. The current situation is such that whether a university promotes its services on the net or not, it will still get student allocation every session, such ease of attracting students can be even an economic reason for the little emphasis on investing in technologies for the reason of outwitting rivals.

Innovativeness is not a significant factor possibly because of the high rate of e-brochure diffusion among Malaysian institutions of higher learning. Hardly any university in Malaysia is not on the internet. They promote their academic and non-academic programs, research, consultancy services, etc. irrespective of the level of innovativeness of the administrators or teaching staff. In fact, the use of website is so common that even the most rigid, inflexible and change phobic administrators are adopting it. Such scenario explains the non-influence of innovativeness on adoption. However, the result that poses a little surprise is the non-influence of relative advantage. Such could be the case, especially when no deliberate effort is made to record, analyse and recognise the gains from the use of the website for promotional activities.

Full EC adoption: The study reveals significant relationship between information efficiency and full e-commerce adoption, as well as marginal relationship between relative advantage, network interaction and adoption. As stated earlier, full e-commerce usage is assumed when the organization not only uses the internet for product or service promotion, but when it also allows customers to order or reserve service, pay online and received delivery offline or online as in the case of e-learning, e-fulfilment and e-procurement.

Interaction with network of stakeholders is another important adoption factor. Both the internal customers (e.g. subordinate and superiors) and external customers (students, clients, suppliers, intermediaries, etc.) can benefit from e-commerce adoption in the organization. Customers expect to have a personal experience with the organization, but broadcast approaches send the same messages to all members of the large audience. The internet enables the organization to engage in customer-specific actions- a broadcast to an audience of one and also allows the customer to control the degree of customization by taking action to set the level of customization desired. Such capability added to the availability of skills within the organization to create an ease of use environment from important facilitators of adoption.

Information efficiency not only determines e-brochure usage, but also full EC adoption. Buying and selling online requires the transmission of impersonal and personal information from buyer to seller and some of these information are highly confidential and may lead to loss of wealth and/or property when intercepted by unauthorised person/s. Additionally, speed and accuracy in picking orders, processing them, billing, fulfilling orders and collecting bill can result in satisfied customer. Since full EC allows these organizations to carry out these activities more efficiently, a possible explanation as to the association between information efficiency and non-business EC adoption is furnished.

As with e-brochure innovativeness and competitiveness have no significant association with non-business EC adoption. This is often the case when adoption neither reflects innovativeness nor is undertaken to out-complete rivals. The lack of rivalry among the universities in Malaysia as stated earlier explains why adoption may not be for the purpose of overcoming competition.

CONCLUSION

This study has a number of implications. With regards to theory, the research identifies the facilitators of Non-business e-commerce adoption by Malaysian universities. This is a big contribution to theory since there is no known study on the key dimensions of facilitators for e-commerce usage in not-for-profit-making organisations. The results of the exploratory factor analysis show 5 key dimensions (relative advantage, network orientation, information efficiency, innovativeness and competitiveness) as the parsimonious set. These results should be of interest to both researchers and practitioners in identifying potentially important dimensions that may facilitate the use of e-commerce (partial or full) in educational institutions and other Non-business settings.

The results suggest that Non-business establishments that wish to enhance the usage of e-commerce should focus on its relative advantage, networking capability, information efficiency. Other factors that were identified from factor analysis, which, though they do not show significant relationship with adoption but might be of interest to consider by other Non-business establishments not included in the present

study are innovativeness and competitiveness. The fact that relative advantage is not a significant determinant of e-brochure adoption but is a full EC adoption determinant shows where real value lies in the use of the Internet technology. As presented earlier, full EC is an advance over e-brochure in that it additionally allows e-order, e-payment and e-fulfilment. Since the universities are more or less sure of their yearly quota of students with or without online promotion, the relative advantage of e-brochure may be unclear because of such indulgence. This is not the case with full EC, which enables service ordering, payment and fulfilment electronically. For example, the school or unit that allows students/clients to register, pay and receive services online, will increase value and earnings faster than those which merely promote services online while the rest of the process is done offline.

Moreover, in this era of globalisation when universities around the world seek for students across the globe, real value may not lie in merely promoting services online (after all almost everyone does it), but real value creation lies in the ease and speed of actualising a transaction. Again those divisions or units who are capable of allowing customers/clients to order, pay and receive services online are more likely to enjoy the patronage of foreign students and/or clients.

The salience of information efficiency in determining e-brochure and full EC adoption is evident. As mentioned earlier, the main product in online transaction is product-information; order information, payment information and delivery information, therefore the speed and accuracy of transmitting these pieces of information to and fro will determine the perceived efficiency of the system and its adoption. This is an important finding for designers and marketers of Non-business EC applications.

Systems designers and vendors may also capitalise on the influence of organisation network to promote products and training. Since usage is driven by the size of the network of internal and external customers as well as the level of assistance provided by technical experts within the organisation, system vendors my design their marketing strategy with a focus on schools or units with larger clientele (Nasiri and Deng, 2009). They may also provide training in order to assist in increasing the skills of technical experts. It is also useful to vendors to know that adoption does not depend on the innovativeness of the adoption decision maker (Ndubisi *et al*., 2005). Both innovative and less innovative heads are equally likely to buy the application; therefore market targeting efforts need not be discriminatory.

REFERENCES

Corti, I.N., P.N. Marola and M.B. Castro, 2010. Social inclusion and local development through european voluntourism: A case study of the project realized in a neighborhood of morocco. Am. J. Econ. Bus. Admin., 2: 221-231. DOI: 10.3844/ajebasp.2010.221.231

Cragg, P.B. and M. King, 1993. Small-firm computing: motivators and inhibitors. MIS Quarterly, 17: 47-60.

Hirzallah, N., 2007. An authoring tool for as-in-class e-lectures in e-learning systems. Am. J. Applied Sci., 4: 686-692. DOI: 10.3844/ajassp.2007.686.692

Igbaria, M., 1993. User acceptance of microcomputer technology: An empirical test. Omega, 21: 73-90. DOI: 10.1016/0305-0483(93)90040-R

Igbaria, M., N. Zinatelli, P. Cragg and A.L.M. Cavaye, 1997. Personal computing acceptance factors in small firms: A structural equation model. MIS Quarterly, 21: 279-305. DOI: 10.2307/249498

Jantan, M., N.O. Ndubisi and B.Y. Ong, 2003. The viability of e-commerce as an alternative distribution channel. Logistics Inform. Manage., 16: 427-439. DOI: 10.1108/09576050310503402

Kearney, A.T., 2000. Building the B2B Foundation: Positioning Net Market Makers for Success. A.T. Kearney report, 2000; http://forum.atkearney.cn/download.php?id=PDF061228142954002

Kimberly, J.R. and M.J. Evanisko, 1981. Organizational innovation: The Influence of individual, organizational, and contextual factors on hospital adoption of technological and administrative innovations. Academy Manage. J., 24: 689-713. PMID: 10253688

King, W.R. and T.S. Teo, 1996. Key dimensions of facilitators and inhibitors for the strategic use of information technology. J. Manage. Inform. Syst., 12: 35-53. ISSN: 0742-1222

Laudon, K.C. and J.P. Laudon, 2003. Essentials of Management Information Systems: Managing the Digital Firm. 5th Edn., Prentice-Hall, USA., ISBN: 0130087343, pp: 512.

Lucian, R. and S.A. de Farias, 2009. Effects of information overload on Brazilian e-consumers. Am. J. Econ. Bus. Admin., 1: 21-26. DOI: 10.3844/ajebasp.2009.21.26

McGaughey, R.E., 2002. Benchmarking business-to-business electronic commerce. Benchmark. Int. J., 9: 471-484. DOI: 10.1108/14635770210451473

Mendoza, R.L., 2010. The economics of autism in Egypt. Am. J. Econ. Bus. Admin., 2: 12-19. DOI: 10.3844/ajebasp.2010.12.19

Nasiri, A. and G. Deng, 2009. Environmental factors influence on mobile learning business. Am. J. Applied Sci., 6: 1225-1234. DOI: 10.3844/ajassp.2009.1225.1234

Ndubisi, N.O., O.K. Gupta and G.C. Ndubisi, 2005. The mogul's model of computing: Integrating the moderating impact of user's persona into the technology acceptance model. J. Global Inform. Tech. Manage., 8: 27-47.

Perry, K., 2006. Guidelines for statistical measures of usage of web-based indexed. Inform. Technol. Librar., 17: 219-221. ISSN: 0730-9295

Pires, G.D. and J. Aisbett, 2003. The relationship between technology adoption and strategy in business-to-business markets: The case of e-commerce. Indus. Market. Manage., 32: 291-300. DOI: 10.1016/S0019-8501(02)00237-7

Richardson, S. and N.O. Ndubisi, 2003. Strategic-level system in decision making by entrepreneurs: antecedents of system usage. J. Bus. Develop. Nation, 7: 75-109.

Rizon, M., M.F. Hashim, P. Saad and S. Yaacob, 2006. Face recognition using eigenfaces and neural networks. Am. J. Applied Sci., 3: 1872-1875. DOI: 10.3844/ajassp.2006.1872.1875

Santos, B.L.D., K. Peffers and D.C. Mauer, 1993. The impact of information technology investment announcements on the market value of the firm. Inform. Syst. Res., 4: 1-23. DOI: 10.1287/isre.4.1.1

Stock, J.R. and D.M. Lambert, 2001. Strategic Logistics Management. 4th Edn., McGraw-Hill, New York, ISBN: 9780071181228, pp: 872.

Teltscher, S., 2002. Electronic commerce and development: Fiscal implications of digitized goods trading. World Dev., 30: 1137-1158. DOI: 10.1016/S0305-750X(02)00033-5

Thong, Y.L. and C.S. Yap, 1994. Engagement of external expertise in information systems implementation. J. Manage. Inform. Syst., 11: 209-231. ISSN: 0742-1222

Turban, E., D. King, J. McKay, P. Marshall and J. Lee *et al*., 2008. Electronic Commerce 2008: A Managerial Perspective. 4th Edn., Pearson Prentice Hall, USA., ISBN: 9780135135440, pp: 910.

Venkatesh, V. and M.G. Morris, 2000. Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior. MIS Quarterly, 24: 115-139. DOI: 10.2307/3250981