

Driving Forces and Impediments to E-Commerce Activities among SME's in Kuala Lumpur and Selangor

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ABSTRACT

E-commerce appears to be a complementary method of doing business. It is hypothesized that to provide the enterprises the opportunity to generate revenues. Its adoption requires the emplacement of ICT infrastructure within the enterprise, while the levels of sophistication, requirements, and expenditure for E-commerce operations vary across enterprises. Due to the significant contributions of SME's to large enterprises, it is of interest to find out their experience in using e-commerce. The study administered a two-page structured questionnaire on a sample of 160 SME's located in Selangor and Kuala Lumpur based on the list of enterprises obtained from SMIDEX. The instrument was sent through ordinary mail (50), facsimile (90), and hand-delivered (20) in June 2003. The survey administration produced an effective response rate of 21.9 percent (i.e. 35 usable and 3 incomplete questionnaires). The results show that E-commerce has been used as a complementary method of doing business. Enterprises were not sure whether E-commerce has generated incremental revenue. Being a complimentary tool, method does not reduce the need for face-to-face interaction with customers. The impediments to use E-commerce are predominantly Internet related, and they include security, and unstable and slow data communications.

1.0 INTRODUCTION

Electronic commerce (E-commerce) has caused a fundamental change to the way to conduct business (Elliot and Loebbecke, 2000; McIvor et al, 2000; Murtaza, Gupta, and Carroll, 2004). It is proposed as an essential business tool for the 21st century (Ratnasingham, 1998). It has been observed that organizations are increasingly using online business to achieve the digital-based competitive market (Al-Mashari, 2002).

E-commerce has been given numerous definitions. It has been defined as "the electronic exchange of information, goods, services, and payments" (Kiani, 1998), the applications of information and communication technologies in reshaping the organization (Tan, Lin and Hung, 2003), and conducting business online (Shelly, Cashman, Vermaat, and Walker, 1999).

Some quarters claim that E-commerce has proven to be an effective means of conducting business-to-business (B2B) trade in many industry sectors (Kandampully, 2003), and should be considered as a major component of all economies (Rao, Metts, and

Monge, 2003). It enables business development and increases customer service (Aldin, Brehmer, & Johansson, 2004). However, one preliminary study found no significant differences between the benefit of E-commerce and the traditional trade (Poon & Joseph, 2001). While E-commerce benefits do exist, they do not spread evenly among industries (Liang, Lin and Chen, 2004). Its adoption has been lower than expected (Fairchild, Ribbers, and Nooteboom, 2004) despite government initiatives to promote its adoption, and the SMEs still fail to realize related benefits (Stockdale and Standing, 2004), for instance, among the SMEs in Ireland (Barry and Milner, 2002).

Due to special interest of the Malaysian government in the development of SMEs, noted by the establishment of the National Council for SME Development, it would be beneficial to find out the motivations of the SMEs in E-commerce. (Prime Minister, Malaysia, 2005).

2.0 RESEARCH OBJECTIVES

The study aims to answer two related questions: What are the Internet-related forces that facilitate and hinder the adoption of E-commerce among the SMEs in Malaysia?

3.0 LITERATURE REVIEW

Driving forces and impediments could be two sides of the same factor, the grouping may be considered discretionary. Driving forces (or facilitators) and impediments (or barriers) of E-commerce have been discussed extensively by a number of authors (e.g., Fairchild, Ribbers, and Nooteboom, 2004; Stockdale and Standing, 2004; Chao, Samiee, and Yip, 2003; Rao, Metts, and Monge 2003; and, Power and Sohal, 2002).

Revenue Forces

There are a number of forces purported to be the motivations for SMEs to use E-commerce. They may loosely be classified into four categories: cost savings, time savings, revenue generation, and competitive advantage.

Cost savings: E-commerce reduces transaction costs for purchases (Gottschalk and Abrahamsen, 2002), spurs much higher EDI diffusion rates at much lower

costs across industries (Angeles, 2000), reduces procurement cost (Min and Galle, 1999), lowers prices, search costs, and sales taxes (Strader and Shaw, 1999). In general, E-commerce reduces administration costs (Pawar and Driva, 2000).

Time savings: E-commerce reduces order cycle time, and order processing error (Min and Galle, 1999), and enables quick response and efficient consumer response (Mackay, Altmann and McMichael, 2003) by reducing the constraints of time and space (Bhatt and Emdad, 2001). In short, E-commerce gives faster transactions (Pawar and Driva, 2000).

Revenue generation: E-commerce helps reach new markets or segments through the electronic medium (Kim and Galliers, 2004; Murtaza, Gupta, Carroll, 2004). A study shows that both industrial characteristics (e.g. information content of the product) and e-commerce models have significant effects on firm performance (Liang, Lin and Chen, 2004).

Competitive advantage: E-commerce leads to distinctive means of business differentiation, with particular reference to branding and pricing (Reynolds, 2000). The medium is said to supercede or complement traditional hierarchical marketing organizations (Palmer and McCole, 2000). Better cooperation between trading partners (Pawar and Driva, 2000) through E-commerce may give the business a competitive advantage.

Internet Forces

The driving forces related to the Internet include awareness and education, telecommunication infrastructure, and customer requirements.

Awareness and education: Technological adoption should correlate with availability of 'knowledge workers' who possess the skills to operate new technologies (Leinbach and Brunn, 2001). Two of the four factors related to the Internet system within an organization are internal organization actors, and internal systems factors; the remaining two, are external driven (Kim and Galliers, 2004). The government plays an important role in providing suitable education and training programs in relation to the technology (Costa, 2001). In addition, training intervention can help implement IT based change in the human resource (Westhead and Storey, 1996).

Telecommunications infrastructure: Due to the expensive investment involved in providing the telecommunications infrastructure, the government again plays a crucial role. There has been a positive trend of growth of the extranet, which links with the Intranet. Extranet represents the connection of intranets of an organization with its external contacts, whereas Intranet is an organization's closed internal

network based on Internet technology (Kippenberger, 2000). The Internet infrastructure comprises both internal as well as external components: Two of the factors are external to the organizations, i.e. external market factors, and external technical factors (Kim and Galliers, 2004).

Customer requirements: Customers determine the types of technologies to be accepted in satisfying their needs. The technology adopted therefore must fulfil three requirements: customer need, customer value, and customer cost (Lin, 2003). Product characteristics will suggest the customer needs for E-commerce transactions (Cho and Park, 2003). Culture is also an important factor that shapes consumer choice. A study found that Chinese firms are not yet ready to deal with faceless transactions (Lai, Humphreys, and Sculli, 2001).

Impediments

Impediments are used as a generic label to refer to major concerns, challenges, and real or imagined problems toward the adoption of E-commerce. There are a number of concerns that deserve close scrutiny: Awareness creation, infrastructure, trust and security.

Awareness creation: Small and medium-sized enterprises seem to lack the necessary information about technology, business practices, and awareness programs fail to produce expected results (Papazafeiropoulou, Pouloudi, and Doukidis, 2002). Lack of awareness of E-commerce is certainly a major impediment to its adoption (El-Nawawy and Ismail, 1998) that must be bridged (OECD, 1998). Computer illiteracy of the business can delay adoption of E-commerce (Kirby and Turner, 1993). A study conducted in Hong Kong concluded that organizational members must have a thorough understanding of the impact of E-commerce on inter-firm relationship before they engage in E-commerce (Au and Ho, 2002). Slow adoption of E-commerce could be due to lack of readiness of the trading partners (Power and Sohal, 2002). All of these may be related to organizational culture which must be changed before organizational members can accept technology effectively (Lewis, 2004, p.355). The Economist Intelligence Unit (12 July 2002) observes that business culture is even more critical than having a top-rated infrastructure.

Infrastructure: Most people in a developing economy do not have easy access to telephone or internet services, or the access cost is very high (Leinbach and Brunn, 2001). Organizations are still manual driven, and paper dependent (El-Nawawy and Ismail, 1998). Uneven telecommunications infrastructure means less prospects of adoption of E-commerce (Costa, 2001). Difficulties in the implementation of EDI among the small businesses become a disincentive for them to adopt E-commerce (El-Nawawy and Ismail, 1998).

Expectations: Traditionally run businesses lack standards to be used for their guidance. They are not sure of the standards, supply chain integration, and global trading (Stockdale and Standing, 2004). They are searching for the business models and procedures (Al-Mashari, 2002). They need to meet the challenge of generating quality information in the E-commerce integrated environment (Tan, Lin and Hung, 2003) and E-service quality, including reliability, efficiency, support, communication, security, and incentives (Santos, 2003). More importantly, E-commerce requires round the clock support (Kandampully, 2003). The enterprises need to know that E-marketplaces can increase competition and leave non-participants vulnerable to more e-enabled firms (Stockdale and Standing, 2004).

Importance of trust: E-commerce creates businesses based on relationships, and trust (Ratnasingham, 1998). E-commerce is about trust, not technical security (Whyte, 2001). Experience shows that efficient and secure protocols are not enough to guarantee peoples' confidence in E-commerce (Siyal and Barkat, 2002). Lack of trust will be a deterrent to E-commerce (El-Nawawy and Ismail, 1998), and organizations need to develop mechanisms for instilling confidence have to be perceived as trustworthy by consumers (OECD, 1997). Customers and trading partners need to be assured of protection against fraudulent misuse of information (Baker, 1999), and this calls for a planned effort to build trust in trading partners (Ratnasingam, 2000, Power).

Security challenge: One of the major concerns in E-commerce is security (Murtaza, Gupta, Carroll, 2004). People are sceptical about e-commerce due to perceived security risks associated with electronic transactions over the Internet (Labuschagne and Eloff, 2000). Business partners will have to prove to each other that they are adequately secured through evaluation and certification (Barnard and von Solms, 1998). Trust and security are inter-related. In one study consumers confirmed a significant relationship

between their perceived information security and trust in E-commerce transactions (Chellappa and Pavlou, 2002).

4.0 RESEARCH METHODS

The study administered a two-page structured questionnaire on a sample of 160 SME's located in Selangor and Kuala Lumpur based on the list of respondent enterprises obtained from SMIDEX. The instrument contained ten questions, excluding three background data. It was developed specifically for the study. The instrument was sent through ordinary mail (50), facsimile (90), and hand-delivered (20) in June 2003. It produced an effective response rate of 21.9 percent (with 35 usable and 3 incomplete questionnaires). The survey data were analyzed using Cronbach alpha and t-tests.

5.0 RESULTS

Background

The responses in the study reflect the views of 51.4 percent and 48.6 percent male and female respondents respectively. CEOs comprised 20.6 percent, whereas dominant respondents originated from marketing and sales which constituted 50 percent of the sample. About 70.0 percent of the sample represented consumer, industrial, trading and services sectors of the *Bursa Malaysia* (i.e. the Malaysian stock exchange) industry classification. The respondent enterprises serve three categories of clients: consumers (11.8 percent), business organizations (20.6 percent), and a combination (67.6 percent). Most of the SMEs surveyed used Dial-up (60 percent) and XDSL (28.6 percent) to connect to the Internet, whereas the rest used ISDN (5.7 percent) and Leased line (5.7 percent).

The reliability of questionnaire items is summarized in Table 1. Other than "E-commerce benefits" and "Enterprise gains", the other themes commanded high reliability of above 0.7000.

Table 1: Results of Reliability Test (N=35)

Question	Theme	Cronbach Alpha	Adjusted Alpha
Q1	Driving factors	0.0722	0.8318
Q2	E-commerce benefits	0.4182	0.5990
Q3	Impediments	0.6706	0.8141
Q4	Reasons for Internet	0.7533	0.7795
Q6	Enterprise gains	0.3736	0.4943
Q7	ICT uses	0.6424	0.8621
Q10	Customer relations	0.8760	-

Enterprise Gains

The variables used to measure E-commerce benefits (Cronbach 0.5990) and enterprise gains (Cronbach 0.4943) need to be revised because of their low levels internal consistency. Tentatively, E-commerce is

perceived to increase enterprise gains but not necessarily bring in additional (t-value -3.391, p=.003, see Table 2) or incremental revenues (reflected in the mean of 3.00).

Table 2: Enterprise Gains (N=35)

	Frequency	Mean
Increased business	22	3.45
Cost savings	29	3.31
Increased revenue*	23	3.00
Increased incremental net revenue	18	3.00

Scale: Disagree 1 2 3 4 5 Agree. Cost savings was removed to improve reliability. *T-value -3.391, p=.003

E-commerce in the sample appears to function as a customer relations complement (Mean 3.50) to the traditional method of doing business because its

adoption does not lessen the need for face-to-face contact with customers (Mean 2.43). See Table 3.

Table 3: Relationship with Customers

	Frequency	Mean
Broadened market	19	3.53
Improved customers relationship	24	3.50
Change in trading arrangement	23	2.70
Change in pricing policy*	22	2.55
Lessen face-to-face customer contact	30	2.43

Scale: Disagree 1 2 3 4 5 Agree. *t-value -3.089, alpha .006

Non-revenue Driving Forces

The study formulated two questions to evaluate the forces that prompted the SMEs to adopt E-commerce. Convenience (Mean 4.15) and efficiency (Mean 4.05)

appear to reign rather than competitiveness (3.90). See Table 4. Items in Question 2 do not receive support as the relevant forces, reflected in their low Cronbach alpha.

Table 4: Forces Facilitating E-commerce

Question		Frequency	Mean
1	Convenience	20	4.15
	Efficiency	21	4.05
	Competitiveness	20	3.90
2	Speed of transaction	26	4.23
	Cost savings	29	3.69
	Simplification	15	3.27
	Supplier's availability	25	3.12

Scale: Disagree 1 2 3 4 5 Agree. Non-significant t-test results. Reliability for Question 1 is 0.8318; Question 2, 0.5990.

Internet-related Impediments

There is a list of barriers that SMEs faced in implementing E-commerce, see Table 5. Lack of security (Mean 4.12) is rated is the most important barrier, followed by unstable (3.61), and slow (3.47) data communication. The barriers are therefore related directly to the Internet itself, rather than other factors. The results suggest that the SMEs are aware of and knowledgeable about the benefits of E-

commerce, and know where to find the qualified personnel. "High Internet access charges" was excluded from the list to improve the internal consistency among the items. The exclusion suggests the deficiency of the Internet connectivity faced by the SMEs. The SMEs say the access charges are affordable.

Table 5: E-commerce Barriers

	Frequency	Mean
Lack of security	25	4.12
Unstable data communication	18	3.61
Slow data communication	19	3.47
Lack of benefits	21	3.00
Lack of specific knowledge	12	2.50
Lack of qualified personnel	12	1.92

Scale: Disagree 1 2 3 4 5 Agree. Non-significant t-test results.

The employees of the enterprises surveyed used a low level (i.e. 20 percent) of ICT in their work. Only a small fraction (11 out of 35) of the SMEs say that they are familiar with EDI, whereas their usage of ICT is rated average (Mean 3.09). See Table 6.

Table 6: Enterprise ICT Usage

	Frequency	Mean
EDI	11	3.09
E-mail	35	3.86
Internet	34	3.76

Non-significant t-test results.

6.0 DISCUSSION

In spite of strong propositions that E-commerce brings in increased revenues to the enterprises, the sample in the study lends a very weak support. The SMEs surveyed expressed “neither nor” sentiments on the matter. Perhaps, the result is moderated by the lack of awareness of the substance of E-commerce and knowledge of the technology.

Non-revenue factors show that the motivators for adoption of E-commerce are “convenience,” and “efficiency.” Competitiveness thesis promoted in the literature is not supported in the sample.

The above phenomenon is best explained by looking at the evaluation of the SMEs toward the Internet related barriers. The SMEs three major concerns deserve scrutiny, i.e. lack of security, unstable data communication, and slow data communication. The factors reflect the observations made by the EIU (The Economist Intelligence Unit, 2002) that the telecoms infrastructure in developing countries lagged behind the rapidly expanding demand. EIU ranked Malaysia 33 out of 60 countries on its E-readiness, i.e. an index for the extent to which a country’s business environment is conducive to Internet-based commercial opportunities. The survey did not address the issue of trust which is more delicate compared to security; the latter, however, warrants immediate attention.

Lack of education and awareness in relation to E-commerce is prominent as reflected on the SMEs’ average usage of the EDI, E-mail, and the Internet. It should be noted that understanding can help plan effective strategies to gain from E-commerce participation (Stockdale and Standing, 2004). The enterprises may require planned transformation of their business processes (McGaughey, 2002), and then develop customer intimacy through sharing of information, and enhance their levels of online customer support (Mackay, Altmann and McMichael, 2003). Perhaps the SMEs can start with B2B, being the most dominant form of E-commerce (Mackay,

Altmann and McMichael, 2003; Rao, Metts, and Monge, 2003).

There is a long way for Malaysian SMEs to travel to adapt its traditional face-to-face to the virtual mode of relationship management and revenue improvement.

7.0 CONCLUSION

Malaysian SMEs in the geographic region studied may be described as beginners in E-commerce. The enterprises have not used E-commerce as a competitive tool, rather as an aid (Harridge-March, 2004) to sustain their customer relationship management. It is only with increased level of awareness of the substance and knowledge of E-commerce will key stakeholders mutually benefit from the practice.

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