

# The status of e-commerce applications in Malaysia

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**Abstract.** The main focus of this study is the status of e-commerce usage in Malaysia, specifically five main business processes and activities, namely, marketing, advertising, customer support and service, order and delivery and payment. A total of twenty applications categorized under the five processes and activities were identified and analysed. From the twenty applications studied, communications via e-mail was found to be the most widely used (70%). On the other hand, applications categorized under the payment category such as the smart card and prepaid card was used by only seven percent of the organisations. This demonstrated that Malaysian organisations were using e-commerce applications. However the usage was limited. The results of the survey indicated that security issues seemed to be the main barrier to the implementation of e-commerce. Organizations were reluctant to use e-commerce as they felt that the transactions conducted electronically were open to hackers and viruses, which are beyond their control. They were also skeptical about the security measures that were implemented to safeguard on-line payment transactions.

## 1. Introduction

Internet is becoming an important medium for commercial activities. The rapid adoption of the Internet as a commercial medium has led to many new innovations. These new developments are expanding beyond the utilisation of Internet as a communication medium to an important view of Internet as a new tool for doing business, i.e., electronic commerce (e-commerce) [9].

E-commerce is a process whereby organisation/business share and exchange information, maintain relationships and conduct business transactions using technologies. Such activities carried out by organisations or businesses basically involved five different business processes or activities, namely, advertising, marketing, order and delivery, payment and customer support and services. There are various technologies in which e-commerce can be carried out; the Internet is one of the more popular means.

The main aim of this paper is to study the trends of the e-commerce applications in Malaysia by analysing the extend of e-commerce usage in the business processes or activities mentioned above. In addition, the factors that hinders e-commerce adoption is also presented.

## 2. Literature review

There are numerous ways in which e-commerce applications may be classified. Turban et al. [16] have summarised Kalakota and Whinston [10] and Zwass [17] lists and classified them as stock jobs, on-line banking, procurement and purchasing, malls, on-line marketing and advertising, home shopping, auctions, travel and on-line publishing.

The World Trade Organisation (WTO) categorises e-commerce applications by reviewing the usage of the Internet. It stated that the Internet can be used for a multitude of exchanges and transactions,

Table 1

Relationship between business processes and e-commerce applications

Phases	Applications
(1) pre-contractual	– marketing – advertising
(2) contractual	– customer support services
(3) ordering and logistic	– ordering and delivery
(4) settlement	– payment
(5) post processing	– customer support services

including e-mail, leisure reading and searching for information (browsing or surfing), advertising and promoting personal or business causes, linking people in private or professional circles, and publishing, selling, purchasing or providing services mainly as a means for advertising, communications and public relations, customer information, online sales and customer support.

Online research of web sites based in Malaysia, together with a study on Singapore organisations by Soh et al. [14] showed that the common applications of Internet by the businesses were in five main areas: marketing, advertising, customer service and support, order and delivery, and payment.

Clarke [2,3], on the other hand, emphasised that e-commerce applications basically cover the five phases of the buying and selling process, namely, pre-contractual, contractual, ordering and logistics, settlement and post processing.

Both Clarke's and Soh et al.'s categorizations were combined and adopted throughout this research. Based on both these studies, it can be concluded that e-commerce applications are normally carried out during one phase of the buying and selling process. Table 1 illustrates the relationship between the phases and applications.

The following paragraphs review the various e-commerce applications in detail. The applications studied was based from various previous studies such as by Fletcher [6], Cook and Sellers [4], Soh et al. [14] and Turban [16], among others.

### 2.1. *Electronic marketing*

For a business to survive and be effective, an organisation must keep in touch with the market environment: what their competition is upto and the changing trends of consumers' taste and preferences [6]. With its abundance of information resources, a person can find any topic on the Internet. A study by Soh et al. [14] had found that 96% of the respondents use Internet for information gathering and market research.

Besides customised research, an organisation can access the discussion boards and user news groups for issues related to its products and services or collect feedback from customers to better gauge customer's taste and preferences [4,8,14]. Malaysia's examples of news groups can be found in Jaring and TMnet as well as other web sites such as CARI ([www.cari.com.my](http://www.cari.com.my)).

In addition, organisations can also use Internet to monitor competitors. By visiting the competitors' home pages, the organisations can track the competitors' product and services offerings [14]. In fact, the research by Haynes et al. [8] had shown that Internet is what most businesses rely on as a mean of evaluating and tracking industry and competitive changes in their marketplaces.

As more and more businesses are advertising in the Internet, businesses can utilize the Internet for suppliers' evaluation. This would add value to the organisations' procurement decisions as the Internet provides another source of suppliers for evaluation [8].

### *2.2. Electronic advertising*

Hoffman et al. [9] found that most firms use the Internet primarily to provide information about the company, its product and services, and for both internal and external communications. This was again supported by Soh et al.'s [14] study that the majority of the respondents (96%) used Internet for marketing and advertising their products and services.

In addition, organisations can use services such as search engine and web hosting to attract more Internet users and thus add value to the organisations' marketing and advertisement strategy. Of course, there are also organisations, which provide these services and sell the advertising space as a business. Examples are the Malaysia's CARI ([www.cari.com.my](http://www.cari.com.my)), Malaysia homepage and KL online whose incomes are generated from the advertisement space they sell.

### *2.3. Customer support service*

The availability of Internet services such as e-mail and interactive web pages allows the organisation to transfer this part of value chain to the virtual marketplace. The most common service and support provided are e-mail and FAQ (Frequently Asked Questions). The FAQ is basically a list of questions and answers, which was frequently asked by the customers. Customers can view through the FAQ when they have problems, before calling the organisations.

In addition, if the customers cannot get answer from the organisation's home page, they can use fill-in forms to lodge complaints or enquiries. The support team can then communicate with the customers to solve the problems [4]. More and more businesses are discovering the Internet as a fundamental communication tool used to conduct daily business [12]. This is because e-mail is readily available and the service is fast at relatively low cost.

### *2.4. Order and delivery*

Usually after enquiries are made, orders would be placed. The organisation would then check their inventory and then coordinate the delivery. All these functions could be done on-line. The management of inbound and outbound operations of the value chain can also be transferred to the Internet [11]. Already forwarders such as FedEx or UPS are offering customers provision to track their goods, through the Internet.

### *2.5. Payment*

In doing any business transaction, the most important process is making payments or receiving the money for the products and services provided. There is a wide variety of payment mechanisms in place or proposed. Payment can be made using credit cards, electronic checks and digital cash [13]. In addition, payment can also be transferred electronically (electronic fund transfer) from one financial institution to another. Lately, multimedia technologies have brought about smart cards and prepaid cards. In Malaysia through one of the seven Malaysia Multimedia Super corridor's flagship application (Ainin and Lee, 1997), smart cards have been introduced. Besides being used for identification purposes, it can be used to make payments ([www.mdc.com.my](http://www.mdc.com.my)). In addition, the usage of prepaid cards is seen to have grown within the last couple of years. For example, mobile telephone calls can be paid using the prepaid cards.

### 3. Methodology

The survey research utilized both secondary and primary data. The secondary data was based on literature pertaining to the area. Besides published literature, articles obtained through the Internet were also considered. The purpose of conducting the literature search was to review and understand concepts related to the area of research. A questionnaire was used to collect primary data.

The questionnaire consisted of two main sections. The first section required the respondents to identify e-commerce applications that they were using, intending to use within the next 2–3 years or did not intend to use at all. This highlighted the trends of the e-commerce applications usage among the respondents (organizations). The second section required the respondents to state their positions regarding factors that hindered them from using more e-commerce applications. The response was based upon a 5 interval Likert Scale.

The questionnaires were then mailed to organizations. The organizations were identified using several sources as there was no comprehensive list of business organizations available by economic sectors. The main sources of data were the Federation of Malaysian Manufacturer (FMM) Directory, Malaysian Industry Development Authorities (MIDA), and National Productivity Corporation (NPC). A mailing list was then compiled and the questionnaires were distributed accordingly. The mailing list (Table 2) consisted of 6468 organizations representing the various sectors of the economy. Nearly 450 questionnaires were returned as the organizations have either closed down or have moved away.

The rate of responses were between 9–10%. Many past researchers [15] using the same methodology (mailed questionnaire survey) have reported less than 10% response rate. However, it cannot be denied that there have been instances where mail survey received high response rates, for example, Singapore's e-commerce survey and Pricewater House UK IT Survey. It is worth noting here that the high rate of responses were due to the fact that it was made compulsory by the relevant agencies. Probably, if the government through the Ministry of International Trade and Industry or Prime Minister Department would make it compulsory for all Malaysian business organizations to respond, the rate of responses would be higher.

The questionnaire was targeted to the Chief Executive Officer of the organization or their Information System/Technology (IS/T) Directors or equivalent.

It must be highlighted here that although the total number of respondents were 590, the results presented in this paper were based on the responses to individual questions, as some respondents purposely did not answer certain questions. Out of the 590 respondents, 46% were from manufacturing, nearly 47% from services, 4% construction and the remaining 3% were from the agriculture sector. This sample is quite representative of the actual population of organizations by sectors as illustrated in Table 2.

Table 2  
Distribution of questionnaires by sector

Industry	No. of questionnaires	Percentages (%)
1. Manufacturing	3001	46
2. Agriculture	193	3
3. Construction	232	4
4. Services	3042	47
Total	6468	100

#### 4. Trends of e-commerce applications

Figure 1 illustrates the trends of e-commerce applications usage in Malaysia. It was found that nearly 16% of the organisations were already carrying out customer-preference research electronically, while 54% will do so within the next 2–3 years. The increase in percentage indicated that the organisations were aware of the benefits of doing it electronically. In addition, it may be due to the fact that the organisations expects the number of Internet users to increase within the next 3 years as the government through agencies such as MIMOS ([www.jaring.com.my](http://www.jaring.com.my)) and Multimedia Development Corporation ([www.mdc.com.my](http://www.mdc.com.my)) are doubling their efforts to encourage more Internet users. Nevertheless, there were still some organisations (30%) that indicated they do not intend to do so.

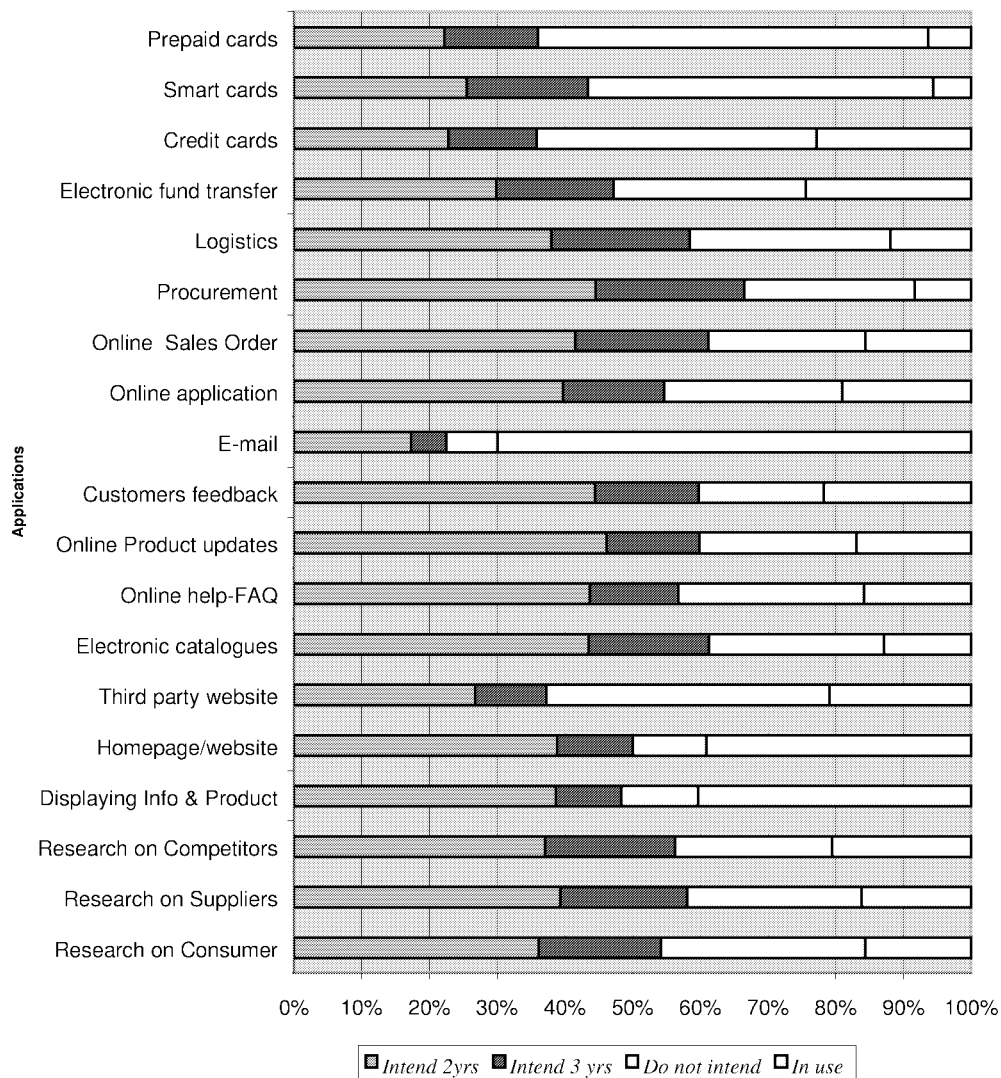


Fig. 1. Trends of e-commerce applications.

From Fig. 1, it is seen that 16% of the organisations were already evaluating their suppliers electronically, while 39% will use it in the next 2–3 years whereas 20% were conducting research on their competitors and 56% will use it within the next 2–3 years. The results showed that there will be an increase in usage for both applications, but there were still some organisations that did not intend to use these applications at all.

It can be seen from Fig. 1 that 40% of the organisations were using e-commerce to display information and product and 47% intended to do so within the next 2 to 3 years. Forty percent of the organisations have their own homepage/website while 49% indicated their intention to have one within the next 2–3 years. These percentages indicated that electronic advertising via homepage/website is recognised by the organisations as an alternative means of advertising their services and products. In addition, it can be seen that only 20% of the organisations have a third party website, 35% indicated that they intend to have one within the next 2–3 years. The reason may be that the organisations did not have technical skills and knowledge to develop their own homepage and thus rely on vendors to develop and maintain them. Nevertheless, 45% of them indicated that they did not have any intention to have a third party website/homepage. This may be because they plan to have their own homepage/website.

It was found that 29% of the organisations did not intend to use on-line help and FAQ and 25% did not intend to use the on-line – products update despite the fact that these two are the most cost effective ways of providing customers with information. In addition, more and more organisations indicated that they would be handling customer feedback and using on-line application in three years time. This showed that the organisations were keen on using e-commerce to provide better services to their customers thus improving the relationship between them, which is an important essence in any business. Although e-mail was widely used (71%), there were still a small percentage (nearly 8%) of the organisations that did not intend to use it at all. This was probably because they did not plan to have Internet access.

Figure 1 shows that 15.6% of the organisations were processing their sales order electronically and 60% intend to do so within the next two to three years. This clearly indicated that the organisations were serious in their efforts to increase their sales, which in turn will increase their revenue. It was also revealed that organisations were also increasing their usage of coordinating procurement and tracking incoming and outgoing goods within the next two to three years. The increase in usage was due to the fact that these two applications would enable the organisations to plan their delivery more systematically. This would enable them to apply the Just In Time concept within their organisations.

In studying the trends of individual applications categorised under payment, it was observed that 25% have implemented EFT, while 45% indicated they would do so within the next 3 years. The results also showed that 30% of the organisations did not intend to implement it. This was probably because their nature of business did not necessitate the usage of the application. It is also shown in Fig. 1 that currently 21.5% of the organisations were using credit cards for payments while 43.5% indicated that they would not do so. This implied that the organisations were concerned about the authentication of the payment system.

The number of organisations using smart cards and prepaid cards were very low (less than 10% each) and the increase in usage within the next three years was expected to be minimal. On the other hand, the number of organisations that did not intend to use them was very high (more than 55%). This indicated that the organisations were not ready to use them as the technology is still new and there are not many success stories on its usage. Nevertheless, with the implementation of the smart card flagship application by the government within the next few years the usage of smart card is expected to increase.

## 5. Discussion

From the results of the survey discussed above, it can be seen that communication via e-mail (71%) was the most widely used e-commerce application among the organizations that participated in the survey. Among the nineteen e-commerce applications studied, e-mail was probably the cheapest to implement. In fact the organizations did not have to invest a lot of money to communicate via e-mail as no software or extra hardware were needed. This implied that organizations were not ready to invest a large sum of money to conduct e-commerce. Assuming that the organizations were already using computers (equipped with modems), all they needed to do were to register with a service provider to gain access to the Internet for a minimal fee. This implied that it is readily available. In addition, there are several agencies that provide free web-based email service such as hotmail ([www.hotmail.com](http://www.hotmail.com)), Yahoo ([www.yahoo.com](http://www.yahoo.com)) and Malaysia's own Technology Park Malaysia through its wau mail service ([www.waumail.com.my](http://www.waumail.com.my)). The expenses incurred will be only for the usage of the Internet time; these charges are based on the local telephone call rates.

It was also found that displaying information and product was used by 40.3% and third most widely used application was having their own homepage/website (39.1%). This implied that the organizations used the homepages/websites mostly to display information and products offered. This showed that the organizations realized the benefits of having their own homepage/website, i.e., it allows them to make themselves known to the virtual market place.

On the other hand, applications such as coordinating procurement, monitoring trading, and tracking incoming and outgoing goods were not widely used. This is because these applications require a substantial amount of investment, that only a few can actually afford to implement them within their organizations. This further substantiated the reason why e-mail is most widely used.

Besides these three applications, smart cards and prepaid cards usage were also minimal (less than 7% each). This may be due to the fact that these applications are relatively new in Malaysia hence most organizations are not aware of their potentials. However, their usage is expected to increase within the next three years due to the government's effort through the Multimedia Super Corridor (MSC) flagship applications.

It can be concluded based on these findings that the main usage of e-commerce applications is to improve customer-support service and customer relationship. This implied that organizations are taking serious steps to attract and retain customers, which is one of the means for an organization to gain competitive edge over their competitors. These findings support the studies conducted by Bloch et al. [1] and Soh et al. [14]. In addition, if similar research is to be conducted in any country which is just embarking on e-commerce such as Malaysia's neighboring countries like Thailand, Indonesia and Brunei, the results would be similar to that of this research. On the other hand, for countries, which have been adopting e-commerce for some time such as America, Australia and Singapore, the results may differ. It would be expected that online payment and order and delivery usage would be higher compared to the results of this research.

Besides studying the trends of e-commerce applications in Malaysia, it is useful to discuss why these organizations are not fully utilizing the applications. The four top reasons given by the respondents were as follows:

- Insufficient security to prevent hacking and viruses (30.3%).
- Sales and marketing requires high human interaction (28%).
- Insufficient security for on-line credit payment transaction (26%).
- Cost of setting up e-commerce is high (25.7%).

The findings indicated that security issues seemed to be the main barrier to the implementation of e-commerce. The organizations were reluctant to use e-commerce as they felt that the transactions conducted electronically were open to hackers and viruses, which are beyond their control. They were also skeptical about the security measures that were implemented to safeguard on-line payment transactions.

These findings are similar to the findings of the research conducted on the Small Medium Enterprises (SME) in Australia [13] and the survey conducted by United Kingdom based Industrial Research Bureau [5]. Both these studies illustrated that electronic security is the single major barrier to e-commerce.

Besides security, our study indicated that financial concerns were also a barrier to e-commerce implementation. The organizations perceived that the cost of setting up e-commerce infrastructure is high, therefore they do not intend to use e-commerce applications in their organizations. Although this was indicated by 26% of the organizations, review of the literature indicate that applications such as e-mail is very cheap to use. Creation of web site also does not cost much (cost varies according to design) if designed and maintained by vendors. Electronic advertising using banner on a third party website costs as little as RM400 ([www.waumail.com](http://www.waumail.com)). Hence, we can conclude here that the reason given by the organizations was what they perceived and not based on actual know-how.

## 6. Conclusion

This study is part of a larger study carried out by the author in collaboration with the Malaysian National Productivity Corporation. The study was aimed at identifying the level of e-commerce usage among Malaysian business organisations. Although more than 6000 questionnaires were distributed, less than 10% responded. A total of twenty applications categorized as electronic marketing, electronic advertising, customer support service, order and delivery and payment were studied. The study showed that the most widely used application was communication via the e-mail. It was also found that less than 7% of the organisations actually used the smart card and prepaid card applications. Hence it can be concluded that Malaysian business organisations do use e-commerce applications. However, the usage was limited and mainly focused on customer support and marketing and advertising applications. This indicated that the organisations are focusing on e-commerce applications that are used in the pre-contractual, contractual and post processing stages of the business processes. This also showed that Malaysia is still lagging in terms of using e-commerce to settle payments, which is one of the main processes in any business transactions. In addition, the results indicated that Malaysian organisations were not ready to invest heavily in e-commerce as both e-mail and creation of websites (most widely used) are among the cheapest applications to implement and use.

There are various reasons as to why organizations do not use e-commerce extensively. The findings of this research seem to be similar with the results from other studies that aim to elucidate factors that hinder organizations in adopting e-commerce in either developed or developing countries such as India and Indonesia. Therefore, the cornerstone of Malaysia's move into e-commerce lies in the transformation of its legal and regulatory environment to support companies undertaking e-commerce. The first few steps include the drafting of the Multimedia Convergence Act, which creates an up-to-date communications framework. The Act will be implemented along with the following five high-impact cyber laws:

- The Digital Signature Cyber Law enables the community and businesses to use electronic signature instead of their hand-written counterparts in legal and business transaction.
- The Multimedia Intellectual Property Cyber Law gives multimedia developers full intellectual property protection through on-line registration of works, licensing and royal collection.

- The computer Crime Cyber law provides law enforcers with a framework that defines illegal access, interception, and use of computers and information; standards for service providers; and outlines potential penalties for infractions.
- The Telemedicine Development Cyber law empowers medical practitioners to provide medical services from remote locations using electronic medical data and prescriptions standards.
- The Electronic Government Cyber law allows politicians, public servants and the public to communicate electronically using established security formats and standards.

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