

2. LITERATURE REVIEW

Internet has commanded great attention in the media as well as the business community. In this chapter, efforts are made to find out: what exactly is Internet, its characteristics and benefits to the business community, how business use Internet and for what purpose; the factors which influence the adoption of Internet and the barriers which is currently experienced by the businesses and how they affect the adoption of Internet by the businesses.

2.1 The Internet

The Internet is a massive global network of interconnected packet-switched computers network. It is a collection of networks of resources which are based on TCP/IP protocols for communication and people can access those resources from the networks (Hoffman et al, 1996).

The Internet was originally developed by the National Science Foundation to protect US main-frame computer systems in the event of world-wide catastrophe and later in 1970s was used by scientists and academics to share data and research. It was turned over to the private sector in April of 1995, primarily because its new-found popularity among consumers meant that it was no longer a reliable medium for national security purposes (Janet, 1996).

The Internet reaches over 70 million people world-wide and is expected to grow beyond the 300 million mark in the next three years (IDC Research, 1998). Most end users are commercial (61%) as opposed to scientific, government or educational. The web revenue should exceed USD 1 trillion in year 2002 and the business-to-business segment should exceed \$300 billion. (Multi Digital Media, 1997; Active Media, 1998; Forrester Research 1998).

This explosive growth of commercial networks and services, accompanied by an astounding increase in the populations of Internet users, provides huge potential of customers and consumers for the businesses (Alicia, et al 1997).

2.2 World Wide Web (WWW)

The World Wide Web is the most exciting commercial developments in the Internet. Its ability to facilitate global sharing of information and resources, and its potential to provide efficient channel for advertising, marketing and even direct distribution of certain goods and information services, make it a popular medium for commercial purposes. (Hoffman et al 1996)

Essentially, the WWW is an organisation of files on the Internet and can support hypermedia environment. As such, the WWW allows multimedia information to be stored in any servers that are networked within the Internet and be accessed by using the hyperlinks. The hyperlinks provide means to connect many web pages and web site together and thus simplify the task of navigating the Internet (Cook, 1995; Hoffman, et al 1996; Multi Digital Media, 1997).

The available of free browser software in addition to the ease of navigation and easy-to-use interface, is one the of the main reasons why the Internet has become such a success (Multi Digital Media, 1997).

2.3 Characteristics of Internet

The unique characteristics of Internet makes it attractive as a commercial medium for the business. They are as follows:-

Size - The populations in the WWW has increased at a tremendous rate. Although the actual market potential for business can not be certain, study has shown that Internet shopping will become a norm one day and this has great implications to the business.

Interactive and responsive - The interactive nature of the Internet allows business to collect customer information, and to tailor made their services to individual customers.

Multimedia - the Internet is able to support not only text, but images, audio and video as well. With its ability to store and display lots of information regarding products and pricing, it is one level up compared to traditional medium such as TV, radio, newspaper, magazine and so on.

Accessibility and convenience - In the WWW, the business has the opportunities to open 24 hours a day, thus increase the chances of conducting more business and making more sales across different time zones.

Flexibility - The Internet technology makes it easier and less expensive for business to change their advertisement and information they wish to provide. For marketing purposes, web page can be considered as electronic billboard, electronic advertisement or electronic catalogues that provides information products or services plus contact information for interested customers. (Kiani, 1998). Companies can quickly change its content - add products, description, prices and keep up-to-date at its own schedule and convenience.

Information rich medium- The ability of the Internet to amass, analyse and control large quantities of specialised data is a good source of information for many (Hoffman and Novak, 1996). It is essentially a "hybrid medium" that shares mass communication's ability to reach a wide audience, with interpersonal communication's capacity to provide individual information through feedback and interaction (Janet, 1996). Individual user can do research on purchase related information while the business can do research on consumers and competitions.

2.4 Internet Services

The Internet supports basically three fundamental applications: Internet access, electronic email and web pages.

2.4.1 Internet Access

The Internet access provides a mean to search the Internet or WWW for information. This service is normally provided by ISPs (Internet service providers) which serves as a gateway to the Internet networks. With the service, anyone with a computer equipped with a modem and relevant software such as browser can access to the Internet and retrieve any desired information.

2.4.2 Electronic Mail (E-mail)

E-mail is one of the main Internet services besides the access and is available to anyone with an access account to the Internet. The e-mail services allows users to send electronic messages to anyone in the Internet. In addition, it also allows files to be transferred as attachment together with the message.

2.4.3 Web Pages and Web Sites

Web pages basically are pages of HTML (Hypertext Markup Language) which may contain multimedia features that supports a combination of text, images, and sounds. They are stored on computer servers attached to the Internet and are publicly accessible for browsing and retrieving.

For business purposes, firms can store the information of the company and product/services offered on web pages which reside on a web site. The consumers can interact with the web page, view and download the content, or to submit comments and feedback. The web site could be dedicated to the company alone or shared by other organisations as well.

There are many new innovations developed to expand the web sites from merely an advertising site to a virtual store fronts or a virtual office. Special built-in programmes such as Java and Active-X can be stored in the web site to support automation features and e-commerce facilities. Business transactions can be conducted without any real sales person and the consumers can take their leisure time to browse, order and pay over the Internet.

2.5 The Internet as a Commercial Medium

The tremendous growth of the Internet, together with the proliferation of World Wide Web, has led to a critical mass of consumers and firms participating in a global online marketplace (Hoffman et al, 1998). International Data Corp (IDC) reported that there are 68.69 million people using the World Wide Web in the World today and the populations is estimated to grow to 97.25 million people by the end of 1998 and 319.79 million by the end of 2002. Among the 70 million Internet users, 27.65 million of them have made purchase in the Internet (IDC Research, 1998).

As for the electronic commerce, a study by Active Media showed that Web-wide revenue in 1998 is projected to be close to \$74 billion - an amount which is more than double what was reported in 1997. Shown below is the study from Active Media's - "Real Numbers behind 'Net Profits 1998"

Table 2-1 World Web Revenues

Web Revenues	US\$ (billions)
<i>Actual</i>	
1995	\$.1
1996	\$ 2.7
1997	\$ 21.8
<i>Projected</i>	
1998	\$ 73.9
1999	\$ 180
2000	\$ 377
2001	\$ 717
2002	\$1,234

Sources: Active Media, 1998

On the other hand, Forrester Research has projected that E-commerce will account for almost 1% of global economy by 2001, and \$300 billion on business to business transaction by 2002 (Forrester Research/US Commerce Dept., 1998).

It is evident from the statistics that 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 of Internet applications. These new developments are expanding beyond the utilisation of Internet as a communication medium to an important view of Internet as a new market (Ricciuti, 1995 and Hoffman et al, 1996).

2.5.1 Internet in Asia

The use of Internet is not limited to the West only. Asian countries is also starting to realise the importance of internet and the impact of WWW to their businesses. According to the recent survey by IDC (CNNfn, 1998), Asian corporates are quick to adopt Internet with 75 percent of them now hosting sites. The figure has more than double (57 percent increase) since the last IDC's Asia/Pacific survey conducted in October of 1997.

2.5.2 Internet in Malaysia

Based on a report by IDC (Singapore Business Times, 1997), Malaysia is to lead Internet growth in Asia. Malaysia is expected to generate USD1 billion in revenue from e-commerce by 2001 while Singapore is expected to make as much as USD800 million in revenue. In terms of Internet users population, the number of Internet users in Malaysia is expected to grow from 250,000 (1997) to 2.2 million by 2001 while Singapore from 250,000 now to 1.5 million.

2.6 Internet Surveys on Users

To use the Internet as a commercial medium, it is important for the organisations to understand the users characteristics and why they made purchase on-line and the goods or services they would normally buy. The followings are some surveys gathered from the Internet itself and should provide some insights on the market potential, buying behaviour and user characteristics.

2.6.1 Gvu 9th WWW User Survey

The 9th Gvu (Graphics, Visualization & Usability Center's) Survey was run from April 10, 1998 through May 15, 1998 and was endorsed by the World Wide Web Consortium (which exists to develop common standards for the evolution of the Web) and INRIA (the acting European host for the W3C in collaboration with CERN, where the Web originated).

2.6.1.1 Users Profile

Majority of the respondents are from US (84.4%) with male (61.3%) and some college experience (80.9%) in education. In terms of age and marital status, the average age is 35.1 years and majority of them are married (40.1%). The average annual income is around USD 52,500 and the main occupation are: education (26.2%), computer (22.3%), and professional (21.7%).

2.6.1.2 Internet Shopping

Although the study showed that most respondents use Internet for information seeking rather than making purchases, the on-line purchasing is growing rapidly, when comparing with the results from the 8th survey. The largest percentage of respondents who made purchases over the Internet in the last six months spent between \$100-\$500 (32.5%) and a group almost as large spent more than \$500 (29.5%). The most common products sought after are: computer related product (78.3%), books and magazine (72.4%), travel arrangement, music recording and so on.

2.6.1.3 Buying Behaviour

Majority of the respondents reported that convenience (78.4%) was the main reason for shopping on-line, followed by no pressure from sales person, save time, and availability of vendor information.

In contrast, the reasons given for not purchasing from the Internet are:

- not trusting the security of credit card information (39.1%)
- not being able to judge the quality of the goods (39.2%)
- the security of private information (26.9%)
- faster and easier to shop locally (22.6%)

Nevertheless, most respondents did not consider providing the credit card information as the major obstacle for making purchases on the Web (54.9%). This is confirmed by the number of respondents who don't consider it more risky than providing the same information over the phone (60.5%). Both lower prices and higher quality of products did not seem to have a bearing on the respondents' willingness to provide credit card information over the Web. The major factor appears to be the reputation of the vendor (76.1%).

2.6.2 1st Asian AltaVista Asianwide User Survey (1997)

The Asianwide User Survey was targeted to Asian Internet population unlike the GVI survey which was targeted to the world Internet population.

2.6.2.1 Users Profile

Majority of the respondents are male (78%), young between 20 to 29 years of age with 50% are tertiary educated. Majority of them are working in larger enterprises primarily in the IT-related and business services sector with USD 20-29k annual income. In terms of marital status, majority are unmarried and in a household with no children.

2.6.2.2 Internet Shopping

The product and services purchased by the Asian respondents showed slightly different characteristics from the GUV survey. The top online purchase was adult entertainment (18%), followed by wine (15%), business services (14%), decoration (12.5%), clothes (10%), food (7%) and games.

It is evident from the above surveys that there may be differences in areas such as user demographics, product and services purchased and attitude towards Internet shopping, among the Internet users from different part of the world. Therefore, traditional method of customer segmentation may be fruitless if not unnecessary. The key to segmentation in Internet is the *benefits* to the consumers (Alicia, 1997).

2.7 Business Use of Internet

Every business today competes in two worlds: a physical world of resources that managers can see and touch and virtual world made of information. Besides creating value in the physical world (which was often referred to as value chain), organisations can also create a virtual value chain that parallels but improves on the physical value chain (Rayport and Sviokla, 1995).

The Internet provides such a marketplace and means for the virtual value chain. It can be an invaluable communications, support, marketing and sales tool for reaching current and potential customers. It can also be a cost effective communications tool for internal and external staff, as well as for conducting daily business, and an excellent delivery system for information (Multi Digital Media, 1997; Kiani, 1998). Thus organisations are able to market and advertise their products and services; communicate with their customers and suppliers; provide after sales service and support, and even conduct business transaction all on the Internet.

Online research of web sites based in Malaysia, together with a study on Singapore organisations by Christina et al (1997) showed that the common applications of Internet by the businesses were in five main areas: marketing and advertising,

market research, communication and information sharing, customer service and support, and e-commerce.

2.7.1 Marketing and Advertising

Hoffman et al (1996) found that most firms use the Internet primarily to provide information about the company and its product and services and for both internal and external communications. This was again supported by Christina et al's (1997) study that majority of the respondent (96%) used Internet for marketing and advertising.

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 such organisations which provide these services and sell the advertising space as a business. Examples are the Malaysia's CARL (www.carl.com.my) and KL online whose incomes are generated from the advertisement space they sell.

2.7.2 Market Research and Information gathering

For a business to survive and be effective, an organisation must keep in touch with the market environment: what their competition is up to and the changing trends of the consumers taste and preferences (Fletcher, 1990). With its abundance of information resources, a person can find any topic in the Internet. Study by Christina et al (1997) has found that 96% of the respondents use Internet for information gathering and market research.

Besides customised research, organisation can access the discussion boards and user new groups on issues related to its products and services or collect feedback from customers to better gauge the customers taste and preferences. (Cook, 1995; Christina et al, 1997; Paula et al, 1998). Malaysia's examples of news groups can be found in both Jaring and TMnet as well as other web sites such as CARL.

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 (Christina et al 1997). In fact, the research by Paula et al (1998) has 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 utilise the Internet for suppliers' evaluation. This would add value to the organisations' procurement decisions as the Internet provides another source of suppliers for evaluation (Paula et al, 1998).

2.7.3 Customer Service and Support

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 the 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 can't get answer from the organisations 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 (Cook, 1995, pp. 74)

2.7.4 Electronic Commerce

Electronic commerce can be defined as "the buying and selling of information, products and services via computer networks and support of any kind of business transaction over a digital infrastructure (Bolch et al, 1996).

It is rapidly growing and enjoying considerable attention with the emergence of Internet. While the technology may not be limited to Internet, however for this study, the scope is limited to three main areas: order taking, co-ordinating procurement and

electronic payment processing which include both collecting credit card information and e-cash.

In the online reviews of the web sites hosted by companies in Malaysia, there were not many web sites offering e-commerce facilities. Unilever, a well established name in Malaysia, has recently launched a retail channel in the Internet (Computimes, 1999), allowing consumers to make direct purchases of the company's products. The Unilever electronic shopping channel offers order processing within 24 hours and delivery within five working days depending on customers location. Payment can be made via credit card based on Secure Sockets Layer (SSL) security for the Internet.

At present, the use of electronic commerce may appear to be low in Malaysia as compared to other western countries. However, there is indication that the numbers is growing. With the MSC and Government initiatives, application and security issues would be resolved and thus more business are expected to adopt e-commerce in the future.

2.7.5 Communication and Other Functions

More and more businesses are discovering the Internet as a fundamental communication tool used to conduct daily business (Kiani, 1998). This is because e-mail are readily available and the service is fast and relative low cost.

Other uses of Internet include job advertisement by organisations which provide a second channel for the Human resources people to search for qualified candidates. For example, IBM has a section dedicated to job opportunities and that covers job vacancies its world-wide office. This is another added value from duplicating this value chain in the Internet.

In addition, the management of inbound and outbound operations of the value chain can also be transferred to the Internet. Already forwarders such as FedEx or UPS are offering customers to track their goods through the Internet.

2.8 Factors Influencing the Use of Internet for Business

The increasing popularity of the Internet, as a business vehicle in general and an advertising medium in particular, is due to its size and future growth prospects, its attractive demographics, and its potential to provide an efficient channel for advertising, marketing, and even direct distribution of certain goods and information services (Hoffman et al, 1996).

The apparent new market potential and benefits can enhance the perception of the organisations toward the Internet. As a result, positive perception can lead to adoption and usage of the Internet (James, 1995; Christina et al 1997).

The environment in which the organisations operate in can also play an important role in influencing the use of Internet. Companies that currently do not want to participate in Internet commerce may be forced to by competitors or customers (Shikhar, 1998). In addition, some organisations may have different needs of information depending on their industry and customers. As its primary objective was to gather and disseminate information, the Internet can be an ideal medium for organisations with intensive information needs to access and process more information. (Lawrence 1978, James, 1995, Cook 1995)

The size of the firm can be another factor which may influence the use of Internet. Already there are anecdotal evidence that there are key areas of differences as well as similarities in Internet usage patterns among different sizes of organisations (John et al 1996, Shikhar 1998; Paula et al 1998).

Finally, there are concerns and problems reported by the business. These barriers would discourage the business from using or using more of the Internet.

2.8.1 *Benefits to the Firms*

There are many advantages associated with doing business on the World Wide Web. Companies can reach a greater number of potential consumers, and it's much easier to explore what the competition is offering and to track the changing consumers needs. In addition, there are opportunities for cost saving, establishing better relationships with customers and suppliers, making business processes more efficient and lean, and creating competitive advantage. (Hoffman et al, 1996; Bolch et al 1996; Derek et al, 1997; Christina, et al 1997; Paula et al, 1998).

2.8.1.1 New Sales Market and Corporate Image

There is no doubt that Internet provides a new channel for more sales and access to local and international market. Any company that establishes a site on the Internet automatically becomes a multinational company (Paula et al, 1998; John et al, 1996). In addition, organisations can use Internet to affirm their corporate identity and their brand image (Bolch et al 1996). However, Christina et al's study (1997) on Singapore's business found that although respondents rated highly about the impact of Internet on the company image, they were less likely to perceive the benefits of using Internet in terms of increasing sales and market share.

2.8.1.2 Customer Relationship, Service and Support

The availability of the web sites to customers 24 hours a day enables the customers to engage the services and business transactions at their convenience. The interactive and responsive nature of the Internet also offer opportunity for organisations to obtain customer data and tailor made services precisely to the customers, and for customers to request as much as information as desired (Cook et al 1995; Hoffman et al, 1996; Multi Digital Media, 1997; Kiani, 1998; Paula et al, 1998).

Services such as FAQ is particularly useful especially for product and services which require technical information to install or implement. These services help to reduce the cost and improve customer satisfaction in the service and support. One good example is the SunSolve online, which saved Sun Microsystems US\$4 million in customer service and support by having FAQ on the Internet (Cook et al 1995; Hoffman et al, 1996).

2.8.1.3 Suppliers Relationship and Choice

With its capability of handling communication and sharing of information, the Internet provides a cost effective ways for efficient supply chain management. With Internet, organisation can better control the cost in co-ordinating and procurement, with the improved access to vendor options (Hoffman et al 1996; Paula, et al 1998).

2.8.1.4 Cost Saving and Competitive Advantage

The accessibility of the Internet by millions of people from around the world provides a cost effective solution for any size of organisation to market their products/services. Hoffman et al (1996) reported that anecdotal evidence has shown that it is about one-fourth less costly to perform direct marketing through the Internet than through conventional channels.

Other savings could also be from cost efficiencies in the marketing and selling functions. Essentially, the Internet allows the organisations to shift some of these functions to the customer. Rather than getting the information from the printed catalogues, customers can browse through the electronic catalogues or download the information about the products before filling up the order forms to complete the purchase process on the Internet. This will save cost through reduced printing cost and postage cost as well

Additional savings can result through reduced overhead cost as transaction costs associated with sales persons, office rents, order taking and invoicing is reduced significantly when the customers fill-up the order forms and make payments all by themselves. (Hoffman et al 1996; Multi Digital Media, 1997; 9th GUV survey 1998; AltaVista Asianwide survey , 1998).

Cost saving can also be found in the other areas of value chain as well. The ease of communication and sharing of information in electronic form reduce the cost in co-ordination activities - between the organisation and the suppliers, and between the organisation and customers, by bypassing the middleman, thus reducing intermediary transactions and unneeded co-ordination. At Boeing Co., there were 75 projects using the Internet to connect to contractors and customers—everything from sending documents to the government to tracking the history of every plane that Boeing sold. The expected savings could add up to millions of dollars (Wigard and Benjamin, 1995; Business Weeks, 1998; Hoffman et al 1996)

Most importantly, the Internet offers opportunity for competition on the 'specialty' axis instead of price axis (Hoffman et. al, 1996) Rather than competing on price (which is not desired by most organisations), organisations can try to satisfy customer needs in terms of benefits sought, value and convenience. This is reflected in recent study (9th GUV survey, 1998), that price is not as important compared to other factors mentioned above.

2.8.2 Firms Perception on Internet and E- Commerce

The adoption of an innovation product is largely dependent on the perceptions of the adopters towards the innovation, as described by Rogers's innovation theory (Rogers, 1995; James, 1995). As a result, a decision to adopt a product or not would go through a process of forming favourable or unfavourable attitude towards the innovation product. If the perception is positive or favourable, the chances is that the product will be adopted. In contrast, an unfavourable attitude will most likely result in

not adopting the product. Similarly, the perceptions resulting from the usage of the innovation are likely to play an important role in the social process of diffusion. As such, the extent of using Internet will be influenced by the perception of the users towards the Internet (Christina et. al 1997).

As Internet is considered an innovation that has great impact on the business, it is therefore appropriate to use this theory to explain why organisations decide to use Internet for their businesses. The innovation theory suggested that there is a positive relationship between the perception of the attributes of an innovation and the adoption of that innovation. There are five attributes (Rogers, 1995; Christina et al. 1997) as described follows:-

Relative Advantage - the degree to which an innovation is perceived as more superior than the existing one. The degree of relative advantage is often expressed as economic profitability (cost saving), social prestige, or other benefits (detail refer to section 2.8.1). **Social prestige** - desire to gain social status is another factor that motivate people to adopt an innovation (Rogers, 1995).

Compatibility - the degree to which an innovation is perceived as consistent with existing values, past experiences and needs of the potential adopters. Such compatibility helps to provide a sense of familiarity to the innovation. When compatibility is achieved, a faster rate of adoption usually occurs.

Complexity - the degree to which an innovation is perceived as relatively difficult to understand and use. It is the only attribute which is negatively related to its rate of adoption.

Trialability - the degree to which an innovation can be experimented with on a limited basis. The experiment or trial provides a means to remove any uncertainty about the innovations and thus encourage faster adoption.

Observability - the degree to which the results of an innovation are visible to others. The results of some innovations are easily observed and communicated to others while some may not. It is said to be positively related to the rate of adoption.

In general, the perception of the business towards the use of Internet are positive and this may be the main contributor to the growth of the Internet and Internet Commerce. Although the early growth mainly concentrated in the West or the more developed countries, the Asian and Asia Pacific countries are now aware of the importance of Internet and its impact to the business. A survey by Visa International (The Straits Times, 1998) on 600 companies executives around Asian countries (unfortunately, Malaysia was not one of them) showed that Asian businesses remain optimistic about how the Internet will affect their businesses. The results is as follows:-

- 68 percent of those surveyed said they believed that e-commerce would give their business a competitive edge
- 60 percent said they believed it would allow them sell a wider range of products than physical stores.
- 92 percent said they believed that e-commerce will attract new customers and 85 percent said they believed that sales to foreign companies would be increased by online retail systems.

The above survey showed that the optimistic view by the Asian business are largely contributed by the perceived benefits associated with the use of Internet. Therefore, it showed that perceived benefits can form positive perception which in turn leads to adoption of the Internet.

Another study based on a survey of 220 companies in Australia and New Zealand and was conducted by Delta Outlooks for IBM Australia (IBM Australia, 1998). Companies surveyed ranged from SMEs to large corporations, in a variety of

industries. 76 percent rated e-commerce as an important business strategy. However, only 35 percent of these businesses have a business strategy in place.

25 percent of companies said the opportunity to cut costs was the major reason for developing an e-business strategy. 18 percent said it was in order to provide better access to and service for customers. 12 percent of said they were developing an e-business strategy because it was the way of the future, 7 percent because it would speed up processes and 6 percent to increase profit margin and market.

The business processes that companies believe will benefit most from e-commerce were communication and information sharing, 32 percent, customer contact, 28 percent, advertising and marketing, 18 percent, sales, 17 percent, and payments and purchasing, 16 percent.

The second survey provides some interesting points. The benefits associated with the use of Internet for the business processes gave rise to the formation of important business strategy to create competitive advantage. This implies that the Internet was compatible to their business needs and this contributed to the positive perception towards the Internet.

2.8.3 Firm Size

The findings of a study by Paula et al (1998), and anecdotal evidence suggested that there may be key areas of difference as well as similarities in Internet usage patterns among the businesses of different sizes.

The study also found that small business were more likely than mid-sized or large firms to have a home page and to reveal computer/technology programs as potential Internet services needed to improve current operations (Paula et al, 1998). As small firms are usually poor in resources, with limited financial reserves and internal IT expertise (James, 1995), small and mid-sized businesses tended to focus operations

on a local population (Paula, et al, 1998). With the access to wider range of customers in the Internet, the small businesses will be able to compete more easily in the global marketplace, and to access to consumers in the emerging markets (Paula et al, 1998; John and Lisa, 1996).

In contrast, large and established businesses have too much to risk - the existing distribution channel, the reputation and the carefully built brands, in order to participate in the Internet commerce (Alicia et al, 1997).

From the above, the small and medium sized (SMEs) appeared to benefit more with the use of Internet. However, a report by the Yankee Group (1998) showed that most SMEs in US had not yet understood the potential and the importance of the Internet as a means of increasing business reach. Just 30 percent considered the Internet as important to their business strategy. It was also found that over 60 percent of SMEs that did not have Internet access had no plans to go online.

The report also suggested that the reason may be that as the SMEs were still learning to use the Internet, it was difficult for them to adopt solutions that were designed to revolutionise the way they conduct business. Similarly, Cahners In-Stat Group (1998) also found that small businesses in the US were not taking advantage of the Internet and its commerce opportunities due to cost and security.

2.8.3.1 Definition of Firm Size

There is no legal definition of small industry in Malaysia. Different government agencies adopt different definitions. Most of them use the value of firm's fixed asset as a measure of the size of the firm but the cut-off point is rather low in view of the inflation in recent years. (Chee, 1986). In his book, Chee suggested that small industry was defined as firm with fixed asset less than 500,000 or employs less than 50 full-time workers and is engaged in manufacturing industry. However, as the study includes the non-manufacturing sectors as well, the definition may not be relevant. In

addition, it may be difficult to gather information about the firms' fixed assets from the respondents.

Another definition was taken from Chew Soon Beng of Singapore (198x) which used the number of employees to categorise the firm size. The category of the firm size is as follows:-

- Small - employs 10 to 49 workers
- Medium - employs 50 to 99 workers
- Large - employs 100 or more workers

In contrast, the firms was categorised by Paula et al (1998) as described follows:-

- Small owner-operated firms, generally in business less than a decade
- Mid-sized owner operated over a decade
- Larger and non-owner operated business

As the number of employees was more widely used to measure firm size (James et al, 1995) as compared to the years of establishment, it was decided to use the number of employees in this research to classify the firm size.

2.8.4 Information Need

Every business faces some kind of uncertainty. Uncertainty can be defined as the difference between the information needed for task completion and that which already exists (Galbraith 1973, Lawrence 1978). There are two ways to reduce the uncertainty: (1) to reduce the information needed or (2) to increase capacity to process more information (Lawrence, 1978).

Since the business in different sectors face different degree of uncertainty, their level of information need may vary as well. Internet, which is rich in information and conveniently accessible, can help the business to increase the capacity to handle

more information. Therefore, a business which are information intensive are more likely to utilise Internet for gathering and processing more information.

2.8.5 Competitiveness of Environment

According to Michael and Champy (1996) in the book "Reengineering the Corporation" , there are three forces influences the business environment - customers, competition and the change. In order to stay above the competition, organisations can adopt IT as an enabler to reengineer its business process, thus to create competitive advantage. In addition, firms can use Internet to change industry's business model; introduce new products or services to capture new market, and to create new value to existing products and services. (Shikhar, 1998). Therefore, a business in a more competitive environment would feel a greater need to use Internet to gain competitive advantage.

2.8.6 Staff Internet Knowledge

Knowledge is an important factor in the innovation-decision process. The process of acquiring knowledge occurs when the adopters learn of the innovation existence and gain some understanding of how it functions (Rogers, 1995). Lack of technical knowledge would become a barrier to the adoption of the innovation. It is argued that when the staff has the technical knowledge on the innovation, it is easier for the organisations to overcome the uncertainty barriers associated with the innovation and thus lead to adoption of the innovation (James et al, 1995).

2.8.7 Barriers to the Use of Internet

The Internet as medium for commercial purposes presents different opportunities as well as challenges to the business. The business need to overcome these challenges before they can fully exploit the opportunities and succeed on the Internet.

A review of literature shows that besides cost and security, there are many other barriers which include: lack of internal knowledge and skills, potential conflicts of distribution channels, difficult in measuring market potential; difficulty in maintaining and promoting of the web sites, difficult of locating desired information, (IBM Australia, 1998; Visa International - The Straits Times, 1998; Hoffman et al, 1996; John et al, 1996; Christina et al, 1997; Alicia, et al 1997; Shikhar, 1998;).

2.8.7.1 Cost

There are many costs associated with the use of Internet - cost of design and development, cost of maintenance, subscription fees and time access costs (Christina et al 1997).

The study on Singapore business showed that 48% of the survey respondent perceived these costs as a problem which may partially offset the relative advantage of the Internet innovation (Christina et al 1997).

The following table shows the cost of building a web site in US (Computerworld, 1998). As we can see, there is a wide range of prices depending on the desired content and function of the web site.

Table 2-2 Cost of New Web Site

Type	Cost
A "conservative" Web site (basic electronic catalogue with offline transactions)	\$10K to \$100K
An "aggressive" Web site (object-oriented, dynamic, interactive, transactional)	\$1M to \$10M

Source: Forrester Research Inc, 1997.

However, the creation of a web site is not a one-time effort. John et al (1996) reported that annual cost for site maintenance are two to four times higher than the initial launch cost based on a 1995 Forrester report.

In addition, Paula et al (1998) reported that additional personnel and time required to analyse and respond to customer feedback may add to the maintenance cost of the Internet usage. The study also suggested that it could be due to the unexpected larger volume of information and feedback associated with the use of Internet.

Nevertheless, in addition to the reduction in services costs by the ISPs due to competition, the decreasing hardware and software prices will motivate more businesses to use Internet (Christina et al, 1997).

2.8.7.2 Market Potential and Measurement Problems

The commercial success of a firm's Web site depends in part on accurate information on market potential and consumer needs. It is thus important for any business strategy to determine how many people are on the Internet and what they are doing there. It is also necessary to define and estimate segments of Internet users based on their needs. (Hoffman et al, 1996).

While there is little doubt that the Internet has great potential, no one seems to know exactly how important it is as there are varying results and conflicting predictions. This makes investment decisions difficult. The rapid change in the technology, size, users demographics all contribute to the uncertainty of future direction of the Internet (Alicia et al, 1997)

In addition, there are no established criteria for judging the success of Web sites (Hoffman et al, 1996). This makes it difficult to justify for the cost of utilising the Internet.

2.8.7.3 Security

As shown by most of the surveys, there is a great deal of concerns regarding the security of financial information transmitted over the Internet. This could be due to the weaknesses of encryption technology and the destructive power of computer viruses (Christina et al, 1997) which create security concerns when transmitting credit card information across the unsecured servers and networks. In addition, the 9th GUV user survey (1998) reported that the security issue could also be related to the reputation of the organisation itself from the consumers' point of view.

These security issues have great impact on consumer willingness to buy on the Internet and may lead to less adoption of e-commerce by the seller (organisations, vendors) alike (New York Times, 1998). The GUV 9th survey also suggested that this may be the reason why majority of Internet users use the Internet for searching information rather than making purchases.

As the security issues are affecting everyone in the Internet, there are many bodies trying to solve the problems and there are many industry standards--such as the Secure Electronic Transaction (SET) protocol--working to resolve the security concerns. In addition banks and credit card industries are also under competitive pressure to create a safe system to move cash around the Internet (Semich, 1996).

2.8.7.4 Upsetting Existing Partnerships

Due to the nature of the Internet which facilitates direct marketing, the potential for channel conflict will be magnified (Alicia et al, 1998). As a result, the business is having a dilemma whether to sell their products directly over the Internet. If they do not sell direct, others will. If they do, the existing distributors of the value chain may desert them and look for someone else (Dr Wilson, 1998).

However, given the market potential and possible loss of business due to competition from the Internet with lower cost and convenience, the companies may find

themselves have little choices but to risk damaging relationships in their physical chains to compete in the electronic channel (Shikhar, 1998).