



# Journal of Internet Banking and Commerce

An open access Internet journal (<http://www.arraydev.com/commerce/jibc/>)

Journal of Internet Banking and Commerce, August 2007, vol. 12, no.2  
(<http://www.arraydev.com/commerce/jibc/>)

## Correlation between Internet and ICT, Web Site Development, and Internet Marketing: Perception of Marketers in Malaysia and Singapore

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### Abstract

The main objective of this study is to review the adoption of Internet and ICT, Web site development and Internet marketing, as well as to study the correlation between these three factors. This study also tries to study marketers' perception in Malaysia and Singapore on the implication of the Internet and ICT on Web site development and implication of Web site development on Internet marketing. The overall of 200 samples shows that the correlation between the Internet and ICT, Web site development, and Internet marketing are positive. The analysis of each country, Malaysia and Singapore also shows that there are positive correlations for all the variables. The study proved that the Internet and ICT has a statistically significant positive impact on Web site development in Malaysia and Singapore. The study also concluded that Web site development has a statistically significant positive impact on the Internet marketing in Malaysia and Singapore.

**Keywords: Internet and ICT; Web Site Development; Internet Marketing**

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## INTRODUCTION

### Malaysia

Computers were first introduced in Malaysia in the 1960s. In 1965, the first computer systems used in the public sector was in the National Electricity Board and in 1965 the Inland Revenue Department for processing statistical information. In terms of directions, the Science and Technology Policy was formulated in 1986 followed in 1988 by the Computerisation Guideline Manual of Management and Manpower Planning Unit (MAMPU) (Buyong, 2001). The dotcom situation in Malaysia is merely getting started; in fact it is taking its first few 'baby steps'. Many businessmen, from a traditional business background with existing ties to the bricks-and-mortar business and access to funds are firing up local Web ventures. The number of new participants to this infant Internet industry is small and this follows the low Internet usage and small rate of adoption (Karunakaran, 2000). In 2001, IDC's Marco Polo study indicated that only 41% of Malaysians' Web spending was done in local sites, 8% in the Asia Pacific region and the remaining 51% in international sites (Rahman, 2002). Marketers still seem to adopt a "wait-and-see" stand. Currently, the cost benefit of going online may still be unclear for some businesses, which may be the cause of them holding back (Fatt, 2001).

The total of Internet dial-up subscriptions is 3.171 million with the growth rate of 1.7% and the penetration rate at 12.3% in Q3 2004. The total number of broadband subscriptions at approximately 218004 translates a penetration rate of 0.85%. The total number of Internet users in Malaysia also increased in 2004 with 9.513 million users compared to 2003 with 8.643 million users. The total numbers of PCs are approximately 4.2 million, which translates a penetration rate of 16.6 for every 100 people in the population (MCMC, 2005).

Acceptance of Web site by Malaysians is increasing year by year. Very few 'com.my' domain names were registered prior to 1995 under MYNIC that was only 100 registrations. However, the new domain name registrations increased to 9086 registrations for the year 2004 and the accumulative total is 50792. The total number of registration of 'com.my, net.my, org.my, gov.my, edu.my, and mil.my' between January 1995 to December 2004 is 56263 (MYNIC, 2005).

Malaysia has developed its own homegrown plan to become the centre of E-Commerce in Asia. Malaysia has not been known as a technology powerhouse in the world nor does it enjoy the same international coverage as Singapore does. However Malaysia, despite its critics, has put up one of the best plans and efforts of any country in Asia (Chenard and Wong, n.d.).

E-Commerce activities have yet to make an impact. Companies are beginning to show a lot more interest and people are more open to the idea now and there is certainly a

change in the mindset among businesses and potential of the Internet marketing (Chow, 1999).

### **Singapore**

Singapore was first linked to the Internet in October 1991 via Technet, a TCP/IP based network set up by the National Science and Technology Board (NSTB) to serve the research and development and academic communities in Singapore. The Internet first made its mark in Singapore only in July 1994 when Singapore Telecommunications Ltd launched the republic's first commercial ISP, SingNet. There were about 85,000 users at the end of 1995, an increased rate of 60% compared to 52,000 users at the beginning of 1995. The first WWW sites were started in September 1993. Commercial access to WWW was officially established in July 1994 via CommerceAsia, a SingNet Web information service. At the end of 1995, it was estimated that more than 40 local companies were already providing information on the WWW, while at least 150 companies have leased lines for E-mail communications (Soh, Quee, Fong, Chew and Reid, 1997).

IDA Survey on Infocomm usage in households 2001 found that about 64% of the Singapore households owned a personal computer and 57% had access to the Internet (Puay, 2003). The broadband penetration rate was approximately 5.5% of the population (Yapp, 2005). Another study found that computerisation level for 1998 is 75%. The findings also showed that 70% of the small and medium sized enterprises surveyed used at least one stand-alone PC. 8.81% of the companies with computers had access to the Internet and over a third of these companies owned corporate Web sites. The sectors that were highly Internet-ready were the businesses in banking/finance and IT (The Infocomm Development Authority of Singapore, 2000a). Even acceptance of the marketer to the Internet is high, but only 10% of Singapore's top 2000 companies engage in E-Commerce (Mathivanan, 2002).

The study indicated that 73% of Singapore companies have Internet accounts and one in three companies has its own Web site. Another survey of over 1000 companies done by NCB in mid 1999 also showed that most companies in Singapore are basically Internet ready (Kang and Lee, 2000). The total of domain name registration that covers 'com.sg, org.sg, net.sg, edu.sg, gov.sg, and per.sg' in Singapore until December 2004 is 41044, an increase of 7% (38438) compared to June 2004. The domain name of com.sg shows the highest registration compared to other domain names registration, which totals 37058 from the 41044 of total registrations (SGNIC, 2005).

Based on the situation in Singapore, "perceptions of the Internet for business use resulting from experience are likely to play an important role in the social process of diffusion". Marketers' perceptions of the attributes of the Internet are largely positive. This may reflect, in part, the relatively pro-IT culture that exists in the country because of the Government's strong support for IT education, use and infrastructure. Marketers use the Internet for marketing and advertising; customer service and support; information gathering; and electronic transactions. Compared with companies in developed countries, Singapore firms use the Internet more for conservative tasks, such as information dissemination and gathering feedback (Soh et. al., 1997).

## **OBJECTIVES**

The objective of this study is to review the adoption of Internet and ICT, Web site development and Internet marketing. The second objective is to study the correlation between these three factors. This study also tries to study marketers' perception in Malaysia and Singapore on the implication of the Internet and ICT on Web site development and implication of Web site development on Internet marketing.

## **LITERATURE REVIEW**

### **Internet and ICT**

A strong ICT infrastructure provides two important strategic capabilities. First, infrastructures enable data sharing across functions and divisions, which supports cross-functional decision-making and allows organisations to act more globally. Second, provide a base for faster development of business applications due to standardised platforms and common applications (Brown and Ross, 1996). The ICT, the convergence of computing, telecommunications and imaging technologies have had radical impacts on ICT users, their work, and their working environments. In its various manifestations, ICT processes data, gathers information, stores collected materials, accumulates knowledge, and expedites communication.

There is a dynamic relationship between the ICT adoption and management especially strategy, organisational structure, management systems and human skills; which at the end will give the impact to the Web site development. In the management systems, ICT adoption corresponds to an incremental process of organisational capability development and strategic impact. The shape of ICT utilisation in today's organisation is characterised by an explosion of products and services available not merely for the automation of basic transaction processing, but to systems that support the execution, co-ordination, control and evaluation of entire business processes (Turban, McLean and Wetheterbe, 1999).

### **Web Site Development**

Web site development has been suggested that it should be covered preparation; seeding; full-scale planting; growth; yield; growth outstrips infrastructure; pruning, weeding and re-planning; and finally maturity (Oliver and Johnson, 1999). A top-down approach by Artz (1996) was introduced for developing corporate Web applications that begins with defining the purpose of the application and proceeds through well-defined stages to Web page development.

As E-Commerce expands, the design of Web sites becomes a critical success factor. First, Web sites are the main interface between businesses and consumers. Second, the Web site may become one of the main factors in judging a corporation. 100 of judges used six criteria (business function, corporation credibility, contents reliability, Web site attractiveness, systematic structure and navigation) to find factors that make an award winning over 3000 Web sites (Kim, Shaw and Schneider, 2003). A number of informal

development models for Web sites can be identified under a variety of guises. A synthesis of these informal approaches and case studies leads to the following general or an informal Web site development model: establish the need before the Web site is adopted as a solution; gather information before any Web site development takes place; develop and evaluate before creating the complete site; implementation should be done once all design decisions have been finalised; and maintain (see Table 1) (Cunliffe, 2000).

Table 1: Informal Development Model, Tasks and Usability Methods for Web Sites

Stage Usability	Method
<b>Establish the need – Before the Web is adopted as a solution</b>	
Information providers business objectives Whether a Web site is the right solution Define success	<ul style="list-style-type: none"> <li>• One-to-one meetings (Rosenfeld and Morville, 1998, ch. 7)</li> <li>• Brainstorming (Rosenfeld and Morville, 1998, ch. 7)</li> </ul>
<b>Gather information – Before any Web development takes place</b>	
Competitive analysis Key users Key user characteristics Key user tasks Information objects Relevant published research Reusable content resources Appropriate guidelines and heuristics	<ul style="list-style-type: none"> <li>• Competitive analysis (Nielsen, 1995a; Andrew and Musser, 1997; Rosenfeld and Morville, 1998, ch. 7)</li> <li>• Focus groups (Abels et. al., 1997a, b; Berndtsson, 1999)</li> <li>• Interviews (Rice et. al., 1996; Corry et. al., 1997; Berndtsson, 1999)</li> <li>• Surveys (Fuccella, 1997; Zimmerman et. al., 1997)</li> <li>• Questionnaires (Abels et. al., 1997a)</li> <li>• Scenarios (Nielsen, 1995a; Flemming, 1998, ch. 1; Rosenfeld and Morville, 1998, ch. 8)</li> <li>• Customer pathways (McGaffin, 1999)</li> <li>• Review appropriate existing studies of user information-related behaviour (Abels et. al., 1997a, b; Zimmerman et. al., 1997)</li> <li>• Design team brainstorming (Andrew and Musser, 1997; Erskine et. al., 1997; Rosenfeld and Morville, 1998, chs 7, 8)</li> </ul>

Table 1: Informal Development Model, Tasks and Usability Methods for Web Sites  
(continued)

Stage Usability	Method
<b>Develop and evaluate – Before creating the complete site</b>	
Design look and feel Structure and chunking Create prototypes Evaluate prototype usability Evaluate prototype accessibility Evaluate conformance to guidelines	<ul style="list-style-type: none"> <li>• Web design guidelines (Corry et. al., 1997; D'Angelo and Little, 1998)</li> <li>• Card sorting (Nielsen and Sano, 1995; Rice et. al., 1996; Corry et. al., 1997; Fuccella, 1997; Berndtsson, 1999)</li> <li>• Focus groups (Abels et. al., 1997a, b; Rosenfeld and Morville, 1998, ch. 9)</li> <li>• Prototype testing (Nielsen, 1995b; Abels et. al., 1997a, b; Corry et. al., 1997; Fuccella, 1997; Zimmerman et. al., 1997; Rosenfeld and Morville, 1998, ch. 8)</li> <li>• On-line feedback forms (Abels et. al., 1997b)</li> </ul>

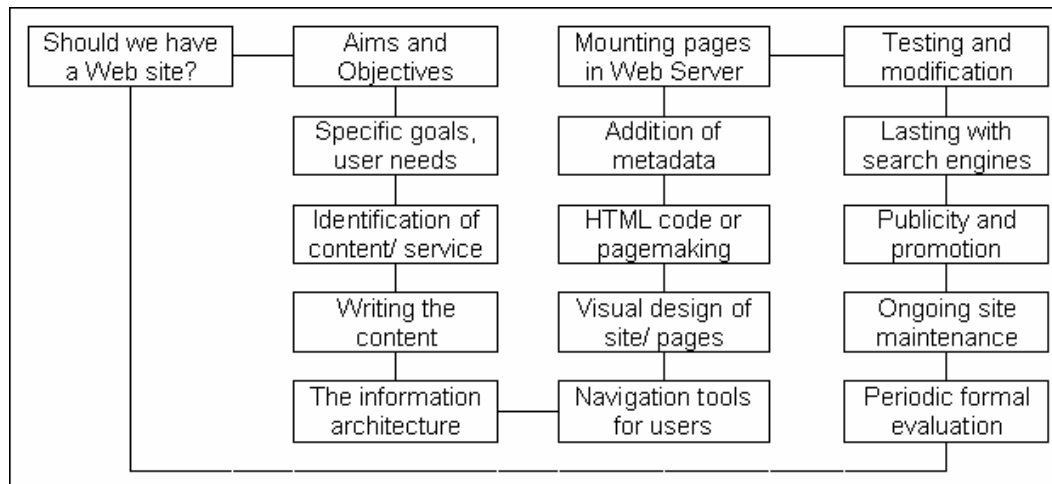
	<ul style="list-style-type: none"> <li>• Questionnaires (Fuccella, 1997)</li> <li>• Scenarios (Erskine et. al., 1997; Kritou, 1998)</li> <li>• Think-aloud methods (Nielsen and Sano, 1995; Corry et. al., 1997; Kritou, 1998)</li> <li>• Direct observation (Corry et. al., 1997; Kritou, 1998)</li> <li>• Interviews (Kritou, 1998)</li> <li>• Structural analysis (Botafogo et. al., 1992)</li> <li>• Inspection/walkthrough methods (Nielsen and Sano, 1995; Kritou, 1998)</li> </ul>
<b>Implement – Once all design decisions have been finalised</b>	
Validate Check internal and external links Launch Publicise	<ul style="list-style-type: none"> <li>• Continuing competitive analysis (Nielsen, 1995a; Fuccella, 1997)</li> <li>• On-line questionnaire (Kritou, 1998; Thomas and Paterson, 1998)</li> <li>• Email feedback (Thomas and Paterson, 1998)</li> <li>• Search terms analysis (Bevan, 1998)</li> <li>• Log analysis (Bertot et. al., 1997; Smith et. al., 1997, p. 91; Kritou, 1998)</li> </ul>
<b>Maintain – Continuously after site has been launched</b>	
Monitor site use Check external links Gather user feedback Monitor changing business objectives Monitor changes in technology Continue competitive analysis Continue to understand key users	<ul style="list-style-type: none"> <li>• Search terms analysis (Bevan, 1998; Rosenfeld and Morville, 1998, p. 173)</li> <li>• Log analysis (Bertot et. al., 1997)</li> <li>• On-line questionnaire (Kirakowski and Cierlik, 1998; Thomas and Patterson, 1998)</li> <li>• E-mail feedback (Rosenfeld and Morville, 1998, ch. 9)</li> <li>• Continuing competitive analysis (Nielsen, 1995a; Fuccella, 1997)</li> </ul>

Source: Cunliffe (2000)

• **Planning and Preparation Stage**

The strategic planning process provides a useful framework through which to view the many tasks associated with Web site development and maintenance and to conceptualise their relationship to one another. It brings together information about the personnel and skills, facilities and equipment, software, financial investment, time commitment that will be necessary at each stage of the Web site development process, matching to the tasks that need to be performed at each stage. In this way, it facilitates forward planning for Web site development. It also highlights the fact that Web site development and maintenance are ongoing activities for which resources and personnel times are needed on a continuing basis (see Figure 1) (Clyde, 2000).

Figure 1: Strategic Planning/Development Cycle for a Web Site

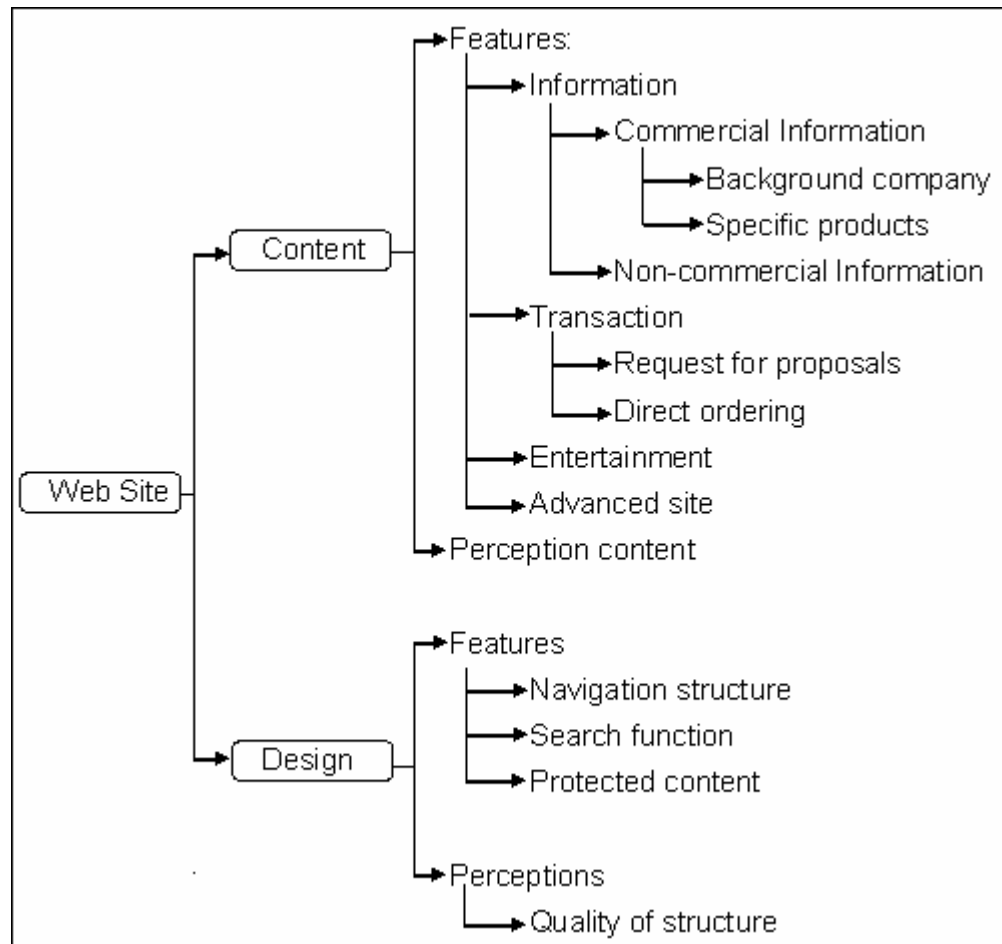


Source: Clyde (2000)

- **Development and Design Stage**

Prior competencies, competitive intensity, firm size, Web site age, firm age, and strategic commitment are six drivers that significantly influence a firm's Web site development and effectiveness. The study also found that competitive intensity, prior competencies, firm age and firm size influence the firm's strategic commitment, which has a mediating effect on Web site development (Kowtha and Choon, 2001). Another suggestion in the Web site development by Huizingh (2000), two important characteristics need to be focussed, content and design (see Figure 2).

Figure 2: Content and Design



Source: Huizingh (2000)

The implementation of the Web site represents not only the design as based on the user group's initial criteria but also their feedback and possible feedback from other members of the same community to preliminary versions of the site. This continual feedback should continue to be considered in making decisions about site design. In the implementation stage, the site becomes operational and available. Real users begin to incorporate the site into their normal information-gathering behaviour (Abels, White and Hahn, 1999). The study of 54 Canadian travel agencies indicate that informational implementation and transactional implementation are determined by the environmental context (business partners' influence and environmental uncertainty), whereas strategic implementation is determined by the travel agencies' marketing strategy in terms of distribution and communication, the organisational context (type of ownership, nature of business) and the characteristics of E-Commerce (perceived advantages and technology attributes) (Raymond, 2001).

- **Management and Maintenance Stage**

Maintaining process covers monitoring site use; checking external links; gathering user feedback; monitoring changing of business objectives; monitoring the changes in

technology; continuing competitive analysis; and continuing to understand key users (Cunliffe, 2000). Another suggestion based on the management and maintenance process that needs to be focussed is ensuring that new pages meet the quality and usability requirements; indexing; and full maintenance. To ensure that new pages meet the quality and usability requirements, skills will be required for developer especially the expertise in the subject domain, HTML, graphic design and usability. Based on the indexing, Web site can also be used to help people to find relevant Web site by indexing the important topics and names of key people. Maintenance covers a plan and reviews the site structure as it grows, reviews the users' needs and makes sure the site continues to meet the needs. This also covers monitoring feedback from users, keeping track on words used when searching the site and where people first arrive on the site; checking for broken links; and finally comparing the site to other comparable sites as Web browsers and Web designs evolve (Bevan, 1999).

### Internet marketing

Internet marketing activity occurs through three types of channels: distribution, transaction, and communication channels (Peterson, Balasubramanian and Bronnenberg, 1997). Various advantages to sell directly on the Internet that can be classified into those three channels based on the functions performed can be referred to Table 2 (Kiang, Raghu and Shang, 2000).

Table 2: Advantages of Three Marketing Channels based on Functions Performed

Activity	Advantage
As a communication channel: information exchange between sellers and buyers	For accessing, organising, and communicating information.
	To improve interactivity and perceptual experience.
	To gather information about customers via surveys and contests for new product development and introduction, relationship building and personalisation.
As a transaction channel: sales activities	To improve visibility and reach a much bigger customer base.
	To improve revenues by exploiting cross-selling opportunities.
	To streamline transaction processing, thereby reducing task complexity, paperwork and transaction costs.
As a distribution channel: physical exchange of products services	To customise promotion and sales to individual customers and improve flexibility.
	To eliminate huge inventories, storage costs, utilities, and space rental, etc.
	To shorten supply chain and reduce commission and operating costs.

Source: Kiang et. al. (2000)

- **Communication**

Marketing communication in the traditional parameter mix approach has been identified as persuasion, which entails a primarily one-way communication mode (Waterschoot

and Van den Bulte, 1992). The three phases of the relationship marketing communication development process are pre-relationship phase, negotiation phase and relationship development phase (Andersen, 2001). In marketing relationships, communication serves roles other than persuasion such as informing, listening and answering, which require interaction and two-way communication forms between marketer and customer (Duncan and Moriarty, 1998). In addition, the communication task is no longer confined to a small group of marketing persons. Essentially, all supplier personnel having dealings with customer personnel served as part-time marketers fulfilling roles in the overall relationship marketing communication scheme (Gummesson, 1991).

A number of communication tactics are available for maintaining and managing the broad spectrum of ongoing marketing communication activities between suppliers and customers. Such tactics include episodic communication, which involves suppliers and buyers, recording and keeping customer encounters in databases in order to store, distribute and retrieve updated information on customer business to the benefit of relevant personnel. Thus, maintaining an updated information level enables the staff to speak with one voice (Spekman and Johnston, 1986).

The Internet can provide timely information to customers because of its ability for instant communication and its availability 24 hours a day, 7 days a week. This means more interaction better customer services and quicker responses. The Internet can be used for both internal and external communications. For external communication, it can be used to communicate with both suppliers and customers. The ways of communication on the Internet range from the most basic form of email service, mailing lists, and newsgroups, to participating in chat-room activities. It also allows for easy follow-up on customers' needs and for expanding and adjusting marketing strategy (Kiang and Chi, 2001).

The Internet is the ability to gather information about customers via surveys and contests. The information can be used to assist new product development and introduction. Companies can design and personalise advertising for each customer through "push" technology. The communication also helps with identifying prospects, sales and relationship building and deepening customer loyalty (Kranzley, 2001). A study found that five of the top six business functions performed electronically via the Internet are related to communication, namely company information (50%), customer communication (49%), supplier communication (45%), marketing (42%), customer service (34%) and public relations/advertising (31%) (Adam, Mulye, Deans and Palihawadana, 2002). The fact is there is no actual face-to-face contact involved in the Internet communication. For the types of products that rely heavily on building personal relationship between buyers and sellers such as the selling of life insurance and the type of products that requires physical examination, Internet marketing is maybe less appropriate (Kiang and Chi, 2001).

- **Transaction**

Business transactions consist of a number of sub-processes. Four phase to describe transactions, include information, negotiation, settlement, after-sales and transaction

analysis. Alternative perspectives include the viewpoints of the sellers (suppliers, manufacturers and distributors) and intermediaries (Gebauer and Scharl, 1999).

The Internet can also ease transaction processing, especially for handling complex orders, thereby reducing paperwork, increasing efficiency, replacing professionals' tasks, hence reducing the transaction cost. For example, the online payment system minimises the processing fee and allows for small-fee transactions for micro-services. This is especially advantageous for SMEs because most of their business is generated from low-volume orders, allowing them to better compete with large cap companies (Kiang and Chi, 2001).

For B2B transactions', shortening the processing time also means the buyer can maintain a lower inventory level and reduce other related overhead for handling excessive inventory. The Internet allows for quick adjustment to market conditions, which means it is possible to customise promotion and sales to individual customers, that allowing for flexible pricing (Kiang and Chi, 2001).

- **Distribution**

Efficient consumer response is arguably the most complex managerial innovation in distribution (see Table 3) (Brockman and Morgan, 1999). Internet marketing offers more choices and flexibility and at the same time, eliminates huge inventories, storage costs, utilities and space rental. People tend to associate Internet marketing with direct marketing because companies participating in online marketing usually shortened the supply chain and reduced commission and operating costs. The ability to serve as both a transaction medium and a physical distribution medium for certain goods is a unique feature of Internet marketing. Using the Internet as the distribution channel can reduce not only the delivery cost substantially, but also ensures instant delivery of products or services (Kiang and Chi, 2001).

Adoption of the Internet marketing gives either positive or negative perception to the marketer due to the advantages and disadvantages of marketing on the Internet. A review of the business and academic literature yielded over 50 advantages and forty disadvantages that may impact on firms when they adopt E-Commerce. Tables 4 to 6 classify impacts, respectively, into those concerned primarily with internal, market or competitive factors. Table 4 lists advantages and disadvantages concerning factors internal to the firm perceived as being important for aligning resources to the market environment. Table 5 shows that the impact of E-commerce is similarly ambiguous for market factors such as definition of markets, relationships, customer service, customer value, delivery channels and new products. Shifting attention to competitive factors reported in Table 6, it is apparent that the assessment of the impact of E-Commerce is similarly ambiguous (Pires and Aisbett, 2002).

Table 3: Key Managerial Innovations in Distribution

<b>Time period</b>	<b>Innovation</b>	<b>Operational change</b>
1870 – 1929	Vertically integrated systems: <ul style="list-style-type: none"> <li>• Chain store (R,D)</li> <li>• Department store (R,D)</li> <li>• Mail-order houses (R,D)</li> </ul>	<ul style="list-style-type: none"> <li>• Wholesale activities performed by the retailer.</li> <li>• Routinisation of transactions.</li> <li>• Merging of chain store, department store and mail-order houses.</li> </ul>
1930 – 1949	Self-service (R)	<ul style="list-style-type: none"> <li>• Reduction in consumer services performed by retailer; scrambled merchandising.</li> <li>• Increasing amount of wholesale activities performed by retailer.</li> </ul>
1950 – 1969	Contractually integrated marketing systems (M,D,R)	<ul style="list-style-type: none"> <li>• Increased coordination efforts in both vertical and horizontal integration.</li> <li>• Movement towards greater efficiency in replenishment efforts.</li> </ul>
1970 – 1989	Just in Time (M,D,R) Quick response (M,D,R)	<ul style="list-style-type: none"> <li>• Increasing integration between channel players.</li> <li>• Primary focus on efficiency in production and replenishment, and product and service quality.</li> </ul>
1990s	Efficient Consumer Response (M,D,R)	<ul style="list-style-type: none"> <li>• Primary focus still on efficiency in production and replenishment.</li> <li>• Joint efforts to identify and provide market demanded products.</li> <li>• Movement towards improving the efficiency of promotional efforts.</li> </ul>

Note: R – retailer; D – distributor; M – manufacturer

Source: Brockman and Morgan (1999)

Table 4: Implications for Business from Adopting E-Commerce: Internal Factors

<b>Advantages</b>	<b>Disadvantages</b>
Increased profits; leverage of scarce corporate resources	Advantages may be negated by critical mass requirements; non-sustainable advantage
Increased revenue and sales	Costs in staying on top of ICT
Reduced start-up capital needs and lower overheads once started	Specific skills required; reskilling required
Reduced costs: material, transaction, operation, marketing, distribution; reduced inventories	Small businesses have to carry more stock
More diverse business activities and economies of scope	Resistance to payment for services offered via the web
Economies of scale possible	Unreliability and risk
Better control over industry supply chains	Loss of control through loss of relationships
Disintermediation; enhanced supplier-reseller relationships	Disintermediation
Improved sales tracking and improved marketing	Measurement challenges: difficult to determine the audience reached, costs and benefits
Shorter product development cycles; shorter supply chain	Long access and search times for information; traffic congestion
Accelerated transactions, with faster cash generation; automated buying processes	Time and expense in setting up new processes for handling orders, dispatch and freight
Increased flexibility and responsiveness	Difficulty in integrating existing databases and transaction-processing software designed for traditional commerce into the software that enables E-Commerce
Improved internal processes and sharing of internal best practice; access to commercial research	Confusing and anarchic information environment

Source: Pires and Aisbett (2003)

Table 5: Implications to Business from Adopting E-Commerce: Market Factors

<b>Advantages</b>	<b>Disadvantages</b>
Company location becomes irrelevant	Potential inability to accommodate global differences – may justify exclusion of information such as prices
Closer customer relationships with higher switching costs through structural bonds linking computer systems	Disruption to existing relationships along the selling channel
Widens existing markets to the global level	Risk from dealing with shoe-string businesses
Reaches/creates new markets virtual communities	Sceptical buyers; risk from unknown customers
Buyers gain easy access more suppliers more often	Big companies band together to screw suppliers on prices
Suppliers can affordably reach more buyers Larger potential customer base	Suppliers forced online (a benefit if compliance costs are reasonable)
Better customer service increasing customer value; contributes to societal gain	Restricts competition: big businesses deal only with suppliers that have e-procurement systems
Shifts advantage from seller to the buyer; buyers can quickly and thoroughly compare attributes of competing products	Shifts advantage from seller to the buyer
Service information more accurately distributed; customers' problems solved faster	Security problems
Improved communication and increased feedback in real time. Information can reach more people without sacrificing content	Web sites are dull; confusing and anarchic information environment
Enables narrowly targeted marketing efforts	Cultural and legal impediments
Alternate sales/delivery channels	Unwieldy URLs
Number of products carried by suppliers independent of physical display area	Need bricks-and-mortar evidence
Creates new information-based products and enables presumption	Specific skills required
Increases supply chain efficiency	

Source: Pires and Aisbett (2003)

Table 6: Implications to Business from Adopting E-Commerce: Competitive Factors

<b>Advantages</b>	<b>Disadvantages</b>
<p>Business size becomes irrelevant</p> <p>Small businesses can compete on a more equal technological footing with multinationals; more opportunities for small businesses</p> <p>Big businesses may minimise inventory and increase cycle</p> <p>Reduced costs for big business (through accepting only suppliers that practice JIT delivery)</p> <p>Price convergence at a lower price level; viral marketing</p> <p>Nonprice competition stimulated</p> <p>Low cost distribution of information goods</p> <p>Online synergy effects from cross-selling lead to one-stop shop offerings and increase customer perceived value</p> <p>Faster launching of new or revised products</p> <p>Eliminates some national and global barriers to entry, such as marketing costs, distribution and shelf-space acquisition</p> <p>Competitive intelligence</p> <p>Virtual enterprises may mimic benefits of vertical integration</p>	<p>Spells the end for small businesses</p> <p>Greater power for large businesses</p> <p>Risk from dealing with shoe-string businesses</p> <p>Bad for small business as big business can reduce costs by accepting only suppliers that practice JIT delivery</p> <p>Reduced competition</p> <p>Levelling of business practices</p> <p>Need to maintain a trust relationship with customers, providing constant value-added information, products and quality online experience</p> <p>Creates barriers to entry via IP, exclusivity arrangements and creation of customer communities</p> <p>Blurring of traditional boundaries</p>

Source: Pires and Aisbett (2003)

### **Adoption of Internet and ICT on the Web Site Development**

The majority of Web pages are authored using the tagged standardised HTML language. In addition, Dynamic HTML techniques can also be used for Web page authoring thereby making it more dynamic and interactive. But, the percentage of Web pages that use Dynamic HTML is still quite low that is around 3.8%. Another most commonly used programming language is Java. It allows applets and servlets to be run on the client side and server side respectively. Web pages are increasingly being developed with Java applets and JavaScript. It is widely used for supporting interactions in the Web pages, as it can easily be integrated into many popular browsers. Based on the study of a total of 105 Web pages from the Internet over a one-month period, 12.6% of the Web page designs were found to contain Java applets and 7.7% of the Web page designs were with JavaScript (Tan, Foo and Hui, 2001).

The evolutionary of the Web publishing applications or tools make the Web site development much interesting to consumers to access it. Multimedia, animated images and visual, as well as sound, video, image and graphics are used in the Web site design. 86.7% and 33.3% of the Web pages included images and multimedia (Tan, Foo and Hui, 2001). Web site attractiveness would increase with interactive functions, a term used to describe Web multimedia applications. Based on media richness theory, the multimedia interactive format should provide more capabilities than text, sales brochures and catalogues (Ghose and Dou, 1998). Advancement in graphics technology allows more creativity on the Web with developments such as animated ads and banners on screen. New inventions in Web technology allow multimedia techniques to make much more sophisticated and integrated presentations in the form of video, sound, music, graphics and text (Karayanni and Baltas, 2003).

However, another argued that different ways of presenting information alter information search costs. Indeed, the new media are not frictionless. Some information search tasks take longer online, depending on how the Web is designed (Hoque and Lohse, 1999). Unfortunately, there is no objective technique for measuring information search in the context of site design. Both speed and effectiveness are impaired when information is provided using video or audio, as compared to other subtle interfaces such as animation, text or graphics. Information search in audio or video takes more effort than searching in text or graphics. The additional effort is attributed to more waiting time to load an audio or video clip (Karayanni and Baltas, 2003).

### **Adoption of Web Site Development on the Internet Marketing**

Web site presents new opportunities and challenges to establish, build and manage customer relationships. To establish relationships with online customers, it is imperative that a firm understands the user experience and how people interact with the Web (Geissler, 2001). Web site development can be used to move customers and prospects through successive phases of the buying process. A digital marketing was built around five elements to tap on the opportunities of interactive media, therefore attracting users, engaging users' interest and participation, retaining users, learning about their preferences and relating back to users to provide customised interactions (Kierzkowski, McQuade, Waitman and Zeisse, 1996).

A research on Irish companies' Web sites found evidence of three different strategies, which are ornamental, informational and relational. Many companies also had failed to move their Web sites beyond offering a virtual brochure (Geiger and Martin, 1999). A finding was confirmed with Canadian companies (Andrus, 2000). It is evident from such research that although the Internet offers major benefits to procurement and marketing, many companies are not taking advantage of these opportunities. It is possible that other new methods such as intranets and extranets are not being fully utilised either as the penetration of EDI or an old technology similar to an extranet is relatively low, it is only used by approximately 10,000 companies in the UK even after being promoted by the government (Naudé, Holland and Sudbury, 2000).

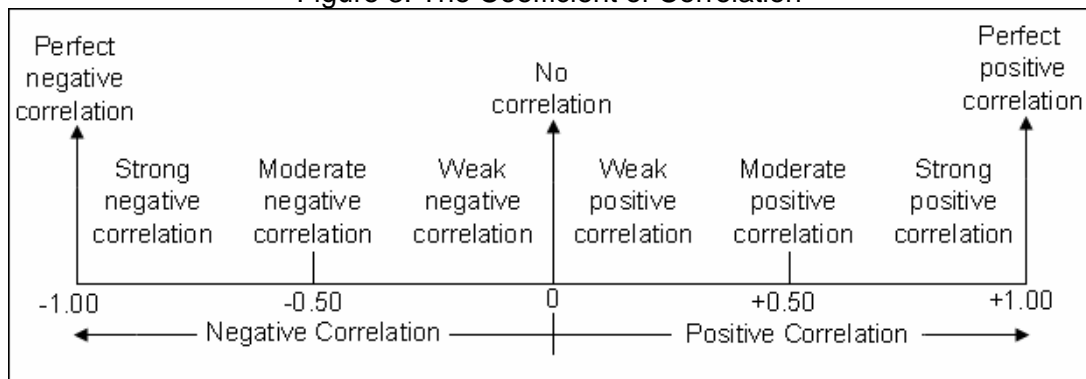
Web site is used in many different ways by business with some being more dependent on links to attract new visitors than others. Technological advances generally increase the scope of the types of activity that are possible. Examples of this are faster modems allowing more data to be exchanged online, HTML allowing the forms interface to be included in Web pages and digital certificate support in browsers allowing relatively secure online commerce (Thelwall, 2001).

Many companies doing business online are still in the investment and brand-building phase and have yet shown profit. The Internet marketing has shifted its focus from building a customer base to increasing revenue growth and profitability, as it will improve their current business strategy (Shin, 2001). A survey of 400 firms, which 92 usable responses were obtained found that this form of marketing strategy contributes significantly to the development of the Web site's online brand equity. A successful online brand offers potential for companies to foster customer loyalty in the Web sites, which can translate to higher profit growth (Teo and Tan, 2002).

## **METHODOLOGY**

Primary data for this research were collected using a self-administered questionnaire designed to serve the purpose of the research objectives. Data collection process will be based on the traditional research methodology and online research methodology (free online survey - <http://www.my3q.com>). For the traditional-based, self-administered questionnaire together with the duly stamped returned envelopes will be mailed to the businesses selected in the sample. Another way is distribute to the respondents face-to-face. Same type of questionnaire was applied for both methods. The main objective of using the questionnaire is to study the correlation and implication of the Internet and ICT, Web site development and Internet marketing. The first analysis method applied in this research is the coefficient of correlation using SPSS. The coefficient of correlation describes the strength of the relationship between two sets of interval-scaled or ratio-scaled variables. It can assume any value of  $-1.00$  or  $+1.00$  inclusive. The coefficient correlation of  $-1.00$  or  $+1.00$  indicates perfect correlation (see Figure 3). We are also using AMOS 5 to analyse path analysis.

Figure 3: The Coefficient of Correlation



Source: Mason et. al (1999)

## ANALYSIS AND DISCUSSION

### Total Samples Received

The questionnaire was distributed to the companies or marketers based on the eight industries (Internet and ICT; tourism and hospitality; manufacturing; retailing; construction and real estate; printing and publishing; banking and finance; and education). Of the 1849 questionnaires, 200 were returned (see Table 7). The total of response rate was 10.8%. 100 questionnaires were returned from each country, therefore Malaysia and Singapore. 93.5% of the samples received were from three industries namely retailing, Internet and ICT, and manufacturing. Samples received were less than 3% of the total population of distributed questionnaires for each industry. Even few methods have been applied to distribute the questionnaire, however, the feedback from five industries, therefore tourism and hospitality, construction and real estate, printing and publication, banking and finance, and education still low.

The distribution of questionnaires is based on size of the industry. Due to the population of each industry in Malaysia much higher than Singapore, 56.6% of the questionnaires were distributed in Malaysia compare to Singapore just only 43.4%. Minimum of 100 questionnaires were distributed for each country. However, due to the small population of industry in Malaysia and Singapore, less than 100 questionnaires were distributed for three industries, therefore printing and publishing industry, banking and finance industry, as well as education industry for Singapore. 57% of the questionnaires distributed were mainly from the Internet and ICT industry (Malaysia: 250, Singapore: 150), manufacturing industry (Malaysia: 200, Singapore: 150), and retailing industry (Malaysia: 150, Singapore: 150).

The reason lack of feedback because certain company unable to provide their information due to the company's restriction and policy. Even few methods have been used in this study example by email, phone and face to face, but the respond still low especially from SME because they are not interested to participate in this study.

Table 7: Total Samples based on Category of each Industry

Industry	Questionnaire	Country		Total
		Malaysia	Singapore	
Internet and ICT	Distributed	N=250 13.5%	150 8.1%	400 21.6%
	Received	24 1.3% *6.0% **9.6%	25 1.4% *6.3% **16.7%	49 2.7% *12.3%
Tourism and Hospitality	Distributed	150 8.1%	100 5.4%	250 13.5%
	Received	0 .0% *.0% **.0%	4 .2% *1.6% **4.0%	4 .2% *1.6%
Manufacturing	Distributed	200 10.8%	150 8.1%	350 18.9%
	Received	29 1.6% *8.3% **14.5%	15 .8% *4.3% **10.0%	44 2.4% *12.6%
Retailing	Distributed	150 8.1	150 8.1	300 16.2
	Received	43 2.3% *14.3% **28.7%	51 2.8% *17.0% **34.0%	94 5.1% *31.3%
Construction and Real Estate	Distributed	100 5.4%	100 5.4%	200 10.8%
	Received	1 .1% *.5% **1.0%	0 .0% *.0% **.0%	1 .1% *.5%
Printing and Publishing	Distributed	70 3.8%	50 2.7%	120 6.5%
	Received	2 .1% *1.7% **2.9%	0 .0% *.0% **0%	2 .1% *1.7%
Banking and Finance	Distributed	26 1.4%	22 1.2%	48 2.6%
	Received	1 .1% *2.1% **3.8%	3 .2% *6.3% **13.6%	4 .2% *8.3%
Education	Distributed	100 5.4%	80 4.3%	180 9.7%
	Received	0 .0% *.0% **.0%	2 .1% *1.1% **2.5%	2 .1% *1.1%
Total	Distributed	1046 56.6%	802 43.4%	1848 100%
	Received	100 5.4%	100 5.4%	200 10.8%

\*% Total Samples Received for each Industry

\*\* % Total Samples Received for each Industry based on each Country

## Correlation

Based on the overall samples (200), it shows that the correlation between the Internet and ICT, Web site development, and Internet marketing are positive (Table 8).

- The Internet and ICT has a positive correlation, which is between Strong positive correlation and Perfect positive correlation with Web site development (0.765) and between Weak positive correlation and Moderate positive correlation for Internet marketing (0.386).
- Web site development has a positive correlation, which is between Strong positive correlation and Perfect positive correlation with the Internet and ICT (0.765) and between Weak positive correlation and Moderate positive correlation for Internet marketing (0.459).
- The analysis shows that Internet marketing has a positive correlation, which is between Weak positive correlation and Moderate positive correlation with Internet and ICT (0.386) and Web site development (0.459).

Based on Malaysia and Singapore samples, the study also shows that there are positive correlations for all the variables (Table 8).

- Internet and ICT
  - Malaysia  
The Internet and ICT has a positive correlation, which is between strong positive correlation and perfect positive correlation with Web site development (0.809) and between Moderate positive correlation and Strong positive correlation with Internet marketing (0.501).
  - Singapore  
The Internet and ICT has a positive correlation, which is between Moderate positive correlation and Strong positive correlation with Web site development (0.707) and between no correlation and Weak positive correlation with Internet marketing (0.247).
- Web site development
  - Malaysia  
Web site development has a positive correlation, which is between Strong positive correlation and Perfect positive correlation with the Internet and ICT (0.809) and between Weak positive correlation and Moderate positive correlation for Internet marketing (0.378).
  - Singapore  
Web site development has a positive correlation, which is between Moderate positive correlation and Strong positive correlation with the Internet and ICT (0.707) and Internet marketing (0.565).
- Internet marketing
  - Malaysia  
The analysis shows that Internet marketing has a positive correlation,

which is between Weak positive correlation and Moderate positive correlation with Internet and ICT (0.501) and Web site development (0.378).

- o Singapore  
The analysis shows that Internet marketing has a positive correlation, which is between no correlation and Weak positive correlation with Internet and ICT (0.247) and between Moderate positive correlation and Strong positive correlation with Web site development (0.565).

Table 8: The result of the Coefficient of Correlation

		INTERNET & ICT			WEB SITE DEVELOPMENT			INTERNET MARKETING		
		MY	SG	T	MY	SG	T	MY	SG	T
INTERNET & ICT	PC	1	1	1	.809**	.707**	.765**	.501**	.247*	.386**
	Sig	.	.	.	.000	.000	.000	.000	.013	.000
	N	100	100	200	100	100	200	100	100	200
WEB SITE DEVELOPMENT	PC	.809**	.707**	.765**	1	1	1	.378**	.565**	.459**
	Sig	.000	.000	.000	.	.	.	.000	.000	.000
	N	100	100	200	100	100	200	100	100	200
INTERNET MARKETING	PC	.501**	.247*	.386**	.378**	.565**	.459**	1	1	1
	Sig	.000	.013	.000	.000	.000	.000	.	.	.
	N	100	100	200	100	100	200	100	100	200

Note: PC: Pearson Correlation; Sig: Sig. (2-tailed);  
 \*\*Correlation is significant at the 0.01 level (2-tailed);  
 \*Correlation is significant at the 0.05 level (2-tailed).

At the significant level of 0.05, this study shows that Internet and ICT has a statistically significant positive impact on Web site development in Malaysia and Singapore. This can be proved by the standardised estimate is 0.686, unstandardised estimate is 0.765, critical ratio is 16.751 and P-value is <0.001 (Table 9).

The study shows that the standardised estimate is 0.459, unstandardised estimate is 0.475, critical ratio is 7.288 and P-value is <0.001. Since the result is significant at 0.05 significance level, the conclusion of this study shows that Web site development has a statistically significant positive impact on the Internet marketing in Malaysia and Singapore (Table 9).

Table 9: Unstandardised and Standardised Path Coefficient

	Estimate	S.E.	C.R.	P
Web site development ← Internet and ICT	*0.686	0.041	16.751	<0.001
	**0.765			
Internet marketing ← Web site development	*0.475	0.065	7.288	<0.001
	**0.459			

## CONCLUSION

This study has proved that there are positive correction between three factors, Internet and ICT, Web site development and Internet marketing. Web site development has a statistically significant positive impact on the Internet marketing in Malaysia and Singapore. It also proved that the Internet and ICT has a statistically significant positive impact on Web site development in Malaysia and Singapore. Marketing on the Web does not guarantee that a company will be able to avail itself of all the benefits (Wilson and Abel, 2002). As Moschella (1999) pointed out, organisations that are resource-rich are not necessarily more capable of fully utilising the Web. Some of these large organisations have failed to recognise the opportunities the Web offers and have either under-invested in Web-based communication or have invested unwisely (McMillan, 2001). Some organisational types seem to be more likely to survive than others (Koehler, 1999) and the importance of organisational commitment to current technology (Cunningham, 2000).

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