

# CHAPTER 1

## OVERVIEW-PART I: FOUNDATION OF E-BUSINESS AND E-BUSINESS TECHNOLOGIES

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This chapter presents foundation of e-business and discusses technologies for e-business. The foundation of e-business is discussed from the perspectives of global internet adoption and e-business growth, e-business definition, e-business categories, e-business models, impacts of e-business, security, privacy, and governance issues associated with e-business, and e-business strategy planning and implementation. E-business related technologies covered in this chapter include e-business information technology infrastructure, enterprise applications/systems, data warehouse & data mining, and technologies for addressing security & privacy concerns. The integration issue associated with e-business technologies is also addressed.

### 1. Foundation of Electronic Business

#### *1.1. The Rapid Growth of the Internet and Electronic Business*

In the last decade, a rapid growth and adoption of the internet has been observed in all the continents of the world (see Table 1.1). As shown in Table 1.1, all the regions in the world have achieved more than 100 percent growth for the period of 2000-2008, with 129.6% in North America, 165.1% in Oceania/Australia, 266.0% in Europe, 406.1% in Asia, 669.3% in Latin America/Caribbean, 1031.2% in Africa and

1176.8% in Middle East. In the meantime, North America has the highest adoption rate of the Internet (73.6% of its population have adopted the Internet) while Africa has the least adoption rate of the Internet (only 3.5% of its population are connected to the Internet). The differences in economic development may contribute to the variances in adoption rates of the Internet between developing and developed regions. The world has more than 14 million Internet users (or 21.9% of the world population) in the first half of 2008, and has achieved over 300 percent growth for the period of 2000-2008.

Table 1.1: Global Internet adoption

World Regions	Population (2008 Estimates)	Internet Users (Dec 31, 2000)	Internet Users (June 30, 2008 Data)	% of Population	% of World Internet Users	User Growth (2000-2008)
Africa	955,206,348	4,514,400	51,065,630	5.3%	3.5%	1031.2%
Asia	3,776,181,949	114,304,000	578,538,257	15.3%	39.5%	406.1%
Europe	800,401,065	105,096,093	384,633,765	48.1%	26.3%	266.0%
Middle East	197,090,443	3,284,800	41,939,200	21.3%	2.9%	1176.8%
North America	337,167,248	108,096,800	248,241,969	73.6%	17.0%	129.6%
Latin America/Caribbean	576,091,673	18,068,919	139,009,209	24.1%	9.5%	669.3%
Oceania/Australia	33,981,562	7,620,480	20,204,331	59.5%	1.4%	165.1%
World Total	6,676,120,288	360,985,492	1,463,632,361	21.9%	100.0%	305.5%

(Source: adopted from [www.internetworldstatistics.com](http://www.internetworldstatistics.com) with permission)

Some top countries in terms of the number of Internet users are (in the order): China (253 million or 17.3% of total world Internet users), United States (220.1 million or 15.0% of total world internet users), Japan (94 million), India (60 million), Germany (52.5 million), Brazil (50 million), United Kingdom (41.8 million), France (36.15 million), South Korea (34.8 million), Italy (34.71 million), Russia (32.7 million), Canada (28 million), Turkey (26.5 million), Spain (25.6 million), Indonesia (25 million), Mexico (23.7 million), Iran (23 million), Vietnam (20.16 million), Pakistan (17.5 million) and Australia (16.35 million) (see Table 1.2). As displayed in Table 1.2, while China has the largest number of Internet users the penetration/diffusion rate of the internet is quite low (only 19% Chinese are using the internet). Similarly India's Internet penetration rate also quite low (with 60 million users and 5.2% internet penetration rate). On the other hand countries like

Canada (84.3%), Australia (79.4%), Japan (73.8%), and United States (72.5%) are some countries with the highest internet penetration rates. At the same time, developing countries (such as China (1024.4%), India (1100.0%), Iran (9100.0%), Vietnam (9979.8%), and Pakistan (12969.5%)) have dominated the user growth for the period of 2000-

Table 1.2: Top countries of Internet users

Country or Region	Internet Users (June 30, 2008 Data)	Penetration (% of Population)	% of World Users	Population (2008 Estimates)	User Growth (2000-2008)
China	253,000,000	19.0%	17.3%	1,330,044,605	1024.4%
United States	220,141,969	72.5%	15.0%	303,824,646	130.9%
Japan	94,000,000	73.8%	6.4%	127,288,419	99.7%
India	60,000,000	5.2%	4.1%	1,147,995,898	1100.0%
Germany	52,533,914	63.8%	3.6%	82,369,548	118.9%
Brazil	50,000,000	26.1%	3.4%	191,908,598	900.0%
United Kingdom	41,817,847	68.6%	2.9%	60,943,912	171.5%
France	36,153,327	58.1%	2.5%	62,177,676	325.3%
South Korea	34,820,000	70.7%	2.4%	49,232,844	82.9%
Italy	34,708,144	59.7%	2.4%	58,145,321	162.9%
Russia	32,700,000	23.2%	2.2%	140,702,094	954.8%
Canada	28,000,000	84.3%	1.9%	33,212,696	120.5%
Turkey	26,500,000	36.9%	1.8%	71,892,807	1225.0%
Spain	25,623,329	63.3%	1.8%	40,491,051	375.6%
Indonesia	25,000,000	10.5%	1.7%	237,512,355	1150.0%
Mexico	23,700,000	21.6%	1.6%	109,955,400	773.8%
Iran	23,000,000	34.9%	1.6%	65,875,223	9100.0%
Vietnam	20,159,615	23.4%	1.4%	86,116,559	9979.8%
Pakistan	17,500,000	10.4%	1.2%	167,762,040	12969.5%
Australia	16,355,388	79.4%	1.1%	20,600,856	147.8%
TOP 20 Countries	1,115,713,572	25.4%	76.2%	4,388,052,548	284.5%
Rest of the World	347,918,789	15.2%	23.8%	2,288,067,740	391.2%
Total World-Users	1,463,632,361	21.9%	100.0%	6,676,120,288	305.5%

(Source: adopted from [www.internetworldstatistics.com](http://www.internetworldstatistics.com) with permission)

2008. Also it can be seen from the Table 1.2 that the top 20 countries have accounted for more than 70% (76.2%) of the world's total number of internet users while the remaining world (with more than 140 countries) only accounted for 23.8%. Therefore in world scene most of the e-business activities come from these countries and they form the massive head of the Internet world.

Some most used languages on the Internet include (in the order): English (430.8 million or 29.4% of all Internet users or 21.1% of all English speaking population have interacted in English online), Chinese (276.2 million, 18.9% & 20.2%), Spanish (124.7 million, 8.5% & 27.6%), Japanese (94 million, 6.4% & 73.8%), French (68.15 million, 4.7% & 16.6%), German (61.2 million, 4.2% & 63.5%), Arabic (59.85 million, 4.1% & 16.8%), Portuguese (58.18 million, 4.0% & 24.3%), Korean (34.82 million, 2.4% & 47.9%), and Italian (34.71 million, 2.4% & 59.7%) (see Table 1.3). The two dominant internet languages are

Table 1.3: Top Languages on the Internet

Top Ten Languages on the Internet	% of all Internet Users	Internet Users by Languages (June 30, 2008 Data)	Internet Penetration by Language (% of World Population for the Language)	Language Growth on the Internet (2000-2008)	2008 Estimated World Population for the Language
English	29.4%	430,802,172	21.1%	203.5%	2,039,114,892
Chinese	18.9%	276,216,713	20.2%	755.1%	1,365,053,177
Spanish	8.5%	124,714,378	27.6%	405.3%	451,910,690
Japanese	6.4%	94,000,000	73.8%	99.7%	127,288,419
French	4.7%	68,152,447	16.6%	458.7%	410,498,144
German	4.2%	61,213,160	63.5%	121.0%	96,402,649
Arabic	4.1%	59,853,630	16.8%	2063.7%	357,271,398
Portuguese	4.0%	58,180,960	24.3%	668.0%	239,646,701
Korean	2.4%	34,820,000	47.9%	82.9%	72,711,933
Italian	2.4%	34,708,144	59.7%	162.9%	58,175,843
Top 10 Languages	84.9%	1,242,661,604	23.8%	278.3%	5,218,073,846
Rest of the Languages	15.1%	220,970,757	15.2%	580.4%	1,458,046,442

(Source: adopted from [www.internetworldstatistics.com](http://www.internetworldstatistics.com) with permission)

English and Chinese. It can be seen from Table 1.3 that some online languages have realized fastest growth include: Arabic (2063.7%), Chinese (755.1%), Portuguese (668.0%), French (458.7%), and Spanish (405.3%). In the meantime, internet users of the top 10 Internet languages account for 84.9% of all internet users.

In addition, the growth of broadband users is also increasing faster even though worldwide usage is uneven in different regions. For example, broadband subscriber lines (per 100 people) are 29.5 in Western Europe, 27.9 in North America, 26.7 in Japan, 9.2 in Eastern Europe & Russia, 6.7 in Latin America, 5.7 in Asia and Australasia, and 2.2 in Middle East and North America (Economist Intelligence Unit 2009). Furthermore according to IDC (reported in Economist Intelligence Unit 2009), there will be 600 million mobile users accessing the internet via their mobile devices in 2009. And the number of devices with internet connections will double to 3 billion over the next few years. Countries also have different readiness for e-business. Economist Intelligence Unit & IBM Institute for Business Value (2007) study the e-readiness of 69 countries by examining factors such as connectivity & technology infrastructure, business environment, social and cultural environment, legal environment, government policy & vision, and consumer & business adoption. As per their criteria, top ten countries of e-readiness (in the order) are: Denmark, the U.S., Sweden, Hong Kong, Switzerland, Singapore, the U.K., Netherlands, Australia and Finland.

In line with a rapidly changing market, i.e., increasingly intense competition, the trend of globalization, more demanding customers, dramatic advancement of technologies (changes almost every 18 months or less), the increasing affordability of technologies and the rapid diffusion of the Internet globally, electronic business (conducting business online) is getting more and more popular and expanding dramatically. According to Economist Intelligence Unit (2009) around half of the approximate 1.5 billion Internet users will shop online in 2009 and further 400 million more internet users will purchase on the Internet by 2012. The projected over 1 billion online shoppers by 2012 will make the transaction value of business to consumer (B2C) e-business market reaching US\$ 1.2 trillion. But by then B2B e-business will be worth

US\$ 12 trillion (10 times of B2C e-business transactions) (Economist Intelligence Unit 2009).

## ***1.2. Understanding E-business***

E-business is a term that is used very widely, but the term means different things (i.e., online catalogue, online buying and selling, serving customers online, e-learning, e-government, e-research, e-supply chains, among many others) to different people in its relatively short history. In the meantime, there exists a debate on the similarities and differences of the two terms of e-commerce and e-business, which could be partially explained due to the lack of well-established literature. In this chapter, the concepts of e-commerce and e-business are used interchangeably. E-business/e-commerce has a broad meaning and encompasses all types of electronic transactions (i.e., B2B, B2C, C2C, Mobile commerce, E-government, E-learning, E-publishing, Online communities and Social networks) and communications within organisation and between organisations as well as with consumers. Organisations can be involved in e-business in different degrees – varying from no involvement at all (i.e. using only traditional, brick and mortar premises to sell physical goods) through partial involvement (i.e. mixing electronic and traditional distribution channels-click and mortar e-business) to full involvement (i.e., pure online businesses).

There are different ways of categorising e-business/e-commerce. One way is to classify according to the type of system involved. Under this approach, there are four types of e-business/e-commerce systems (see Figure 1.1), including electronic markets (i.e., online marketplaces), inter-organizational systems (i.e., electronic data interchange, extranets), intra-organizational systems (i.e., intranets), and service delivery systems (i.e., online banking, online learning and other online services). Electronic markets and inter-organisational systems are terms which have been used for many years. Some differences between these two types of systems include the nature of the relationship among the participants (i.e., in inter-organisational systems the participants have an existing relationship before entering into electronic transactions; in electronic markets there can be a relationship but it is more likely that the

participants do not know each other before the transaction takes place) and technology deployed (i.e., inter-organisational systems are made of proprietary systems or closed systems (providing entry only to approved suppliers and customers) while in electronic markets (essentially platforms for trading) anyone can gain access and can participate in transactions).

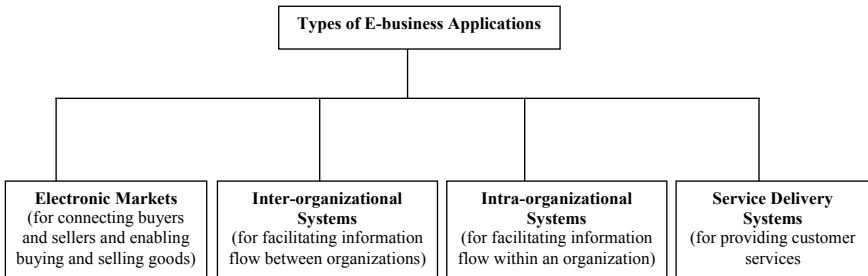


Figure 1.1: Categorising e-business according to type of application  
(Source: developed from Turban et al. 2008)

A different way of categorising e-business, which is the approach favoured by the authors, focuses on the type of transaction taking place (Turban et al. 2008, p. 8). With this approach, transactions may be conducted among businesses (business-to-business), between an organisation and its retail customers (business-to-consumer), within an organisation (intra-business), and between consumers (consumers-to-consumers). Other types of transactions include mobile commerce, e-government, e-learning, e-publishing, consumer-to-consumer, peer-to-peer applications, social networks & online communities, among many others. The two major types of e-businesses so far are business-to-consumer (B2C) and business-to-business (B2B).

Another important concept is the business model of electronic business, which basically refers to ways organizations can employ to generate sufficient revenue (i.e., via different approaches of (1) sales-generating revenue from selling merchandise or services online; (2) transaction fees-earning a commission based on the volume of transactions made or fees per transaction; (3) subscription fees: fixed amount, usually monthly for services provided; (4) advertising fees;

(5) affiliate fees: receiving commissions for referring customers to others' sites; (6) payment for usage, (7) donations & voluntary contributions) to sustain themselves (Turban et al. 2008, p. 18; Laudon & Trevor 2008, p. 70; Rappa 2008). Another important component is value created from the e-business for customers, organizations and other relevant parties. Like any other businesses, business model is very critical to the viability of an electronic business. In addition, many e-business failures have resulted from failed business models (i.e., relying too much on generating revenue from online advertising). While there are many similarities between Internet business models and traditional business models, the characteristics of the Internet have offered the capacity to present new Internet business models and reinvent existing business models (i.e., online auctions, search engines, mass customization, etc) (Rappa 2008). Even though there are no unified views on the classification of e-business models, some common Internet business models include: merchant (i.e., selling from B2C sites such as amazon.com, landsend.com, bestbuy.com), marketplace-matching sellers and buyers (i.e., ebay.com for transactions between consumers, alibaba.com for transactions between businesses), affiliate marketing by referring users of one website to other websites (many e-business websites have adopted it), community & social network (i.e., redhat.com, wikipedia.org, facebook.com, myspace.com, youtube.com), portal and search engine (i.e., yahoo.com, google.com, ask.com, live.com), subscription (i.e., truste.com, aol.com), utility-only paying for usage (i.e., slashdot), direct selling by manufacturers (i.e., dell.com, sony.com), content providers (i.e., wsj.com, cnn.com, espn.com), intermediaries working on consumer data (i.e., doubleclick.com, netiq.com), transaction brokers (i.e., etrade.com, paypal.com, wotif.com) (Rappa 2008, Turban et al. 2008; Laudon & Trevor 2008, Rayport & Jaworski 2004).

### ***1.3. Impacts of Electronic Business***

The Internet has changed the way we conduct business and the way we see the world and ourselves in it. It has rewritten the rules of business and transformed many industries (i.e., book, travel, music, accommodation, internet phone, real estate, among many others). It has

brought profound changes (including both negative and positive impacts) to individuals, organizations, industries, governments and societies (see Table 1.4).

Table 1.4: Some positive and negative impacts of electronic business

Impacts	Positive Impacts	Negative Impacts
To Individuals	Convenience; Personalised & customised products & services; Ubiquity & mobility; Better and more affordable communication and interaction (i.e., in real-time and multimedia way); Greater flexibility and better freedom of publishing ideas and views; Better connection with other members of communities; Access to products, services and information from all over the world (normally with cheaper prices); Making fulfilling the dream of being your own boss and of managing an international business much more easier; among many others.	Privacy issues; Security issues (i.e., online fraud, viruses, spam, etc); Individuality issues (i.e., passwords and user names are used to represent human beings on the internet); The lost balance between work and leisure arising from the use of lap tops, mobiles and other mobile devices; The loss of writing and other language skills resulting from overly using computer and the internet; The lost human interaction with others by excessively relying on e-mail, VoIP, instant messaging, online chatting and other electronic communication tools; etc.
To Organizations	An additional distribution channel; New opportunities in existing and new markets; Better/new products and services; Enhanced efficiency & effectiveness; Time & cost reductions; Better relationships with customers, with suppliers and business partners, with government agencies, with competitors and with employees; Enlarged market share, Increased revenue; Improved profit, Better image, among many others.	Channel conflict when doing both online and offline operations; More intense competition from existing competitors and new entrants; Losses due to network failures and security breaches; The wide and quicker distribution of negative news on the organization; The difficulties in maintaining 24/7 reliability and accessibility of online operations; etc.
To Industries	More effective and efficient industries and industry supply chains more efficient & effective; Enhanced cooperation and collaboration within and across industries; Creation of new industries and addition of new elements to existing industries; among many others.	Increased competition in many industries (especially in service-oriented industries); Changed structure of many industries (i.e., many traditional intermediaries will either disappear or change their roles (e.g., providing more value-added services and focusing more on

Table 1.4: *Continued*

Impacts	Positive Impacts	Negative Impacts
		knowledge) while some new online players (i.e., online aggregators and distributors) will enter the market; etc.
To Governments	Better services to citizens, Reduced time and costs of operations; Better relationships with citizens, businesses, other government agencies, and employees; Quicker and Better responsiveness to national security issues and unfortunate events; Enhanced transparency of their operations; Improved engagements from citizen, businesses, other government agencies, and employees; Improved cooperation and collaboration with relevant parties; Diversified campaigns and propaganda activities; among many others.	Security issues (both inside and outside threats); The wide and quicker distribution of negative news on the government; The difficulties in maintaining 24/7 reliability and accessibility of e-government operations; Unclear and inconsistent, and unexperienced governance of and policies for the Internet; etc.
To Societies	Better availability and accessibility of products, services, information & knowledge from all over the world; Better living (i.e., convenience of online shopping); Better understanding of the world and its history; Exposure of ideas to the global audience; Faster distribution of information and knowledge; Easier, less expensive and more flexible education (i.e., via e-training/learning, online universities); Improved health services and medical advances; Reduced risks associated with performing dangerous tasks; Better crime prevention and control; Better environment protection and sustainability; among many others.	Digital divide (i.e., between developing and developed countries); Health issues arising from using the computer and access the Internet; Job losses arising from automation; Public welfare issues (i.e., Online gaming/-gambling addiction); Public safety issues (i.e., Online pornography, especially child pornography); The loss of face-to-face social networking to social networking sites and other online applications; The e-waste (disposing computing and internet equipments); The difficulties in controlling and reducing carbon emission from computing and Internet equipments, as more and more people buying more and more computing and Internet gears; etc.

(Source: developed for this study)

#### ***1.4. Security, Privacy, Policy and Governance Issues Associated with E-business***

Security and privacy are two key challenges of e-business. Many individuals are still having difficulties in trusting e-business organizations for the fears of cyber crimes and misuses of their personal & confidential information. Organisations continue to experience various cyber attacks from inside and outside of the organisation. We are also seeing more and more security threats every day. For example, there could be up to 20,000 new malicious programs ever day (Ward 2008). Any type of e-business involves a number of players who use a variety of network and application services that provide access to a variety of data sources. A perpetrator needs only a single weakness in order to attack a system. While some attacks require sophisticated techniques and technologies (i.e., denial of services, phishing, malicious software, hacking), most attacks are not sophisticated (i.e., preying on poor security practice and human weaknesses, social engineering) (Turban et al. 2008, pp. 523-524; Laudon & Trevor 2008, p. 260). Meanwhile, Insiders' breach could be more frequent and more harmful than that of outsiders. The financial losses from a cyber attack can be substantial (i.e., out of the business) for e-businesses. According to a survey conducted by McAfee cited in Chapman (2009), the estimates of the global damage from data loss could be up to US\$ 1 trillion. Various parties from small, medium, large, and very large firms, individual consumers, government organisations, military/defence departments, and universities are victims of online security breaches. Security is and will remain a major issue for e-business participants. Generally speaking, security concerns can be found in communication, server and client perspectives. Some basic e-business security issues in the communication aspect include (Turban et al. 2008, p. 522; Laudon & Trevor 2008, p. 264):

- authentication: 'Does this message indeed come from the person/organisation it claims to come from?'
- privacy: 'Is the message secure and used only by the sender and the receiver?'
- integrity: 'Does the message contain exactly what the sender sent?'
- non-repudiation: 'Can the sender deny that this message was sent?'

These issues resemble the off-line requirements for security, i.e., buying goods at a shop with a credit card. The challenge is to ensure that these issues are addressed when the two parties have no face-to-face contact. Some security issues in the server and client areas include: denial-of-service (DoS) attack, malicious software (i.e., virus, worm, trojan horse), adware, spyware, etc), social networking, online breaches and security threats by insiders.

Security concerns everyone involved in the e-business. A systematic and integrated approach is needed to address e-business security issues. Good e-business security must take into consideration of relevant technologies, organizational policies and procedures, laws and industry standards. Furthermore given the fact that a large number of security breaches are committed by insiders, education and prevention programs should be heavily emphasized. It must be remembered that people are the first defence line, and Technology is the second defence line (Haag et al. 2008).

When the Internet makes it easier and more affordable to collect, store, organize and disseminate information, it has brought great privacy concerns. The individuals' right to privacy may include – to be left alone and to be free from any interference and surveillance from any individuals and organisations (Laudon & Trevor 2008, p. 486). Privacy breaches may occur in various ways, for example (O'Brien & Marakas 2008, p. 506):

- monitoring individuals' private e-mail conversations and computer records, and collecting, sharing information about individuals by tracking their online movement
- monitoring people's location by mobile and paging services
- unauthorised collection and use of personal information.

Another major privacy issue is spam, which has been around for a long time and for which we haven't found an effective solution. According to a report by CISCO cited in News.com.au (2008), about 90% of emails are spam. Another recent privacy concern comes from the increasing use of so called "the human flesh search engine", in which many volunteers on the Internet come together online to expose the personal details of perceived wrongdoers (O'Brien 2008). Solutions to

privacy issues have to come from the combined force of users themselves (they have to protect their personal information with more caution), e-business organizations (they need to strictly comply with their privacy policies which are in line with government's privacy-related legislations/laws), industry associations (they can produce industry standards of privacy and encourage e-business organizations within the industry to embrace), governments (they need to establish, update and enforce privacy laws such as Privacy Act Australia ([www.privacy.gov.au](http://www.privacy.gov.au))), and technological solutions.

Any business faces a number of legal, ethical, and regulatory issues. E-business adds to the scope and scale of those issues as a result of the very connected world we are living in. In many cases legal involvement by the governments is desirable. Many ethical (normally including privacy and other issues such as intellectual property rights, free speech, online fraud, etc) issues require not only national government's involvement, but also need international cooperation and global legislation. The Australian government takes the stance that electronic transactions are legally the same as traditional, paper-based transactions (As a result, e-businesses have to put up with 10% goods and services tax while in the U.S. online transactions will not occur sales tax until 2014). Singapore has passed a similar law. Such a position facilitates e-business because it provides a clear legal framework for transactions. The United States approved the Electronic Signatures in Global and National Commerce Act in 2001. UK's E-Commerce Regulations were published in 2002. Several other European and Asian countries have also established similar e-business/e-commerce laws.

Being relatively new form of business, regulations and policies in regard to e-business are still evolving. It is highly desirable that an international legal framework is developed to guide e-business. There are various ethical issues that relate to e-business, and they could be difficult to deal with. Ethical issues are always tricky. Sometimes activities may be unethical but not illegal, so there is no way that people can be officially stopped from carrying out such activities. Also, activities may be considered unethical by some people or by some cultures, but not by all. Hence it is difficult to establish a clear, well-accepted, international code of e-business ethics. Even though so far there is a lack of

established international laws for e-business, progress has been made (i.e., many companies, professional organisations and industry bodies have established and implemented relevant codes, standards, and policies).

Currently we are in a mixed mode policy environment where self-regulation, through a variety of Internet policies, protocols, and standards, and technical bodies (i.e., Internet corporation for assigned names and numbers (ICANN), Internet society (ISOC), the Internet engineering taskforce (IEFT), number resource organization (NRO), international telecommunication union (ITU)), co-exists with some government regulation. In addition, there is a lack of clear Internet governance structure in place. However it is not true that the Internet cannot be controlled. In fact, the internet can be very easily controlled, monitored, and regulated through a central approach (such as done by China, Singapore, North Korea, Thailand, Saudi Arabia and others) (Laudon & Trevor 2008, p. 526). Apparently at present there is a lack of an internationally agreed governance framework which should provide guidelines on why, who, how, when, what aspects of the governance of the Internet and online businesses.

### ***1.5. E-strategy Planning & Implementation***

In today's knowledge economy (also called digital or networked economy), organizations need to take into consideration of the impacts and the potential roles of the Internet and the emerging Internet technologies when they are designing their business strategy. Many Internet-based and pure online businesses design their organizational structure and business strategy (i.e., using the Internet for competitive advantages) around the Internet. Other businesses have tried to adjust their business strategy and organizational structure with the assistance from the Internet (i.e., expanding into overseas markets). One of the most difficult aspects of e-business is translating innovative ideas into a framework of specific projects. E-business can be discussed at a high level, but actual implementation in the day-to-day operation is a major challenge. The process is long and complex and is generally not well understood. Academic journals, business magazines, and newspapers

contain things such as stories of successful applications, present checklists for web design, and identify providers of various online services and products. However, there is no clear model for turning identified e-business opportunity into a fully operational e-business organisation. This could be the most challenging and least understood area in e-business. And there is a lack of clear message and well established literature on this area. There are some available tools and techniques associated with strategic planning and implementation, but those tools and techniques could be very confusing to many people. Such confusion reflects the new and relatively immature nature of e-business strategy at present. There is no magic formula for e-business strategy planning and implementation. While there is no agreed framework on e-business strategy planning, we would suggest a framework presented by Turban et al. (2008), which includes activities of (1) initiation, (2) strategy formulation, (3) implementation, and (4) assessment. At the same time, e-business strategic planning process should be a two-way street by taking advantages of both top-down and bottom up approaches (i.e., longer term view and more consistence for top down approach, and better understanding of environment, business and customers from people in the front line for bottom up approach) and by avoiding disadvantages of both approaches (i.e., disconnection between strategy formulation and implementation stages which in turn leads to poor plans and failed implementations for top down approach, and short-term focus as well as a fragmented strategy with many separate e-business projects without an integrated plan that links the individual projects for bottom up approach).

### *Strategy Initiation*

The first step and a very important activity in the strategy initiation phase is analyzing the internal and external environments of a business. A convenient way of analysing the firm and the environment is SWOT analysis (O'Brien & Marakas 2008, p. 419), which identifies strengths (S) and weaknesses (W) within the firm and scans for opportunities (O) and threats (T) in the industry and its external operating environment. Another useful tool is Porter's (1985) Five Forces Model, which

examines an industry's external operating environment by looking at rivalry of competitors within its industry, threat of new entrants into an industry and its markets, threat posed by substitute products which might capture market share, bargaining power of customers, and bargaining power of suppliers.

After knowing its external operating environment and internal conditions, a firm needs to develop a list of potential e-business initiatives, which exploit opportunities and deal with external threats in light of its strengths and weaknesses. Some broad strategic issues and initiatives the firm may look at include (Turban et al. 2008; Laudon & Traver 2008; The Authors' Own Knowledge):

- keeping the current status (no online business at all or no e-business improvement)
- being a first-mover or a follower
- choosing born-on-the-net or move-to-the-net approach
- having a separate online company? having a separate online brand?
- adopting online advertising & e-marketing
- using the internet for customer relationship management
- using the internet for supply chain management
- adding in an additional online channel to complement existing distribution channels
- establishing an online business

### *Strategy Formulation*

There are four main activities in the e-business strategy formulation stage, namely evaluating specific e-business opportunities, conducting cost/benefit and risk analyses, and selecting an appropriate e-business strategy.

Based on the results of analyses of its internal and external environments, the company is ready to evaluate potential e-business opportunities and select appropriate one for implementation. Generally speaking, companies will look at e-business opportunities when:

- E-business can provide a solution for its internal problem or enable it to exploit the market opportunities (i.e., an additional distribution channel, a global operation)

- E-business can enhance its operations and business performance (i.e., enhancing customer relationships, improving supply chains, streamlining business processes, optimizing internal communication, etc)
- Certain internet technologies or e-business applications have become industry standard or have been adopted by their competitors, industry leaders, and have become a strategic necessity (in this case, a business may face the choices of either participating in e-business or going out of the business)
- They have already possessed advanced Internet technologies which will be a waste if they are not utilized
- There are requirements of compliance imposed by the government and/or industry associations. So businesses have no option but to invest in e-business
- When the existing systems cannot cope with the demands and challenges of networked individuals, society, and economy.

Finding suitable e-business opportunities is not easy as there are a multitude of choices and many uncertainties involved in the e-business (after all e-business is still relatively new phenomenon for many industries and businesses). There are no universal views or commonly-agreed methods so far. Turban et al. (2008, p. 655) introduce a systematic approach: the internet portfolio map. Tjan (2001) created it by adapting the Boston Consulting Group's approach. Instead of trading off market potential and market share, the Internet portfolio map is based on company fit and project viability, both of which can be either low or high. Viability can be assessed by various criteria such as market value potential, time to positive cash flow, time to implementation, and funding requirements. The Internet portfolio map can be a very effective tool for selecting an appropriate e-business strategy.

Like many other investments, an e-business project has to go through the assessment of cost-benefit analysis and risk analysis before final decisions can be concluded. To properly evaluate an e-business investment, a multiple-perspective and a balanced approach should be adopted, which should look at: (1) both tangible and non-tangible costs and benefits; (2) both qualitative and quantitative dimensions;

(3) both financial and non-financial perspectives; (4) strategic, tactical, operational & other factors.

At the same time, risk is inherent in all business activities (especially for entering new territory), and there is no exception for e-business projects. Managing e-business risk is a process of identifying the potential risks, analyzing the potential impact of the identified risks, and taking appropriate actions to deal with identified risks associated with proposed e-business projects (Turban et al. 2008, pp. 656). There are some good guidelines on risk management around, an example is AS/NZS-4360 Risk Management Standard 2004 for organizations in New Zealand and Australia, which includes steps of (1) establishing the context: what part of the organisation are we talking about?, (2) identifying risks: what could cause harm or is a threat or has unknown consequences?, (3) analysing risks: is it likely to happen?, (4) evaluating risks: what would its impact be? and (5) treating risks: what can we do about it?.

When a firm is deciding on its e-business strategy, a number of factors (i.e., industry, firm, customer, technology development, society, economy) needed to be considered. Two techniques which can be used to help identify specific e-business strategic applications among many others are:

- Critical success factors (O'Brien & Marakas 2008, p.380): Critical success factors require managers to identify the most important factors which help achieve organisational goals. This approach focuses on the particular part of the business which should be addressed first and foremost. It highlights the part of the business, which might benefit most from e-business.
- Value chain analysis (Porter & Miller 1985 cited in O'Brien & Marakas 2008, p. 53): Value chain analysis focuses on the internal activities of the firm and identifies where e-business can contribute to improve its performance and help achieve its strategic objectives/goals.

Furthermore, there are other issues involved in e-business strategy formulation stage, including online pricing strategy (i.e., how to price effectively for products and services sold in the online and offline

channels?), channel conflicts (i.e., how to handle online and offline channels?), and so on.

### *Strategy Implementation*

Some activities involved in the implementation stage may include:

- allocating/securing sufficient capital and resources to the e-business projects
- establishing an e-business project team and assign responsibilities: The team is responsible for implementation of the e-business project. Tasks are identified, responsibilities are assigned, and project leaders & champions are appointed. A good project plan should be developed and closely followed. In the meantime, effective change management is essential when organizations are adding e-business initiatives into their existing operations.
- deciding a development approach: Organizations can choose from a number of options. Each of them has advantages and disadvantages (see Table 1.5).
- deciding a conversion approach: Organizations can choose among four options (McKeown 2000, p. 263) of implementation: pilot implementation (installing and testing with one of the organization until it is evident that the new system performs correctly and then spread to other parts of the organization), parallel implementation (using both the old and the new system until it is evident that the new system performs correctly), direct/plunge implementation (discarding the old system completely and immediately starting to use the new system), and phased implementation (implementing the new system in phases).
- addressing security & privacy issues: Security and privacy issues must be considered throughout the development process. Appropriate levels of security and privacy policies should be implemented.
- working on integration issues: For many businesses integration issues (i.e., being able to communicate with business partners' systems; the integration with existing systems) are also needed to be addressed when they are developing their e-business systems.

Table 1.5: Comparison of development options

Development Options	Advantages	Disadvantages
Internal Development	<ul style="list-style-type: none"> <li>○ Competitive advantage</li> <li>○ Complete control over final systems</li> <li>○ Builds technical skills and functional knowledge of developers</li> </ul>	<ul style="list-style-type: none"> <li>○ Requires dedicated effort of in-house staff</li> <li>○ Development can be slow</li> <li>○ Costs may be higher than working with other approaches</li> <li>○ Systems may not work when completed or may not provide desired functionalities</li> </ul>
Outsourcing	<ul style="list-style-type: none"> <li>○ Cost savings</li> <li>○ Ease of transition to new technologies</li> <li>○ Better strategic and business focus</li> <li>○ Better management of information systems/ information technology (IS/IT) staff – vendor has the knowledge and skills in effectively managing IS/IT staff</li> <li>○ Handles peaks with greater capacity of vendor</li> <li>○ Consolidates data centres, which is very difficult to be done by an internal group</li> <li>○ Infuses cash via selling equipment to the outsourcing vendor</li> </ul>	<ul style="list-style-type: none"> <li>○ Loss of control</li> <li>○ High switching cost</li> <li>○ Lack of technological innovation</li> <li>○ Loss of strategic advantage</li> <li>○ Reliance on outsourcer</li> <li>○ Security and reliability</li> <li>○ Evaporation of cost saving, i.e., perceived costs may never be realised due to factors such as out-of-date processes, costs arising from software upgrades, unspecified growth and new technologies not anticipated in the contract. And some savings may be hard to measure</li> </ul>
Acquisition	<ul style="list-style-type: none"> <li>○ Could purchase a complete system from a vendor</li> <li>○ Could purchase different systems from various vendors</li> <li>○ Fastest approach of all</li> </ul>	<ul style="list-style-type: none"> <li>○ Little competitive advantage</li> <li>○ Must accept functionalities of purchased systems</li> <li>○ May not integrate well with existing systems</li> <li>○ May require modification and customization to meet needs</li> </ul>
Use of Application Service Providers (ASP)	<ul style="list-style-type: none"> <li>○ Firms, especially small and medium enterprises, will enjoy the benefit of reduced need for internal IS/IT staff</li> <li>○ Saving money on internal</li> </ul>	<ul style="list-style-type: none"> <li>○ Less control over the applications (i.e., on issues such as when applications should be upgraded? how access to applications is facilitated?)</li> <li>○ Applications from ASP tend to</li> </ul>

Table 1.5: *Continued*

Development Options	Advantages	Disadvantages
	infrastructure and initial capital layouts ○ Some companies find it easier to 'rent' software from an ASP and avoid the problems associated with installing, operating and maintaining complex systems like enterprise planning systems ○ Easier to walk away from unsatisfactory systems and solutions ○ Quicker to respond to market with applications available from ASP	address routine problems, there is not much attention on how particular problems the organisation is facing are addressed ○ ASP solutions tend to be rather generic (i.e., normally allowing only 20% customisation for any given company)

(Sources: developed from McKeown 2000, p. 251; Peralson & Saunders 2004, pp. 198–199; Hoffer et al. 2005, pp. 32–33, 38–39, 40–41; The Authors' Own Knowledge)

### *Project and Strategy Assessment*

As for any project, post-implementation evaluation of the e-business project is important. It helps unveil problems in the planning and implementation process so that those problems could be avoided in future e-business projects. It can measure the execution of e-business strategy, ensure projects are delivering what they were supposed to deliver, determine if the e-business strategy and projects are still viable in the current environment, reassess the initial strategy in order to learn from mistakes and improve future planning, identify failing projects as soon as possible, and determine why they failed to avoid the same problems on subsequent projects. It can also help identify realized benefits and costs of the project. Strategy assessment should look at beyond metrics (i.e., some widely used metrics of net present value, internal rate of return, return on investment, payback period, total cost of ownership, click-through rate, conversation rate, speed, web traffic, availability, response time, etc) and evaluate from multiple dimensions (i.e., evaluating as per strategic, tactical, operational considerations by

looking at all the tangible, intangible, financial and non-financial costs, benefits, and risks as suggested by Gunasekaran et al. (2001), which could assist in dealing with difficulties in measuring tangible & non-financial benefits and costs of e-business projects.

### ***1.6. Launching a Successful E-Start-up***

The internet has provided fantastic opportunities for people who are interested in being an entrepreneur and make their dream of being their own bosses more affordable and much easier. One can start running your business overnight from your home. The basic ICTs needed are: a computer, an internet connection, and a website (or even web pages if not decided to have own website). The successful stories of e-start-ups (i.e., Microsoft, Yahoo, Google, YouTube, E-bay, Amazon, Dell, Facebook, Flickr, Seek, Wotif, Realestate.com.au, Paypal, Skype, MySpace, among many others) have inspired many people's interest to become an e-entrepreneur, and has changed young generation's perceptions of top jobs. When being a lawyer or a doctor or a highly-paid white collar professional is still attractive to many young people, more and more young people also would like to start up their own e-businesses and become mega rich in a few years time.

While there do have some very successful businesses online, it is not easy to succeed in the online world. What are the success factors? Unfortunately there is no clear answer here; and not everyone can make his/her e-dream come true and become successful like Bill Gates (the founder of Microsoft), Michael Dell (the founder of Dell Computer), Larry Page & Sergey Brin (the co-founders of Google), Jerry Yang (the founder of Yahoo), Jack Ma (the founder of Alibaba), and Mark Zuckerberg (the founder of Facebook).

On top of the e-business strategy planning and implementation process discussed in the previous section, on the individual level, e-entrepreneurs (like other entrepreneurs) need to have or equip themselves with certain personal qualities and some critical success factors. Some of them could include:

- passion towards e-business (have an e-dream)
- persistence (never give up)

- the ability of executing your ideas (don't just dream and you need to do it)
- advanced analytical skills (excellent at finding opportunities and gap)
- innovativeness, willingness to take risk
- excellent decision-making capacity (making tough decision when necessary)
- strong communication skills
- flexibility & adaptability to changes and new environments
- very strong self-learning ability (since you need to get a new e-business up and running)
- discipline (willingness to sacrifice a lot of enjoyment and comfort)
- the ability of integrating resources from different sources
- adequate knowledge in all areas of running a business
- a good management team and sufficient financial resources are also very critical
- a good business plan
- sufficient capital and resources
- to some extent, a bit of good luck (i.e., knowing right people, at right place, at right time) also will enhance the success chance of your e-dream.

## **2. E-Business Technologies**

### ***2.1. E-Business Information Technology Infrastructure***

E-business activities are supported by various technologies (i.e., hardware, software, networks). Some technologies existed and were in use before being applied to e-business; other technologies were developed specifically to enable e-business activities. This section looks at the technology infrastructure that supports and enables e-business activities. All e-business activities rely on specific technologies for support. It is important to understand that e-business applications are built on top of a number of technologies. The underlying technologies provide a layered, integrated infrastructure which enables e-business applications to be deployed. The layered structure means that each layer

depends on the layer below and cannot function without the lower layers. Table 1.6 include some important layers of e-business IT infrastructure.

## ***2.2. Enterprise Applications/Systems***

Many companies have moved from mainframe legacy systems, which focus on traditional business functions or internal business processes, to integrated cross-functional enterprise applications, which emphasise accomplishing fundamental business processes in concert with customers, suppliers, partners, and employees. Integrated systems, such as enterprise resource planning systems, knowledge management systems, supply chain management systems, and customer relationship management systems, allow the same data to be used for multiple applications; information output from one function can easily become data input to another function. Very often only one integrated/centralised database needs to be maintained. Many organisations view cross-functional enterprise systems as a strategic way to use IT to share information resources and improve the efficiency and effectiveness of business processes, thus helping an e-business organization achieve its strategic objectives.

Enterprise resource planning (ERP) systems focus on improving the efficiency of a company's internal business processes, such as production, distribution, and financial processes. Customer relationship management (CRM) systems mostly deal with acquiring and retaining customers, especially profitable customers. Supply chain management (SCM) systems primarily provide an organization with solutions in optimising the efficiency and effectiveness of its supply chain and enhancing its relationship with its suppliers. Knowledge management systems (KMSs) aim at organising, sharing and applying knowledge within and outside the organisation and creating new knowledge. Even though there enterprise systems have different emphases, they complement and enhance each other. For example, without quality products, which are largely influenced by effective internal operations facilitated by ERP systems, CRM systems become meaningless. In the meantime, without accurate and timely information on customers

Table 1.6: E-business information technology infrastructure

Basic Technologies	Functions	Application Examples
E-business Applications	Support business processes of organizations (i.e., B2B, B2C, and intra-organizational communications) and activities of individuals (i.e., communications, networking, community building, knowledge sharing, online shopping, online selling, online information search) as well as the government's functions	E-marketplaces, E-procurement applications, Sales Force Automation applications, E-tailing, Online Banking, Online Publishing, E-learning, Online auctions, Search engines, Social networks, Online communities, E-government, etc.
Interfacing, Sharing, Integration & Aggregation Applications	Tie different services together and integrate with business partners' applications	Service oriented architecture (SOA), Web Services, Virtualizations, Grid Computing, Semantic Web, Web Science, Middleware, Enterprise Application Integration (EAI), etc.
Common Business Services Applications	Provide services required for online transactions and website functions	Online security, Online authentication, Web addresses, Storage repositories, Electronic payment systems, Smart cards, etc.
Transportation Services Technologies	Publish and distribute information in different formats (i.e., in text, audio, fax, video) on the internet	Hyper text transfer protocol (HTTP), Transmission control protocol/Internet protocol (TCP/IP), Electronic Data Interchange (EDI), E-mail, World Wide Web (WWW), Hypertext markup language (HTML), Java, Extensible markup language (XML), Virtual reality modelling language (VRML), etc.
Telecommunication Networks	Connect different devices together and Enable online communications	The Internet, TV Networks, Telephone Networks, Wireless Networks, Intranets, Extranets, Virtual Private Networks (VPNs), Local Area Networks (LANs), Wide Area Networks (WANs), etc.

(Source: developed from Turban et al. 2008; Watson et al. 2000; McKeown 2000; Kalakota & Whinston 1997; Laudon & Traver 2008; The Authors' Own Knowledge)

recorded and analysed in CRM systems, ERP and SCM systems cannot work properly. Furthermore without knowledge stored, organized and disseminated by knowledge management systems, the organization's efforts of implementing enterprise-wide (also called cross-functional information systems) will not succeed easily since many costly mistakes will be repeated again and again and many wheels will be reinvented again and again. These systems themselves can be interconnected with enterprise application integration (EAI) software so that the business users of these applications can more easily access the information resources they need to support the needs of customers, suppliers, and business partners.

### ***2.3. Data Warehouse and Data Mining***

Technologies such as data warehouse and data mining allow organisations to gain vast amount of business intelligence, which basically is information for decision-making. The focus of data warehouse and data mining applications in many organizations is to have better understanding of customers and thus develop more targeted marketing and better products and services. A data warehouse extracts current and historical data from both internal and external data sources and reorganises those data into a central database for management reporting and analysis via various tools (i.e., online analytical processing (OLAP), data mining). While databases normally contain information in a series of two-dimensional tables, which means that one can only view two dimensions of information at one time, the information in a data warehouse is multi-dimensional and consists of layers of columns and rows (Haag et al. 2008, p. 83). Dimensions could include such things as products, promotions, stores, category, region, stock price, date, time, and even the weather. The ability to look at information from different dimensions can add tremendous business insight. A critical factor for the successful use of data warehouse and data mining is maintaining high quality information in the data warehouse all the time (i.e., via certain cleaning processes and tools). Without high quality information the organisation will be unable to make good business decisions and will face a situation of garbage in and garbage out.

Data mining is a major use of data warehouse databases. Data in data warehouses is analysed to reveal hidden correlations, associations, patterns, and trends and make better predictions (O'Brien & Marakas 2006, p. 147). Through data mining, firms can search for valuable business information and business opportunities. Online analytical processing (OLAP) is another important data analysis tool, and it supports manipulation of and real-time analysis of large volumes of data from multiple dimensions and perspectives (O'Brien & Marakas 2006, p. 147). An organization can capture its customer information from all customer touch points (i.e., face-to-face channels, online channel, call centres, video channels (even including information in the security surveillance cameras and videos), mail and fax services, suppliers & business partners) as well as other data sources. The captured data can be organized into a single customer data repository or data warehouse. Data mining allows managers to analyse aggregated customer behaviour to identify profitable and unprofitable customers as well as customer activities (e.g. purchasing patterns, etc.) while online analytical processing (OLAP) allows them to dynamically analyse customer activities to spot trends or problems involving customers (Laudon & Trevor 2008).

#### **2.4. Integration**

For an organization to participate in e-business effectively, its e-business applications must integrate with the organisation's existing internal infrastructure and applications (e.g. CRM, SCM, ERP, KMS, servers, databases, etc.), and with external servers, applications and databases of its customers, suppliers and business partners. Such internal and external integrations are not easy to achieve. For example, many large organisations have heavily invested in in-house systems and have streamlined internal operations by purchasing and implementing enterprise resource planning (ERP) systems. In many firms the ERP system is the core of logistics and planning and it contains a wealth of valuable information. Those organisations now face the challenge of incorporating their expensive ERP operations with e-business. Integrating online payment systems could be another challenge for many

e-business organizations. Furthermore organisations often take the approach of best-of-breed for the reason that no one vendor can respond to an organisation's all needs (Haag et al. 2008, p. 138). As a result, many organisations have various systems and applications from multiple vendors.

Sharing and organising information sitting in multiple databases and applications internally and externally could be very time-consuming and inefficient. Fortunately, many applications and approaches are available in the market to help organizations' integration efforts. Some of them include: Service oriented architecture (SOA), Web services, Virtualizations, Grid Computing, Cloud Computing, Semantic Web, Web Sciences, Middleware, Enterprise Application Integration (EAI), etc. And standards such as electronic data interchange (EDI)/Internet-based EDI and XML could also greatly assist e-business organizations' integration efforts.

### ***2.5. Addressing Security & Privacy Concerns through Technology***

Each of the basic security issues in the communication perspective mentioned previously (namely authentication, privacy, integrity and non-repudiation) can be addressed by certain technology tools and practices, such as encryption (the process of scrambling (encrypting) a message in such a way (i.e., making the size of a key bigger with more bits) that it is difficult, expensive, or time-consuming for an unauthorized person to unscramble (decrypt) it), digital certificates (normally issued by third parties (i.e., verisign.com) to verify the authenticity of the engaging parties), digital signature to identify authenticate the sender of a document, secure socket layer (SSL) (a protocol invented by Netscape to provide secure online credit card transactions for both consumers and merchants and a major standard for online credit card payments), and secure electronic transaction (SET) (an open standard and protocol designed to provide secure online credit card transactions for both consumers and merchants; developed jointly by Netscape, Visa, MasterCard, and others). The following Table 1.7 shows in the first column a variety of technological tools while in the following columns the ticks indicate the use of these tools to help solve security problems

Table 1.7: Technologies to address basic security issues

	Authenticity	Privacy	Integrity	Non-repudiation
Digital Certificates	√			
Digital Signatures	√			√
Encryption		√	√	
SSL	√	√	√	
SET	√	√	√	√

(Source: developed from Turban et al. 2008; Laudon & Trevor 2008; The Authors' Own Knowledge)

associated with authenticity, privacy, integrity and non-repudiation. It is noted that not all the tools can deal with all four issues.

Some technologies for securing e-business network (client and server focus) include (a) firewall to monitor incoming traffic, (b) proxy servers to handle all the outgoing communications, (c) virtual private network (VPN) for low-cost and secure point-to-point communication via public internet, (d) intrusion detection systems (IDSs) to watch for suspicious activities and take automated action based on what it sees, (e) anti-virus & anti-spam software (such as Symantec's Norton 360, PCTools' Spyware Doctor, McAfee's anti virus package), (f) authentication and biometric control applications (i.e., login user names & passwords, keystrokes, voice recognitions, iris scans, finger prints, faces, palm patterns), among many others. For security issues associated with insiders, the best approach is probably education and training coupled with relevant policies and procedures.

When most of the technologies and measures discussed for addressing security concerns of e-business could deal with or assisting in dealing with privacy issues suggested in the previous section 1.4, some specific technologies include spyware blockers (i.e., Spyware Doctor, ZoneAlarm), pop-up blockers (i.e., those pop-up blockers embedded in various browsers), E-mail encryption (i.e., Safemessage.com, Pretty good privacy(pgp.com)), Cookie manager (i.e., Cookie Crusher, Cookie control functions embedded in various browsers), Privacy Policy Reader (P3P) (i.e., embedded in Internet Explorer 6.0 and above) (Laudon & Trevor 2008, p. 501). Some specific anti-spam technologies and

techniques include: Authentication of E-mail, Sender-policy-framework (SPF) and/or Sender-ID, Message Enhancements for Transmission Authorization (META), Existence of the senders' domain and eliciting a response, Existence of a point record (PTR), Blacklists, Filtering (i.e., via Keyword filters, Bayesian filters, Behavioural filters, Fingerprint filters, Heuristic filters), among many others (OECD 2006).

For internet fraud, individual consumers and buyers need to ensure they only access online businesses that are known or have good reputation (they can check themselves with local commerce or fair trading or consumer protection authorities or with third party assurance services providers (i.e., Best Business Bureau (BBB), TRUSTe.org) or through their peers). On the other hand, the sellers and merchants, can protect themselves by accessing online databases (i.e., [www.cardcops.com](http://www.cardcops.com), for credit numbers with chargeback history), using the five tools of digital certificates, digital signatures, encryption, SSL, SET discussed earlier in this section, using intelligent software to identify possibly questionable customers and identify warning signals for possibly fraudulent transactions, and making better efforts in verifying the customer (i.e., investigating inconsistency in addresses, contact numbers, account details, identifications), among many others.

Finally good e-business security and privacy practices must take into consideration of technology solutions, people (both users and managers), organizational policies and procedures, laws and industry standards.

### **3. Conclusions**

This chapter presents an overview of E-Business and E-business technologies. It first presents the exponential growth figures of Internet across the globe. It is interesting to observe how various regions of the world have embraced Internet and how it has penetrated into individual's life and working environment. The chapter then presents various e-business models and sheds some light on the impacts of e-business (positive and negative) on individuals, organizations, Governments etc. After touching on e-business strategies and implementation issues the chapter moves into giving some basic understanding on e-business technologies. The security and privacy issues are also discussed.

This chapter sets the basic scene on e-business. It will help the readers to understand the basics and move on to some newer concepts and applications of e-business in subsequent chapters.

## References

- AS/NZS 4360 (2004) Risk Management, Standards Australia International Ltd, GPO Box 5420, Sydney, NSW 2001 and Standards New Zealand, Private Bag 2439, Wellington 6020, 2004.
- Chapman, G. (2009) Cybercrime losses up to \$US 1 trillion, *The Australian*, February 03, 2009, Online, Available at: <http://www.australianit.news.com.au/story/0,24897,24997483-24169,00.html> (accessed on February 4, 2009).
- Economist Intelligence Unit (2009) *The World in Figures: Industries (E-commerce)*, The World in 2009, The Economist, pp. 120.
- Economist Intelligence Unit & IBM Institute for Business Value (2007) *The 2007 e-readiness rankings: raising the bar*, The Economist, pp. 1-25.
- Emily, R. & Holland, A. (2007) *50 Great e-Business and the Minds Behind them*, Random House Australia.
- Guanasekaran, A. Love, P. Rahimi, F. & Miele, R. (2001) A Model for Investment Justification in Information Technology Projects, *International Journal of Information Management*, Vol. 21, No. 5, pp. 349-364.
- Haag, S., Baltzan, P. & Phillips, A. (2008) *Business Driven Technology*, 2nd edition, McGraw-Hill Irwin, Boston, U.S.A.
- Hoffer, J.A. , George, J.F. & Valacich, J.S. (2005) *Modern Systems Analysis and Design*, 4th edn, Prentice Hall.
- Laudon, K.C. & Laudon, J.P. (2005) *Essentials of Management Information Systems: Managing the Digital Firm*, 6/E, 2005, Prentice Hall.
- Laudon, K.C. & Traver, C.G. (2008) *E-commerce: Buisness, Technology, Society 2008*, 4th edn, Addison Wesley, Boston, USA.
- Kalakota, R. & Whinston, A.B. (1997) *Electronic Commerce – A Manager’s Guide*, Addison Wesley, Reading, MA.
- Kalakota, R. & Robinson, M. (1999) *E-Business – Roadmap for Success*, Addison Wesley, Reading, MA.
- McKeown, P. (2000) *Information Technology and the Networked Economy*, Boston: Thomson Learning.
- News.com.au (2008) 90 percent of email is spam, Online, Available at: <http://www.news.com.au/technology/story/0,24808797-5014239,00.html> (accessed on January 23, 2009).
- O’Brien, C. (2008) The human flesh search engine, *Forbes*, November 21, 2008, Online Available at: [http://www.forbes.com/2008/11/21/human-flesh-search-tech-identity08-cx\\_cb\\_1121o](http://www.forbes.com/2008/11/21/human-flesh-search-tech-identity08-cx_cb_1121o) (accessed on November 22, 2008).

- O'Brien, J.A. & Marakas, G.M. (2006) *Management Information Systems*, 7th edn. Boston: Irwin/McGraw-Hill.
- O'Brien, J.A. & Marakas, G.M. (2008) *Management Information Systems*, 8th edition, McGraw-Hill Irwin, Boston, U.S.A.
- OECD (2006) *Element IV: Anti-spam technologies*, Online Available at: [http://www.oecd.antisipam.org/article.php3?id\\_article=241](http://www.oecd.antisipam.org/article.php3?id_article=241) (accessed on January 2, 2009).
- Porter, M.E. (1985) *Competitive Advantage*, Free Press, New York, 1985.
- Pearlson, K.E. & Saunders, C.S. (2004) *Managing and Using Information Systems: A Strategic Approach*, 2nd edn, Wiley, Danvers.
- Rappa, M. (2008) *Business Models on the Web*, Online Available: <http://digitalenterprise.org/models/models.html> (accessed on Jan 17, 2009).
- Rayport, J.F. & Jaworski, B.J. (2004) *Introduction to E-commerce*, 2nd edn, McGraw-Hill, Boston, USA.
- Tjan, A.K. (2001) Finally a Way to Put Your Internet Portfolio in order, *Harvard Business Review*, Vol. 79, No. 2, pp.76-87.
- Turban, E., King, D., McKay, J., Marshall, P., Lee, J. & Viehland, D. (2008) *Electronic Commerce 2008: A Managerial Perspective*, International edn, Prentice Hall, Upper Saddle River, NJ.
- Ward, M. (2008) 'Boom year' for high-tech criminals, *BBC News*, Online Available at: <http://newsvote.bbc.co.uk/mapps/pagetools/print/news.bbc.co.uk.2/hi/technology/77> (accessed on December 30, 2008).
- Watson, R.T., Berthon, P., Pitt, L.F. & Zinkhan, G.M. (2000) *Electronic Commerce*, The Dryden Press, Fort Worth, TX.