

6 The Internet and World-Wide Web

The Internet is a vast network of computers connected across the globe that can share both information and processing (Oz and Jones, 2008). Information is transmitted from PCs whose users request services to computers that hold information and host business applications that deliver the services in response to requests. The PCs within homes and businesses are connected to the Internet via local Internet service providers (ISPs) which, in turn, are linked to larger ISPs with connection to the major national and international infrastructure or backbones. The Internet can be described as a global network system made up of smaller systems. The Internet was conceived by the Defense Advanced Research Projects Agency (DARPA), an American intelligence organisation, in 1969. The Internet began to achieve its current form in 1987, growing from systems developed by DARPA and the National Science Foundation (NSF).

6.1 Web-Enabled Business

Web-enabled business can be classified by those parties involved in business transactions. The most common transactions identified as those when an organisation is using the Internet to transact with consumers, termed business-to-consumer (B2C) or when an organisation is transacting with other businesses, termed business-to-business (B2B). The relationship between a company and its suppliers and customers can be dramatically altered by the opportunities afforded by the Internet. This occurs because the Internet offers a means of bypassing some of the channel partners. This process is known as disintermediation or ‘cutting out the middleman’. The benefits of disintermediation are that it is able to remove the sales and infrastructure cost of selling through the channel. Some of these cost savings can be passed on to the customer in the form of cost reductions. Although disintermediation is widespread the creation of new intermediaries between customers and suppliers, termed re-intermediation, has also occurred. For example in the travel industry companies such as Tripadvisor provide information regarding destinations and hotels and then provide links to hotel providers.

6.2 Intranets and extranets

The majority of Internet services are available to any business or consumer that has access to the Internet. However, many business applications that access sensitive company information require access to be limited to favoured individuals or third parties. If information is limited to those inside an organisation the network is termed an intranet. If access is extended to some others, but not everyone beyond the organisation, the network is termed an extranet (Laudon and Laudon, 2007). Extranets can be accessed by authorised people outside the company such as collaborators, suppliers or major customers, but information is not available to everyone with an Internet connection but restricted using password access. Intranets are also used for sharing information such as staff phone directories, staff procedures or quality manuals, information for agents such as product specifications, current list and discounted prices, competitor information, factory schedules and stocking levels – all this information normally has to be updated frequently and can be costly. Extranets are used extensively to support activities such as ordering from suppliers.

6.3 The World Wide Web

The World Wide Web provides a standard method for exchanging and publishing information on the Internet. The medium is based on standard document formats such as HTML (hypertext markup language) which has been widely adopted because it supports a wide range of formatting facilities making documents easy to read on different access devices. It also incorporates graphics and animations which can be integrated into web pages and interaction is possible through HTML-based forms that enable customers to supply their personal details for more information on a product, perform searches, ask questions or make comments.

It is the combination of web browsers and HTML that has proved so successful in establishing widespread business use of the Internet. The use of these tools provides a range of benefits such as increasing the ease to which navigation between documents is enabled by the use of hyperlinks or images. This soon becomes a very intuitive way of navigation which is similar across all web sites and applications. It can provide a graphical environment supporting multimedia which is popular with users and gives a visual medium for advertising. The standardisation of tools and growth in demand means information can be exchanged with many businesses and consumers.

6.4 Web browsers and servers

Web browsers are software applications that are used to access the information on the world wide web that is stored on web servers. Web servers are used to store, manage and supply the information on the world wide web. The main web browsers in use are Microsoft Internet Explorer and Mozilla Firefox. Browsers display the text and graphics accessed from web sites and provide tools for managing information from web sites. Web browsers communicate with web servers in the following way. A request from a PC is executed when the user types in a web address, clicks on a hyperlink or fills in an online form such as a search. This request is then sent to the ISP and routed across the Internet to the destination server using the mechanism described in the section on protocols. The server then returns the requested web page if it is a static (fixed) page, or if it requires reference to a database, such as a request for product information, it will pass the query on to a database server and will then return this to the customer as a dynamically created web page. Information on all page requests is stored in a transaction log file which records the page requested, the time it was made and the source of the enquiry.

6.5 E-business

E-business involves several key activities including improving business processes, enhancing communications and providing the means to carry out business transactions securely. E-business is part of a broader Internet economy which encompasses all of the activities involved in using the Internet for commerce. The Internet economy is made up of the following layers:

- Internet Infrastructure. Companies that provide the hardware, software and other equipment for the Internet. Examples: ISPs, networking companies and manufacturers of PCs and servers.
- Internet Applications Infrastructure. Companies that provide software facilitating Internet transactions. Also, companies that provide web development, design and consulting services. Examples: producers of web development software, web-enabled databases and search engines.

- Internet Intermediaries. Companies that link buyers and sellers, for example by providing content or by creating marketplaces where business can be transacted. Examples: travel agents, content providers and online brokerages.
- Internet Commerce. Companies that sell products and services to consumers or other companies. Examples: online retailers, subscription or fee-based services and manufacturers selling directly to the public.

In general, the benefits of e-business include reduced costs, improved efficiency and access to larger markets. By automating many of the administrative tasks associated with ordering, supplying and delivering goods or services, the cost of a typical business transaction can be reduced significantly. E-procurement is used to reduce administrative costs and purchase goods at lower prices. It was mentioned earlier that adopting an e-business approach could help to enhance three main areas of business: production processes, customer-focused processes and internal management processes. In terms of customer-focused processes, for example, the efficiency of customer services can be improved through the introduction of a help desk on the company's web site. As well as helping customers, such a facility can also act to reduce costs by reducing pressure on other support services, such as telephone helplines. Finally, the adoption of an e-business approach can help companies to reach a larger, global market. This is often one of the benefits of restructuring the relationship between manufacturer, retailers and customers.

6.6 E-commerce

A common activity associated with e-business is e-commerce which can be described as using technology to conduct business transactions, such as buying and selling goods and services. However, e-commerce involves more than merely conducting electronic transactions; it also encompasses a wide range of associated activities, such as after-sales support and even logistics.

E-commerce activities can be broken down into five basic types:

- Business-to-business (B2B). Transactions take place between companies. Approximately 80 per cent of all e-commerce is of this type.
- Business-to-consumer (B2C). Companies sell products directly to consumers. B2C can involve activities such as product research (where consumers gather information and compare prices) and electronic delivery (where information products are delivered to consumers via e-mail or other means).
- Business-to-government (B2G). Transactions take place between companies and public sector organizations.
- Consumer-to-consumer (C2C). Transactions take place between private individuals. Perhaps the best examples of C2C commerce are online auction sites and peer-to-peer systems.
- Mobile commerce (m-commerce). M-Commerce is a relatively new development and involves selling goods or services via wireless technology, especially mobile phones.