Module 1

Introduction to Electronic Commerce Foundations

Introduction

Welcome to Electronic Commerce. Today many people all over the world are looking to increase their knowledge of trade and business. The world is becoming more closely linked and modern developments in communication associated with the Internet, is changing the world of business.

Even as this course was written things are changing rapidly. The most important thing to gain from this course is not a series of facts, which may soon be outdated, but an approach to how to use the tools, and a sense of their potential — as well as drawbacks. The intent of this course is to provide you with a comprehensive view of e-commerce from a manager's perspective. If you want to become directly involved in e-commerce, you need to develop a critical and expert foundation from which you can evaluate the e-commerce ventures of others, and bring the knowledge you acquire to designing and executing your own operation.

This first module introduces you to this field. After considering what we mean by the term 'e-commerce', you move on to look at the different categories into which e-commerce operations can be organised. Then you will consider the reasons a company would decide to go into e-commerce. This includes the advantages and disadvantages of using e-commerce; the different options available to an organisation and the issues, such as security which will need to be addressed. You will then begin to look at the impact e-commerce has had on the business world, focusing on improvements in direct marketing, transformation of organisations and virtual value chains.

Finally, we will discuss the future of e-commerce from technological, business and social/cultural perspectives.

As you go through this course ensure that you use the Web links we have included, as well as doing some of your own research.

Upon completion of this module you will be able to:

Outcomes

- *define* electronic commerce and identify the main kinds of e-commerce operations.

- *describe* the framework for e-commerce and its major components.

- *evaluate* the advantages and disadvantages of e-commerce.

- *describe* the impact of e-commerce on organisations.

- *discuss* likely future directions of e-commerce.

Terminology

Terminology

Business-to-business (B2B)	E-commerce model in which businesses focus on selling to other businesses. All of the participants are business or other organisations.
Business-to-consumer	This is also called *Direct-to-consumer (B2C)*. This is an e-commerce model in which businesses sell to individual shoppers or consumers directly.
Business-to-Government (B2G)	Businesses supply products or services to government and government agencies. They interact through a two-way e-procurement process where a government portal will offer contracts for goods and services and electronic tenders will then be returned by the businesses.
Buyer's value chains	These are the ultimate source of differentiation, because it is the product's role in this chain that determines buyer needs.
Channel value chains	These are the delivery mechanism(s) for the business's products on their way to the end-buyer, customer or consumer.
Consumer-to-consumer (C2C)	E-commerce model in which consumers sell directly to other consumers.
Electronic commerce	The use of electronic transmission media (telecommunications) to engage in the exchange, including buying and selling, of products and services requiring

transportation, either physically or digitally, from location to location.

In simple terms, Electronic Commerce refers to the process of buying, selling, or exchanging products, services, or information via computer networks.

Supplier value chains   These create and deliver the essential inputs to the business's own chain.

Value chain analysis   The analysis disaggregates a business into its major activities in order to understand the behaviour of costs and the existing and potential sources of differentiation. It determines how the business's own value chain interacts with the value chains of suppliers, customers and competitors. Companies gain competitive advantage by performing some or all of these activities at lower cost or with greater differentiation than competitors.

What is Electronic Commerce?

The idea of e-commerce is not new. You may have heard the story of 'Tradelink', an ElectronicData Interchange (EDI) offered by Tradelink Electronic Commerce Ltd, where the Hong Kong SAR Government holds 45 per cent of its shares. The Tradelink controversy became one of the most frequently talked about topics in the local textile industry. It started as a proprietary value-added network (VAN) in late 1996. The first service launched was for the submission of Restrained Textile Export Licences for the textile industry. However, most small businesses typically didn't have the resources to deploy EDI software and VAN services.

Another problem impeding the use of EDI was lack of computer literacy among Hong Kong's small and medium enterprises (SMEs). The lack of Chinese character input in the EDI software also created difficulties for local users.

With advances in IT,the original VAN-based EDI system is now being converted to work on the Internet. This has significantly reduced the resource investment required to acquire the service (check Tradelink's website at http://www.tradelink-ebiz.com).

Figure 1.1: Tradelink homepage.

Source : Tradelink, 2013.

Tradelink's services are now being offered to organisations of various sizes, and in business areas other than textiles. As its mission statement says, Tradelink is to 'help the local trading community enhance its efficiency and stay competitive in the global market place through greater use of electronic commerce'. Hong Kong's experience is probably directly relevant to your own situation, for although electronic commerce has moved on in Hong Kong, the pattern of development has been similar in many other places which do not provide as much documentation. In addition, it has the advantage of being documented in English!

Activity 1.1

Activity

Tradelink

Go to the Tradelink site at **www.tradelink-ebiz.com** and explore the site, noting the services it offers. Read the welcome message from the CEO. This is found on the link in the column on the left of the page.

Hint: If the link does not open because the page URL has been amended, open the Google search engine and enter the search terms: Tradelink Hong Kong and you should find a link to the homepage within the first or second search results listed. Note that the CEO's message ends with the words: It pays to watch this space. Ask yourself whether this is a promise to update regularly, or whether it is a simple appeal to avarice. Consider the following questions:

1. What services does Tradelink offer to qualify as an e-commerce service provider in Hong Kong?

2. What benefits will it bring to the SMEs, which form the majority of the local trading community, and are these benefits worth the resources that will have to be invested?

3. Could any improvements be made to the site?

As you work through this module, think about these questions. We'll come back to them a bit later. Let's leave Tradelink for now though, and try to establish a working definition for e-commerce.

Definitions of e-commerce

It makes sense to start exploring this question by surveying a selection of websites that use ecommerce.

If you have not already experienced e-commerce go to the following websites and then continue through this module:

www.ebay.com

www.dell.com

www.amazon.com

www.thebodyshop-usa.com

Greenstein and Feinman (2000) define e-commerce as:

> "… the use of electronic transmission media (telecommunications) to engage in the exchange, including buying and selling, of products and services requiring transportation, either physically or digitally, from location to location."

Note that they say e-commerce includes buying and selling, but the focus is really on exchange of products and services.

Steve Orlowski (1998) gives a clear account of its development. He says e-commerce is about buying and selling, but note what he says about its origins. It all started with EDI. Manufacturers and government agencies have been involved in e-commerce for years. They used expensive, private networks, which used standard procedures and formats, known as EDI or electronic data interchange.

You'll note that this ties in with what we said about Tradelink at the start of this section. Larger companies that could afford the software have been using e-commerce in their supply chain management for years. However, it was the development of the Internet that made it affordable for everyone.

Activity 1.2

Activity

Definitions

Have a look at the following sites. If you like, you can take your time reading them, as many of them provide useful information about e-commerce. Bookmark any you think may be useful. The main purpose of this activity, however, is to attempt to arrive at a definition of e-commerce. Make notes of whether and how each site defines the concept of e-commerce. Then see if you can come up with your own definition.

1. **Digital Darwinism**
   www.entrepreneur.com (Note: If the link does not operate, go to Google.com and enter the search terms "entrepreneur.com" — digital Darwinism into the search box. You will find the article at the top of the search results.)

2. **The basics of e-commerce**
   www.nam.org

3. **Is wireless e-commerce right for you?**
   www.ecompany.com (Search for 'Wireless e-commerce' when you are in the site).

4. **Basic guide to e-commerce**
   http://mapnp.nonprofitoffice.com/

E-commerce and the Internet

Internet-based e-commerce relies on the development of the Internet as a communication medium as well as the success of the World Wide Web (WWW). The Internet was first implemented in 1969 as a joint project between the Defence Advanced Research Project Agency (DARPA) and four universities in the United States. They first transferred data using a so-called packet switching theory, which was first developed by Massachusetts Institute of Technology (MIT). The same theory still forms the basis of data transmission in the current infrastructure that the Internet is dependent upon.

In 1986, the National Science Foundation (NSF) set up the NSFnet in the U.S. as a way of interconnecting the major universities. Initially the Internet was used to transfer files, send email and for remote terminal access. While file transfer could be used in B2B transactions, the potential of the Internet in developing e-commerce was soon discovered. However, it was not until the development of the World Wide Web that e-commerce, as we know it today, became possible. The WWW was only a prototype in 1990 when Tim Burners Lee put his concept on trial. Web pages on the WWW are heavily scattered with hyperlinks, allowing viewers to navigate between sites following paths of their choice. Using special languages such as HTML and Java, Web pages were only readable on the monitors of PCs or mainframes if browsers (e.g., Netscape) were available on these platforms.

The first e-commerce success story that most of us are aware of comes from Amazon.com, created in 1994 by Jeff Bezos, a young financial analyst and fund manager. The virtual bookshop is a classic example of how e-commerce is being used, and at the time, opened a new page for dot-com companies in the era of e-commerce. In its first five years, Amazon.com became a large global company with annual sales in excess of USD 600 million. You may be aware that some e-commerce companies (including Amazon.com) are valued in the billions of dollars, although they have never made a profit.

These companies have identified a number of the original working models of e-commerce which benefited them one way or the other. We look at these in more detail in the next section.

Why do definitions vary so much? Well it may be that there is a confusion between commerce and business. A lot of the time we mean e-business when we use the term e-commerce. So it may be better to restrict the term 'e-commerce' to buying and selling, and use 'e-business' for the whole set of things that go together to run an operation (like hiring staff, ordering paperclips, reporting to the taxman, taking out adverts etc.).

Categorising e-commerce by transaction

People have tried to impose categories on e-commerce, as on everything else. Some make more sense than others. When it comes to businesses using the Internet and engaged in e-commerce, naturally, our first impulse is to try to find handy categories in which to fit them for discussion purposes so that we can make useful generalisations about them. However, this isn't easy, as not everyone agrees on the categories to use. Remember to take any classifying or category system with a pinch of salt. Use it if and when it works, but don't let it constrain your thinking.

Orlowski (1998) focuses on two kinds of e-commerce transactions — direct to consumer and business-to-business. Hence, the parties involved in e-commerce transactions can be classified as business organisations (B) and individual consumers (C). In fact, the Internet also encompasses a wider spectrum of potential commercial activities and information exchanges. In some countries and regions, the (G) category has emerged, which implies the reorganisation of the management of public information distribution and procurement systems over the Internet. This opens up sizeable B2G, G2B, C2G, G2C and even G2G transactions. Hence, we can have nine different categories of e-commerce, which are summarised by the following matrix:

	Government	Business	Consumer
Government	G2G e.g., co-ordination	G2B e.g., information	G2C e.g., information
Business	B2G e.g., procurement	B2B e.g., e-commerce	B2C e.g., e-commerce
Consumer	C2G e.g., tax compliance	C2B e.g., price comparison	C2C e.g., auction market

Figure 1.2: Categories of e-commerce by transaction

Business-to-Government (B2G)

Many businesses supply services to government and government agencies. Increasingly they interact through a two-way e-procurement process where a government portal will offer contracts for goods and services and electronic tenders will then be returned by the businesses. We are also seeing the emergence of e-government, as government works to deliver its services to citizens online. Increasingly, governments see the Web as the basis for more effective distribution of community services, and countries such as the United Kingdom have invested significant resources in government online. There has also been a blossoming of third-party providers of e-government services such as Communities Online **http://www.communities.org.uk**/, a U.K. organisation providing ICT support, networking and advice to community groups, government and public sector organisations, voluntary bodies and projects concerned with bridging the digital divide. It has played a major part in disseminating good practice, running online forums and developing links with community networking bodies worldwide. This whole area raises issues such as equity of access to social services, digital divides (the haves and the have-nots in relation to Internet access across the world) and even questions relating to the desirability of e-democracy as electronic voting becomes a real possibility.

Business to Consumer (B2C)

This is the kind of e-commerce that everyone who uses the Internet is aware of. B2C e-businesses are online versions of physical stores. You can shop (e-tail), bank or make investments online. You're probably already familiar with a number of B2C sites.

These are retailing transactions with individual shoppers such as those offered at Amazon.com. These can offer a variety of different services for consumers such as information updates, comparison shopping, online

chats and consultations. Increasingly these sites are focusing on customer relationship management-offering customers information-rich services and developing e-communities. This is a very important aspect we will return to in Modules 2 and 6. E-businesses need to differentiate their products, and creating added value on their site is one of the most important strategies they can adopt. Check out **www.familywonder.com** for an example of how these B2C sites evolve.

Such consumer-driven sites are not restricted to B2C but can also be C2C or even C2B. Typically, these sites may be auction sites where consumers are selling their property (such as cars) directly to the consumer, mirroring classified adverts in newspapers (see **www.classified2000.net**). Individuals will also sell products or services to businesses, such as their own skills for employment or consultancy work.

Activity 1.3

Activity

Comparing B2C websites

Visit the following B2C websites. You'll see that there are a variety of options. Make a note of what they have in common, and do a quick evaluation, giving each one marks out of 10. Make this a purely subjective exercise. You don't have to spend too long on it, but keep your notes. It will be interesting to review them in Module 3 when you have established some criteria for judging good and bad B2C sites.

1. **Amazon.com:** an online bookstore, provides a unique way to sample and read reviews about books, as well as to order them. **www.amazon.com**

2. **My Tailor:** this clothing service simplifies the process of buying a dress shirt. Select your sleeve and collar type as well as the size and colour. The system then displays and prices the shirt, and checks inventory for availability**. www.mytailor.com/default.aspx**

3. **New York Times**: the New York Times gives its online newspaper away. Revenues are generated solely from online advertising. Such advertising is tailored to individual subscribers based on registration data and the individual customer's reading habits. **http://www.nytimes.com/**

4. **FedEx**: this FedEx application allows customers to create and edit their own address book with the names and addresses of frequent customers. FedEx Ship Alert also uses email to inform recipients that their shipment is on the way. **https://www.fedex.com**

Consumer to Consumer (C2C)

A popular way of getting into the e-commerce field has been with online auctions. These may be companies looking to auction off goods, or they may be intermediaries looking to bring buyers and sellers together for a commission. This has been a big success for example e-bay, **www.ebay.com,** deals with millions of transactions each week.

Business to Business (B2B)

As you have already read, some businesses have been conducting B2B for years, using EDI, but with the growth of the Internet, there has been a tremendous growth in B2B transaction volumes.

This reading explains how B2B exchanges, as they are called, can make businesses more efficient, and examines the relationship between Internet B2B and EDI.

Reading

www.b2binternational.com/publications/white-papers/b2b-marketing

Most e-commerce falls into the B2B category. Many organisations still use EDI systems to facilitate these transactions within a specific industry group. The growth of the B2B market has resulted in the creation of e-hubs or B2B hubs where businesses can purchase multiple components from multiple suppliers. These hubs can also be referred to as portals and fall into two types the vertical portal (also known as vortal) specialising services across several industries and the horizontal portal (sometimes described as a hortal) providing a set of services across a single industry.

Kaplan and Sahwney (2000) further distinguish these groupings into four classifications, firstly by classifying purchases into manufacturing inputs or operating inputs and secondly by classifying how products and markets are bought. Manufacturing inputs are usually highly specialised and so tend to be sourced from vertical portals (vortals), whereas operating or maintenance (MRO) inputs are more general and frequently sourced from horizontal portals. Companies will also have different sourcing strategies either through systematic sourcing, which implies long term negotiated contracts, or spot sourcing where the aim is to fulfil an immediate need at the lowest possible cost.

Activity 1.4

Activity

B2B websites

Now have a look at some of these B2B sites.

Welcome to i2i — industry to industry: **www.ind2ind.com**

CommerxPlasticsNet — a commerce marketplace: **www.commerxplasticsnet.com/.**

Metal Site — global metals marketplace: e-STEEL — marketplace for steel: **www.e-steel.com.sg**

ChemConnect — connecting buyers and sellers worldwide: **www.chemconnect.com**

1. Do any of these websites give you ideas for B2B within your own organisations, or perhaps an aspect of business that had not occurred to you before?

We shall return to this topic later and inspect these sites and others in more depth.

You may have noticed when looking at the above sites, those online auctions, which started as a C2C application, are beginning to take off on B2B sites too. We will return to this point in a later module.

Non business e-commerce

Not everyone uses the Internet for profit. One of the major users of e-commerce in many countries is the government. How they use it will vary, for example trade departments, taxation, government department information, and local government services can be found online.

As well, many non-governmental organisations and nonprofits are emerging as the Internet becomes harnessed for wider social ends, including activism; **www.mercycorps.org** is one such site.

This concludes our brief survey of the types of e-commerce. Now let's go on to consider why organisations should opt to put some (or all) of their business operations online.

Activity 1.5

Activity

ESD

Visit the site **www.componentsource.com/services/publisher/esd-service.html**.

Find out what ESD is and what kind of public services it will provide.

Going into e-commerce: why and how

According to articles you may have read about e-commerce, its possibilities are limited only by the imagination of the businesses and individuals that wish to conduct commerce across the Internet. This being the case, you might ask, how can a company afford to miss the chance of an e-commerce involvement? This is a fair question, as there are certainly many overwhelming advantages to having a successful e-commerce presence. However, there are also serious disadvantages to having a poor site. You need to look at the downside as well as the possible upside before spending on e-commerce.

Benefits of e-commerce

What benefits of e-commerce can you think of for organisations and for consumers? The Information Society website of the European Commission gives the following list:

Table 1.1: Different benefits to suppliers and customers

Supplier opportunities	Customer benefits
Global presence	Global choice
Improved competitiveness	Quality of service
Mass customisation and customisation	Personalised products and services
Shorten or eradicate supply chains	Rapid response to needs
Substantial cost savings	Substantial price reductions
Novel business opportunities	New products and services

Turban et al. (2008) also suggest the following benefits to society:

- More people working and shopping at home via the Internet leads to less traffic congestion and environmental pollution in our physical environment.

- E-commerce has the effect of lowering some prices, so that less-affluent people can improve their standard of living.

- People in developing countries and rural areas have access to products and services they would otherwise not be able to purchase.

- E-commerce facilitates delivery of public services, e.g. making it easier to bring health-care to rural areas.

You might feel that some of these points are rather debatable (i.e. how many people in developing countries are actually connected to the Internet). We shall look at some of the social, cultural and ethical aspects of e-commerce later in the course.

Many people are actively opposing the increased global trade that the Internet facilitates. They argue that this increases the separation of economies into single-product economies and increases economic interdependence – and not for the equal good of all. Whether this simple view is true or not, is beyond the scope of this text, but to argue one way or another, we still need to understand what it is that we are arguing for or against.

Dangers of e-commerce

There is no doubt that there has been a lot of hype about e-commerce, but organisations that leap on the bandwagon too quickly can find themselves with a lot of problems. You may know of B2C outfits that started successfully, but then overstretched themselves and failed.

A recent report by the Boston Consulting Group for **www.Shop.org** revealed that 65 per cent of all people visiting online e-commerce sites gave up before buying anything. Is this because they weren't serious, or because the sites were poorly designed? We shall return to this idea briefly and in more detail in other courses where we take a systematic look at Web page design and site construction. For organisations looking to trade with other organisations (not consumers) in what we call the B2B market, there are also pitfalls.

Reading

These two readings focus on one of the main problem areas for B2B exchanges – standardising software and systems**.**

www.tved.net.au/index.cfm?SimpleDisplay=PaperDisplay.cfm&PaperDisplay=http://www.tved.net.au/PublicPapers/November_2000,_Corporate_Education_Channel,_B2B_Electronic_Commerce.html

Soderstrom, E. (2003). Challenges in the field of B2B Standardisation.

Security issues

For managers, security is perhaps the main issue. Many people in the industry try to downplay the security aspects of e-commerce. They correctly argue that with the use of security technologies, e-commerce transactions are reasonably secure across the Internet. This is a fair argument. However, one major cause of concern remains — the security of the data on the seller's server. This, of course, can be correctly secured by the appropriate use of firewalls and encryption techniques. However, it is very difficult for the buyers (or consumers in B2C transactions) to assess the relative security risk of one seller site versus another. This may cause buyers to restrict their dealings to sites that have a good reputation, or to sites associated with stores with which they would normally deal with in the local community. Furthermore, buyers may be suspicious as to whether the goods will actually be delivered and query the refund policy, if there is one.

It is a common observation that in the B2C e-market, merchants do not treat security as one of their high priority concerns unless they are required to do so by regulatory bodies such as banks and financial institutions. In fact, in the local e-commerce market, the only e-businesses that treat security as a requirement are e-banking services. For example, the Hong Kong Monetary Authority has imposed some guidelines on the security requirements for banks to launch such services.

The main reasons for lack of attention to security in the B2C e-market are:

- Security is not a revenue-generating feature in the e-market.

- Investment in security is much higher than other revenue generating features, such as storefront and customer database.

- Security measures can downgrade the performance of a seller's server. It is difficult to strike a balance between security risk and the degradation of performance brought about by security measures.

Retailers are tending to focus only on 'tangible loss' in security breaches, which is, largely, much lower than the 'business reputation losses' that result.

Making the decision to get into the game

There are two possible ways in which businesses may decide to go into e-commerce:

1. A company may start up an e-commerce presence that is completely independent of its existing infrastructure.

2. A company may add an e-commerce component (i.e. have a Web presence) to its existing structure (a combination known as

'clicks and mortar'). In this case, the e-commerce system would almost certainly need to integrate with the existing transaction processing and ordering systems.

It has been argued that while businesses using the former approach may take the opportunity to re-engineer their processes in order to make full use of the benefits of e-commerce, those going for the second option may be at a significant disadvantage. This is because they still have the existing store and processing overheads that they have in their traditional business, and integration of the two with the e-commerce operation can be difficult. The next readings certainly confirm that problems can arise in this area. They also suggest ways of dealing with them.

Reading

http://ijyoti.com/tag/business-process-reengineering/

http://iosrjournals.org/iosr-jbm/papers/Vol7-issue1/C0711723.pdf

http://iosrjournals.org/iosr-jbm/papers/Vol7-issue1/C0711723.pdf

The impact of E-commerce on the business world

E-commerce has had a huge impact on all facets of the world of business, and many of the changes it has caused will be revealed as the course progresses. In this section, we concentrate on three of the major areas of development.

Improving direct marketing

If you've ever used e-commerce as a consumer, you'll know that e-commerce organisations frequently obtain information about their customers – they ask us about our age, jobs, interests and so on. If you haven't seen this in action, try out the following site, **www.albumreminder.com** .

You don't have to buy anything, just visit the site and try it out. This site is a good example as it uses an innovative approach to direct marketing. When a new album is about to be released, **albumreminder.com** emails all the previous purchasers of music by the same recording artist. This direct, targeted marketing is very effective. Other e-businesses (**Amazon.com**, for example) use demographic data to compile lists of recommended items, which greet you when you next visit their site. You can try this out as well.

Other areas in which e-commerce can improve marketing include product promotion, new sales channels, direct savings, reduced cycle time, customer service, and brand or corporate image.Customer service can also be greatly improved by the provision of online services, such as technical support, where much of the needed information is available in a Web-based database.In the case of queries that cannot be answered from the database, the system generates emails to appropriate technical support staff. This significantly reduces the cost of customer service for organisations wanting to offer this level of support, while improving the responsiveness tocustomers.

Organisational restructuring

The introduction of e-commerce has encouraged companies to change their ways of doing business so that they are not left behind. In adapting to new technology, organisations may undergo strategic and structural changes in policy, purpose and technology, and may even transform the way they conduct business. These changes often call for staff changes too, so it is a good thing that you are studying this course – the company will not have to leave you behind when it changes, because you will already be up there with the new information and skills.

Supply chain management

In many cases companies are using the new, faster communications technologies upon which e-commerce is based, not simply to buy and sell, but to change the ways they store and supply goods. The days of large warehouses with few large shipments in and out, are giving way to many more deliveries on a smaller scale, often calling for fewer wholesalers/storage businesss in the delivery chain as a result. This is a common feature of the online environment around the world.The possibility of handling goods fewer times, of getting a faster response to sales variation, and using fewer people to run the business, is driving a whole new way of moving supplies between grower/producer and retailer.

Even where the retailer integrates online activity, instead of replacing a shop front with a Web page, substantial changes are inevitable if their organisation is to operate effectively.

These new technologies require new organisational approaches. To be flexible and responsive to the market, new processes need to be implemented for the use of e-commerce, since its use may significantly redefine conventional sales and marketing strategies.This type of corporate change must be planned and managed.

The changes that organisations will undergo will also affect employees. With the globalisation of business and constantly changing skill set requirements, they need to be flexible and adaptable in moving between organisations and playing various job roles.

Virtual value chains

In 1985, Professor Michael Porter of Harvard Business School introduced the concept of the 'value chain' in his book Competitive Advantage: Creating and Sustaining Superior Performance. Since then, this thinking has prompted or underpinned much of management thinking. The relationships are shown in **Figure 1.3**. Porter's value chain theory is a well-known model in the study of business and information systems management. The model helps organisations identify and determine what and how value is added to a particular product or service.
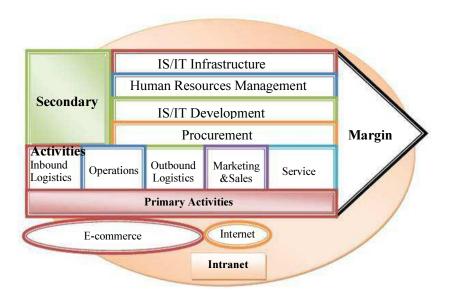
Figure 1.3: Physical value chain model

Source: Porter, 1985

In this traditional and physical value chain model, value is added to a product/service through five main business activities:

1. Inbound logistics (such as purchasing raw materials)

2. Production (such as designing a product/service)

3. Outbound logistics (such as shipping and delivery)

4. Marketing and sales

5. Services

Value chain analysis is used to identify potential sources of economic advantage. The analysis disaggregates a business into its major activities in order to understand the behaviour of costs and the existing and potential sources of differentiation. It determines how the business's own value chain interacts with the value chains of suppliers, customers and competitors. Companies gain competitive advantage by performing some or all of these activities at lower cost or with greater differentiation than competitors.

This approach requires an understanding of the linkages between activities and the way the performance of one activity affects the cost and performance of others. To perform value chain analysis:

- Divide a business into its key activities and assign costs to those activities.

- For each activity, understand the cost drivers, the linkages between activities and the company's cost position relative to competitors.

- Identify linkages to the buyer's value chain and assess potential sources of differentiation.

- Develop a differentiation strategy that maximises value to the buyer and minimises increases in cost.

The Basic Concept

The focus of Porter's argument is that winning by charging less or by having distinctive features should be understood and planned for as a result of the total activities that a company performs. By splitting these activities into 'strategically relevant' groups, managers should be able to understand the behaviour of costs as well as work out potential sources of differentiation.

What is a value chain?

In this analysis 'value' is defined as 'the amount buyers are willing to pay'. The value chain is therefore designed to display total value and consists of the business's value activities (defined below) and its margin ('the difference between total value and the collective costs of performing the value activities'). This allows us to describe the generic value chain for any single business in terms of three main elements: its primary activities, its support activities and the margin.

Primary activities

Primary activities create the product, its sale and transfer to the buyer as well as after-sales service. These are:

- Inbound logistics – warehousing, materials handling, inventory control, etc.

- Operations – the activities that change inputs into finished products (e.g. machining, testing, packaging, equipment maintenance, etc.)

- Outbound logistics – the activities that store and distribute products to buyers (e.g. warehousing, delivery fleet operations, order processing, etc.)

- Marketing and sales – the activities that provide the means for the buyer to purchase (e.g. advertising, sales force operations, selection and management of distribution channels, etc.)

- Service – activities which enhance or maintain the value, such as installation, upgrade, repair, spare parts, etc.

Support activities

Support activities are those which support primary activities and each other. Three of these: 1) procurement, 2) technology development and 3) human resource management can be associated with specific primary activities, while the fourth, business infrastructure, supports the entire chain.

- **Procurement** –While raw materials procurement is usually concentrated in a purchasing department, other purchasing is often dispersed throughout a business.

- **Technology development** – includes engineering and process development and, while usually associated with an engineering or development function, may also be dispersed (office automation, telecommunications, etc.)

- **Human resource management** – recruitment, hiring, training, development and compensation of all personnel. Partly centralised but increasingly dispersed. Porter (1985) points out that the skills and motivation of employees and the costs involved may be critical to competitive advantage.

- **Business infrastructure** – broadly encompasses general management activities, as well as finance, accounting, legal, corporate affairs and quality management. Often viewed as an overhead, these can be a considerable source of advantage (e.g. skilful negotiations with regulatory bodies.)

Defining a value chain

Starting with the generic value chain, individual value activities are identified for the particular business within its particular industry or the service provider within the public sector. Each of the main categories in the overall model can be subdivided into separate activities. In this way, sales and marketing might be subdivided into marketing management, advertising, sales force administration, sales force operations, technical literature, promotion, etc. This process of subdivision can continue down to activities that are very narrowly defined, if they have clear boundaries.

Determining which activity lies within which category requires judgement. In particular it depends on the nature of the business, its industry and where it derives the competitive edge which keeps it in business. Thus, order processing can belong within outbound logistics but its correct category is marketing if it is an important element of the way a business interacts with its buyers. One way or another, however, everything a business does should be captured and identified.

Linkages within the chain

Although definition requires this process of disaggregation, the value chain is not a series of independent activities but of interdependent ones. Linkages exist because of the relationship between how one activity is

performed and its impact on the cost or performance of another. Porter (1985) argues that competitive advantage frequently emerges from such linkages — for instance, how buying high quality, well-prepared raw material can simplify manufacturing and reduce scrap, or how the timing of promotional campaigns can help production and capacity scheduling in a fast food chain.

Linkages are not always obvious: the same function can be performed in different ways. Thus, keeping parts within specification can be achieved by buying in high quality parts, by specifying tight manufacturing tolerances or by imposing 100 -per cent inspection of finished goods; different businesses will choose different routes and achieve different potential advantages. Another under-recognised factor is that the cost or performance of direct activities is improved by greater efforts in indirect activities. For example, better scheduling (indirect) can reduce time spent by either the sales force (customer complaints) or the cost of delivery vehicles (by making fewer runs).

The value system

Porter (1985) extends the value chain concept to what he defines as a 'Value System', taking account of the fact that an individual business's value chain is inevitably 'embedded' in a larger stream of activities. This matrix concept suggests that there are at least three additional value chains of which account must be taken:

1. **Supplier Value Chains** – These create and deliver the essential inputs to the business's own chain.

2. **Channel Value Chains** – These are the delivery mechanism(s) for the business's products on their way to the end-buyer, customer or consumer

3. **Buyer's Value Chains** – These are the ultimate source of differentiation, because it is the product's role in this chain that determines buyer needs.

As you see, managers need to understand not only their own business's value chain but also how it fits into the industry's overall value system. The underlying point is that the value chains of separate businesses in an industry will differ according to each organisation's history, its strategies and its skills at implementation. For instance, one or more businesses may have restricted their competitive scope. This decision to serve a focused industry segment may enable a business to tailor its particular value chain to that segment and thus gain advantage either through lower costs or greater differentiation.

Since Porter introduced the notion, it has become ever clearer (particularly when the explosive growth in, and reduced costs of, ICT are studied) competitive advantage does not just arise within the business. It may be derived from looking at the entire system and recognising that different businesses can adjust and improve their own value system. For instance, quite often supplier linkages mean that the relationship with suppliers is not a zero-sum game in which one gains only at the expense

of the other but a relationship in which both can gain. Similarly, co-ordination and joint optimisation with different distribution channels can be important — especially in those industries where the channel may represent as much as 50 per cent of the ultimate selling price to customers (e.g., consumer goods, wine, newspapers, etc.) As a product/service goes through each of these five main business activities, its corresponding value is added and the profit margin is increased. Further, other support functions of an organisation can also indirectly add value to a product/service, including the functions of human resource management, technology development, procurement and business infrastructure (such as financial and accounting functions). Focussing on analysing the five business activities, organisational managers can redesign business processes in each of the five main business activities to improve organisational effectiveness and efficiency. This would add value to the product/service, and eventually increase the profit margin.

Interestingly, in Porter's view, IT (information technology) has only an indirect effect on a product/service's value chain. In other words, in a physical value chain, useful information provided by IT is not considered a source of value itself, but rather is considered as functioning in a supporting role. In the era of e-commerce, however, a virtual value chain exists only with such data, and information becomes an essential source of value for an organisation. Rayport and Skiokla (1995) extended Porter's model from a physical marketplace into a virtual one. Understanding that value can be created from the virtual marketplace, as well as how to achieve this value, is an important concept for managers.

The nature, characteristics, and ways of managing the virtual value chain are different from those in Porter's model. The essential point here, is that information itself is the source of value, rather than an indirect factor influencing the value chain. In other words, the digital asset (information saved in digital form) is the key to the virtual value chain. The five main characteristics of the virtual value chain are:

1. Unlike physical assets, digital assets are not consumed. A typical example is selling books in digital form, as they do not require paper for re-printing after a copy is sold.

2. The virtual marketplace defines new economies of scale. Even small companies may have a chance to provide products/services at the low unit prices, which are normally only available to big companies with large-scale mass production capabilities. Think about the cost of a worldwide launch of a product/service in comparison with launching it on the Internet, which, in theory, also has global reach.

3. New economies of scope can also be redefined because digital assets can be used to add value across many different and disparate markets. For example, other departments in an organisation can use customers' demographic data collected from a specific market sector for other marketing purposes.

4. In the virtual value chain, transaction costs are much lower than many of their counterparts in the physical value chain. Again,

electronic transactions can be performed at a much lower cost with savings in rental, human resources, etc.

5. Digital assets can also facilitate organisations in shifting a thinking paradigm from supply-side to demand-side by providing direct marketing information to the sales department, which matches different needs with different customers.

The marketspace: Content, context and infrastructure

Finally in this section, we adopt a more theoretical and holistic perspective by looking at what Rayport and Skiokla (1995) call 'the marketspace'. They argue that the information revolution has greatly changed the way economic value is created and extracted. They claim that in a marketspace, the three components of a business:

1. content

2. context

3. infrastructure

can be separated.

This disaggregation can create new ways of adding value in the business value chain. This is quite a difficult concept, but persevere with it as it gives you a theoretical perspective that is essential when considering e-commerce. It isn't enough to transfer your bricks and mortar business to the market space. You have to analyse these three components and then reassemble them to take advantage of the power of the Internet.

Try to look at the idea of marketspace with two levels in mind. First, with the marketspace itself as source of ideas and then the ideas generated from the marketspace which spark more perspectives with regards to e-commerce.
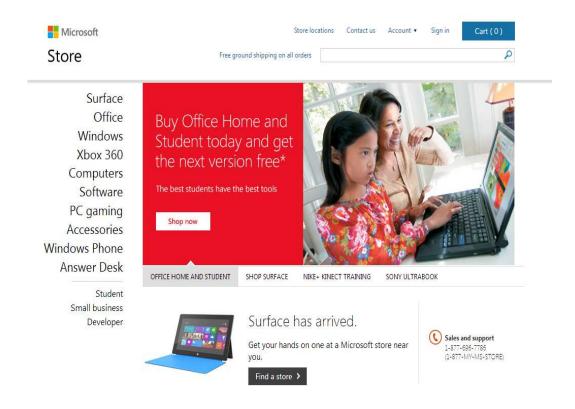
Figure 1.4: Microsoft marketspace

Commercial use of the WWW: Government perspectives

It is not surprising that the U.S. has been the world leader in Internet technology and e-commerce. It started the whole thing off and gave the world the idea of a non-governed communications utility free from profit-making and restrictive practices. Today the pioneering spirit lives on as U.S. private businesses, as well as government agencies, work together to develop suitable strategies and action plans to transform traditional business processes into new e-commerce processes.

In 1997, the U.S. White House proposed a political initiative about e-commerce entitled 'A Frame work for global electronic commerce'. It clearly describes the importance of e-commerce in transforming the world's economy, articulates five key principles and policies guiding e-commerce development globally, and establishes a road map for international discussions and agreements to promote the development of e-commerce around the globe.

These five key principles are:

1. The private sector should lead e-commerce because innovation, expanded services, broader participation, and lower prices will arise in the marketplace, and not in highly regulated governmental departments.

2. Governments should avoid undue restrictions on e-commerce, because doing so at the current stage would be likely to decrease the supply and raise the cost of products and services for consumers across the world.

3. Where government involvement is needed, the aim should be to support and enforce a predictable, minimalist, and consistent and simple legal environment for e-commerce. More specifically, the role of government should be to ensure competition, protect intellectual property and privacy, prevent fraud, foster transparency, support commercial transactions, and facilitate dispute resolution.

4. Governments should recognise the unique qualities of the Internet. For example, governmental regulations and policies established over the last 60 years for telecommunications, radio, and television may not fit the Internet. As a result, those regulations, policies and laws that could hinder e-commerce should be reviewed and revised, or even eliminated.

5. E-commerce over the Internet should be facilitated on a global basis. For example, a legal framework guiding commercial transactions on the Internet should be worked out and commonly accepted by as many countries as possible. The U.S. White House's political initiative on e-commerce also covers three main areas and nine specific issues for discussion and possible agreement by governments (see **Table 1.2**).

Table 1.2: Main areas for discussion

Financial issues	• Customs and taxation • Electronic payments
Legal issues	• 'Uniform commercial code' for e-commerce • Intellectual property protection • Privacy • Security
Market access issues	• Telecommunications infrastructure and IT • Content • Technical standards

Realising the international nature of e-commerce, the U.S. government requested the involvement of important international bodies such as the World Trade Organisation (WTO), World Bank, the Organisations for Economic Cooperation and Development (OECD), Asia-Pacific Economic Cooperation (APEC), and the Free Trade Area of the Americas (FTAA). It is predicted that in the near future various countries may reach a consensus on international legal and commercial frameworks and agreements. If this is the case, the pace of e-commerce development will accelerate. Of course, not all governments are happy with this. Aside from the fact that many governments see free communication and even trade as threatening their control on their countries, there is the sense that

governments could effectively tax all e-commerce activities and enrich themselves. Whether this is true or not is a complex issue, but it is certainly true that unless e-commerce grows beyond today's experimental stages (with huge loses for many players) there will never be thriving online businesses needing to be taxed.

The future for e-commerce

We can view the future of e-commerce from several different angles. First, we can look at technology trends. One of the future key technological components in e-commerce is mobile computing. It is predicted that the number of people using mobile handsets connected to the Internet will overtake the number using a PC. The popularity of mobile computing is mainly due to the rapid penetration rate of mobile handsets to the public. The rapid decrease in price, cost and size of mobile handsets means the majority of the population can own a mobile phone. Mobile e-commerce has another advantage over PC-based e-commerce in that it allows transactions to be done at any time and any place. Present mobile e-commerce is mainly based on Wireless Application Protocol (WAP) technology, which enables mobile handsets to perform simple Internet browsing functions.

Another important technology trend in e-commerce is the use and availability of broadband. The ability to access suitable bandwidth is a major hindrance to the development of multimedia delivery services such as online video and audio streaming, regarded as future e-commerce applications.

Another aspect of the future of e-commerce is the way it is changing the business environment:

- **Participation in value networks** — companies become engaged in multiple inter-enterprise relationships, driven by customer-specific demands. They seek to enhance customer value, and reduce costs and time-to-market through a web of partners, focusing on the integration of information flows between them and exploitation of intra- and inter-enterprise knowledge. A typical example is the integration of services provided by travel agents, airlines, car rentals and hotels where customers can complete one-stop shopping for travel packages through the Internet.

- **Transacting in dynamic markets** — companies and markets increasingly become interwoven and interchangeable. Through markets, companies seek increased dynamics in buying and selling, and in contractual relationships, some of which are very short lived. New market mechanisms enable products and services to be traded that were previously locked inside companies. A typical example is the increasingly popular online education market where some education institutions, other than delivering online education services, also package their online delivery system as a commodity to sell to other institutions.

- **Thriving on information** — existing and new businesses exploit the large amounts of information by pushing digitising even further and by bringing together information from many sources in a knowledgeable way. Their business models include direct and indirect revenue streams from digital information. For example, many Internet Content Providers (ICPs) provide information such as news and entertainment.

- **Convergence of B2B and B2C e-commerce** — attractive B2C interactivity and personalisation concepts overflow into B2B. Conversely, product and service lifecycle management and direct marketing concepts from B2B find their way into B2C. Radio Frequency Identification (RFID) is very rapidly being used to extend the Internet to the real world applications. For the past 15 years the Internet has enabled us to extend the reach of our databases and to link them between organisations rapidly and at low cost. With the arrival of inexpensive radio tags we are now able to keep track of projects in the world, and not just items in databases.

Finally, we can also look at the future of e-commerce from the social and cultural point of view. Inevitably, the new e-commerce paradigm will strengthen the globalisation of economy, including the reorganisation of economic activity, the internationalisation of services, and the growth of transnational corporations. Another social trend related to e-commerce is the effect of these technologies on labour markets. There will be a huge demand for knowledge workers and a need for interdisciplinary understanding between technical and non-technical workplaces. Privacy concerns are also a big social issue, given that in the e-commerce world, there is an inherent conflict between the growth of personalised services – which depend on the dissemination and collection of personal information – and the protection of privacy.

Module Summary

Summary

This module was an introduction to e-commerce and reviewed definitions and theory.

E-commerce refers to the use of electronic transmission media (telecommunications) to engage in the exchange, including buying and selling, of products and services requiring transportation, either physically or digitally, from location to location. In simple terms, e-commerce is the process of buying, selling, or exchanging products, services, or information via computer networks. We also looked at the different categories that e-commerce operations can be organised into. The parties involved in e-commerce transactions can be classified as business organisations (B), individual consumers (C) and the Government (G). This opens up nine different categories of e-commerce, which are summarized by the matrix as: B2C, B2B, B2G, C2B, C2C, C2G, G2B, G2C and even G2G transactions.

There are several benefits of e-commerce for organisations, consumers and society at large. At the same time, there are dangers. The main concern for e-commerce is security.

E-commerce has had a huge impact on all facets of business, specifically we looked at three of the major areas of development:

1. improving direct marketing,

2. organisational restructuring

3. supply chain management.

We also considered the future of electronic commerce and how it may evolve and in the process, influence changes in business and the world as we know it.

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