

Chapter Four

Concepts of *E-procurement*

4.1.Introduction

Procurement has not traditionally been a significant topic for management study in comparison with other areas such as marketing, operations or strategy. The concept of e-business has, however, highlighted its importance as a strategic issue since introducing electronic procurement or e-procurement can achieve significant savings and other benefits which directly impact upon the customer.

The potential importance of online procurement is highlighted by Christa Degnan, a senior analyst at the Aberdeen Group, who explains that purchased goods and services are often the largest expenditure at many companies:

We estimate that for every dollar a company earns in revenue, 50 cents to 55 cents is spent on indirect goods and services – things like office supplies and computer equipment. That half dollar represents an opportunity: By driving costs out of the purchasing process, companies can increase profits without having to sell more goods. (Hildebrand, 2002)

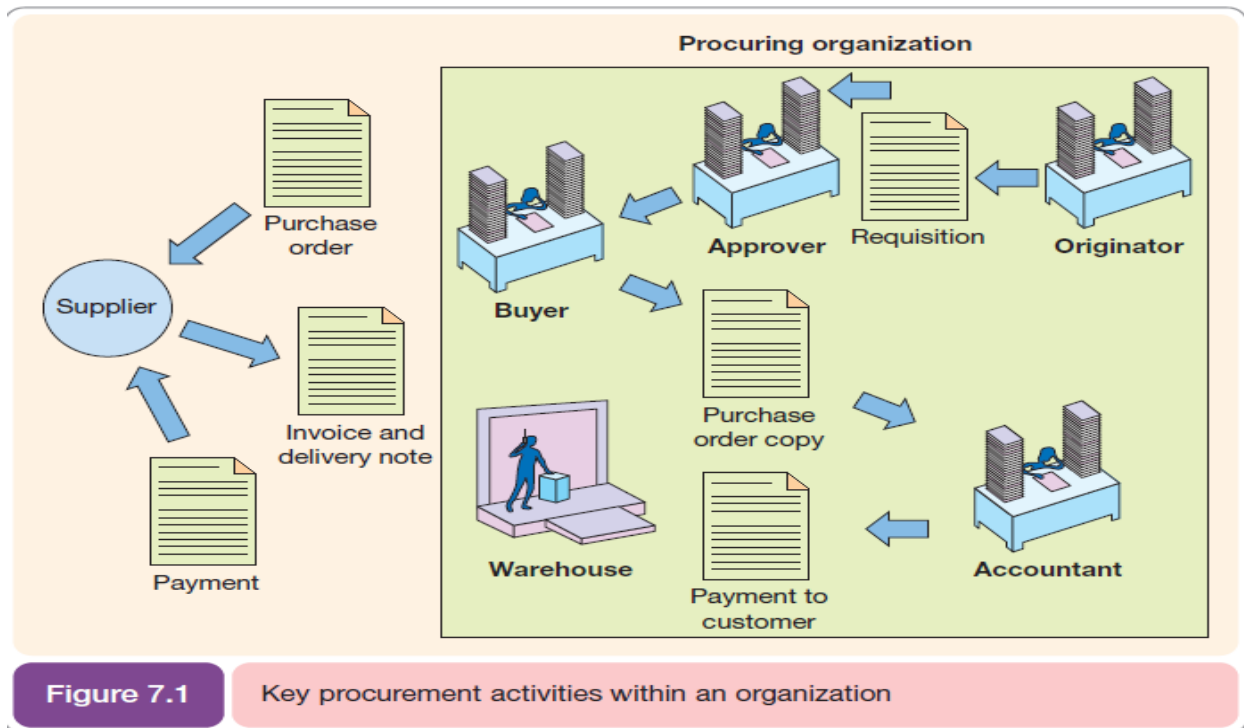
Issues involved with electronic trading between a supplier and its customers are often considered from the marketing perspective of the supplier of goods. In this chapter, we consider the same transaction, but from the alternative perspective of the purchaser of goods. It will be seen that there are a wide range of methods of implementing electronic trading with suppliers which will be assessed by purchasing, information systems and marketing managers. Meanwhile, company directors will need to assess the strategic benefits and risks of e-procurement.

In this chapter we consider the benefits and risks of e-procurement together with techniques that can be used to assess these benefits and risks. We also consider the selection of the different types of e-procurement including the hyped business-to-business marketplaces.

4.2.What is e- procurement?

The terms ‘purchasing’ and ‘procurement’ are sometimes used interchangeably, but as Kalakota and Robinson (2000) point out, ‘procurement’ generally has a broader meaning. ‘Procurement’ refers to all activities involved with obtaining items from a supplier; this includes purchasing, but also inbound logistics such as transportation, goods-in and warehousing before the item is used. The key procurement activities and associated information flows within an organization are shown in the following *Figure*. In this chapter we focus on these activities which include

searching and specification of product by the end-user, purchasing by the buyer, payment by an account, and receipt and distribution of goods within a warehouse.



Electronic procurement (e-procurement)

E-procurement (electronic procurement, sometimes also known as **supplier exchange**) is the business-to-business or business-to-consumer or business-to-government purchase and sale of supplies, work, and services through the Internet as well as other information and networking systems, such as electronic data interchange and enterprise resource planning.

The e-procurement value chain consists of indent management, e-Informing, e-Tendering, e-Auctioning, vendor management, catalogue management, Purchase Order Integration, Order Status, Ship Notice, e-invoicing, e-payment, and contract management. Indent management is the workflow involved in the preparation of tenders. This part of the value chain is optional, with individual procuring departments defining their indenting process. In works procurement, administrative approval and technical sanction are obtained in electronic format. In goods procurement, indent generation activity is done online. The end result of the stage is taken as inputs for issuing the NIT. Elements of e-procurement include request for information, request for proposal, request for quotation, RFx (the previous three together), and eRFx (software for managing RFx projects).

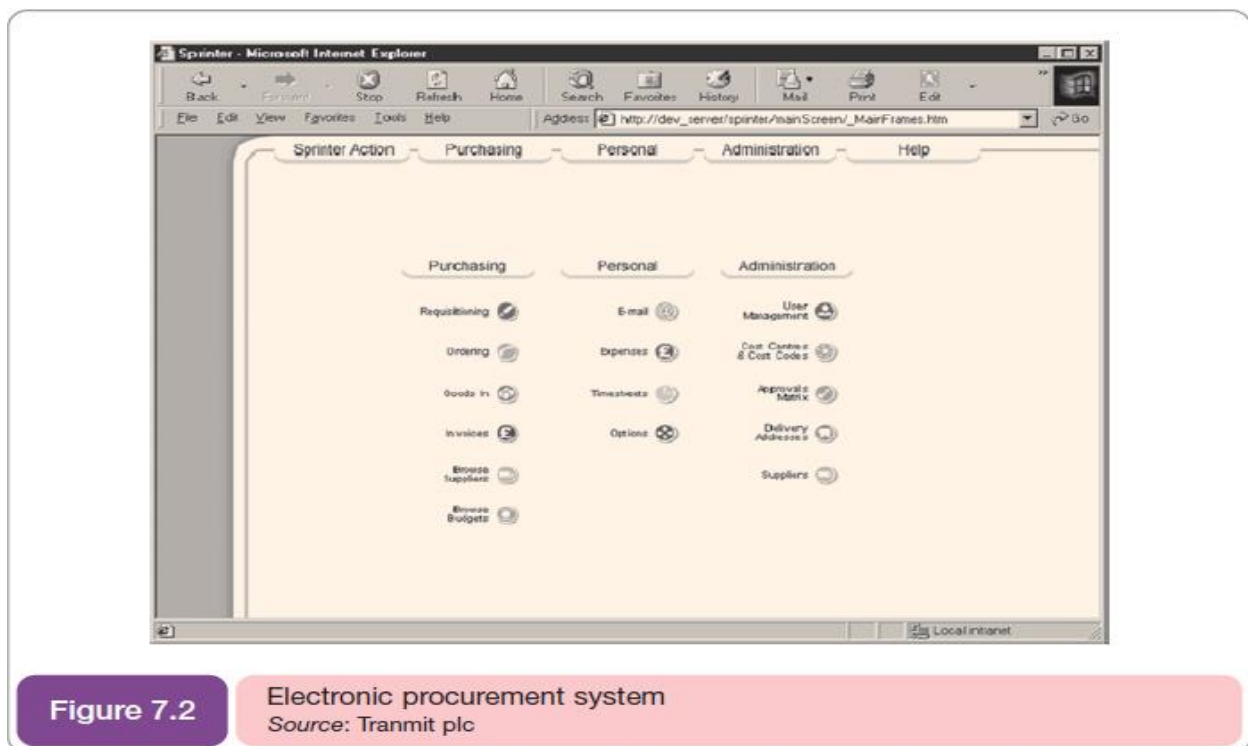
The electronic integration and management of all procurement activities including purchase request, authorization, ordering, delivery and payment between a purchaser and a supplier.

E-procurement should be directed at improving performance for each of the ‘five rights of purchasing’ (Baily *et al.*, 1994), which are sourcing items:

- i. at the right price
- ii. delivered at the right time
- iii. of the right quality
- iv. of the right quantity
- v. From the right source.

E-procurement is not new; there have been many attempts to automate the process of procurement for the buyer using **electronic procurement systems (EPS)**, workflow systems and links with suppliers through EDI. These involved online entry, authorization and placing of orders using a combination of data entry forms, scanned documents and e-mail based workflow. It is convenient to refer to these as ‘first-generation e-procurement’. *Figure 7.2* is an example of an electronic procurement system that is available through a company intranet.

Electronic procurement system (EPS): An electronic system used to automate all or part of the procurement function by enabling the scanning, storage and retrieval of invoices and other documents; management of approvals; routing of authorization requests; interfaces to other finance systems; and matching of documents to validate transactions.



4.3.Overview of e-procurement : *Understanding the procurement process*

Before the advent of e-procurement, organizational purchasing processes had remained similar for decades. It can be seen that it involves the end-user of the item selecting an item by conducting a search and then filling in a paper requisition form that is sent to a buyer in the purchasing department (often after authorization by a manager, which introduces further delay). The buyer then fills in an order form that is dispatched to the supplier. After the item is delivered, the item and a delivery note are usually reconciled with the order form and an invoice and then payment occurs. Procurement also includes the transport, storage and distribution of goods received within the business – this is referred to as ‘inbound logistics’.

Table 7.1

Process flow analysis for traditional procurement (typical cycle time, 5½ days)

	Task description	Chart symbols	Time
1	Search for goods	●⇒□▷▽	1 hour
2	Fill in paper requisition	●⇒□▷▽	10 min
3	Send to buyer	○⇒□▷▽	1 day
4	In buyer's in-tray	○⇒□▷●▽	½ day
5	Buyer enters order number	●⇒□▷▽	10 min
6	Buyer authorizes order	●⇒□▷▽	10 min
7	Buyer prints order	●⇒□▷▽	10 min
8	Order copies to supplier and goods-in	○⇒□▷▽	1 day
9	Delivery from supplier	○⇒□▷▼	1 day
10	Order copy to accounts	○⇒□▷▽	1 day
11	Three-way invoice match	●⇒□▷▽	1 day
12	Cheque payment	●⇒□▷▽	10 min

The following explains how the procurement process can be simplified through e-procurement.

Evaluating the benefits of the e-procurement process for a typical B2B company

Purpose

To highlight the tasks involved in organizational purchasing and to indicate the potential time savings from e-procurement.

Introduction

Table 7.1 illustrates a typical traditional procurement process using the flow-process chart symbols that are explained in more detail in Chapter 11. It is based on the actual procurement process for Cambridge Consultants described in Case Study 7.1. Note that this process is for relatively low-value items that do not need authorization by senior managers. The timings are for a new item rather than a repeat buy for which searching would not be required. *Table 7.2* summarizes the new procurement process.

Table 7.2

Process flow analysis for new procurement (typical cycle time, 1½ days)

	Task description	Chart symbols	Time
1	Search for goods	●⇒□D▽	20 min
2	Order on web	●⇒□D▽	10 min
3	Delivery from supplier	○⇒□D▼	1 day
4	Generate invoice	●⇒□D▽	10 min
5	Cheque payment	●⇒□D▽	10 min

Key to flow process chart symbols

- Process
- ⇒ Transport
- Inspection
- D Delay
- ▽ Inbound goods

Questions

- 1 Identify inefficiencies in the traditional procurement process (*Table 7.1*).
- 2 Identify process benefits to *Table 7.1* that would be possible through the automation of a system through an e-mail-based workflow system.
- 3 Summarize why the e-procurement process in *Table 7.2* is more efficient.

Answers to activities can be found at www.pearsoned.co.uk/chaffey

4.4.E-procurement tools

Some e-procurement tools and applications include:

- ✓ Electronic systems to support traditional procurement.
- ✓ EDI (electronic data interchange)
- ✓ ERP systems.
- ✓ Internet as a support or complement to traditional procurement.
- ✓ electronic mail (e-mail)
- ✓ web enabled EDI.
- ✓ extensible markup language (XML)
- ✓ world wide web (www)

4.5.Types of e- procurement

To understand the benefits of e-procurement, and also to highlight some of the practical considerations with introducing e-procurement, we need to briefly consider the different types of items that are obtained by procurement (what is bought?) and types of ordering (how is it bought?).

Let us start us by reviewing what is bought by businesses. A B2B company might buy everything from steel for manufacturing products, through equipment to help machine products, to paper clips and pens for office use. There are two broad categories of procurement: those that relate to manufacturing of products (*production-related procurement*) and *operating or nonproduction- related procurement* that supports the operations of the whole business and includes office supplies, furniture, information systems, **MRO** goods and a range of services from catering, buying travel, and professional services such as consulting and training. Raw materials for the production of goods and MRO goods are particularly important since they are critical to the operation of a business. For the B2B Company, they would include manufacturing equipment, network cables and computers to control the process.

Moving to how items are bought, businesses tend to buy by one of two methods:

- ✓ *Systematic sourcing* – negotiated contracts with regular suppliers, typically in long-term relationships.
- ✓ *Spot sourcing* – fulfillment of an immediate need, typically of a commoditized item for which it is less important to know the credibility of the supplier.

A further characteristic of corporate procurement is that often items such as stationery are purchased repeatedly, either for identical items (straight rebuy) or with some changes (modified rebuy). E-procurement systems can assist in purchase if they make rebuys more straightforward.

Participants in online procurement

An understanding of new potential participants or actors in e-procurement is helpful. Riggins and Mitra (2007) identify eight types of intermediary that need to be reviewed to understand options for changes to procurement as part of developing an e-procurement strategy:

- ✓ *Traditional manufacturers* which produce physical goods that are generally sold to other corporate customers.
- ✓ *Direct sales manufacturers* similar to traditional manufacturers except that they bypass intermediaries and sell direct to end consumers via web or phone channels. These can include services companies, for example insurer Dell (www.dell.com) or airline easy Jet (www.easyjet.com). Direct sales manufacturer can be a cost-effective option for companies procuring business services such as flight bookings for staff.

- ✓ *Value-added procurement partners* act as intermediaries to sell products and services to other businesses; examples include travel agents and office solutions companies.
- ✓ *Online hubs* are industry-specific vertical portals such as Elemica (www.elemica.com) that generate revenues via B2B exchanges.
- ✓ *Knowledge experts* who produce information goods, for example E-consultancy.com and Hitwise.com have subscription services with innovation alerts, best practice and statistics of Internet usage.
- ✓ *Online information services* provide unique information to end users that is either original in its development or provides a unique editorial perspective. This is similar to the Knowledge experts category. From an e-procurement perspective, as we saw in *Chapter 6*, SaaS services such as E2open (*Figure 6.11*) are available to manage the information supply chain.
- ✓ *Online retailers* include start-up e-businesses and more traditional multi-channel retailers. Eurooffice (www.eurooffice.co.uk) is an example of an Internet pure play providing office goods at lower prices than traditional providers. Traditional providers in this space with a network of stores include Staples (www.staples.com).
- ✓ *Portal communities* seek to aggregate different online information services into an integrated customer experience, for example personalized news stories, online bill presentment and payment and community discussion features. These overlap with the online information service and knowledge experts. An example is Accounting Web (www.accountingweb.co.uk) which would support accountants in selecting services needed to run their business and would also support other businesses looking to select accountancy firms.

For each product sourced, an e-procurement strategy requires that alternative marketplace actors are selected who can offer reduced costs or improved services such as integration with internal systems.

4.6.Benefits of e- procurement

The benefits of e-procurement are explained through the drivers of e-procurement. The primary driver is cost reduction. In many cases the cost of ordering exceeds the value of the product purchased. E-procurement to be a strategic issue since, as the figures above show, significant savings can be made and these cost reductions should result in greater profitability.

Direct cost reductions are achieved through efficiencies in the process. Process efficiencies result in less staff time spent in searching and ordering products and reconciling deliveries with invoices. Savings also occur due to automated validation of pre-approved spending budgets for individuals or departments, leading to fewer people processing each order, and in less time. It is also possible to reduce the cost of physical materials such as specially printed order forms and invoices that are important to the process.

There are also indirect benefits from e-procurement; *Tables 7.1 and 7.2* show how the cycle time between order and use of supplies can be reduced. In addition e-procurement may enable greater flexibility in ordering goods from different suppliers according to best value. This is particularly true for *electronic B2B marketplaces* (p. 400). E-procurement also tends to change the role of buyers in the purchasing department. By removing administrative tasks such as placing orders and reconciling deliveries and invoices with purchase orders, buyers can spend more time on value-adding activities. Such activities may include more time spent with key suppliers to improve product delivery and costs or analysis and control of purchasing behavior.

A useful framework for evaluating the benefits of e-procurement and e-SCM has been created by Riggins and Mitra (2007). This can also be used to review strategy since it highlights potential benefits in terms of process efficiency and effectiveness and strategic benefits to the company. Some of the main dimensions of value highlighted by the approach include:

- ✓ *Planning* – this shows the potential for an e-procurement system to increase the quality and dissemination of management information about e-procurement.
- ✓ *Development* – e-procurement systems can potentially be incorporated early in new product development to identify manufacturing costs; this can help accelerate development.
- ✓ *Inbound* – this is the main focus of e-procurement with efficiency gains from paperless transactions and more cost-effective sourcing possible through hubs or marketplace. A strategic benefit is **vendor managed inventory (VMI)** where supply chain partners will manage the replenishment of parts or items for sale.
- ✓ *Production* – the integration of systems managing manufacture with the procurement systems used to ensure that manufacturing is not limited by poor availability of parts.
- ✓ *Outbound* – this is management of fulfillment of products to customers. It is not usually managed by the e-procurement system, but demand must be evaluated by linking through these systems to achieve **efficient consumer response (ECR)**.

Turban *et al.* (2000) summarize the benefits of e-procurement as follows:

- ✓ Reduced purchasing cycle time and cost
- ✓ Enhanced budgetary control (achieved through rules to limit spending and improved reporting facilities)
- ✓ Elimination of administrative errors (correcting errors is traditionally a major part of a buyer's workload)
- ✓ Increasing buyers' productivity (enabling them to concentrate on strategic purchasing issues)
- ✓ Lowering prices through product standardization and consolidation of buys
- ✓ Improving information management (better access to prices from alternative suppliers and summaries of spending)

- ✓ Improving the payment process (this does not often occur currently since payment is not always integrated into e-procurement systems).

4.7.Challenge and risks of implanting e-procurement

Of course, there are also barriers to adoption of e-procurement. CIPS (2008) identifies the following issues for suppliers which can act as barriers to e-procurement:

- ✓ Competition issues, e.g. in exchanges using collaborative purchasing
- ✓ Possible negative perception from suppliers, e.g. their margins reduced further from e-auctions
- ✓ Negotiated procurement benefits may be shared with other exchange users who may be competitors
- ✓ Creation of catalogues can be a long process and costly to suppliers
- ✓ Culture profile within organizations, e.g. resistance to change.

The adoption of e-procurement is low, with less than a fifth of large companies adopting this technology. It may be possible to explain low adoption through a consideration of the risks and impacts involved with e-procurement. A PricewaterhouseCoopers survey of 400 senior European business leaders indicates that security concerns and lack of faith in trading partners are the most significant factors holding back e-procurement (Potter, 2000). Potter states that authentication of identity is the main issue. He says ‘People need to be satisfied about who they are dealing with.

They need to know that their messages have not been intercepted or corrupted on the way, and most importantly they are legally non-reputable – meaning that the other party can’t walk away from it in a court of law.’ He goes on to say that the security fears are well founded, with nearly two-thirds of companies relying solely on password protection when dealing with suppliers. Trusted third-party certification is required for the level of trust to increase. While the Internet may give the impression of making it readily possible to swap between suppliers and use new suppliers, two-thirds of those interviewed said building a trusted relationship with suppliers is necessary before they would trade using the Internet.

Organizational risks

If the cost savings referred to earlier in the chapter are to be achieved it may be necessary to redeploy staff, or in the worst case make them redundant. For a medium-sized company such as Cambridge Consultants the purchasing team of five people was reduced to four. The threat of redundancy or redeployment is likely to lead to resistance to the introduction of the system and this need to be managed. The purchasing manager will have to carefully explain the reasons for introducing the new system, emphasizing the benefits to the company as a whole and how it should enable more variety to be introduced to the buying role. Since the cost savings of e-procurement are achieved through empowerment of originators throughout the business to

directly purchase their own items rather than through a purchasing department there is a risk that some originators may take advantage of this. This is known as ‘maverick or off-contract purchasing’, and it has always happened to some extent. Maverick purchasing occurs when items are ordered that are unnecessary or too expensive. Complete

Failure to achieve real cost reductions

There is a risk that the return on investment (ROI) from introducing e-procurement may be lower than that forecast and the introduction of the e-procurement system may not pay for itself. This may occur if the assumptions used to calculate savings from e-procurement such as those in *Activity 7.2* are too simplistic. Complete *Activity 7.4* to review why savings may be lower than anticipated.

Technology risks

Tranmit (1999) reported the biggest barrier to automation of e-procurement as integration with existing financial systems, according to 60 per cent of respondents. The section on implementing e-procurement below shows that there is a range of different models for procurement. The models are evolving fast, so it is difficult to know which to select. Likewise there is a range of different marketplaces, many of which have not yet reached critical mass. It will be wasteful to become involved in a marketplace which fails in a year’s time. Problems introduced by large-scale ERP systems may also not dispose organizations to e-procurement.