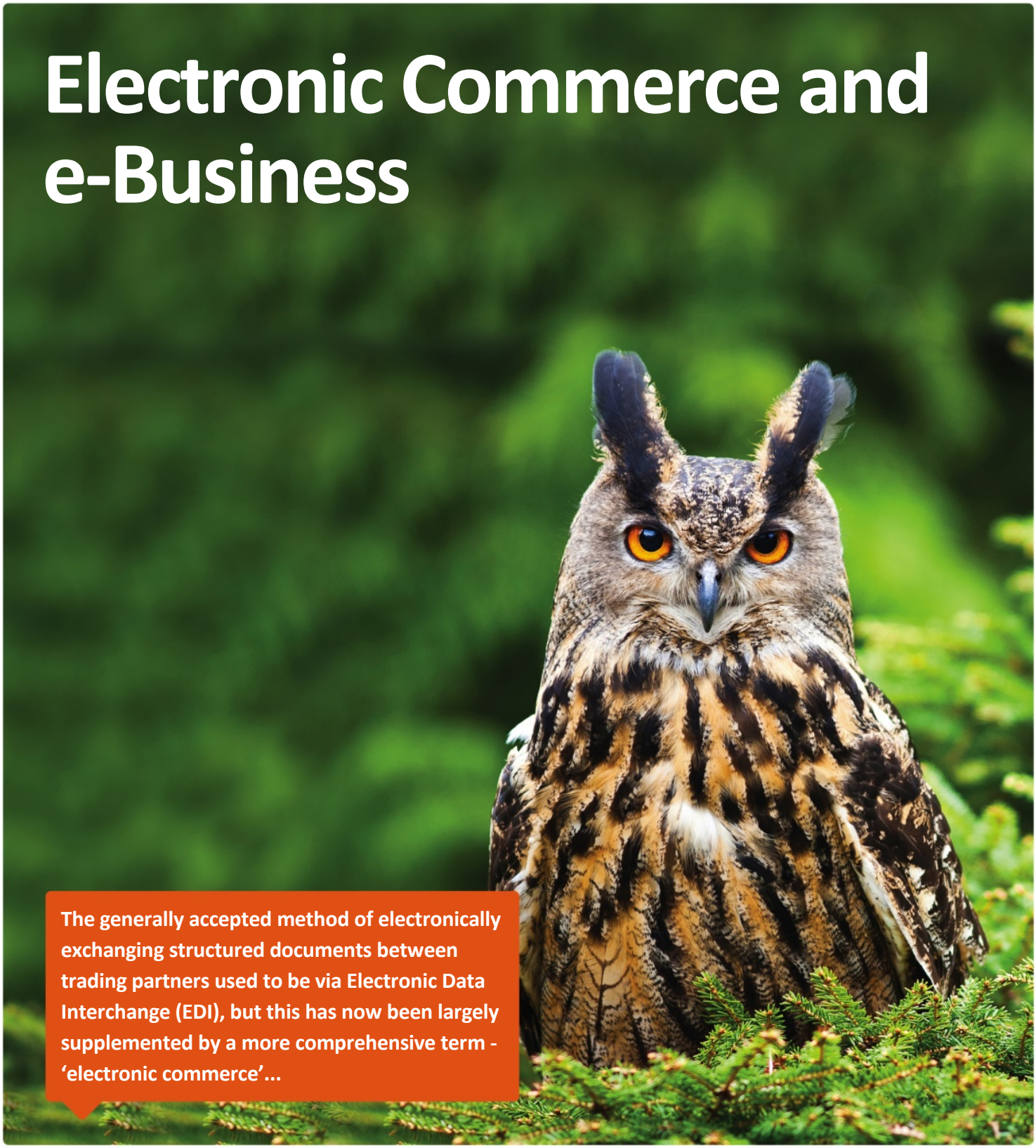
Knowledge Insight

CIPS KNOWLEDGE

Electronic Commerce and e-Business



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1. Introduction

The purpose of this Practice Guide is to help readers gain an understanding of:
• e-commerce and e-business in general
• the benefits
• collaborative e-commerce
• penetration of e-commerce in the UK
• case studies relating to e-commerce
• key issues - e-commerce
• contractual issues
• trading models

The generally accepted method of electronically exchanging structured documents between trading partners used to be via Electronic Data Interchange (EDI), but this has now been largely supplemented by a more comprehensive term - 'electronic commerce' - and EDI now just forms part of the overall picture. This change of emphasis was confirmed and endorsed by the decision of the EDI Association in January 1996 to change its name to the Electronic Commerce Association. The ECA subsequently merged with the Article Number Association to form E Centre, which has now been renamed to GS1 - a collaborative partner of CIPS (contact details given at the end of this Practice Guide).

Technological exchange in this area is helping to ensure supply integration as it cascades globally. The effect that it will have on the business and procurement will be discussed throughout this document.

2. Definitions and Explanations

Numerous definitions of e-commerce (EC) have been put forward. However, in general, it may be described as the use of computers linked by networks to carry out any, or all of, the following:

- access data about products (goods and services)
- find and qualify suppliers
- advertise needs and wants
- issue invitations to tender
- let contracts
- issue call-off orders
- monitor performance
- receive invoices
- make payment

This list falls naturally into two categories -

- e-sourcing and e-procurement
- e-sourcing

There is confusion about what is covered by e-sourcing and how this differs from e-procurement. The CIPS definition of e-sourcing is: "e-sourcing is using the internet to make decisions and form strategies regarding how and where services or products are obtained."
It covers the key elements in the buying process, which are at the discretion of the specialist buyers; these include knowledge, specification, request for quotation/e-tender/e-auction, evaluation/negotiation through to contract.

If e-sourcing is to be implemented, a good e-sourcing practice is ESSENTIAL in making e-procurement work. If the correct STRATEGIC DECISIONS are made good operational process will probably result. E-sourcing and e-procurement are both aspects of the e-purchasing cycle. E-sourcing provides a platform for delivering promises of social responsibility - it provides accountability and visibility of why a company makes a decision to source products from their chosen suppliers.

E-sourcing systems should enable the sourcing team to:

- effortlessly analyse and model complex decisions in real time
- automate the contract lifecycle management including awards, rejections, amendments and renewals
- collaborate with the supplier - using a central system facilitates the collaboration process

E-sourcing should deliver the following visible benefits:

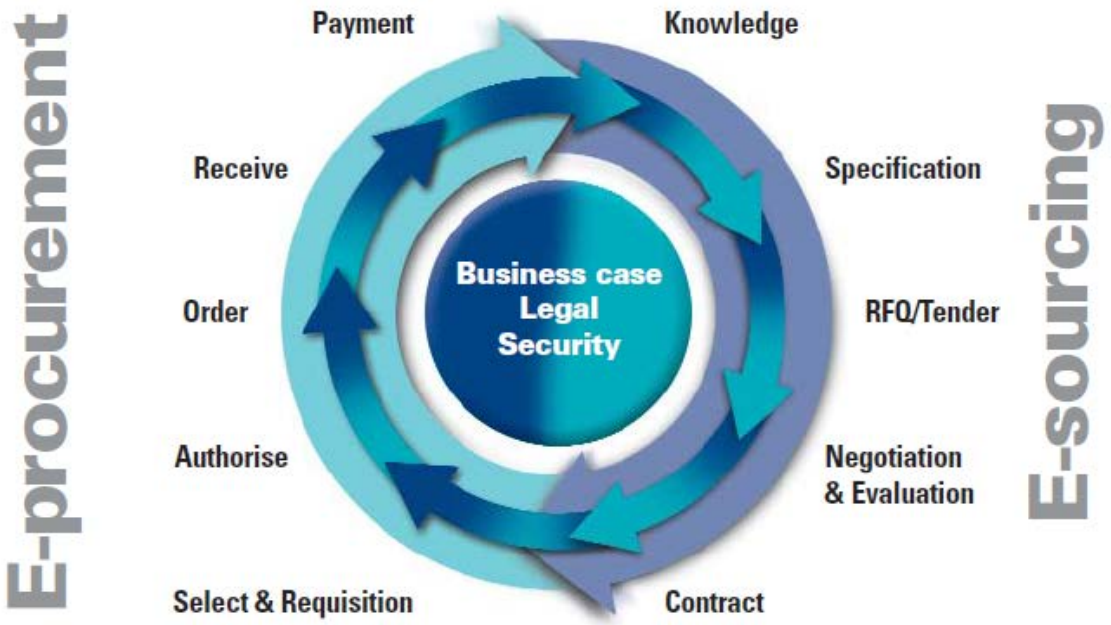
- real-time information - the sourcing team gets visibility on contracts and spending patterns. Any planned improvement must ensure reliable up-to-date information for the purpose of analysis. A system can provide pre-qualified information about suppliers.
- integrated process automation - taking the drudgery and time out of the sourcing process by reducing the amount of paper involved. Typically such systems can distribute all requirements electronically via the web, email or disk format.

E-procurement

The CIPS definition of e-procurement is: '….. using the internet to operate the transactional aspects of requisitioning, authorising, ordering, receipting and payment processes for the required services or products."

E-procurement may be seen as the focus of local business administrators with one of the key goals being to devolve the buying process to local users, covering the requisition against contract, authorisation, order, receipt and payment.

Both e-sourcing and e-procurement are integral to the purchasing cycle, which may be illustrated diagrammatically as follows:



E-commerce includes e-purchasing and e-sales. It would also encompass the use of the internet to build more collaborative ways of working between the customer and supplier and within companies themselves. An example of this would be if a customer has the ability to send through real time sales data to their suppliers, the supplier could vendor - manage the customer's inventory, obviating the need for the customer to raise orders.

EDI, which is generally viewed now as one element within the overall e-commerce picture, did not achieve the impact on the supply chain which was originally expected for a number of reasons, notably the high setup costs and the plethora of standards and versions of standards which were introduced. Any business conducted over the internet typically, e-commerce between businesses is often referred to as e-business.

3. CIPS Position on E-Commerce

CIPS Practice Guides are designed to provide awareness and a level of understanding to the reader on selected topics, in this case on e-commerce and e-business. They are written for use by those with an interest in business issues in general, and purchasing and supply management (P&SM) issues in particular. This will include full and part time P&SM professionals as well as individuals interacting with P&SM activities. The Practice Guides will also include information on the contextual background to the issues, and will give a balanced opinion on issues that the reader may wish to consider. There will also be references to other sources of information.

Most Practice Guides will contain CIPS position statements, that is, CIPS' view(s) on the Practice Guide's subject matter.The CIPS views are arrived at via an extensive consultation with P&SM practitioners and people with expertise relevant to the subject, including working knowledge groups and the CIPS Policy Advisory Network (PAN). Following the consultation process the CIPS Council's Key Practice Statements Group finalise the statements.

The growth of e-commerce does not affect the CIPS mission. It does however facilitate significant new opportunities in P&SM, and also creates substantial threats, due to the rapidity of the change and because of e-commerce's challenge to traditional P&SM functions.

In accordance with its overall mission CIPS:

- supports its members, and other P&SM professionals, in taking full advantage of the opportunities arising from e-commerce
- leads the P&SM profession in developing e-commerce (specifically with regards to e-purchasing aspects) expertise to meet future challenges.

CIPS appreciates that there is a great deal of hype and also nervousness about e-purchasing (which, as noted above, consists of both e-sourcing and e-procurement). This can lead to uncertainty and engenders self-preservation. E-purchasing should not be driven by technology but by the need for process improvement to meet the objectives of an organisation and its customers. P&SM professionals should view it as a positive opportunity to increase their value-add, rather than as a threat.

E-purchasing facilitates:

- evaluation of end-to-end trading cycles, eg evaluation and possible re-engineering of trading cycles leading to reduced cycle times
- improved work flow of the internal procurement process enabling end-user self service and decentralisation with centralised control through company-specific catalogues

- new functionality such as online bidding in e-auctions and e-requests for Quotations (RFQs)
- use of more efficient and cheaper connectivity methods such as the internet and XML (a computer language for coding content and delivery). XML is not however a requirement for e-procurement as many solutions do not utilise it
- connectivity to external sources of information eg portals; e-hubs; e-marketplaces
- connectivity to external supply chains eg Extranets, EDI; E-hubs; e-marketplaces – allowing shared real time information such as suppliers accessing real time sales
- sourcing, eg identifying new sources via the internet; use of intelligent search engines
- content management, eg private catalogues, public catalogues, internal inventory management, maintenance management
- connectivity to internal systems and sources of information such as inventory management, maintenance management, MRP systems
- payment systems, eg purchasing cards
- multimedia (although e-procurement does not necessarily contain multi-media elements)
- improvements in localised supply chain mechanisms and consortia etc. leading to mutual benefit e-purchasing does, however, require an appropriate infrastructure such as: internet; intranet and extranet; e-hubs; information access and exchange.

The view of CIPS is that the adoption and implementation of e-purchasing may be summarised as follows: (It will be noted that these views - the benefits to suppliers for instance - are endorsed elsewhere in this Practice Guide):

Strategy
Organisations should consider incorporating ecommerce - e-sourcing and/or e-procurement – within their corporate strategies. Correctly chosen e-purchasing options can be a relatively low risk e-strategy offering significant benefits.

CIPS strongly recommends that organisations have a well-defined P&SM strategy and use appropriate e-purchasing methods as a facilitator to achieve this. A progressive P&SM strategy will deliver significant business benefits by maximising value for money. An e-purchasing solution should never be implemented in the absence of such a strategy. An organisation's e-purchasing strategy should also support its e-business strategy including the e-commerce strategy (which includes e-selling) and vice versa.

E-commerce Programmes
Purchasing professionals should, ideally, lead and drive the procurement part of any e-commerce project relating specifically to e-purchasing initiatives and work cross-functionally with colleagues. Where this is not practicable, a P&SM professional must ensure he or she is consulted by the e-commerce project team, involved in decision-making and kept abreast of developments.

New technology is not a substitute for good professional knowledge and abilities. Processes and Systems Organisations should not simply automate existing procurement processes and systems but should consider improving ways of working and re-engineering business processes prior to the implementation of e-purchasing. P&SM professionals should challenge established procurement practices to test whether these have evolved around a paper-based system such can be replaced. CIPS strongly recommends that, wherever possible, processes should be re-engineered prior to implementing e-commerce.

E-purchasing is not a discrete systems application but rather an on-going programme, which should be continually developed as technology and P&SM expertise evolves within an organisation.

Changes and Benefits

Many of the benefits predicted, for e-purchasing especially, have been over-optimistic as they include procurement benefits which many organisations will have realised without introducing e-purchasing. They have often been based on organisations in which the benefits of professional P&SM strategies have not yet being realised, or where P&SM solutions have been implemented and the outcomes are being incorrectly attributed to an aspect of e-purchasing. Few organisations have implemented e-sourcing or e-procurement for long enough to have realised tangible business benefits. E-purchasing will change the dynamics of the P&SM profession as there will be a greater emphasis on knowledge management. It is suggested that ecommerce will change the culture of P&SM in an organisation and may lead to a greater emphasis on cost and prices. E-commerce will also facilitate purchasing from global sources.

Such changes will present P&SM professionals with enhanced career opportunities. E-purchasing will release time to be spent on more value-add aspects of purchasing such as the development of end users' purchasing competencies and the development of suppliers. It is an opportunity to deploy competencies to the greatest effect.

E-purchasing can enhance transactional purchasing by providing end users with quick and easy-to-use electronic systems such as electronic catalogues for selecting and purchasing their requirement from preferred suppliers. This should reduce transactional costs by improving speed and efficiency and provide greater commitment to contracts by the reduction of "maverick purchasing", ie purchases made outside an organisation's contractual arrangements. CIPS believes that e-purchasing will continue to develop with new technologies becoming available for the more sophisticated aspects of P&SM.

E-commerce has the potential to facilitate communication between purchasers, their customers, suppliers and employees. It can encourage suppliers to become more efficient and more focused on meeting the organisation's needs. e-purchasing specifically will also provide added value to the procurement function (and will improve procurement strategy. It will, for example:

- generate accurate and detailed management information which should enable strategic insight into organisation's buying patterns
- enable improved sourcing, supplier management, improved scheduling, reduced stock holding, demand management and supplier performances

To optimise these and other benefits, companies should focus on overall supply chain e-commerce solutions.

CIPS suggests the most significant benefits gained (as opposed to predicted or expected) from e-purchasing initiatives to date are improved management information, reduced cycle times and reduced transaction costs.

In order to reap the benefits of e-commerce, P&SM professionals should ensure that they undertake appropriate training and ensure their skills, knowledge and competencies are continuously developed. Such skills relating to e-commerce include wider management skills such as those involved with change management.

Benefits to Suppliers

Engaging in the e-purchasing process also brings potential benefits to suppliers. These include:

- time savings in re-inputting orders
- reduction in errors, eg from re-inputting returns, deliveries
- reduced transaction costs and cycle times
- holding less stock as a result of more efficient communications with customers, ie real time sales data, information for use in forecasting
- improved supplier performance by sharing supplier measurement information
- faster payment
- improved management information

Among the resulting benefits to buyers are:

- the ability to effortlessly analyse and model complex decisions in real time
- automate the contract lifecycle management including awards, rejections, amendments and renewals
- enhanced level of collaboration with the supplier
- reduced transaction costs and cycle times
- possibility of developing Vendor Managed Inventory
- improvements in Just in Time deliveries
- more accurate deliveries due to reduced input order errors by suppliers
- shared performance measurement data which encourages improved supplier performance
- potential for reduced need for expediting by the buyer as the supplier acknowledges orders by exception which automatically updates the buyer's system
- reduced stock due to shared sales/forecast information

Implementation Issues

There are also issues to overcome when implementing e-commerce including:

• ensuring that, by deploying e-commerce, organisations are not simply passing costs or process inefficiencies on to another part of the organisation or on to suppliers
• competition issues, eg in exchanges using collaborative purchasing
• possible negative perception from suppliers, eg their margins reduced further from e-auctions
• web site and information control lost to exchange administrators
• 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
• catalogue management can be costly
• product coding and classification can also be costly
• the cost of changing suppliers once they have invested in catalogue production may inhibit competition and lead to inertia
• culture profile within organisations, eg resistance to change

Future

CIPS encourages the ongoing development of technology-based solutions for more complex procurements. It encourages P&SM professionals to learn about e-commerce and then provide leadership on all facets of e-purchasing projects in their organisations in order to, for example:

- identify all the procurement needs for direct and indirect materials and services prior to developing an appropriate e-purchasing solution
- carry out due diligence on potential suppliers
- persuade suppliers to join the market

- suggest improvements to business processes

Summary
CIPS encourages organisations to fully understand how e-commerce can be of benefit to their business. It suggests that P&SM professionals ensure their organisations have a comprehensive e-purchasing strategy. P&SM professionals should evaluate e-commerce options in order to ascertain the most appropriate solutions for their own organisation. CIPS believes that there is nothing unethical or unprofessional about, for example, the use of IT to facilitate e-auctions.

The ability of the procurement function to effect change will depend on the company, the industry sector and the maturity of P&SM within an organisation, its resources, culture, nature of business and markets within which it operates. e-purchasing will impact on people, processes, and procedures as well as on financial performance. CIPS strongly encourages and supports P&SM professionals in their pursuit of the e-purchasing/e-commerce challenge.

4. Attractions of E-Commerce for Buyers and Suppliers

E-commerce impacts upon the supply chain by offering buyers a number of important advantages. As an illustration, a paper by E Scheuing 'Cyber Sourcing in the US' suggests that e-commerce is shifting the balance of power to buyers. Key benefits identified by the author are:

- competition is just a click away
- price comparisons can be done quickly
- geographic distance largely loses its importance

Products will, to an increasing extent, be available through standard web browsers and virtual shopping centres on the web will enable buyers to make quick and accurate comparisons between suppliers' offerings.

Another development is that, to reduce the considerable cost of establishing a fully electronic procurement facility, buyers may well wish to join together in the sharing of catalogues and e-commerce services in general to create a relevant market place, ie, COVISINT (a market place set up for the buyer and suppliers of Universal car parts).

Another important consideration is that by having catalogues available on line, conventional hard copy versions will no longer be necessary. This, it has been suggested, will bring about considerable reductions in ordering time.

There are also benefits for the supplier, notably:

- reduced level of returns as a result of enhanced order accuracy
- reduction in the number of enquiries from buyers regarding stock availability
- generation of new marketing opportunities
- changes to product specifications and promotional literature can be carried out quickly and efficiently without the need to approach printers or publishers

5. Current Benefits of e-Purchasing
With many market places struggling to establish themselves, there are significant benefits to be realised from using e-commerce. It is the 'e', which is no more than a tool to be used to automate and simplify the ordering process in the quest to reduce purchasing costs.

The Commodity Strategy below highlights the appropriate uses for e-purchasing solutions for various categories of good:
The sale of goods over the internet allows a company to have a shop window to the world. Operational and efficiency savings are achieved especially if orders are integrated into front-end order systems. Sales sites can be customised in order to enhance and add value to the buyer/supplier relationship.
The potential benefits to a company can be summarised as follows:

- greater market penetration
- increased responsiveness to customers
- more flexibility with lower costs
- access to new markets
- cost savings on marketing and promotion
- improved customer service
- longer lasting and more profitable customer/supplier relationships

6. Collaborative E-Commerce and How it Benefits Partnerships

The main e-commerce medium, which enables collaborative links between a customer and his suppliers, would be the transaction of messages over an extranet solution. This would be a closed environment that has direct links between the hub company (the customer) and its suppliers.

Not only would an extranet allow a customer to send out standard transactions such as purchase orders and invoices, the potential list for relevant information which could be sent between the customer and suppliers is endless and can be company-specific.

Examples include:

- delivery forecasts
- general information, eg, packaging specifications
- supplier measurement scores
- real times sales data
- stock levels of suppliers
- confirmation by exception
- delivery of goods booking in diary
- requests for new product information
- supplier forums
- cost price maintenance
- requests for quotation
- order tracking

The potential benefits of collaborative purchasing to the customer include;

- faster delivery of purchase orders
- audited document trail
- lead time reduction
- fewer errors on deliveries
- fewer queries and expediting
- improved supplier performance
- increased service levels and stock turns
- reduction in stationary and post costs
- reduced errors on Invoicing

The potential benefits to the supplier are as follows;

- simplified orders
- faster guaranteed delivery of purchase orders
- potential to integrate orders
- reduced stock holding due to more accessible forecasting
- reduced errors
- improved planning and performance
- more accessible information for reporting analysis

7. Implementation/Hints and Tips

As with any new technology, it is important to adopt the right approach to be sure of reaping the benefits. GS1 has suggested the following:

- set up a team with representatives from all departments within the organisation to assume responsibility for setting up and maintaining the new system
- ensure that the system selected has the ability not only to meet existing business objectives but also create new ones
- identify as accurately as possible the range of data to feature in the new system
- select, in consultation with suppliers and customers, an appropriate system, taking professional advice if necessary
- arrange and implement employee training and once this has been done operate the system on a trial basis before going live
- once the system is operational introduce suitable monitoring routines

Another list (the so-called 'Twelve Commandments') has been drawn up by The Ecademy ('The Education Portal for eCommerce') which says 'they can… if applied properly, guide the way through the chaos and wilderness of the Net into clarity and what some might consider the Promised Land….'

The Commandments cover a range of topics including:

• strategies for identifying and addressing international differences in sale of goods legislation and accountancy procedures

• ensuring that any e-commerce strategy adopted is sufficiently flexible to react to changing circumstances even on a day-to-day basis

• how a company can most effectively direct potential buyers to its site by way of search engines and search engine technology

• security considerations

• payment procedures

• personalising electronic relationships – the fact that e-commerce transactions are conducted at a distance does not mean that buyers and sellers should not cultivate a good working relationship to the benefit of both.

Whilst it is not possible to say that adopting the above approach is a cast-iron guarantee of success, it certainly makes that success more likely.

Properly implemented, an e-commerce strategy enables a business to manage its entire purchasing process electronically right across the supply chain from identification of the need to purchase, through sourcing, tendering, supplier appraisal, bid evaluation and contract award. Once suppliers have been approved and appointed their product offerings, along with prices and terms and conditions, can be accessed electronically, selecting from virtual warehouses and having goods delivered to different locations by electronic communication

with the supplier. Payment will be made electronically, generating considerable savings as the time-consuming manual process of receiving, authorising and arranging payment against invoices will become redundant. CIPS has estimated that the cost of placing a purchase order and the associated paperwork may be conservatively placed at £50. Electronic purchasing can reduce this to less than £10. To illustrate, for a business raising say 80,000 orders pa, this can lead to potential savings of approximately £3.2 million. However, CIPS recommends that you place a cost on each step of the purchase-to-pay process as it is currently to obtain a company-specific cost of raising an order. This can then be used in a cost benefits analysis to evaluate if e-procurement (looking at the transactional aspects of e-commerce) is a worthwhile solution.

An established way of achieving cost savings is to negotiate reduced prices from suppliers. E-commerce facilitates consortium /group purchasing, enabling buyers to exert greater leverage on these suppliers, making it easier for these savings to be achieved. It is important to note that, unlike incremental revenue gains, these savings have a direct and positive effect on profit levels. When making the business case for e-commerce to senior management, purchasing managers should place emphasis on this distinction.

8. The Penetration of E-Commerce in the UK

The value of internet sales by businesses rose to £71.1 billion in 2004, an increase of 81 per cent on the 2003 figure of £39.3 billion. Small businesses are a key element of the UK's move up the international e-commerce league, according to the annual government benchmarking survey published 11 November 2004).

The UK has jumped four places to third, behind only Sweden and Ireland for 'IT sophistication', says the survey conducted by Booz Allen Hamilton (BAH) on behalf of the Department of Trade and Industry (DTI). The largest growth area is amongst micro and small businesses, says the report. Larger businesses are still the most likely to trade online, but the gap is closing and IT adoption amongst small businesses has increased by an extra 7 percentage points.The proportion of micro and small businesses with a website has gone up by 16 percentage points, the number of micro businesses trading online has almost doubled to 30 per cent and the number of smaller businesses trading online has gone up from 22 per cent to 31 per cent.

Online sales and procurement is also a key area for the UK.The proportion of goods procured online rose to 24 per cent, and of businesses receiving orders online the channel accounts for an average of 19 per cent of their sales.

There are still challenges, says the report. Only 37 per cent of business allow customer to order online, significantly below the level in other leading nations. And the average proportion of sales online, as well as online orders, also trails international rivals. (Ref: ://www.computing.co.uk/computing/news/2071251/small-businesses-drive-uk-)

9. Case Studies

i) Electronic Commerce in the Retail Sector

Tesco

Tesco was the first to introduce the superstore concept successfully and since then has been responsible for a number of innovations in superstore marketing, becoming the first major UK retailer to offer a home shopping service to customers via the internet. The first home delivery website became operational at the company's Osterley (West London) store in November 1996; ultimately the intention is for this facility to be available at all Tesco stores in the M25 ring.

Customers at the internet superstore have on any given day over 20,000 products to choose from this list is updated regularly from Tesco's mainframe. The procedure is simplicity itself; once a shopper has decided which items are required, he or she confirms delivery and payment details. These particulars are then transferred from the web server and printed out at the relevant store where staff collect the relevant goods from the shelves ready for delivery the following day.

Dixons
Dixons' website offers over 2000 products from which the customer can make a selection, with delivery on the next working day. The server was developed using Microsoft Merchant Server; this is an advanced EC software package for the internet and includes a built-in order-processing component to handle all aspects of the transaction. Product data is downloaded from Dixons' mainframe to a Microsoft SQL Server database feeding the internet application.

Any new technology will bring in its train a number of threats, disadvantages or limitations. In the case of the use of the internet within the retail sector it has been suggested these are as follows:

- direct links could be established between manufacturer and consumer so cutting out the retailer
- foreign retailers have access to the UK domestic market
- there can be a dramatic lapse in customer service if there is a breakdown in the technology
- security problems (payment security is discussed at greater length below), unethical trading by sellers, viruses and unauthorised access
- negative customer perceptions such as reluctance to give credit card details over the inter-net.

Whilst there have been numerous papers focusing on the various aspects of the purchase of goods over the web by consumers, relatively little attention has been given to how these goods are actually delivered to the buyer. To illustrate the size of the problem UPS (United Parcels Service) in the USA has found that approximately 30% of goods have to be re-delivered since the owner is not at home on the first occasion.

Various delivery profiles may be distinguished, including:

- attended delivery (someone at home to accept the goods)
- the so-called 'milk float scenario' with goods left on the doorstep to await the houseown-er's return
- the 'collect' option whereby goods are picked up by the buyer from, for example, a post office or a local petrol station

It is clear that, if electronic shopping is to be successful from the consumer's point of view, this issue needs addressing without delay. One option favoured in Sweden is the use of a secure post box in a prominent position outside the house where items can be left.

ii) Distribution
Distribution companies will also benefit from e-commerce; there are well known success stories within this sector;

RS Components

RS Components, a UK-based supplier of non-strategic MRO (maintenance, repair and operation) products, has pioneered new ways of working with customers over the internet since 1997.

The company's overall goal has been to reduce transaction costs for the low-value orders which are the mainstay of its business. RS sells 270,000 products worldwide and 125,000 in the UK, there are no minimum order quantities. On average, the company takes an order every ten seconds from one of its one million worldwide customers. Its annual turnover is £760 million, about 6% of which is currently generated through e-commerce activities.

RS has created a website, backed by a search engine, that is integrated with its ERP system. Customers can log on to the site and access 25,000 technical data sheets for the products. In addition RS allows its customers to define purchasing controls; they can limit the number of people who are authorised to purchase goods and the amount they are allowed to spend. It also offers electronic order history information, detailing all their purchases and consolidated monthly invoices.

Watford Electronics

Watford Electronics is a UK-based company selling PCs, hardware, software, and peripherals mostly through mail orders to individuals, smaller companies, and educational and government institutions. The company launched its firstweb site in 1997 at a cost of £35,000. A year later it wanted a more flexible, true e-commerce site.

Watford decided to develop its own website and carry out its own integration. The site went live in 1999 and has continually improved since then. Total investment to date is £1.5 million.
Today the company gets over 5 million hits a month. About 46% of orders (in volume) are received over the web, a figure that is expected to increase to 70% in the next 12 months. Average order value in the last 12 months has increased from £55 to £130.

iii)Financial Services

This sector would appear to be a natural choice for e-commerce, concerned as it largely is with intangibles such as insurance. However, in Europe, at least, the takeup to date has been relatively slow, unlike the US where internet banking has been a feature of life for many years. However, according to the consultants and market analysts Data monitor, this is all set to change, with a forecast of an annual 75% increase in online banking customers in Western Europe reaching a figure of 8million by the end of 2001.

The CERA Bank in Belgium provides an illustration of the benefits of online banking. In a typical two month period the bank has recorded over 5000 new users of the online facility. The system, which uses sophisticated IBM encryption technology for security, began simply enough with, for example, mortgage payments for customers, but now incorporates up to date concepts such as integrated smart cards.

A recent (1997) IMRG study on the take-up of electronic commerce has shown that clients perceive the following to be the main benefits of online banking services:

- time savings (49%)
- convenience (removes the need to visit the local branch) (28%)
- 24-hour availability (11%)

A survey carried out by Manning Salvage and Lee in behalf of the UK banking industry has found that, in the UK, industry could be saving up to £8 billion pa by changing the way

payments are made. The preferred method highlighted in the report is Direct Credit, whereby funds are transferred electronically. Not only does Direct Credit offer considerable savings in terms of time and administration, it is also safer since funds are transferred directly from one bank to another. The report says that Direct Credit can be used for a wide range of business payments and may also be used by members of the public, eg for pension or child benefit payments.

The report suggests that the reason Direct Credit is not more widely used is simply lack of awareness, which is particularly regrettable in light of the one research finding that 96% of UK businesses would happily accept payments by electronic means.

Presumably those companies in the survey were unaware of the existence, still less the benefits, of Direct Credit.

10. Key Issues

Amongst security issues which need to be borne in mind by anyone organisations or private individuals engaged in e-commerce-based transactions, are the following;

Security of Payment

As indicated above, fears that payments will go astray has been one of the main factors limiting the take-up of e-commerce, certainly as far as private individuals are concerned. To combat this, SET (Secure Electronic Transactions) has been conceived. SET, briefly discussed above, may be defined as an 'open standard multi-party protocol for collecting secure bank card payments over the internet'. Its key features are:

- privacy of payment data and confidentiality of order
- provides for easy authentication of card-holder's signature
- digital signatures (see below) ensure integrity of payment data
- non-repudiation: put simply this means that once payment has been made the buyer cannot cancel the contract; this is an obvious advantage for the supplier

These issues are now considered in more detail.

Authentication

In e-commerce transactions, both parties must be able to authenticate their identities. The main methods employed are passwords, electronic signatures and digital certificates.

Electronic signatures are a method of 'signing' an electronic document to show the legitimacy of the signatory. The security of such signatures may be ensured either through public-key cryptography (digital signatures) or by using biometric tools such as 'PenOps' which record and match the sender's signature.

Authorisation

This refers to the frequent need for transactions to be limited to a specific individual or group. Typically this may be achieved through a combination of passwords or digital certificates. One way of achieving this is for users to be entered on an ACL (Access Control List) and require them to provide their password to establish their identity.

Confidentiality

This is an obvious requirement, and ensures that confidential data such as credit card numbers are not available to unauthorised parties. Encryption is the technique commonly employed. Two approaches may be distinguished:
a) Symmetric encryption – uses a shared key (code) for both encryption (scrambling) by the sender and decryption (unscrambling) by the recipient.
b) Public key cryptography – uses a private and a public key. Information encrypted with an individual's public key can only be decrypted by the corresponding private key, which is known only to the individual; the public key is known only to those with whom he/she communicates.

Domain Names
A domain name may be defined as 'an address in cyberspace' where each computer linked up to the internet may be contacted. Originally computers were identified simply by numbers; however, this proved to be not very user friendly so the domain name concept emerged. For ease of identification such names show the type of organisation concerned. Thus:
com commercial and industrial organisations
ac academic institutions
gov UK government
mod UK armed forces
org non-profit/research organisations

11. Contractual Issues

When buying over the internet it is, of course, not possible to handle or inspect the goods. Under such circumstances the maker's reputation, often supported by a recognised trademark, will be enough to enable the buyer to go ahead with his intended purchase.

However, it is easy to encounter problems in the transaction arising from the absence of contractual documentation. These problems may be particularly acute in cases where international trading is concerned (see below).

Electronic 'Documentation'
Conventional hard copy documentation is relatively easy to monitor and control; signature verification and authorisation is also a relatively straightforward process. In the case of electronic communications, on the other hand, such processes are often far less clear, even though the importance of an electronic message or 'document' can easily be as great as its hard copy counterpart. Moreover, it is often the case that an electronic document is open to wider scrutiny than the paper equivalent. It follows from this that there are a number of key issues and considerations which apply when entering into an e-commerce based transaction over and above those which apply in conventional paper-based transactions.

By an electronic signature people mean nothing like a signature at all, it is of course, simply an electronic means of verifying a sender's identity. There is no requirement for a signature, electronic or otherwise on purchase orders. Electronic signatures, however, perform a validation function, and given the scope for abuse, in particular for impersonating other people in email and web-based communications, that is particularly useful.

When Does a Contract Come into Force?
This is clearly a key issue for both buyer and seller. Traditionally the rule is that the contract comes into force when the offeree (the buyer) communicates to the offeror (the seller) that his offer has been accepted. However, there are exceptions, notably the postal rule whereby

acceptance is deemed to have taken place as soon as the letter of acceptance is posted, and not when it is received by the offeror.

In cases where the method used to transmit acceptance (or indeed non-acceptance) is instantaneous, as is the case of course with e-commerce, it is considered that the contract is binding as soon as the party making the offer receives acceptance.

In practice, the probability (and at the moment it is no more than that) is that it will be sufficient to show that the email/order has entered the recipient's computer system, whether or not it actually appears on the screen of the addressee's PC. What can be said with certainty is that the only absolutely watertight evidence is an email back from the recipient confirming receipt of the initial email/order and verifying that it has been received uncorrupted and entire.

How is an Offer Accepted?
At present there are no universal rules regarding acceptance; an offer on a website may be accepted by email, fax, post, telephone or even in some instances by word of mouth. Obviously the seller would be wise to indicate which is the preferred method of acceptance; a recommended approach is for the buyer to fill out an electronic order form which is actually part of the web page.

This procedure should be reasonably straightforward when both buyer and seller come under the same legal jurisdiction. However, if parties are in different countries, problems can arise all too easily, since it is not always clear which law governs the contract. Legal experts in the UK have suggested that if a foreign buyer accepts the offer then the laws applying in their country should govern the transaction. However, even when it is the UK website owner who accepts the offer, the laws of a foreign jurisdiction may well apply if the Website is stored on a server located in another country. To avoid any such disputes, it is wise to state on the website whose terms and conditions will apply in any given set of circumstances.

Implied and Express Terms
A contract between buyer and seller will be performed on the basis of implied and express terms. The former being the statutory law such as in the UK the Sale of Goods Act 1979; the latter spell out the terms and conditions as they relate to the circumstances of a specific contract.

a) Implied Terms
Mention has already been made of the Sale of Goods Act 1979. Other pieces of statutory legislation of which those buying and selling by electronic means need to be aware include the Supply of Goods and Services Act 1982, the Sale and Supply of Goods Act 1999, the Unfair Contract terms Act 1977, the Unfair terms in Consumer Contracts regulation 1994 and the Trades descriptions Act 1968.

Those selling goods over the web will in addition need to be aware of specific consumer legislation such as the legislation mentioned in Section 14. It is, of course, important to be aware that other legal jurisdictions will have comparable legislation, which may well lead to conflict or dispute.

b) Express Terms
Each of the parties will, of course, have their own sets of terms and conditions. If these are to be binding for a transaction performed electronically, it is important for each to be given as

much notice of them as possible. At this point it is perhaps worth mentioning that there is a potential conflict here between making sure one is safe in the legal sense, and possibly discouraging potential customers through excessive legalese. An approach recommended by some lawyers is to design the website so that the introductory pages have an advertising focus, and the intending buyer is only 'drawn in' to the terms and conditions when they have indicated that they wish to make a purchase.

12. Structure of the B2B World

The B2B market place may be broadly split into two structures – vertical markets and horizontal markets. The former are industry-specific, serving the commercial needs of buyers and suppliers in those industries. Once successful in generating a critical mass of buyers and suppliers and establishing a liquid market, these vertical traders will initially generate their revenues from advertising, but in due course will derive benefit from transaction revenues.

In contrast to vertical markets, horizontal markets span multiple sectors due to the fact that the goods and services concerned are common to many industries. Examples include facilities management services, logistics,MRO, office equipment, etc. To a large degree the products and services bought within these market places are of a standardised nature and it is this very fact which allows the horizontal players to sell to a range of different industries. In so doing they can create aggregated demand and achieve substantial economies of scale. Much of the value that is added in these marketplaces is concerned with the improvement and automation of the workflow processes.

Trading Models

Broadly speaking there are four types of model operating within the vertical and horizontal marketplace, although it should be stressed that these four categories are not distinct but in practice tend to merge or amalgamate:

- catalogues
- auctions
- exchanges
- vertical communities

Online catalogues

Probably the best-known sector of the marketplace. As well as these horizontal organisations there are vertical market organisations like Chemdex. Such organisations take the hard copy catalogues of suppliers, digitise the product information and provide buyers with an internet-based one-stop shop. The fact that in most cases these organisations embed themselves in the business processes and IT infrastructure of buying and selling organisations, reduce process and inventory costs and improve customer access to markets, means that the value add they create is substantially more than just the availability of a digitised catalogue. Amongst the types of online catalogues are:

Supplier-Managed Catalogues

The buying organisation allows its employees to connect to supplier catalogues on an individual basis and buy goods directly. Individuals are given their own spend limit which they are not normally allowed to exceed.

Buyer-managed Catalogues

With this arrangement it is the buyer who develops the system and instructs the supplier(s) accordingly. It is only suitable for cases where the buyer is able to exert significant leverage. If

the buying company has its own private internal market place site, it may be possible to 'punch out' to the supplier site, in which case the catalogue will still be updated by the supplier.

Catalogues managed by the electronic marketplace
Here buyers can link up to an MRO marketplace where a third party has responsibility for the provision and maintenance of catalogues of individual suppliers.

Auctions
Auctions provide a convenient venue for the sale and purchase of unique items such as surplus inventory, engineered components and capital equipment. A reverse auction for manufactured goods, which also offers the capability to support supplier selection and validation on behalf of the client, and Tradeout auctions for asset procurement. There are also vertical players within this market one example being Paper Exchange for buyers and sellers in the pulp and paper market. Auction pricing is dynamic. In a traditional auction the competitive bidding process results in an upward price movement, whereas in a reverse auction the sellers compete for a buyer's offer of purchase which results in downward price pressure. Revenue from online auctions is derived from a combination of transaction fees as well as product listing and supplier advertising.

Exchanges
Exchanges provide a spot market for commodities with high price volatility. These exchanges allow buyers and sellers to trade anonymously – this anonymity is of key importance since otherwise their competitive stance could easily be compromised and skewed prices may also result. Revenue from these exchanges comes not so much through transactions, but rather through membership level.

Vertical Communities
Potential buyers and sellers are brought together through websites with industry-specific content. Information posted to these sites typically includes industry news, bulletin boards, market information and trends, etc. Currently most of the players within this market generate revenue through advertising on their sites due to the volume of traffic. A development which no doubt will generate further revenue is the anticipated linking of transaction engines to these sites.

Portals
A portal may be defined as a single gateway to a range of products and services on the web that are usually provided by a number of different vendors with the object of enabling several suppliers to talk to several buyers through one connection. It may also be described as a website that acts as either a gateway to the web for new users, or as a focus for users with specific interests.

Most portals include directories of sites of interest to their users, providing links to sites run by other organisations. Portals often include services such as search facilities, news and price data. For niche sites directories can be closely defined as being of direct relevance to users and providing clear predetermined routes in response to actual or anticipated demand for information.

Other elements within a portal would also normally include statistics, web search facilities, internet access and free services to users, such as web pages. Increasingly there is freedom for users to select those services of particular interest or relevance to and return to them regularly.#

13. Summary

There are few technologies that have the potential to revolutionise business in general, and supply chain networks than e-commerce. Businesses may have reservations about the use of the internet for security and legal reasons, but the biggest problem to address in most organisations is the cultural change and the buy-in from employees.

The balance of stakeholder and organisational requirements must come from putting a programme team together – cross functional and process-wide teams are probably best for achieving a successful change management programme.

The ultimate key to success, as with any change project, is the organisation's ability to understand, motivate, use and train the right people. It is imperative, therefore, to get project sponsorship from the highest level within the company. A programme manager with day-to-day support from a board member should be appointed to oversee the programme activities. A decision to put together a programme team can then be made. Implementation of an e-commerce initiative within a business requires an on-going maintenance programme to make sure it remains refreshed, distinctive and relevant. The original business case should be revisited with rigour, checking that your strategic and operational deliverables were achieved. The reasons should be established, if not already known, and for any that were not met you should conduct a full 'lessons learnt' investigation for your maintenance team to use in the future.

Sources of advice and assistance

GS1
10 Maltravers Street
London
WC2R 3BX
tel 0207 655 9000
www.gs1uk.org

European Electronic Messaging Association (EEMA)
Alexander House
High Street
Inkberrow
Worcs WR7 4DT
tel 0207 793028
www.eema.org

DTI
151 Buckingham Palace Road
SW1W 9SS
tel 0171 215 1435
www.dti.gov.uk/CII/elec/elec_com.

The Annual e-business events that take place at Olympia and the NEC are a further useful source of up-to-date information on offerings from commercial providers of e-commerce solutions for the supply chain. Suppliers of e-commerce software can also be found at the annual Softworld (Software for the Supply Chain) event at the NEC in March.

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