The coming age of online procurement

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Abstract
Concerns about cost management have led purchasing officers of many companies to look for new solutions – an Internet-based electronic procurement system. The promise of Web procurement has made it one of the hottest topics of business-to-business e-commerce. The promise is simple: to streamline administrative routines, and help companies consolidate their purchasing practices, enabling them to receive better discounts and better service from suppliers. Web-based procurement systems are still in their infancy, and a lot of extra costs are around the corner. This paper presents tips for IT managers for successful implementation of this technology.

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Introduction

During the 1980s, opportunities in rapidly growing countries like China, India, many in Latin America, and the former Soviet Union, began to encourage foreign investment and growth. Many companies expanded forward to respond to opportunities for new markets. Companies also expanded backward toward international suppliers both for lower costs and/or higher technology. The increasing global interdependencies and the accelerating pace of change demanded more flexible and adoptive organizations (Malone and Crowston, 1991). The dramatically reduced cost of IT resulted in enormous investments in IT applications that have stimulated increasingly complex organizational change (Benjamin and Levinston, 1993). Reduced coordination efforts and integration of activities with IT resulted in the substitution of IT for human coordination (Malone and Rockart, 1993). By the early 1990s, managers of leading firms were reducing costs, improving customer service, and supplying better products by extending their supply chains internationally and by improving the entire system by which they managed and related to their suppliers and customers. Relative to domestic supply chains, global supply chains often entail greater geographic distances and time differences, multiple national operations locations and markets. In this global economy the importance of operations to competitive performance in supply chains had increased. Senior managers had to know more about supply chains and operations because they affected business performance much more than before. The leading firms' managers were devising new approaches to designing and coordinating their global supply chains (Flaherty, 1996).

Industries such as telecommunications and manufacturers of computers and associated electronics demand a highly coordinated multi-national logistics infrastructure that bridges continents, countries, transportation systems and information technologies. Corporations of various sizes are involved in component supply, assembly, sub-assembly, distribution and warehousing. With so many organizations contributing to the sale of a product there are inevitably numerous opportunities for shortening the supply chain. It is not surprising therefore, that the computer and electronic sector quickly decided to adopt electronic data interchange (EDI) technology, just-in-time (JIT) and lean manufacturing techniques. Use of inter-organizational linkages such as EDI enabled new forms of organizations and reduced the coordination costs of increasingly market-driven organizations (Malone and Crowston, 1991). EDI has established itself as one of the most effective ways of conducting business for organizations to compete in the global market. Following electronic and computer sectors, many industries took advantage of EDI technology, including auto, retail business, health care providers, insurance companies and universities (Kimberly, 1991). Increasingly, electronic linkages such as EDI are becoming the necessary condition of doing business with larger firms (Keen, 1991).

EDI technology has been used to transmit information such as purchase orders, invoices, material releases, shipping notices and product inquiries electronically. To use this technology you had to be tied to traditional client/server technology. The sender must have an application that can send the information in the format, usually proprietary, to be read by the receiving application. The network vehicle for these transactions is known as a Value Added Network or VAN. Identical processing systems are not required, only the standard must be setup before the transfer.

What makes things different today is the Internet. There is no need for traditional client/server technology; you just need a Web browser. Product information can be called up from an on-line catalogue and ordering can be done by sending e-mail. Employees are empowered to make transactions that are right for their business. Employees can complete the transaction themselves from their desktops, relieving

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administrative personnel of this tedious process.

According to an estimate, the average cost of processing a paper-based purchase order varies from $50 to $200. Traditionally, purchase orders are funneled through layers of costly labor: administrative assistants fill out the order, accounting staff authorize it, managers sign off on it, and finally, mailroom clerks shuffle it along. For some companies, buying a PC involves so many steps – all paper-based that the process takes "from one day to forever." The promise of cutting supplier costs by as much as 15 per cent has made Web procurement one of the hottest topics of e-commerce.

Procurement is an important component in the field of operating resource management, or ORM. This field is still fairly small compared to other software industries but growing rapidly. According to Dataquest, revenue for the largest ORM software vendors is expected to nearly double in 1999 (see Table I). Companies like Oracle, SAP, PeopleSoft, and Baan have recently released electronic procurement products tied into their enterprise resource planning (ERP) software packages. These products act as a virtual mall, linking the buyers to a number of different suppliers. Companies such as Eastman Chemical, MCI, Cisco Systems, Chevron and Bristol-Myers Squibb are using these products.

Benefits gained: strategies for IT managers

Web-based procurement has an enormous amount of potential benefits when properly employed. These could be classified into strategic, operational and opportunity benefits and will vary in emphasis across different organizations, depending on how it has been implemented. With Web-based procurement businesses can eliminate the need to re-enter data from paper documents. This would prevent clerical errors since every re-entry of data is a potential source of error. Web-based procurement can also shorten the lead-time between receipt and fulfillment of orders, thus reducing the inventory. When invoice data are transmitted electronically, company cash flow is improved. Trading information obtained from historical data built up from Web-based procurement transaction is an invaluable source of market research and strategic information (Yates, 1994).

Initial application of Web-based procurement has concentrated on corporate efficiency by improving data flow and error reduction. It has now become apparent that the greatest value of this technology will emerge in strategic areas such as the provision of better levels of customer service and improved competitiveness. These benefits should not be ignored by IT managers. Table II lists major benefits of Web-based procurement.

Furthermore, Web-based procurement can be used in conjunction with the varied technologies of electronic commerce such as document imaging, workflow management, bulletin boards and e-mail to enable business process reengineering. For example, R.J. Reynolds Tobacco Co. used EDI technology in conjunction with varied technologies of electronic commerce, such as document imaging, with electronic work queues to reengineer its accounts payable process. The reengineering of this function has reduced invoice processing costs by 53 per cent, has increased transaction volume by 16 per cent and has reduced clerical staffing by 25 per cent. At Frito Lay, for example, each of the 10,000 salespersons uses a hand-held computer to record sales data on 200 grocery products, reducing many clerical procedures. The data is transmitted each night to a central computer which, in turn, send instructions such as changes in pricing and product promotions to all salespersons through their hand-held computers. This process greatly enhances collaboration between marketing and sales and also makes weekly summaries and analysis available to senior managers.

Table I
Estimated revenues of Web-based procurement software vendors

Year	Revenue in million ($)
1998	37
1999	71
2000	113
2001	196
2002	361

The seven caveats of effective Web-based procurement

With ORM systems in their infancy, the IT mangers should consider the following points before investing in online procurement software:

In-house experts

The lack of sufficient online procurement experts within the company is one of the biggest hurdles many companies face in implementing ORM systems. Hiring a

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consultant who has installed such systems before can take some of the surprises out of the project.

Employees' education

It is important to get employees engaged and involved. Employees should be educated on the underlying issues and on the topic of total cost of ownership. When a process changes, the jobs of those who do the work in that process must also be changed. Furthermore, the way in which employees think and behave, their attitudes and beliefs, must also be realigned to fit the new process.

Content management

The content of online catalogues has to be maintained, making sure the items and prices confirm to the buyer's specification. Presenting and maintaining a database of products from multiple suppliers demands a large investment of resources. Some suppliers will be unable or unwilling to accommodate the technical requirements of the online catalogues demanding technical subsidies to help them come online.

Content rationalization

There is rationalizing across many suppliers – what the company's purchase order tracking system calls a PC computer, one supplier calls a desktop, and another may call it something entirely different. Until there is collaboration between suppliers, content rationalization is an enormous task.

BPR implementation

To fully capture the value of ORM software, the IT manager needs to bring in the other elements of the solution – to think in terms of organizational change. For example, the ORM system should be integrated into accounts payable, a centralized purchasing department should be streamlined, and the company's entire procurement process should be reorganized. In short, business process reengineering is essential to the success of Web-based procurement applications.

Do not count on downsizing anytime soon

Online procurement will eventually reduce the number of employees in purchasing. However, the design and implementation of the technology demand an increase in IT staff for training and support of the users and suppliers.

Better communication

It is understandable that employees often feel threatened by new technology. Employees should not feel threatened and need to know the reasons and advantages they will receive from this technology. It is important to openly communicate with employees, teach them about the new technology, answer their questions, and calm their anxieties.

Table II
Significant benefits of Web-based procurement

Types	Benefits
Strategic	Help to consolidate purchasing practices that will lead to greater discounts and better service from suppliers Accelerate the flow of important information between the buyer and supplier Reduce administrative hours, freeing them up to do other work Help to respond quickly to highly competitive new market entrants Improve the chances of winning new business
Opportunity	Enhance image and improve corporate trading relationships Improve buyer/supplier relationships, as mutual cooperation is required Better accuracy since an order is less likely to be delayed or the wrong goods delivered because there are no transaction errors
Operational	Improve financial control by making it easier to match orders Eliminate paperwork resulting in great saving Improve auditing and better security by enabling staff and auditors to verify and track the movement of orders through the system Shorten the delivery time by cutting time waiting for documents in the mail Eliminate time zone obstacles, as the Web-based procurement can be used any time of the day Reduce inventory levels, hence costs associated with inventory. Maximize labor by empowering the employees who want the product to make the transactions that are right for their work

Managerial implications and conclusions

A number of factors are moving Web-based procurement from an innovative phase into an exponential global growth phase:

- dramatically reduced costs of software/hardware. According to Benjamin and Blunt (1992), technology cost-performance improvements will sustain this trend over the next decade;
- advancement in telecommunication technologies;
- the lifting of trade barriers across Europe;
- the increasing realization of the role of electronic ordering in strategic areas such as the provision of better customer service and improved marketing competitiveness;
- the need for much closer integration of business processes throughout the supply chain; and
- the fact that small companies can now afford to use a technology-based solution for their paper-pushing.

Cooperation in the international context will be necessary to gain a competitive advantage

in the future and electronic linkages are becoming the necessary condition of doing businesses in the global market. Advances in telecommunications, coupled with diminishing costs are increasing distance communication. Electronic ordering appears to be the trend for the future. With all the benefits that Web-based procurement offers, it would seem that eventually every industry would turn to it. The reduction of paperwork, less errors, accurate information, better inventory management, as well as quicker delivery times, all lead us to believe that it's just a matter of time before every company is employing this technology. The technology gives companies an opportunity to gain a competitive advantage. The splendor is that small companies can now afford to use a technology-based solution for their paper pushing.

Web-based procurement is a technology that allows companies to focus on customer needs and expectations. In few years, doing business without this technology will be unthinkable. The proper implementation of this technology is a key management issue. To make this technology successful, IT managers must work to a plan and lay technology groundwork. They must believe in the benefits of this technology, opt for a comprehensive approach, define new relationships with vendors, train and support suppliers, and openly communicate with employees. The employees play an equally important role in the success of this technology. Getting people to buy in is an important challenge for the management. Employee fears about job displacement and coping with resistance to changes need to be alleviated. To prepare workers for their new roles, management needs to begin an education and training program. Education is a significant factor in reducing resistance to implementing the technology. Evaluate the technology and its performance. Make any necessary changes and establish a schedule for system's expansion by either introducing new trading partners into the system or introducing new transactions to be expanded.

Organizations that leverage this technology to their best advantage are those which have built up the experience of exchanging information with trading partners and building up inter-organizational relationships. Opportunities for significant benefits enabled by Web-based procurement technology can only accrue to those organizations that have integrated this technology into their internal application systems.

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