ELECTRONIC PROCUREMENT

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Abstract

The Internet's rapid growth has driven many companies to add an electronic commerce component to their operations to gain competitive advantage. Business-to-business online procurement has recently emerged as one of the hottest topics in the world of commerce and technology. The growth of the Internet and commercial web-based applications is offering ever-increasing operational cost savings to enterprises, extending trading communities and lowering the financial barriers to e-commerce participation. Once the advantages of electronic commerce are recognised, there is an upsurge in the desire to implement a full Electronic Procurement solution - motivated largely by the significant return on investment (ROI) that it can potentially deliver to organisations. Reducing indirect procurement costs can immediately improve an organisation's bottom line. Furthermore, in an increasingly competitive business environment, companies can also re-deploy procurement and administrative resources for more strategic purposes. This paper explores the challenges, the solution and implementation of electronic procurement.

1. Introduction

Increased COST, COMPETITION and CUSTOMER PRESSURES have driven companies to review internal processes and tap into the enormous savings potential from indirect spending.

In general, companies have not automated indirect purchases. For most companies, the procurement process accounts for thirty-sixty percent of overall costs and sixty-eighty percent of purchasing transactions. Furthermore, an enterprise's requisitions do not have an easy-to-use ordering process to buy high volume, low cost indirect materials quickly and efficiently. Most processes for indirect procurement are cumbersome and generate massive paperwork in both the purchasing and finance departments.

While many companies, especially in the manufacturing industry, have tackled direct procurement (direct goods being those, which form part of the actual products the company is manufacturing, e.g.

steel for an automobile manufacturer), Just In Time (JIT) and materials resource planning systems (MRP). Very few organisations have focused their attention on indirect procurement (indirect goods being those supporting production, such as stationery, PCs, etc).

2. Problems with Today's Procurement

There are many problems associated with traditional manual procurement processes. For example, using multiple channels and processes makes both internal and external communications confusing. Additionally, using many different types of transactions to manage numerous suppliers (which vary in size, respective contracts and relationships) is time consuming. Spreading information across many systems increases the margin for error. Hence, there is a high cost and slow turnaround associated with manual procurement (as much as $100-$120 per purchase order).

2.2 Challenges

For the procurement of indirect goods and services, companies are facing the following challenges:

- Excessive focus of procurement resources on low-value activities.
- Disproportionate acquisition cost to product value.
- Off-contract, rogue purchasing or non-leveraged spending across corporate organizations.
- On-going proliferation of supplier and product portfolio.
- Inadequate audit and analysis of enterprise spending and trends.

3. Procurement Defined

Procurement is the term most commonly employed to refer to the purchasing of goods and services for the day-to-day operation of a business. Procurement is an essential part of any organisation's ability to function effectively and efficiently. The term 'procurement' is understood to refer to the purchase of indirect goods. Electronic procurement is about taking this process online and automating the whole procedure with the underlying aim centred on saving money.

Companies investing in electronic procurement solutions expect to improve the efficiency of their buying processes. However, the main question is, where will the savings come from? A list of potential returns comes to mind. This ranges from reducing cost of purchasing through increased control over fulfilment logistics, consolidating enterprise-wide procurement through one channel, all the way to enhanced enterprise image.

Three areas of increased efficiency account for the majority of returns on the eProcurement investment:

- reduced cost of purchasing;
- reduced cost of goods purchased;
- Reduced inventory days.

3.1 Reduced cost of purchasing

What is the cost factor in the purchasing process? Most important, is the value of time spent on purchasing by both the enterprise's procurement department and the employees generating the purchase requirement. The purchase request generator will spend time collecting signatures from those who are authorised to approve the purchase. The procurement department will then check that internal policies have been followed, find a supplier, negotiate terms for the deal, generate a purchase order, track delivery, collect invoice, generate payment. Time saving can be achieved on most of these tasks.

Furthermore, the cost of purchasing in many enterprises today is increased, by maverick buying by employees. This involves some employees purchasing goods from suppliers who are not a preferred list with whom discounts have been negotiated. E-procurement systems are designed to consolidate all purchase orders across an enterprise, and channel the orders to preferred suppliers. Moreover, this act of consolidation allows these enterprises to negotiate bigger discounts in future, with data available on this single aggregated procurement channel with increased volume to suppliers.

3.2 Reduced cost of goods purchased

The key to reduced cost of goods purchased is an increase in buyer power. The more a company buys from the same supplier and the longer the relationship with the supplier, the better the buyer's bargaining position. Accordingly, the enterprise should consolidate buying as much as possible by reducing the number of suppliers and choosing those which bring it most overall value (price, consistency of supplies, timeliness of delivery etc.).

The less consolidated the supply chain, the more savings a company can achieve by improving its strategic sourcing. Greatest savings can often be achieved in the purchase of non-production goods, and on consolidation of the secondary supplier base. It is in these areas that most savings should be expected when implementing an e-procurement solution. A two- percent reduction in the cost of goods over a total spend of $100m will immediately achieve savings of $2m.

3.3 Reduced inventory days

Inventory costs money. The longer the inventory cycle, the more is spent on cost of equity and inventory maintenance. The cost of maintenance may be fixed in the short term since warehouses need to be maintained and inventory management is still required. Savings can be primarily achieved on interest paid on inventory value. Simply, a reduction of days from the inventory cycle will contribute savings of interest rates on the cost of inventory.

Highly integrated purchasing systems, such as e-procurement systems, allow buyers to view real-time information on availability and delivery information from suppliers.

4. Procurement Technology

Strategic sourcing and internal procurement are business issues. As the above section indicates, procurement re-engineering is primarily about improving business processes, not about technology. The technology, however, is necessary to maximize the impact of the business process reengineering. E-procurement applications are all about enabling the optimisation of the procurement business process. The challenges for technology are both internal and external.

With regards to implementation there are two models that can be reviewed, one being a leveraged model where systems are managed and run by a service provider. In this case the client may not want to incur high capital, software license, hardware and services expense. The alternative is a dedicated environment. Within the dedicated environment, the organization elects to manage the system in-house due to the significant customisation and systems integration that is required

5. What is an E-procurement Solution?

The aim of an e-procurement solution is to enable those employees within an organisation who have the necessary authorisation to ditch manual purchase order forms, and use an automated system. Therefore, the idea with e-procurement is to provide these employees with an application on their computers that allows them to browse catalogues online, fill in purchase orders and send these off for either approval from superiors or directly to the supplier.

Therefore the key components for an effective e-procurement solutions are as follows:
· A buyer user interface (usually browser-based interface).
· Catalogue management and interface system.

· An integrated communication infrastructure for approval.
· External link to digital marketplaces and suppliers.

5.1 Buyer User Interface

To allow employees to purchase their requirements, the e-procurement solution has an inbuilt interface where buyers can browse catalogues, put required goods into a shopping basket and then process the order for further approval or direct to the supplier.

5.2 Catalogue interface systems

These systems are essential to any e-procurement system and are used to manage supplier catalogues for access by employees. Any purchasing system needs clear and effective presentation of products, in order for buyers to be able to easily browse through catalogues as well as searching for the products required.

5.3 Integrated approval system

Virtually all organisations have an approval process to ensure that employees are authorised before sending out a purchase order to a supplier. In this same way, every e-procurement system needs an infrastructure in place to accommodate these business processes.

5.4 External link to digital marketplaces and suppliers

The final part of the e-procurement equation is the external link to the sell side - such as a digital marketplace, or a supplier to send through the final order for processing. Many ERP systems fulfilled only the internal procurement processes, but this new breed of e-procurement solution takes things one step further, and links directly to trading communities and suppliers to automate the procurement process entirely.
Internally, an e-procurement solution has three main roles:

- co-ordination of procurement across business units and locations;
- enable the deployment of procurement policies throughout the enterprise;
- Reduce time spent on the purchasing by non-procurement staff.

Externally the e-procurement solution should achieve:

- reduced cost of choosing a supplier, e.g. simultaneous price presentation;
- facilitation of communication with supplier;
- Enhanced logistics monitoring.

Three features of Internet technology allow these benefits:

- Extensive network reach. The Internet's geographic reach is

key to expanding trading communities. The use of private networks implies a high cost for trading partners. The use of the public network allows the lowering of entry costs and significant reduction of ongoing network management costs.

- Superior presentation capabilities. Internet Protocol provides significantly superior graphic presentation to the "green on black" of EDI. The accessibility of product catalogues facilitates procurement for enterprise employees (user friendly technology), as well as reduces risk of remote buying. From the supplier's perspective the ability to actively market the products, transforms the direct communication link to the buyer from a fulfilment channel to a sales channel.
- Inherent interoperability of Internet technology. Internet technology is designed to be interoperable. Indeed, Internet Protocol's interoperability with existing technologies requires significant integration efforts. However, basic features of the Internet protocol and, in particular, overlaying technologies such as XML facilitates the development of complete interoperability.

E-procurement applications are designed to facilitate the development of efficient procurement. Internet technology, both the Internet protocol and the public network, plays five key roles in developing e-procurement beyond the capabilities now available in an EDI enabled ERP procurement solution:

- reduces the cost of deploying e-procurement solutions in the enterprise;
- reduces the network management costs of the procurement solution;
- enables a user friendly e-procurement application;
- increases the supplier's benefits from cooperation with buyer;
- Expands the reach of trading communities.

6. Case Studies

6.1 Ford

Ford spends an estimated $15.5 billion each year on non-production goods and services, making it one of the largest purchasers of such goods world-wide.
With Ford's continuing quest to cut costs, Ford utilises an e-procurement solution, with the intention of cost cutting from the everyday tasks such as purchasing office supplies, and filing expense reports.

Ford has revised the purchasing process, instead of receiving catalogues, and having employees complete purchase orders that must be approved by management, which often takes days or weeks.

Employees now log onto an Internet system, browse manufacturers catalogues, order from a pre-approved group of suppliers, and obtain purchasing approval in minutes. Ford anticipates to cut spending and transaction costs by as much as thirty percent.

Ford also uses procurement applications for processing the more than one million travel and expense accounts that employees submit each year. It is estimated that large corporations spend about $36 on processing each expense report. As this example illustrates, the focus of procurement automation is not so much on production-related raw materials but on non-production goods.

6.2 Labinal

Labinal is an automotive and aeronautics group that purchases fifty percent to seventy percent of its indirect goods through the use of a business to business solution from EDS. The scope covers:

- Office supplies;
- Industrial supplies such as tools and hand equipment;
- Electrical and electronic components;
- Special industrial parts such as ball bearings and sharp tools;
- Cleaning products;
- Security equipment.

In the field of industrial supplies, for example, the number of suppliers, have decreased from 576 to 4. Through process automation, the unit acquisition cost has been halved, from $150 per Purchase Order to less than $75.

As a consequence of sourcing enhancements and process automation, savings generated amounted to twenty-five percent of the total indirect purchasing budget.

EDS has provided the back-end integration for Labinal. This seamless integration has ensured that the procurement system and legacy systems are always synchronised. E-procurement has made requesting and ordering via a Web-based tool a more affordable way for Labinal to conduct business. The automated process is more efficient than the traditional manual processes.

Labinal have achieved a twenty-five percent reduction in non-production procurement costs and halved unit acquisition costs.

7. Implementing an E-procurement Solution

The previous sections have discussed the benefits of eProcurement and the contribution of Internet technology to realising the e-procurement opportunity. This section lists the stages in the development of an e-procurement implementation and analyses the key factors for a successful implementation.

Four core stages are required in implementing eProcurement solutions:

- Business process development.
- Matching the e-procurement solution to the business processes and IT legacy.
- Solution integration to IT legacy.
- Solution management.

7.1 Business process development

E-procurement is about making enterprise's purchasing more efficient, i.e. it is about business processes. Realising the full range of benefits from the e-procurement technology requires the optimisation of the corresponding purchasing processes.

Two such processes are pivotal to the success of an e-procurement implementation:

- from an outbound perspective, the rationalisation of supply chains usually referred to as 'strategic sourcing' and,
- From an inward perspective, the development and deployment of procurement policies.

7.2 E-procurement / business process and IT legacy compatibility

Two key criteria dictate the choice of an e-procurement solution:

- maximum functionality and
- Minimum investment.

The criterion of 'maximum functionality' encompasses a variety of considerations beyond the actual features of the solution. For example: scalability, meeting long term information technology development, minimal friction with prevailing business processes, compatibility with technology legacy, interoperability with partner/customer technical solutions, multi-language and multi-currency capabilities.

The criterion of 'minimum investment' means more than just low software cost. It also involves minimal systems integration and education, low cost of maintenance and updates, frictionless transition from existing operations, maximum supplier buy-in, and easy deployment over large trading communities. In order to be able to account for all these factors, implementing e-procurement involves an in-depth understanding of both the enterprise's operations and information technology legacy, in addition to a comprehensive knowledge, of the variety of e-procurement solutions available.

7.3 Solution integration

E-procurement solutions occupy a position at the centre of the enterprise's operations. These solutions involve a variety of internal processes, from purchasing and accounting through to human resources and enterprise resource management. E-procurement is also central to the enterprise's external relationships with suppliers. Consequently, an e-procurement solution must be integrated to the enterprise's entire information technology infrastructure. Integration into supply chain management, accounting, databases and management information systems (MIS) is fundamental in realising the benefits of e-procurement.

Successful e-procurement integration requires knowledge of a multitude of programming languages, and applications, many of which are no longer in use. A successful e-procurement integrator needs capabilities in historic systems rather than merely an understanding of state of the art technology.

7.4 Solution management

E-procurement solution management involves primarily two tasks:

- trading community management and
- Content management.

Trading community management begins with creating a critical mass of buyers and suppliers who will be using interoperable technologies. Achieving ROI on e-procurement solutions crucially depends on the enterprise's ability to handle a large share of its purchasing online. Successful solution management therefore requires the proactive engagement on the technology provider's part, in the process of convincing relevant suppliers to join the buyer's trading community. The greater the technology vendor's reach into the buyer's supplier base, the quicker an enterprise will achieve return on its e-procurement investment.

Successful solution management inadvertently involves significant content management capabilities. Content management is key to both supplier buy-in, and buyer ease of implementation.

The third stage in implementing an e-procurement solution involves the actual integration of the application to the enterprise's information technology legacy. For e-procurement to provide maximum benefit for the enterprise it must be integrated with both back office and front office applications.

8. Industry Review

The question may be asked as to which industries are typically suitable for the implementation of e-procurement. The target market

for e-procurement can be identified according to any of the following criteria.

Industries with high indirect spend where the purchasing of indirect goods and services is often manual and paper-based. Services industries such as Utilities and Financial Services are prime candidates. Though manufacturing clients may have a lower percentage of indirect spending to total purchases, the sheer volumes also make e-procurement an attractive solution to this industry.
Clients in industries faced with high competition and cost reduction pressures.

Clients in industries where competitors have already adopted these solutions, for example: automotive and financial services.

Government will of course benefit from the introduction of electronic procurement due to the vast amount of indirect procurement that takes place, typically, as this is a service industry. The European Commission has already communicated that the aim is to have twenty-five percent of government procurement transactions, processed electronically by 2003.

9. Business Impact

It is easier to engage in the transactional segment and processing speed of a new computing system than to review the softer issues, in rolling out an electronic procurement system. However failure to engage on this level, can result in frustration, and low effectivity in terms of return on investment.

A successful system must be designed for casual use by untrained employees. If users do not like the system, then the whole application will fail. However the system must also meet the requirements of purchasing managers, to include management controls, reporting, and integration with existing systems.

The organisation during planning and implementation also needs to engage in procurement chain improvement, but change often generates opposition. These issues need to be dealt with, through clear communication and involvement, if this cannot be done, failure will be a part of the process.

Internal business process revolution, in turn, also requires the capability to influence the organisation at all levels and, most importantly, the management. Implementing an e-procurement solution is not, in this perspective, an information technology project. For the project to be successful, the enterprise's management must work towards deployment throughout the company. Management buy-in for the e-procurement effort is therefore essential to success.

10. European Market

The European market for Internet-based buy side online procurement has been slow to take off relative to the US market. However, from a small base of just under thirty implementations at year-end 1999, rapid expansion is anticipated - with the total number of companies implementing expected to exceed 3,000 by 2004. The first year of genuine growth in the European market is set to take place this year. By now nearly all serious procurement software vendors, have established a strategic presence in major European cities, and are reporting encouraging interest and prospects in the market.

The fragmented nature of the European market also means that regions need to be tackled separately. Cultural and regulatory barriers exist, meaning that a different approach needs to be taken to serve Europe as a whole. A strong understanding of the separate regions needs to be developed, and strategies tailored to the conditions that exist within them.

11. Conclusion

As market forces act to increase pressure to reduce costs, and as partners and suppliers develop online capabilities, organisations are required to move towards engaging in developing a competence within the e-procurement arena. The review provided here has indicated that there are multiple facets in the adoption of this process. Failure to consider all issues - will inevitably delay deployment leading to disillusionment and reluctance on the part of employees to engage in the use of these techniques.

To conclude, successful e-procurement implementation requires a variety of capabilities from an information technology services vendor that will be required to assist the organisation in deploying an e-procurement system. These capabilities range from business process understanding, through to technical proficiency and relationship management skills. It is the combination of all capabilities into one solution implementation composition, that is key to excel in an e-procurement implementation.