

Principles of Purchasing
Lecture 11
Information Communication Technology in Purchasing
Lecturer: Samson Ndonye

Lecture Learning outcomes

At the end of the lecture, you will be able to:

1. Describe the fundamental concepts of electronic procurement (e-procurement)
2. Assess key factors in the successful implementation of an e-procurement system
3. Examine the advantages and limitations of adopting e-procurement,

Introduction

Information and Communication Technology (ICT) has transformed purchasing by enabling faster, more efficient, and transparent procurement processes. Through ICT, organizations can automate tasks, streamline workflows, and improve data management, thereby enhancing decision-making in procurement.

E-Procurement, as a key ICT application, utilizes internet-based systems to handle transactions and interactions between businesses and suppliers, ensuring greater accuracy and control. By leveraging e-Procurement, companies can optimize sourcing, reduce costs, and build stronger supplier relationships in a competitive market.

Adoption of E-procurement

Before embarking on e-Procurement or any aspect of e-Business the following issues must be put into consideration:

- Setting clear objectives - consultation with senior management will help align e-Procurement system with corporate goals and enlist management approval and support during implementation. It also involves this involves consultation with key stakeholders to ensure the system expectations are met
- Defining the scope of activities to be covered- this involves defining the value chain and then the key business and procurement processes, including those which will benefit from e-purchasing
- Defining the messages and data to be used- this involves determining e-documents and formats to be used in the system
- Defining the infrastructure- this involves determining the computer systems, applications and data bases involved infrastructure and since this infra-structure will be internal and external it will include intranets/extranets.
- Examining carefully security issues – e.g. Potential data corruption, hacking, cyber-security, etc. Security of data in e-Procurement systems is critical. The system must contain robust mechanisms for identifying and authenticating the user so that the supplier knows that

he can fulfill any orders placed. Both parties must have complete confidence in the security infrastructure of any system

- Implementation -There are also issues to overcome when implementing e-Procurement including:
 - ✓ Ensuring that, by deploying e-Procurement, organizations are not simply passing costs or process inefficiencies on to another part of the organization or on to suppliers
 - ✓ Competition issues (e.g. in exchanges using collaborative purchasing)
 - ✓ Possible negative perception from suppliers, for example, due to their margins being reduced by e-auctions
 - ✓ Website 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
 - ✓ Data and catalogue management has to be done well and can be costly, as can product coding and classification
 - ✓ The cost of changing suppliers once they have invested in catalogue production may inhibit competition and lead to inertia
 - ✓ Culture profile within organizations (e.g. resistance to change)
 - ✓ Examine carefully issues relating to inter-operability especially where legacy databases are involved.
- Evaluation and review – this involves monitoring and assessing the performance of the system and making necessary adjustments to ensure achievement of the set objectives

Types of e-Procurement software

The procurement software market, broadly speaking, has several segments:

- **E-Sourcing:** e -Sourcing is a faster, more transparent and fairer way of facilitating tenders and conducting negotiations. Founded on a web-based platform, e-sourcing ensures smooth and clear communication, and is a more profitable business tool.
 - -E-RFI (Electronic-Request for Information): Online collection of information used to shortlist suppliers.
 - -E-RFQ (Electronic-Request for Quotation): Online collection of quotes to either award business or shortlist suppliers.
 - -E-RFP (Electronic-Request For Proposal): Online collection of proposals used to evaluate and shortlist business cases.

- ***E-tendering***- supports the selection stage and acts as a communication platform between the procuring organization and suppliers. It covers the complete tendering process, usually including support for the analysis and assessment activities.
- **E-Awarding**: opening and evaluation of the electronic tenders received, and award of the contract to the best offer in terms of the lowest price or economically most advantageous bid.
- ***E-ordering and web-based ERP***- the process of creating and approving procurement requisitions, placing purchase orders, as well as receiving goods and services ordered, by using software systems based on the Internet.
- **E-Contract**: conclusion, enactment and monitoring of a contract / agreement through electronic means between the contracting authority/entity and the winning tenderer.
- **E-Invoicing**: preparation and delivery of an invoice in electronic format.
 - ***E-informing***-it is not directly associated with a stage in the procurement process; it is the process of gathering and distributing procurement information both from and to internal and external parties using Internet technology
- ***E - Contract Management***- enables the buyer to quickly prepare contracts using pre-written templates and clause libraries. It can electronically route contracts for approval, track revisions, notify you of impending contract expirations and serve as a central repository for executed contracts
- **E-catalogue**- This allows end users to search catalogs of pre-approved products and services from contracted suppliers, create requisitions and have those requisitions turned into purchase orders (either manually by buyers or, when certain criteria are met, automatically).
- ***E-Invoicing***- enables the buyer to receive supplier invoices electronically, improving efficiency and accuracy. More advanced solutions offer “dynamic discounting,” which allows suppliers to offer to reduce the amount the organization owes in exchange for faster payment.
- **E-Noticing**: advertisement of calls for tenders through the publication of appropriate contract notices in electronic format in the relevant Official Journal (national/EU); electronic access to tender documents and specifications as well as additional related documents are provided in a non-discriminatory way.
- **E-Access**: electronic access to tender documents and specifications as well support to economic operators for the preparation of an offer, e.g. clarifications, questions and answers.
- **E-Payment**: electronic payment of the ordered goods, services or works.

Advantages of using the E-Procurement system

- **Accelerated process time**-With electronic procurement (e-procurement), companies can save time as its automated facility speeds up the internal process in terms of sourcing. Significantly, negotiation and getting the best price can be completed in just few clicks.
- **Easy access to more suppliers**-E-procurement helps lessen the effort of organizations since it allows easy access to more suppliers, which opens more possibilities and options. Unlike the traditional process, this enables to connect with a wide-range of suppliers not just locally, but also globally.
- **Improved workflow and control of the tendering process** - Bids are placed in one interface. It enables end-user self-service and decentralization with centralized control through company-specific formats
- **Reduced transaction costs and cycle times**-Use of potentially more efficient and cheaper connectivity methods - such as the Internet and XML (a computer language for coding content and delivery) results in lower total tendering cost
- **Connectivity to internal systems and sources of information** – these include inventory management, maintenance management and Materials Resource Planning (MRP), Enterprise Resource Planning (MRP & MRPII) Payment systems -e.g. links to banks, credit card companies and purchasing cards systems amongst others
- **Connectivity to external sources of information and external supply chains**- e.g. databases, catalogues and portals such as eHubs and e-marketplaces, extranets and allowing shared real time information (such as suppliers accessing real time sales)
- **New functionality**- e-Sourcing using intelligent search engines and data mining, Requests for Quotations (RFQs), e-auctions and Improvements in supply chain mechanisms and consortia etc. leading to mutual benefits
- **Higher productivity**-Since it automates the process, companies don't have to spend so much effort and time when sourcing. The whole process is done electronically so the company can focus on other strategic tasks and function of their business.
- **Possibility of developing Vendor Managed Inventory** - More accurate deliveries due to reduced input order errors by suppliers. Potential for less expediting by the buyer as the supplier acknowledges orders by exception which automatically updates the buyer's system
- **Improvements in Just in Time deliveries and Possibility of using self-billing**
- **Transparency in purchasing transactions**-With the use of advance technology, documentation and communication become easier. This can ensure compliance between the contract and the actual procedure. Furthermore, transparency is necessary in sourcing to prevent corruption that may occur during transactions of both

organizations. Manual negotiations are minimized. There is complete transparency in negotiations

- **Sustainable tendering process**-reduction in waste, particularly the production of multiple copies of paper-based information, can also lead to a more environmentally friendly tendering process

Features of E- Procurement:

- Easy to use wizard to create contracts and e-Tenders
- Automated notification alerts for all significant events in the Contract Management and e-Tendering process
- Onscreen reporting and exportable reports for post event analysis
- Real-time collaboration within various divisions / individuals within an organization for the creation, management and analysis of the Contract Management and e Tendering process
- Lockbox feature for sealing responses until a specific time / day of response opening including audit features

Benefits of Use of ICT to suppliers

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

- Time and cost savings in submitting bids
- Reduction in errors, e.g. from re-inputting orders, deliveries, returns, invoices and payments
- Reduced transaction costs and cycle times
- Holding less stock because of more efficient communications with customers i.e. real time sales data
- Information for use in planning and forecasting
- Improved supplier performance by sharing supplier measurement information
- Faster payment
- Improved management information

Risk of using ICT in Procurement

1. Data Security and Privacy Risks-E-Procurement systems handle sensitive information such as financial data, supplier details, and contract terms. A breach or unauthorized access could lead to data theft, manipulation, or loss, compromising both organizational integrity and supplier relationships. Organizations must enforce strict security measures, such as encryption, firewalls, and regular audits, to protect data.

2. Cybersecurity Threats-ICT systems are vulnerable to various cyber threats, including malware, phishing attacks, and ransomware, which could disrupt procurement operations. A cyber-attack might delay purchasing processes, corrupt important data, or even halt operations. Robust cybersecurity protocols, employee training, and regular software updates are essential to mitigate these risks.

3. System Downtime and Reliability Issues-E-Procurement platforms require consistent uptime for smooth operations. System crashes, network outages, or software failures can lead to downtime, delaying procurement processes and affecting supplier relationships. Backup systems, regular maintenance, and reliable IT support are necessary to reduce the impact of potential system failures.

4. Compliance and Legal Risks-E-Procurement systems must comply with local and international regulations regarding data handling, privacy, and electronic transactions. Non-compliance could lead to legal consequences, fines, or reputational damage. Regularly updating procurement practices to meet regulatory standards and conducting compliance checks can help manage these risks.

5. Dependency on Technology and Skill Gaps- Heavy reliance on technology can be risky if employees lack the necessary skills to use e-procurement systems effectively. If users are unfamiliar with the technology, errors, inefficiencies, and potential delays may occur. Investing in user training and developing a technology-oriented culture within the procurement team can reduce this dependency risk.

6. Data Integrity and Accuracy Risks- Errors in data entry, outdated information, or inconsistencies between systems can lead to inaccurate procurement data, which affects decision-making and supplier evaluations. Ensuring data quality through routine audits, validation checks, and integration between systems can mitigate issues related to data integrity.

Conclusion

While ICT offers numerous advantages, such as streamlined processes, improved transparency, and access to a broader supplier base, it also presents unique risks. Key concerns include data security, cyber threats, and system reliability, all of which require strong IT safeguards and user training. Additionally, compliance with legal standards, dependency on technology, and maintaining data accuracy are critical to minimizing risks and ensuring a robust procurement process. By carefully addressing these challenges, organizations can harness the full potential of e-Procurement while mitigating its risks.

Revision questions

1. Explain the role of ICT in business-to-business (B2B), business-to-consumer (B2C), and business-to-government (B2G) transactions.
2. What are the key considerations an organization should assess before adopting an e-Procurement system? Discuss at least three of these considerations.
3. Describe the different types of e-Procurement software and their specific functions in the procurement process. Provide examples of at least three types.
4. List and explain three advantages of using ICT system for an organization. How do these benefits contribute to the procurement process?
5. Identify and discuss two potential risks associated with using ICT in procurement. What measures can organizations take to mitigate these risks?