

**BUSINESS VALUE OF E-COMMERCE** According to Mougayar (1997) there are various types of key measurements that must be tracked prior to embarking on a full implementation. Some of the important key elements to measure business value are:

- **Reducing costs:** The most basic cost reductions could be related to publishing costs, which include the cost of production, printing and distribution. Furthermore, marketing and selling costs are also lower in an electronically enabled commerce environment.
- **Process simplification:** Instead of using paper, using the World Wide Web (WWW) simplifies and speeds the approval process.
- **Improving customer service:** Providing customers self-access to their accounts, transactions and orders, is a valuable service. The level of satisfaction for those customers interacting electronically will undoubtedly rise.
- **Generating new revenue:** The new Internet-Based Electronic Marketplace generates new revenue by selling new products and services specifically designed for the electronic marketplace. Existing product or services can also be sold on the Internet.
- **Taking faster decisions:** By receiving information about competition through an Intranet information retrieval database, it would be possible to develop a competitive strategy much faster than otherwise.

## **CURRENT CHALLENGES TO INTERNET-BASED E-COMMERCE**

There are two main drawbacks or challenges in using Internet-Based E-commerce, these are: security issues and payment tools. These two issues are receiving the highest priority and the best attention they deserve, both from vendors and users and implementers.

- **Security Issues:** A recent Forrester Research report found that security, has fallen from first place in 1995 to fifth place in 1996. This indicates that there is a growing confidence in solving the Internet security issues that have been very widely publicised. Even though security is a challenge it is not a barrier to E-Commerce. Security is fairly new to the Internet, so it has not matured yet. However, computer security professionals have known about the Internet security for years and are now improving it.
0. **Payment Tools:** There is confusion over the availability and choice of Internet payments tools. In addition, there are no interoperability standards to make one work with another. Over the past two years, new payment tools from small companies have emerged.

There are many traditional methods of payment available in the real world such as: Cash, Cheques, Credit Cards, Traveller's Cheques, Prepaid Cards, Debit Cards, Physical Tokens, Bank Notes, Secure Wire Transfers, Money Orders, Letters of Credit, etc. However, none of these mechanisms is directly transferable in an unmodified form to suit the Internet. This is because each method assumes a physical presence or that there is a delay incurred in the processing of funds so that fraud can be detected and stopped.

Some of the new E-Commerce payment tools that can be used in manufacturing and business operations are:

- . *Digital Cash (Electronic Cash)*- It is a token-based currency which translates into equivalent real currency units that are guaranteed by a bank. Usually, there is a trusted authority that allows the user to conduct and pay for transactions of this nature. This usually takes place after a pre-determined relationship has been established (eg DigiCash).
- . *Smart Cards*- Smart Cards can be used with or without a stored value. Usually, the user is able to pay with them without having to connect to a remote system. If they have a stored value which contains "real digital cash", they are known as "Cash Cards" because they replace carrying cash (eg Mondex).
- 0. *Electronic Cheques*- These are the equivalent of paper based cheques. They are initiated during an on-screen dialog which results in the payment transaction. Authentication and verification are usually performed instantaneously by using digital signatures and time-stamping controls during the transaction (eg CheckFree).
- 0. *Encrypted Credit Cards*- There are varying degrees of encryption implementations credit of credit cards over the Internet, with the SET (Secure Electronic Transactions) holding the most promise (eg CyberCash).

The drivers for manufacturing are customer's needs and time. Time is a major source of competitive advantage and competitive pressures requiring production schedules to be shortened.

Soliman (1997) demonstrated that if the various departments working in disjointed way were integrated it would lead to:

- 0. Reduction in scrap levels, and reworks.
- 0. Improving communication between the various parts of the organisation.
- 0. Improving vendors' selection method.
- 0. Reduction in the Lead Times of parts used.
- 0. Reduction in Manufacturing Costs.
- 0. Reduction in Inventory Levels.

This integration is possible by the implementation of the Internet-Based E-

Commerce.

## **INTERNET BASED E-COMMERCE BENEFITS TO MANUFACTURING**

To date the major benefits from the Internet include improved internal and external communications. The Web has specifically brought a new marketing medium and enhanced information resource. Innovative applications are starting to appear which allow for sales and database interrogation. Other benefits such as e-mail and file transfer functionality, Web utilisation gave many companies '*Internet presence*' and provided them with opportunities to develop and expand new services.

In manufacturing, traditionally Design Engineering, Procurement and Production Departments communicate with each other using paper based methods. However the introduction of Internet- Based E-Commerce and its superiority of over traditional EDI is adding new dimension to reducing the cost of manufacturing. In a typical manufacturing setting Design Engineering Department supply design drawings and specification to Procurement Department to procure material, commence production, and ultimately deliver goods to customers as per orders. There are three types of flows in a general manufacturing setting. These are:

0. Material flow (examples are raw material from supplier, Work-In-Process and Finished Goods);
0. Clerical flow (examples are Drawings, Specifications and Bills Of Materials); and
0. Information flow (examples are information on parts, suppliers, customers and the industry).

Improvement in the movement of raw material, Work-In-Process and Finished Goods is likely to occur as a result of using the Internet-Based E-Commerce. The main benefit to manufacturing lies in using the Internet for the second and third types of flow. The following figure (Figure 3) illustrates how clerical and production information can be efficiently communicated throughout the supply chain using the Internet-Based E-Commerce.

Figure 3: Supply Chain Communication in Manufacturing using Internet-Based E-Commerce.

The number of parts used in production could be in the order of thousands of items. These parts are usually purchased from suppliers on the basis of price, quality, and delivery on time and suppliers financial position and reputation in the industry.

Accordingly Material Procurement professionals must be equipped with timely and valuable information on parts and their suppliers. The Internet-

Based E-Commerce provides them with a fast and efficient way of obtaining comprehensive information of the market, feedback from the industry and the performance of suppliers.

The reduction in time and costs in the whole manufacturing chain make it possible to gain competitive advantages in price, product innovation and service. Accordingly using Internet-Based E-Commerce is a significant factor in competition because it leads to shorter Opportunity to Delivery (OtoD) cycle times and lower costs.

The British Government's Department of Trade & Industry has recently launched the Information Society Initiative site containing some case studies of multimedia and Internet usage from around the UK. The following table (Table 3) shows excerpts from those case studies:

Table 3: Examples of Internet-Based E-Commerce.

<b>Case</b>	<b>Benefits from using Internet-Based E-Commerce</b>
Fertiliser producer	Received over 2,000 hits (page accesses) at their Web site every week, as well as communicating far more effectively via e-mail.
Ornament manufacturer	Has cut development time of products from 3 weeks to less than an hour through using the Internet to exchange design graphics and video images.
Bakery	Received 12,000 hits in the first 6 months of Web marketing. Revenue from the Web runs at about 140 Pounds per week which is fairly profitable considering post set-up running costs are 2.50 Pounds per week.