Class	: S.Y.B.B.A. – ITM (SEMESTER – III)
Subject	: E-Commerce
Unit	: Introduction To E-Commerce
Faculty Name	: Kalpesh N. Patel

❖ **Definition of E-Commerce (EC):**

Electronic commerce is an emerging concept that describes the process of buying and selling or exchanging of – products, services, and/or information via – computer networks including the Internet.

❖ **Definition of EC from various perspectives:**

• **From a Communications Perspective:**

EC is the delivery of information, products/services, or payments over – telephone lines, computer networks, or any other electronic means (tools).

e.g. Tele Banking, ATM cards

• **From a Business Process Perspective:**

EC is the application of technology toward the automation of business transactions and work flow.

e.g. Material Management System, ERP (Enterprise Resource Planning)

• **From a Service Perspective:**

EC is a tool that addresses the desire of firms, consumers, and management –

1. To cut service costs while improving the quality of goods and
2. Increase the speed of service delivery.

e.g. Tally Software, Inventory system (Check reorder level and give purchase order to company)

• **From a Commercial Perspective:**

From a commercial perspective, EC provides the capability of buying and selling products, services, and information over the Internet and via other online services.

- **From a Learning Perspective:**

From a learning perspective, EC is an enabler of online training and education in schools, universities and other organizations, including businesses.

- **From a Collaborative Perspective:**

From a collaborative perspective, EC is the framework for inter- and intraorganizational collaboration.

- **From a Community Perspective:**

From a community perspective, EC provides a gathering place for community members to learn, transact, and collaborate.

❖ **Definition of E-Business:**

E-business refers to a broader definition of EC, not just the buying and selling of goods and services, but also servicing customers, collaborating with business partners, conducting e-learning, and conducting electronic transactions within an organization.

❖ **Pure Versus Partial EC:**

EC can take several forms depending on the degree of digitization (the transformation from physical to digital) of

- The product (service) sold,

- The process and

- The delivery agent (or intermediary).

Choi et al. (1997) created a framework, shown in below figure, that explains the possible configurations of these three dimensions. A product may be physical or digital, the process may be physical or digital, and the delivery agent may be physical or digital. These alternatives create eight cubes, each of which has three dimensions. In traditional commerce, all three dimensions of the cube are physical (lower-left cube); in pure EC, all dimensions are digital (upper-right cube). All other cubes include a mix of digital and physical dimensions.

If there is at least one digital dimension, we consider the situation EC, but only partial EC. For example, purchasing a computer from a Dell's Web site or a book from Amazon.com is partial EC, because the merchandise is physically delivered. However, buying an e-book from

Amazon.com or a software product from Buy.com is pure EC, because the product, delivery, payment, and transfer to the buyer are all digital.
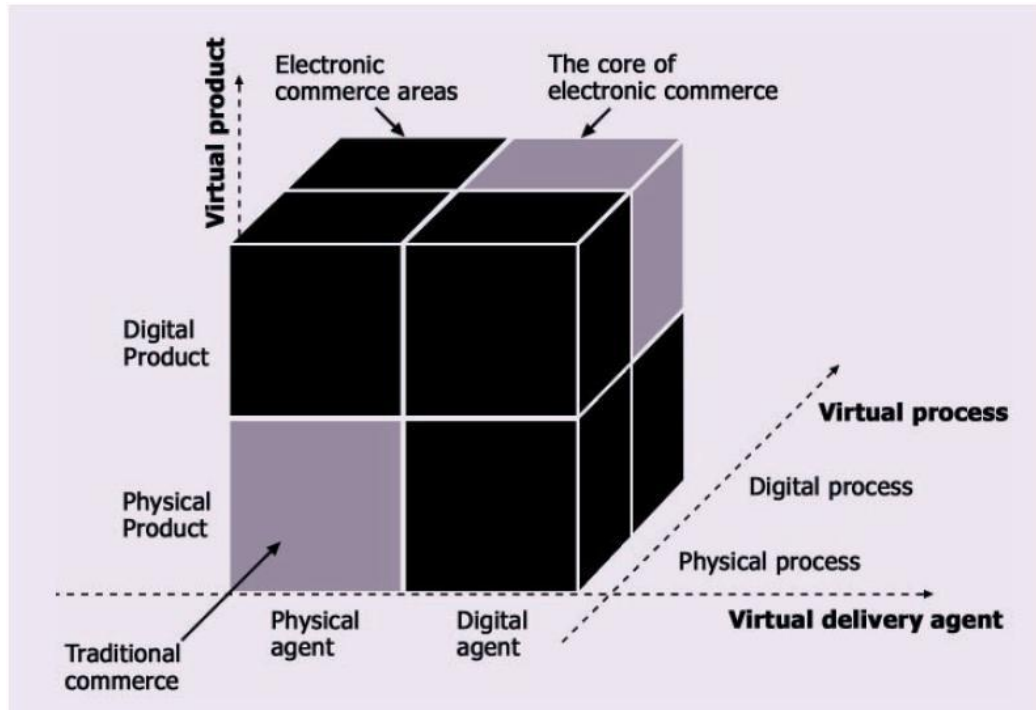

Figure :   A framework for assessing the degree of digitisation
Source: Choi et al.

EC Organizations. Purely physical organizations (companies) are referred to as **brick-and-mortar (or old-economy) organizations,** whereas companies that are engaged only in EC are considered **virtual** or **pure-play organizations. Click-and-mortar** (or **click-and-brick**) **organizations** are those that conduct some EC activities, but conduct their primary business in the physical world. Gradually, many brick-and-mortar companies are changing to click-and-mortar ones.

❖ **Internet Versus Non-Internet EC:**

Most EC is done over the Internet, but EC also can be conducted on private networks, such as value-added networks (VANs; networks that add communications services to existing common carriers), on local area networks (LANs), or even on a single computerized machine. For example, buying food from a vending machine where you pay with a smart card or a cell phone can be viewed as EC activity.

An example of non-Internet EC would be field employees (such as sales reps) who are equipped with mobile handwriting-recognition computers so they can write their notes in the field, for instance, immediately after a sales call.

❖ **CLASSIFICATION OF THE EC FIELD BY THE NATURE OF THE TRANSACTIONS:**

A common classification of EC is by the nature of transaction. The following types are distinguished:

1. Business-To-Business (B2B)

Most of EC today is of this type. It includes the IOS transactions and electronic market transaction between organizations. E.g. Billing and distribution.

2. Business-To-Consumer (B2C)

These are retailing transactions with individual shoppers. The typical shopper at Amazon.com is a consumer, or customer. E.g. Net banking or share trading.

3. Consumer-To-Consumer (C2C)

In this category consumer sells directly to consumers.

Examples are individuals selling in classified ads (e.g. www.classified2000.com) and selling residential property, cars, and so on. Advertising personal service on the Internet and selling knowledge and expertise is another example of C2C.

Several auction sites allow individual to put items up for auctions.

Finally, many individuals are using intranets and other organization internal networks to advertise items for sale or services.

e.g. Matrimonial web sites, ebay.com

4. Consumer-To-Business (C2B)

This category includes

1. Individuals who sell products or services to organizations, as well as
2. Individuals who seek sellers, interact with them, and conclude a transcation.

e.g. artwork created by individual

5. Nonbusiness EC

An increased number of no business institutions such as

1. Academic institutions,
2. Not-for-profit organization,
3. Religious organization,
4. Social organization, and
5. Government agencies

are using various types of EC to reduce their expenses (e.g. improve purchasing) or to improve their operations and customer service.

6. Interabusiness (organizational EC)

In this category we include all internal organizational activities, usually performed on intranets, those involve exchange of goods, services, or information.

Activities can range from selling corporate products to employee to online training and cost-reduction activities.

❖ BENEFITS OF EC:

Few innovations in human history encompass as many potential benefits as EC does.

1. The global nature of the technology,
2. Low cost,
3. Opportunity to reach hundreds of millions of people (projected within 10 years),
4. Interactive nature,
5. Variety of possibilities, and
6. Resourcefulness and rapid growth of the supporting infrastructures (especially the Web).

Result in many potential benefits to organizations, individuals, and society.

These benefits to materialize, but they will increase significantly as EC expands.

It is not surprising that some maintain that the EC revolution is just "as profound as the change that came with the industrial revolution".

❖ Benefits to Organizations:

The benefits to organizations are as follows:

- Electronic commerce expands the market place to national and international markets.

  With minimal capacity outlet, a company can easily and quickly locate more customers, the best suppliers, and the most suitable business partners worldwide.

  For example, in 1997, Boeing Corporation reported a savings of 20% after a request for a proposal to manufacture a subsystem was posted on the internet. A small vendor in hungry answered the request and won the electronic bid. Not only was the sub-system cheaper, but it was delivered quickly.

- Electronic commerce decreases the cost of creating, processing, distributing, storing, and retrieving paper-based information.

  For example, by introducing an electronic procurement system, companies can cut the purchasing administrative costs by as much as 85%.

  Another example is benefit payments. For the US federal government, the cost of issuing a paper check is 43 cent. The cost of electronic payment is 2 cent.

- Ability for creating highly specialized businesses.

  For example, dog toys which can be purchased only in pet shops or department and discount stores in the physical world, are sold now in a specialized www.dogtoys.com (also see www.cattoys.com).

- Electronic commerce allows reduced inventories and overhead by facilitating "pull" – type supply chain management.

  In pull type system the process starts from customer orders and uses Just-in-Time manufacturing.

- The pull type processing enables expensive customization of products and services which provides competitive advantage to its implementers.

  A classic example is Dell Computer Corporation.

- Electronic commerce reduces the time between the outlay (money that you have to spend in order to start a new project) of capital and the receipt of products and services.

- Electronic commerce initiates business processes reengineering projects.

  By changing processes, productivity of

  1. Sales people,
  2. Knowledge workers, and
  3. Administrators

  Can increase by 100% or more.

- Electronic commerce lowers telecommunication cost the internet is much cheaper then VANs.

Other benefits include:

1. improved image,
2. improved customer service,
3. newfound business partners,
4. simplified processes,
5. compressed cycle and delivery time,
6. increased productivity,
7. eliminating paper,
8. expediting access to information,
9. reduced transportation costs, and
10. increased flexibility.

❖ **Benefits to Consumers:**

The benefits of EC to consumers are as follows:

- Electronic commerce enables customers to shop or do other transactions 24 hours a day (24X7), all year round, from almost any location.
- Electronic commerce provides customers with more choices; they can select from many vendors and from more products.
- Electronic commerce frequently provides customers with less expensive products and services by allowing them to shop in many places and conduct quick comparisons.
- In some cases, especially with digitized products, EC allows quick delivery. Customers can receive relevant and detailed information in seconds, rather than days or week.
- Electronic commerce makes it possible to participate in virtual auctions.
- Electronic commerce allows customers to interact with other customers in electronic communities and exchange ideas as well as compare experiences.
- Electronic commerce facilitates competition, which results in substantial discounts.

❖ **Benefits to Society:**

The benefits of EC to society are as follows:

- Electronic commerce enables more individuals to work at home and to do less traveling for shopping, resulting in less traffic on the roads and lower air pollution.
- Electronic commerce allows some merchandise to be sold at lower prices, so less affluent (rich/wealthy) people can buy more and increase their standard of living.
- Electronic commerce enables people in Third World countries (e.g. Africa) and rural areas to enjoy products and services that otherwise are not available to them.
  This includes opportunities to learn professions and earn college degrees.
- Electronic commerce facilitates delivery of public services, such as health care, education, and distribution of government social services at a reduced cost and/or improved quality. Health-care services, for example, can reach patients in rural areas.

❖ **Limitations Of EC:**

The limitations of EC can be grouped into technical and nontechnical categories.

Technical Limitations of EC

The technical limitations of EC are as follows:

- There is a lack of system security, reliability, standards, and some communication protocols.
- There is insufficient telecommunication bandwidth.
- The software development tools are still evolving and changing rapidly.
- It is difficult to integrate the Internet and EC software with some existing applications and databases.

- Vendors may need special Web servers and other infrastructures, in addition to the network servers.
- Some EC software might not fit with some hardware, or may be incompatible with some operating systems or other components.

As time passes, these limitations will lessen or be overcome; appropriate planning can minimize their impact.

Nontechnical Limitations

Of the many nontechnical limitations that slow the spread of EC, the following are the major ones.

- **Cost and justification** (34.8 percent of the respondents)
  The cost of developing EC in-house can be very high, and mistakes due to lack of experience may result in delays,

  There are many opportunities for outsourcing, but where and how to do it is not a simple issue.

  Furthermore, to justify the system one must deal with some intangible benefits (such as improved customer service and the value of advertisement), which are difficult to quantify.

- **Security and privacy** (17.2 percent)
  These issues are especially important in the B2C area, especially security issues which are perceived to be more serious than they really are when appropriate encryption is used.

  Privacy measures are constantly improved. Yet, the customers perceive these issues as very important, and the EC industry has a very long and difficult task of convincing customers that online transactions and privacy are, in fact, very secure.

- **Lack of trust and user resistance** (4.4 percent)
  Customers do not trust an unknown faceless seller (Sometimes they do not trust even known ones), paperless transactions, and electronic money. So switching from physical to virtual stores may be difficult.

- **Other limiting factors**
  Lack of touch and feel online. Some customers like to touch items such as clothes and like to know exactly what they are buying.

  ✓ Many legal issues are as yet unresolved, and government regulations and standards are not refined enough for many circumstances.

  ✓ Electronic commerce, as a discipline, is still evolving and changing rapidly. Many people are looking for a stable area before they enter into it.

  ✓ There are not enough support services. For example, copyright clearance centers for EC transactions do not exist, and high-quality evaluators, or qualified EC tax experts, are rare.

- ✓ In most applications there are not yet enough sellers and buyers for profitable EC operations.
- ✓ Electronic commerce could result in a breakdown of human relationships.
- ✓ Accessibility to the Internet is still expensive and/or inconvenient for many potential customers. (With Web TV, cell telephone access, kiosks, and constant media attention, the critical mass will eventually develop.)

Despite these limitations, rapid progress in EC is taking place. For example, the number of people in the United States who buy and sell stocks electronically increased from 3,00,000 at the beginning of 1996 to about 10 million in fall 1999.

As experience accumulates and technology improves, the ratio of EC benefits to costs will increase, resulting in a greater rate of EC adoption.

The potential benefits may not be convincing enough reasons to start EC activities. Much more compelling are the business drivers that may force companies to engage in EC.

❖ FRAMEWORK OF EC:

Many people think: EC is just having a Web site, but EC is much more than that.

There are dozens of applications of EC such as home banking, shopping in online stores and malls, buying stocks, finding a job, conducting an auction, and collaborating electronically on research and development projects.

To execute these applications, it is necessary to have supporting information (pillars) and organizational infrastructure and systems.

Below Figure shows that the EC application are supported by infrastructures, and their implementation is dependent on five major policymaking support areas (shown as supporting pillars): people, public policy, marketing and advertisement, support services and business partnerships.

The EC management coordinates the applicants, infrastructures and pillars.

Below Figure can be viewed as a framework for understanding the relationships among the EC components and for conducting research in the field.

- **People:** Sellers, buyers, intermediaries, information systems specialists, other employees, and any other participants comprise an important support area.
- **Public Policy:** Legal and other policy and regulating issues, such as privacy protection and taxation, which are determined by governments. Included as part of public policy is the issue of technical standards, which are established by government or industry-mandated policymaking groups.
- **Marketing and Advertisement:** Like any other business, EC usually requires the support of marketing and advertising. This is especially important in B2C online transactions in which the buyers and sellers usually do not know each other.
- **Support Services:** Many services are needed to support EC. These range from content creation to payments to order delivery.
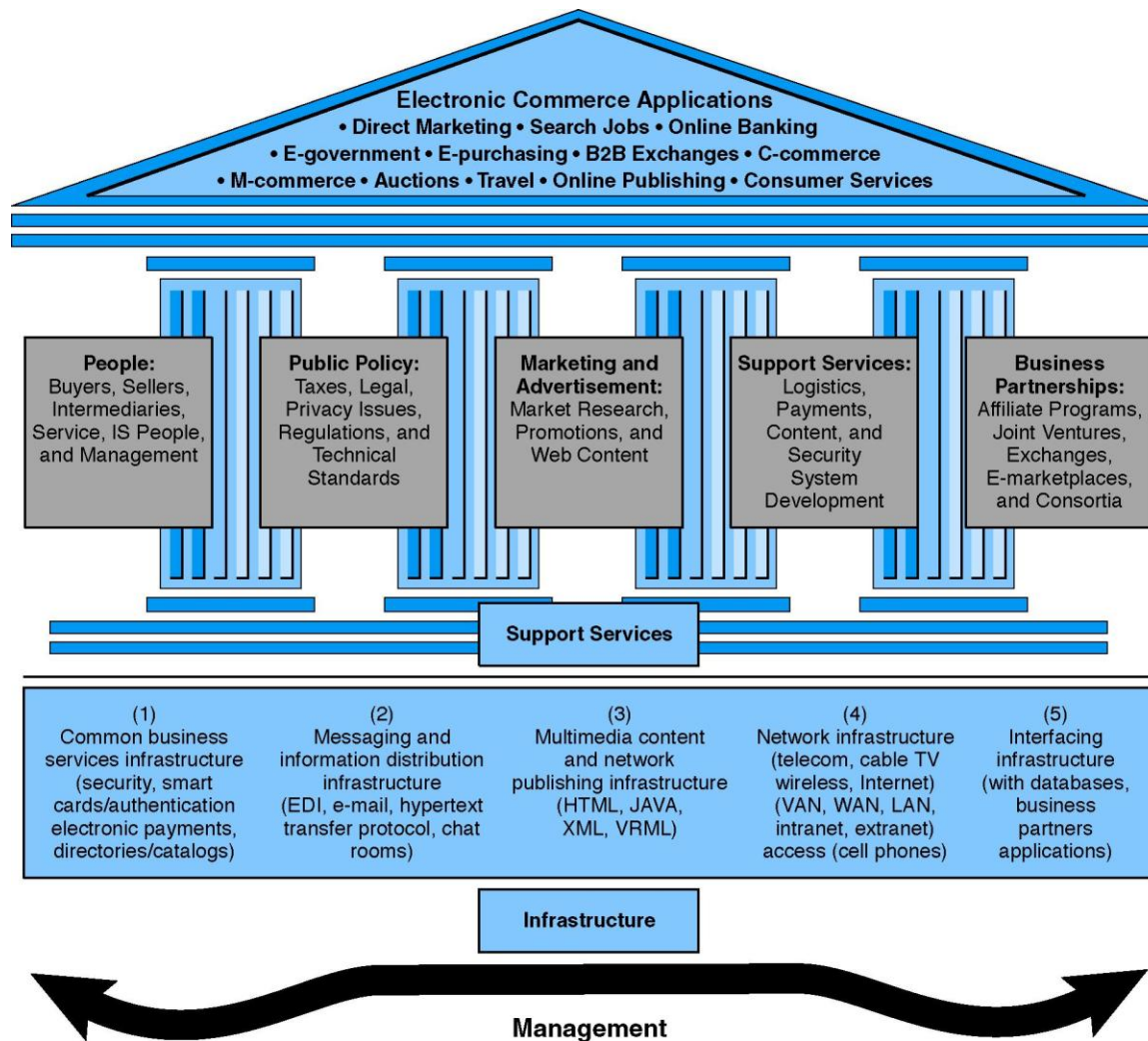
- **Business Partnerships:** Joint ventures, exchanges, and business partnerships of various types are common in EC. These occur frequently throughout the supply chain (i.e., the interactions between a company and its suppliers, customers, and other partners).

At the bottom of this framework, is the infrastructure for EC. Infrastructure describes the hardware, software, and networks used in EC. All of these components require good management practices. This means that companies need to plan, organize, motive, devise strategy, and reengineer processes as needed to optimize their business using EC models and strategies.

The figure can be viewed as framework for understanding the relationship among the EC applications and other EC components and for conducting research in the EC field.

❖ **Impacts of EC :**

❖ **Marketing:**

Traditional direct marketing is done by mail order (catalog) and telephone (telemarketing). According to the U.S. Department of Commerce, in 2001 direct mail generated sales of over $110 billion in the United States, of which only $5 billion (or about 4.5 percent) was via e-marketplace. This figure is small but growing rapidly (about 15 percent in 2005).

Bloch et al. (1996) describe the following impacts of e-marketplaces on B2C direct marketing.

- **Product Promotion:** The existence of e-marketplaces has increased the promotion of products and services through direct marketing. Contact with customers has become more information rich and interactive.

- **New Sales Channel:** Because of the direct reach to customers and the bidirectional nature of communications in EC, a new distribution channel for existing products has been created.

- **Direct Savings:** The cost of delivering information to customers over the Internet results in substantial savings to senders of messages. Major savings are realized in delivering digitized products (such as music software) rather than physical ones.
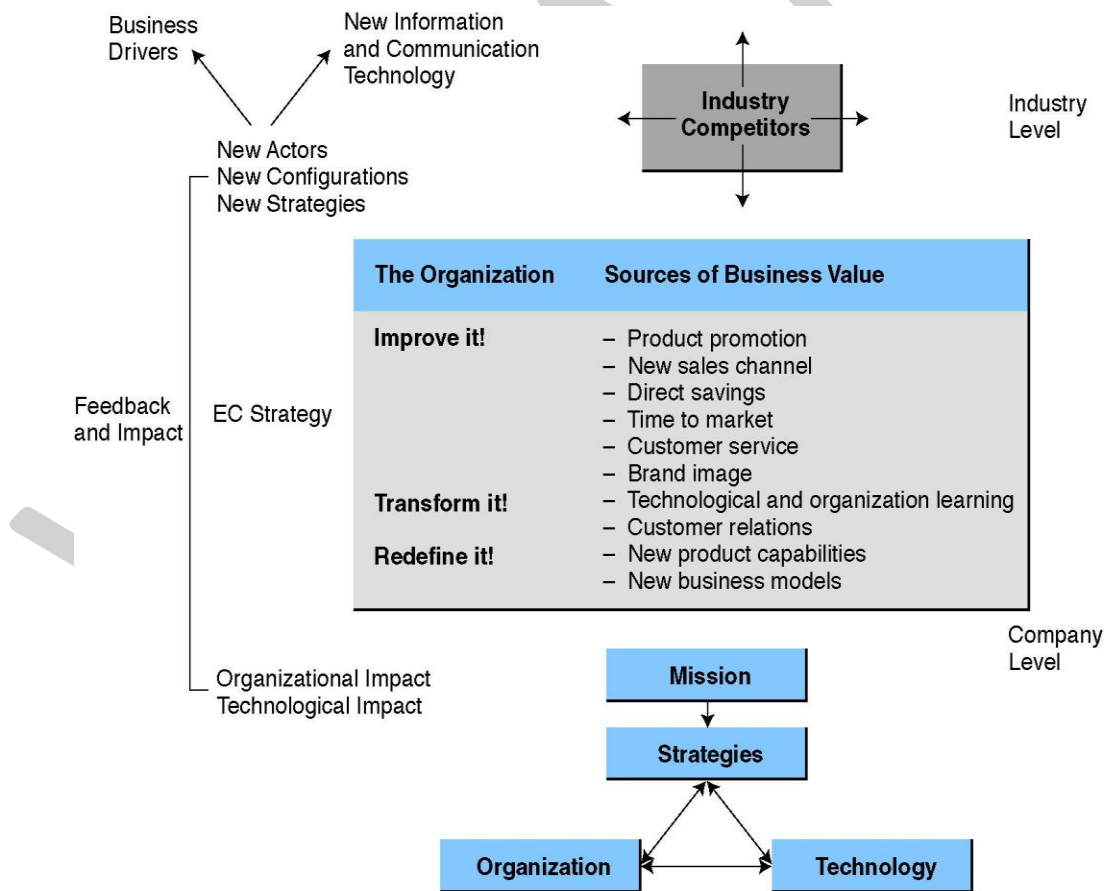

Figure: The Analysis-of-Impacts Framework

- **Reduced Cycle time:** The delivery time of digitized products and services can be reduced to seconds. Also, the administrative work related to physical delivery, especially across international borders, can be reduced significantly, cutting the cycle time by more than 90 percent. One example to this is TradeNet in Singapore, which reduced the administrative time of port-related transactions from days to minutes. Cycle time can be reduced through improvements along the supply chain.

- **Improved Customer Service:** Customer service can be greatly enhanced by enabling customers to find detailed information online. For example, FedEx and other shippers allow customers to trace the status of their packages. Also, autoresponders can answer standard e-mail questions in seconds. Finally, human experts' services can be expedited using help-desk software.

- **Brand or Corporate Image:** On the Web, newcomers can establish corporate images very quickly. What Amazon.com did in just 3 years took traditional companies generations to achieve. A good corporate image facilitates trust, which is necessary for direct sales. Traditional companies such as Intel, Disney, Wal-Mart, Dell, and Cisco use their Web activities to affirm their corporate identity and brand image.

- **Customization:** EC enables customization of products and services. Buying in a store or ordering from a television advertisement usually limits customers to a supply of standard products. Dell is the classic example of customization success. Today, customers can configure not only computers, but also cars, jewelry, shoes, clothes gifts, and hundreds of other products and services. If done properly, a company can achieve mass customization that provides a competitive advantage and increase the overall demand for certain products and services. Customization is changing marketing and sales activities both in B2C and in B2B.

- **Advertising:** With direct marketing and customization comes one-to-one, or direct, advertising, which can be much more effective than mass advertising. Direct advertising creates a fundamental change in the manner in which advertising is conducted, not only for online transactions, but also for products and services that are ordered and shipped in traditional ways.

- **Ordering Systems:** Taking orders from customers can be drastically improved if it is done online, reducing both processing time and mistakes. Electronic orders can be quickly routed to the appropriate order-processing site. This process reduces expenses and also saves time, freeing salespeople to develop marketing plans.

- **Market Operations:** Direct e-marketing is changing traditional markets. Some physical markets may disappear, as will the need to make deliveries of goods to intermediaries in the marketplace. In an e-marketplace, goods are delivered directly to buyers upon completion of the purchase, making markets much more efficient and saving the cost of the shipment into and from the brick-and-mortal store.

All of these impacts of e-markets on direct marketing provide companies with a competitive advantage over those that use traditional direct-sales methods.

❖ **Manufacturing:**

EC is changing manufacturing systems from mass production lines to demand-driven, just-in-time manufacturing. These new production systems are integrated with finance, marketing, and other functional systems, as well as with business partners and customers. Using Web-based ERP systems (supported by software such as SAP R/3), companies can direct customer orders to designers and/or to the production floor within seconds. Production cycle time is cut by 50 percent or more in many cases, especially if production is done in a different country from where the designers and engineers are located.
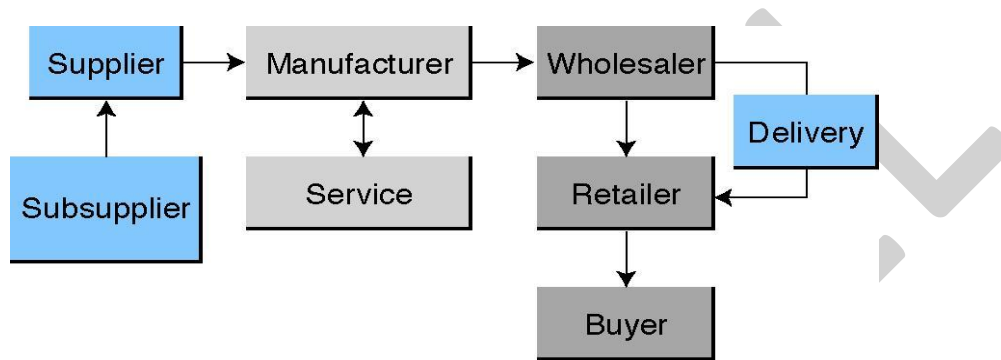
a. Traditional Intermediaries
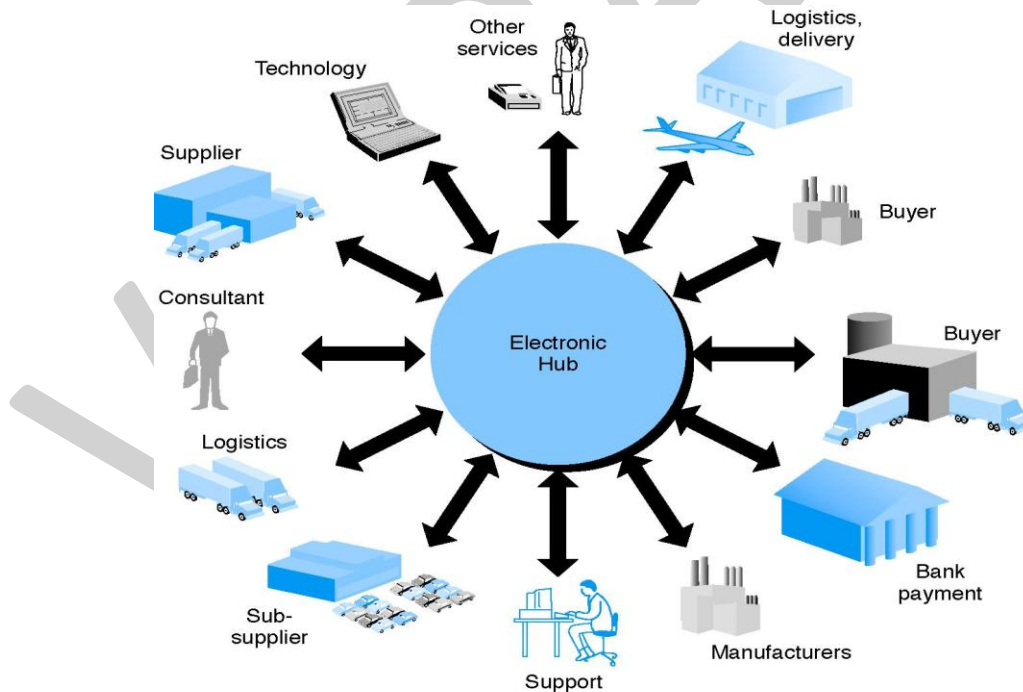
b. Hub-Based Chain

Figure : Changes in the Supply Chain

- **Build-to-Order Manufacturing:** Build-to-order (pull system) is a manufacturing process that starts with an order (usually customized). Once the order is paid for, the vendor starts

to fulfill it. This changes not only production planning and control, but also the entire supply chain and payment cycle. For example, manufacturing or assembly starts only after an order is received.

- **Real-Time Demand-Driven Manufacturing:** Successful manufacturing organizations must respond quickly and efficiently to demand. Strategies and techniques of the past no longer work, and it's a challenge to transform from the traditional, inventory-centric model to a more profitable and flexible demand-driven enterprise. Demand-Driven Manufacturing (DDM) provides customers with exactly what they want, when and where they want it. Effective communication between the supply chain and the factory floor is needed to make it happen. Partnerships must be focused on reducing cost through shared quality goals, shared design responsibility, on time deliveries, and continuous performance reviews.

- **Virtual Manufacturing:** An interesting organizational concept is that of virtual manufacturing-the ability to run multiple manufacturing plants as though they were at one location. A single company controls the entire manufacturing process, from the supply of components to shipment, while making it completely transparent to customers and employees. For example, Cisco works with 34 plants globally, 32 of which are owned by other companies. Each of Cisco's products will look exactly alike, regardless of where it was manufactured. Up-to-the-minute information sharing is critical for the success of this mass-customization approach.

- **Assembly Lines:** Companies such as IBM, General Motors, General Electric, and Boeing assemble products from components that are manufactured in many different locations, even different countries. Subassemblers gather materials and parts from their vendors, and they may use one or more tiers of manufacturers. Communication, collaboration, and coordination are critical in such multitier systems. Using electronic bidding, assemblers acquire subassemblies 15 to 20 percent cheaper than before and 80 percent faster. Furthermore, such systems are flexible and adaptable, allowing for fast changes with minimum cost. Also, costly inventories that are part of mass-production systems can be minimized.

❖ Finance and Accounting:

E-markets require special finance and accounting systems. Most notable of these are electronic payment systems. Traditional payment systems are ineffective or inefficient for electronic trade. The use of new payment systems such as electronic cash is complicated because legal issues and agreements on international standards are involved. Nevertheless, electronic cash is certain to come soon, and it will change how payments are made. It could also change consumers' financial lives and shake the foundations of financial systems.

Executing an electronic order triggers an action in what is called the *back office*. Back-office transactions include buyers' credit checks, product availability checks, order confirmation, changes in accounts payable, receivables, billing, and much more. These activities must be efficient, synchronized, and fast so that the electronic trade will not be slowed down. An example of this is online stock trading. In most cases, orders are executed in less than 1 second, and the trader can find an online confirmation of the trade immediately.

One of the most innovative concepts in accounting and finance is the "virtual close", which would allow companies to close their accounting records, or "books", within a day.

❖ **Human Resources Management and Training:**

EC is changing how people are recruited, evaluated, promoted, and developed. EC also is changing the way training and education are offered to employees. Online distance learning is exploding, providing opportunities that never existed in the past. Companies are cutting training costs by 50 percent or more, and virtual courses and programs are mushrooming.

New e-learning systems offer two-way video, on-the-fly interaction, and application sharing. Such systems provide for interactive remote instruction systems, which link sites over a high-speed intranet. At the same time, corporations are finding that e-learning may be their ticket to survival as changing environments, new technologies, and continuously changing procedures make it necessary for employees to be trained and retrained constantly, a process known as e-Human Resources. EC systems are revolutionizing human resources operations.

RELATED TERMS

1. **Supply Chain Management:** Management of all the activities along the supply chain; from suppliers to internal logistics within a company and to distribution to customers. This includes ordering, monitoring, billing and so on.

2. **Business process Reengineering:** BPR refers to a major innovation in the organization's structure and the way it conducts the business. Technological, human and organizational dimensions of a firm may all be changed in BPR.

3. **Intelligent Agent:** Intelligent agents and their subset software agents are computer programs that help the users to conduct routine tasks, search and retrieve information, support decision making and act as domain experts.

4. **Value Added Networks (VPNs):** Networks that add communication services to existing common carriers.

5. **Virtual Private Network (VPNs):** A special combination of encryption, authentication and protocol tunneling technologies that provided secure transport of private communications over the public Internet. Most enterprises rely on third party companies to host their VPNs.

6. **Inhibitors** means prevent from happening/happen more slowly.

NOTE: The basic objective of this material is to supplement teaching and discussion in the classroom in the subject. Students are required to go for extra reading in the subject through Library work.