



## Unit-5

### Digital /Electronic Markets & Solutions

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# Definition and Functions of e-Markets

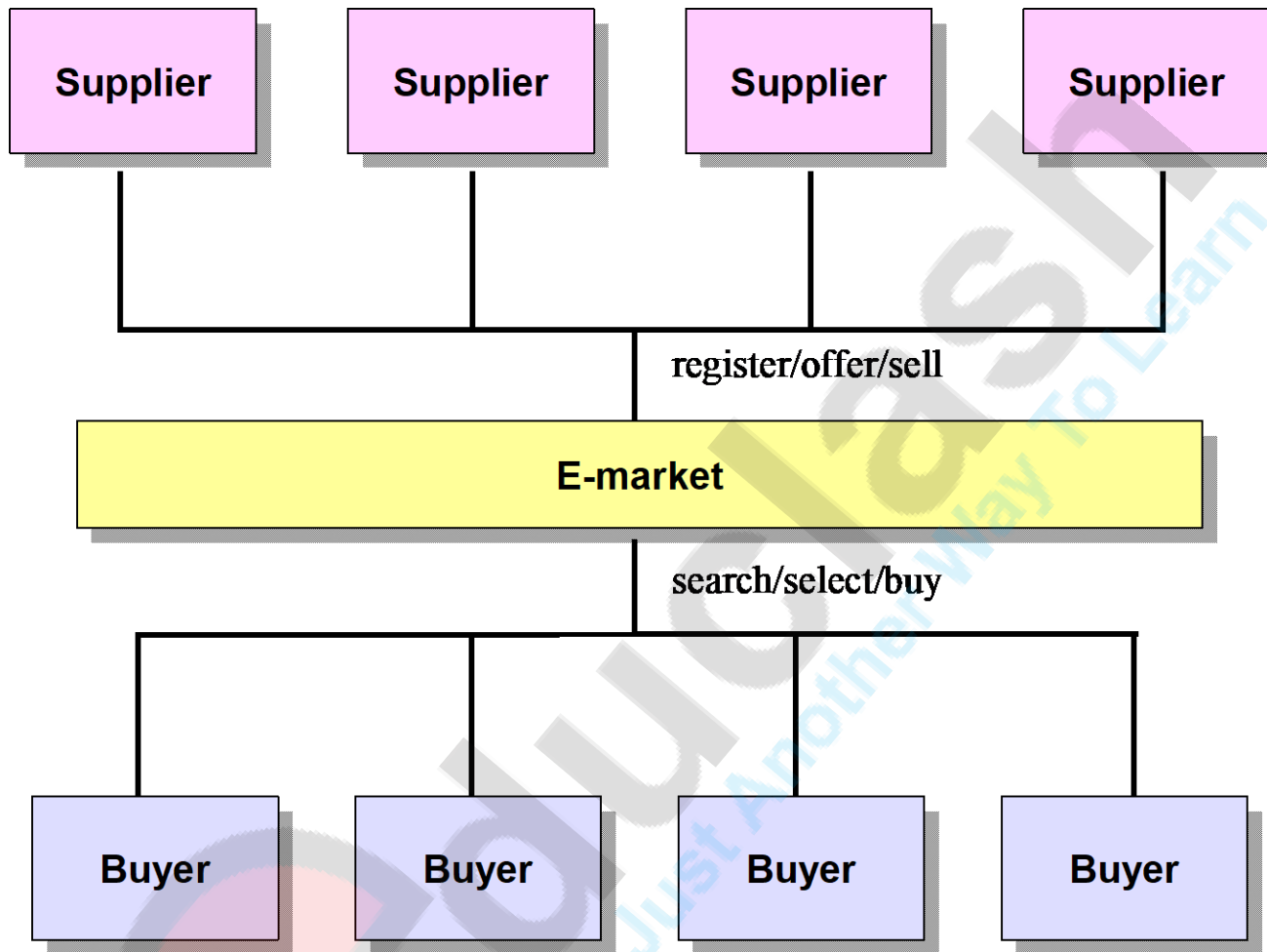
# Introduction

- Internet has powerful effect on transaction cost.
- Businesses are expected to consider buying goods and services they need instead of producing them themselves
- Effect of internet is electronic brokerage effect: Ability to bring buyers and sellers together in a virtual space, to create electronic markets.

# Definition

- An *e-Market* can be defined as a virtual online market,
  - i.e., a network of company interactions and relationships,
  - where buyers, suppliers, distributors, and sellers find and exchange information, conduct trade and collaborate with each other
  - via an aggregation of content from multiple suppliers, trading exchanges, and member communications
  - supported by collaboration tools.
  - They are also known as electronic market places, online markets, e-hubs or business-to-business markets.
- Electronic market minimizes that inefficiency by tightening the relationship between supplier and buyer, promoting price transparency and spending aggregation, reducing supply chain costs and increasing reach of suppliers.

- The e-Market brings all interconnections to a single point – the trading hub
- A trading hub takes content from different suppliers, rationalizes it and makes it usable by all buyers.
- E-business markets serve three particular functions:
  - They act as an exchange for business transaction-not only purchasing but also for checking prices and stock availability, invoicing and order chasing.
  - They manage catalog content, converting product information into a common format understood by all parties
  - They provide additional service to support trading process, from shipping, payment and tax to online auctions, tendering and vetting a company's financial status.



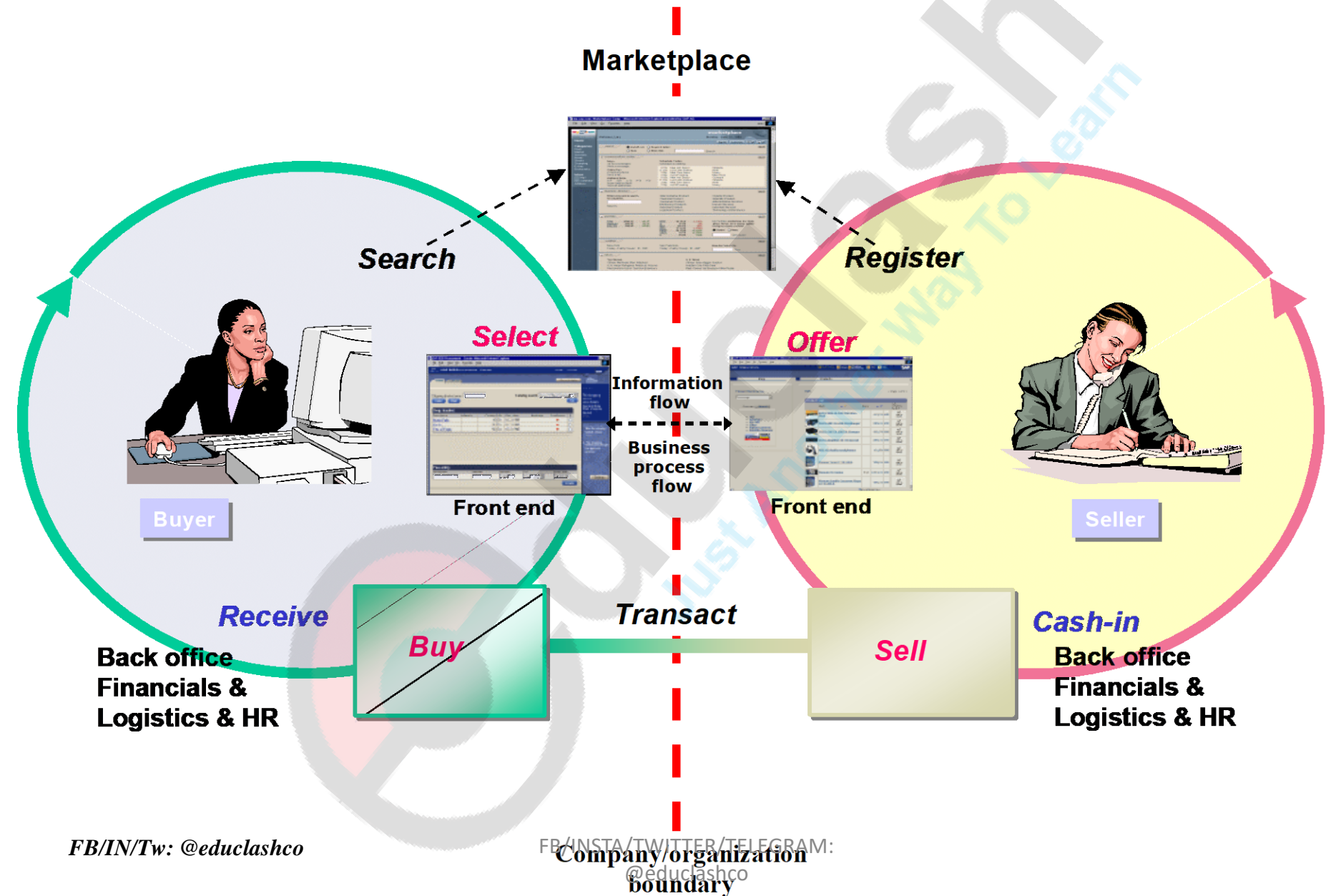
**Central box represents marketplace software and the two wings represents the buyer and seller business processes surrounding the market place**

# How do e-Markets work?

- In a typical e-Market, groups of buyers and sellers in a particular industry are linked together.
- In Most common scenario organizations establish a marketplace to provide an electronic catalogue service that features the products and services of many suppliers in a common industry sector:
  - Sellers register their products with e-market's e-catalog
  - Buyers use browser to search and review product offerings, fill electronic forms for ordering and generate their orders.
  - Orders are passed thro the messaging system
  - Orders are sent to appropriate suppliers



# How Do Electronic Markets Work?



- The two key elements depicted in the fig are:
  - An enterprise portal that provides users with a personalized, web browser based work environment that offers everything they need to do their work.
  - E-market, an open electronic business-to-business hub that enables inter-company relationships for buying, selling, communicating and acquiring info by employing web services.

- Companies operating marketplaces are referred to as **intermediaries** or **market makers**.
- They make themselves participants in the market-buyer or sellers- or independent third parties, financial service providers, IT vendors, or multiform consortia.
- E-markets provide mechanism to facilitate finding buyers for sellers and suppliers for buyers, matching what is wanted with what is offered in the market.
- In e-business e-Markets such matching is implemented through dynamic trading processes, or electronic auctions.
- Financial services and logistics arrangements are two important facilitation functions that should be activated once buyer and seller agree on a deal.

- Market makers provide a comprehensive range of service surrounding trade and offer a strong value proposition, improve customer retention and expand their own potential revenue.
- Some of value market makers may provide to an e-Market include:
  - Industry expertise and content
  - Catalog aggregation
  - Transaction negotiation and facilitation
  - Shipping/logistics services
  - Internationalization
  - Procurement workflow
  - Financial settlement or financing
  - Quality assurance and rating services
  - Business intelligence
  - Customer service

- By bringing buyer and sellers together online-Market play role of digital intermediaries.
- For ex, demand and supply information can be aggregated and disseminated and buyer and seller can be matched in electronic markets.
- To achieve this market aggregate suppliers product offering and help buyers search for desired products and discover attractive prices.
- After buyers and sellers agree on a deal, facilitating mechanism for transaction settlement also can be provided so logistics and payment can be arranged.

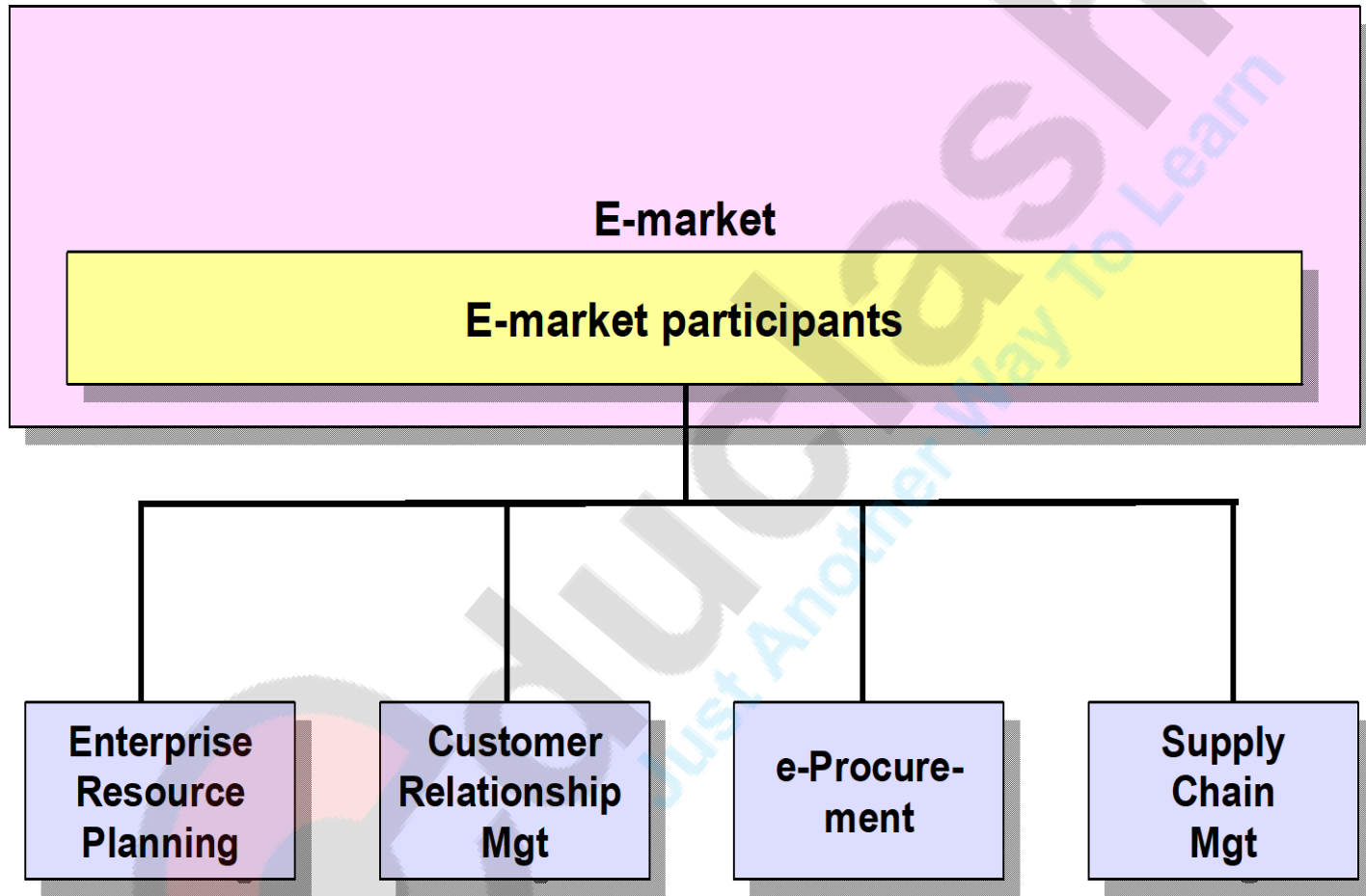
- E-market provide possibility of forward and reverse auctions.
- The forward auction brings together many buyers and one seller. so price can only increase. It is most beneficial to companies that are looking to unload surplus inventory.
- The reverse auction brings together many sellers and few buyers. The buyer drives the price so in this model prices are naturally driven downward.

# Functional characteristics of business-to-business e-Markets

A typical b2b exchange combines following core enterprise applications:

- Enterprise Resource Planning (ERP)
- Supply Chain Management (SCM)
- Customer Relationship Management (CRM)
- Electronic Procurement





**Fig. Core Applications in an e-Market**



- ERP:

- These systems are normally used to run financial and accounting activities: when e-Market participants engage in online transactions, the ERP systems automates the order fulfillment process, from creating a customer to tracking the order through shipping and billing in case of e-Market seller.
- E-Market buyer, ERP software may used to issue purchase orders, and track and manage inventory.
- Integration with back-office accounting system also established through software package.

- Customer Relationship Management(CRM):
  - CRM solutions reach across and into enterprise, affecting anybody who interact with customer
  - CRM focuses on automating interactions with clients, typically in sales and support functions.
  - CRM application important in e-Market processes, as e-Market sellers are interested in optimizing their service, support and marketing functions.

- **E-Procurement:**

- It is the buying and selling goods and services in a digital environment by means of software applications that are web or internet based.
- An e-Procurement network provides a secure market place, sales platform and transaction tracking system for buyers and sellers.
- E-Procurement allows buyers to perform some or all of the following functions: access supplier information including catalogs, generate requisitions, obtain approvals in accordance with business rules of the organization, send purchase orders to suppliers, receive invoices and process payment.

- Supply chain management:
  - SCM software is decision support applications that uses complex mathematical algorithms and balance multiple, often competing, constraints in supply chain.
  - These constraints include available and alternative inventory and finished goods, transportation and manufacturing capacity.
  - It focuses on reducing inventory and optimizing manufacturing in order to take costs out of whole extended production system and should provide the e-Market participants with ability to conduct real time and iterative decision making.

# Function of Electronic Markets

- Markets play a central role in the economy and the electronic economy in particular will play an important role by facilitating the exchange of information, goods, services and payments.
- In the process, they create economic value for buyers, sellers, markets intermediaries and for society at large

Both traditional and electronic markets has three main function:

1. Matching buyers and sellers.
2. Facilitating the exchange of information, goods, services and the payment associated with market transaction.
3. Providing an institutional infrastructure such as a legal and regulatory framework that makes the efficient functioning of the market possible.

Electronic markets employ information technology to perform all three functions, increasing effectiveness and reducing transaction costs, thus resulting in more efficient, called friction-free markets.

# Matching buyers and Sellers

- Markets operate by matching demand and supply.
- The behavior of buyers, sellers and intermediaries in market is motivated by the desire to maximize benefits.
- When markets function well the available productive resources are efficiently allocated.
- Markets function as both the engine and the steering system of our economy.

- The process of matching buyers demand with sellers products offerings has three main components:
  1. **Determining product offerings:** markets provide sellers with demanded information that allows them to employ inputs such as capital, technology, labor, and develop products with characteristics that match the buyers' needs. Sellers determine a product offering's schedule that they expect will maximize their profits.
  2. **Searching:** buyers select their purchases from the available product offerings after considering factors such as price, product characteristics, and delivery time. Obtaining and processing this information involves making search costs. These include the opportunity costs for the time spent searching, as well as associated costs for traveling, making telephone calls, and magazine subscriptions. Typically, sellers exploit these search costs by raising their prices, and thus enjoy higher profits. But sellers may face search costs too, for locating qualified buyers for their products: market research, advertising, and sales calls.
  3. **Discovering prices:** a key function of markets is the process of determining the prices at which demand and supply meet and trade occurs. On financial markets, for instance, several types of auctions are used. Other markets, such as the traditional auto dealership, employ negotiation between buyers and sellers until a price is reached. In department stores, merchants make firm offers that customers can either take or leave.



# Facilitating the exchange

- The markets' matching function establishes relationships between buyers and sellers.
- To facilitate the exchange of information, goods, services, and payments, four aspects have to be considered to establish these relations correctly:

(1) **Settlement:** the payments of the buyer must be transferred to the seller. For example, when a travel agent uses an airline reservations system to book a flight, the system will generate the ticket and process a credit card payment;

(2) **Logistics:** after a transaction is agreed upon, the product sold must be transported to the buyer;

(3) **Trust:** market transactions require the establishment of a certain level of trust, which protects buyers, sellers, and intermediaries from the opportunistic behavior of other market participants. This trust role may include banks issuing letters of credit, credit reporting bureaus, or trusted third parties;

(4) **Physical infrastructure:** markets provide the physical infrastructure that allows transactions between buyers and sellers to take place. This includes real assets such as physical structures, trading floors, computers, communication networks, transportation systems, and cash dispensers

# How do e-Markets Differ from Traditional Markets?

- Several trends are emerging that distinguish e-market from traditional markets.
  - Personalization and customization
  - Product Bundling
  - Information goods
  - Search
  - Transaction mechanisms
  - Price discovery
  - Facilitation
  - e-Payment systems

# Personalization and customization

- Electronic markets support it in two ways:
  1. Consumer tracking technology: Identification of individual buyers.
  2. Information-rich product: lend to cost-effective customization.

This allows the practice of “one-to-one marketing”
- Main objective of personalization and customization is to provide customized services according to individual preferences, whether expressed or inferred.
- For ex amazon.com not only provides individuals with information about book they might like to buy but also offers reviews by previous buyers and personal recommendations on other books might be interested in

# Product Bundling

- When determining their product mix, sellers must decide which product components or features will be included in each product offering. These decisions are driven by the cost of different product bundles, which includes the following types of costs:
  - **Production cost:** the cost of producing additional units for inclusion in the bundle, including storage, processing and communications costs incurred in the process.
  - **Transaction and distribution cost:** the cost of distributing a bundle of goods and administering the related transactions, such as arranging for payment
  - **Binding cost:** the cost of binding the component goods together for distribution as a bundle, such as formatting changes necessary to include news stories from wire services in a “newspaper bundle.”
  - **Menu cost:** the cost of administering multiple prices. If a mixed bundling strategy is pursued, where the available components are offered in different combinations,

- Internet marketplaces are changing the constraints imposed by these costs and thus are fostering new types of intermediaries that create value by aggregating services and products that traditionally were offered by separate industries.
- For ex, consumer buying new car may select a make and model, agree on the price, order it and then arrange financing and purchase insurance through single Internet intermediaries.

# Information goods

- Digital information goods, such as news articles, digital images or music, allow perfect copies to be created and distributed almost costless via the Internet.
- Marginal production and distribution costs of such products are dramatically reduced.
- Micropayment technologies are reducing the transaction costs for their commercial exchange
- This creates new opportunities for repackaging content by bundling, site licensing, subscriptions, rentals, differential pricing, per-use fees.

# Search

- Electronic markets lower the costs buyers for obtaining information about the prices and product features, as well as the costs sellers face for advertising such info.
- Consumer also benefit from being able to identify & purchase products that better match their needs.
- The lower search cost enable new markets to emerge, i.e used products like secondhand camera, vehicle.
- Multiple internet based technologies assist buyers during their search process: search engines, hierarchical directories, or tools specially designed for specific markets.



# Transaction mechanism

- In any e-Market there are four main transaction mechanisms. These are
  - 1) Standard price offerings:** these are predetermined prices for a given set of goods or services. This transaction model is in some ways similar to the typical B2C catalog pricing system.
- In e-Markets, standard price offerings are further broken down to two sub-models:
  - a. Fixed price:** fixed price offerings as the name suggests are offerings that have a fixed price associated with a particular set of goods or services;
  - b. Contract:** contracts are results of offline negotiations between buying and selling organizations. Contracts typically are entered into the system with special pricing, expiration rules, and termination rules. Contracts can also be generated as result of a Request for Quote (RFQ) process.
- 2) Auctions:** these are used in e-Markets to allow rapid inventory turnover, while providing goods and services to buyers at a reduced price. Several different styles of auctions, such as open cry, sealed bid, and Dutch auctions, are available.

- (3) Request for Quote (RFQs):** buyers can create RFQs in the e-Market if the product they are interested in does not exist there, or if they would like to solicit the selling organizations for a better price for an existing product.
- Selling organizations view the RFQs in the e-Market, and respond to the ones they are interested in. The buying organization that initiated the RFQ, reviews the responses and selects a possible winner.
  - The winning RFQs can be used to create a fixed price order, or to establish a contract. Due to the opposite behavior of RFQs compared to auctions, RFQ are sometimes referred to as reverse auctions.
- (4) Exchanges:**
- E-markets and exchanges are not interchangeable.
  - Exchanges tend to be internet based industry spot markets for commodity products with a dynamic market setting supply, and demand prices in the fashion of existing exchanges.
  - The general idea is very similar to the procedures in stock market exchanges.
  - Complicated way of conducting transaction in e-Market.

# Price discovery

- Electronic marketplaces enable new types of price discovery to be employed in different markets.
- For example, some airlines auction last-minute unsold seats to the higher bidders.
- The ability to customize products, combined with the ability of sellers to access substantial information about prospective buyers, such as demographics, preferences and past shopping behavior, is greatly improving sellers' ability to price discriminate, i.e., to charge different prices for different buyers.
- The ability to implement different price discovery mechanisms may result in more efficient markets, and thus benefit buyers and hurt inefficient sellers.

# Facilitation

- The cost of logistics, i.e. the process of transporting products from the seller to the buyer, has been estimated at more than 10% of the GNP(Gross National Products)
- Electronic marketplaces improve information sharing between buyers and sellers, helping lower the cost of logistics and promoting quick, just-in-time deliveries and reduced inventories.
- The distribution of information goods such as newspapers, music, videos and software, is likely to be completely transformed, as the information infrastructure will replace physical distribution systems.
- Sellers in Internet marketplaces are typically responsible for delivery to their customers, and increasingly contract with third-party providers for direct delivery from the manufacturer to the final consumer, reducing costs and time-to-delivery.

# Electronic invoicing and payment

- E-Business transactions typically include procurement, contract administration, fulfillment, financing, credit card ratings, shipment, validation, order matching, payment authorization and general ledger accounting.
- Companies support variety of invoice distribution methods including paper, EDI, XML, flat-files and customer spreadsheets.
- A solution for complex invoicing and payments needs of companies in an e-Business environment is Electronic Invoice Presentment and Payment (EIPP)
- EIPP allows electronic delivery of complex business invoices accommodating highly variable billing data.
- It support interactive system to support online dispute resolution, automatically matches invoices to purchase orders, creates internal audit trails, accept payment over internet and posts results to accounting systems.

# EIPP models

- **Seller Direct Model** :The seller controls the EIPP application in the Seller Direct model. This model comprises a one-to-many relationship, linking one seller to its multiple buyers for invoice presentment. A seller deploys this model by requesting – or requiring – that its buyers view invoices on the seller EIPP system
- **Buyer Direct Model**: The buyer controls the EIPP application in the Buyer Direct model. This model comprises a one-to-many relationship – with one buyer providing an interface for many sellers. A buyer deploys this model by requesting – or requiring – that its sellers post invoices to the buyer EIPP system
- **Consolidator Model** : The consolidator controls the EIPP application in the Consolidator model. This model comprises a many-to-many relationship – providing an interface between multiple sellers and buyers. A consolidator acts as an intermediary, collecting or aggregating invoices from multiple sellers for multiple buyers, eliminating the need for point-to-point connections

# Effects of electronic markets

## A) The impact of the emergence of electronic markets

Five characteristics of e-Market and their impact on market structure and efficiency.

1. Cost reduction
2. Network externalities: The benefits for individual participants in e-Market increase as more businesses join their interorganizational information systems.
3. Switching costs: E-market require sizeable investment from their participants, for hardware, software, employee training and organizational transformations
4. Economies of scale and scope: E-market typically require large capital investments and offer substantial economics of scale and scope
5. Technological uncertainty: Potential participants in e-Markets face substantial uncertainty regarding actual benefits of joining such a system

## B) Stakeholders: buyers, suppliers, investors and service suppliers

Participants who affect or are affected by the market's development and implementation:

- **Buyers and seller:** are institutions or organizations that use electronic market to buy or sell goods or services
- **Investors :** are institutions or organizations that have invested financial or human resources in electronic markets.
  - Companies that intend to make money by receiving dividend and by ultimately selling their shares with profits are called external investors
- **Service providers :** are institutions that supply third-party services



# e-Market Success Factors

- Success will depend on whether the market is able to meet objective of key stakeholders.
- Investors expect a return on investments
- Buyer and seller expect success in their trading processes.
- Important criteria for success is critical mass.
- Critical mass defined as 'The minimal number of users of an interactive innovation for further rate of adoption to be self-sustaining'
- Using critical mass for e-Market it benefits individual participants in e-Market system increases as more organizations join the system.

# Key Criterion of Success

Factors that contribute to critical mass:

- Context-related success factors: are the conditions under which e-Markets operates; generally these are beyond control of market maker but they do affect market's potential success.
- Process-related success factors: are characteristics of trading process on market, market maker generally controls them.

# Context-related success Factors

- Stakeholder Motives: opposite motives of key stakeholders is a serious threat.
- Products traded:
  - Complexity of product description: items with simple product descriptions are more suitable for e-markets
  - Asset specificity: e-markets are best suited for sourcing goods with a low asset specificity.

# Process-related success Factors

- Functionality and support: must match the requirements of the users
- Learning costs: high learning costs are barriers to adoption
- Trust: critical element for screen based trading
- Quality of information: availability of correct information on products, trading partners, and contracts

# Process-related success Factors

- Information security: safeguard of integrity and confidentiality of information
- Geographic location: dependent on the perceived risks for the participants, localized e-markets will evolve
- Partnerships: with industry leaders and domain experts can contribute to perceived trust

# e-Market Technology Solutions

- Aim to facilitate direct integration with trading partners
- Hosted by the market maker organization or via an ASP(Application service Provider) model.
- Trading partner then connect to e-Market.
- Marketplace will manage transforming routing and delivery of messages in same way as internal broker joins disparate applications.
- Fig shows interaction between e-Market and supplier's business system, as well as between buyer's procurement system and business functions of e-Market, where interaction is governed by well defined and executable contract.
- Fig shows how two or more enterprises(supplier and buyer) can interact within an e-Market.
- Dotted arrows refers to electronic flow,e.g, purchase orders.
- E-Market solution are based on web technologies, they rely directly upon an application server.

# e-Market Technology Solution

