UNIT III

Consumer Oriented E-Commerce Applications.

The convergence of money, commerce, computing and networks is laying the foundation for a global consumer market place. Some fundamental business issues must be addressed before consumer-oriented e-commerce can become widespread, including:

1. Establishment of standard business processes for buying and selling products and services in electronic markets.
2. Development of widespread and easy-to-use implementations of mercantile protocols for order-taking, online payment, and service delivery similar to those found in retail/ credit card based transactions.
3. Development of transport and privacy methods that will allow parties that have no reason to trust one another to carry on secure commercial exchanges.

In other words, to make consumer-oriented e-commerce more effective, we need a better understanding of the components of the business process from the initial search and discovery of the product/services via on-line catalogs to the management of the order-to-delivery cycle, including the all-important payment/settlement component.

Consumer Oriented Applications:
The wide range of applications envisioned from the consumer market place can be broadly classified into.

Consumer Life style needs	Complementary multimedia services.
Entertainment	Movies on demand, video cataloging, interactive ads, multi user games, on-line discussions.
Financial services and information	Home banking, financial services, financial news.
Essential services	Home shopping, electronic catalogs, telemedicine, remote diagnostics
Education and training	Interactive education, multi user games, video conferencing, on-line databases.

Personal Finance and Home Banking Management:
Home banking services are often classified as

1. Basic Services
2. Intermediate services
3. Advanced services

1. **Basic services:** it is related to personal finance i.e. checking savings account statement around the clock, banking with ATM's (Automated Teller Machines). Bill payment, balancing cheque book status of payment or stock payment requested etc.
2. **Intermediate services:** it includes a broader array of financial management services which include non-banking activities. Also bank activities such as household banking, tax return preparations etc.
3. **Advanced services:** it includes stock and mutual funds brokerage or trading services such as currency trading and credit card or debit card management.

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Home shopping :

One of the example often sighted about e-commerce is home shopping which is widely used and had generated substantial revenue for many companies racing to develop on-line malls. The malls will enable a customer to enter an online store look at products, try on computerized clothes, see a reflection in a digital mirror and purchase with overnight delivery against credit card billing. The exact operating method of these services has yet to be determined, but the retailers are well aware of the potential opened up by the ability to transmit huge amounts of digital information into home and to provide interactive control to the shopper.

Television based shopping: TV shopping has evolved over years to provide a wide variety of goods ranging from clothing, small electronic house ware, jewelry and computing.

Catalog based shopping: The online catalog business consists of brochures, CD ROM catalogs and on-line interactive catalogs. Most online catalogs are some form of electronic brochure. Electronic brochures are multimedia replacement for direct mail, paper & brochures used in the business to business marketing. Basically electronic catalog contains highly interactive programs using still images, graphics, animation, sound, text & data. One of the disadvantages of this catalog is its prohibitive cost.

Home Entertainment: It is another application area of E-commerce, the most important services provided under. These are movies on demand, interactive games. The online gaming industry in turn parallels the TV industry where the customer is primarily interested in good quality programming & is not faithful to any one network.

In the entire home entertainment area, the key element is the notion of customer control under programming entertainment on demand as expected to give each viewer total control over what, when and where to watch.

In addition to game technology we also witness the emerging services of entertainment support function such as on screen catalogues, TV guide that inform users what is on TV.

Micro Transaction of Information: To serve the information needs of the consumer, services providers whose product is information delivered over the I-way are creating an entirely new industry. Most sell any form of digital information and can be sent down the network of one sort or another such as data, picture, images, sounds, computer programs and services. A few sell products such as music books, clothing etc through on-line catalogues.

One significant change in the traditional business forced by is online information. Business is the creation of new transaction catalogues called small fee transactions for micro services.

Desirable characteristics of E-Market Space:

The following characteristics are essential for consumer oriented E-commerce.

1. **critical mass of buyers and sellers:** the trick is getting a critical mass of cooperation and consumers to use electronic mechanism i.e., the E-market place should be the first place for the customer to go to the right product & service they need.
2. **Opportuinity for independent evaluation and for customer dialogue and Discussion:** the ability to openly evaluate the wares offer is a fundamental principle of viable market place i.e. the users compare notes on who has best products and whose prices are outrageous.
3. **Negotiation and bargaining:** no marketplace is complete if it does not support negotiation.
4. **New products and services:** in a viable market place consumer can request a product and services which are not currently offered i.e. the viable market place is an interactive information service that supports the entire innovation process.

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5. **Seamless Interface:** biggest barriers to E-market Place is having all the pieces work together so that information can flow seamlessly from one source to another. This requires standardization
6. **recourse for disgruntled buyers:** viable market place must have a recognized mechanism for resolving disputes among buyers and sellers. Markets typically include a provision for resolving this and agreement by replacing the product.

Mercantile Process Models:

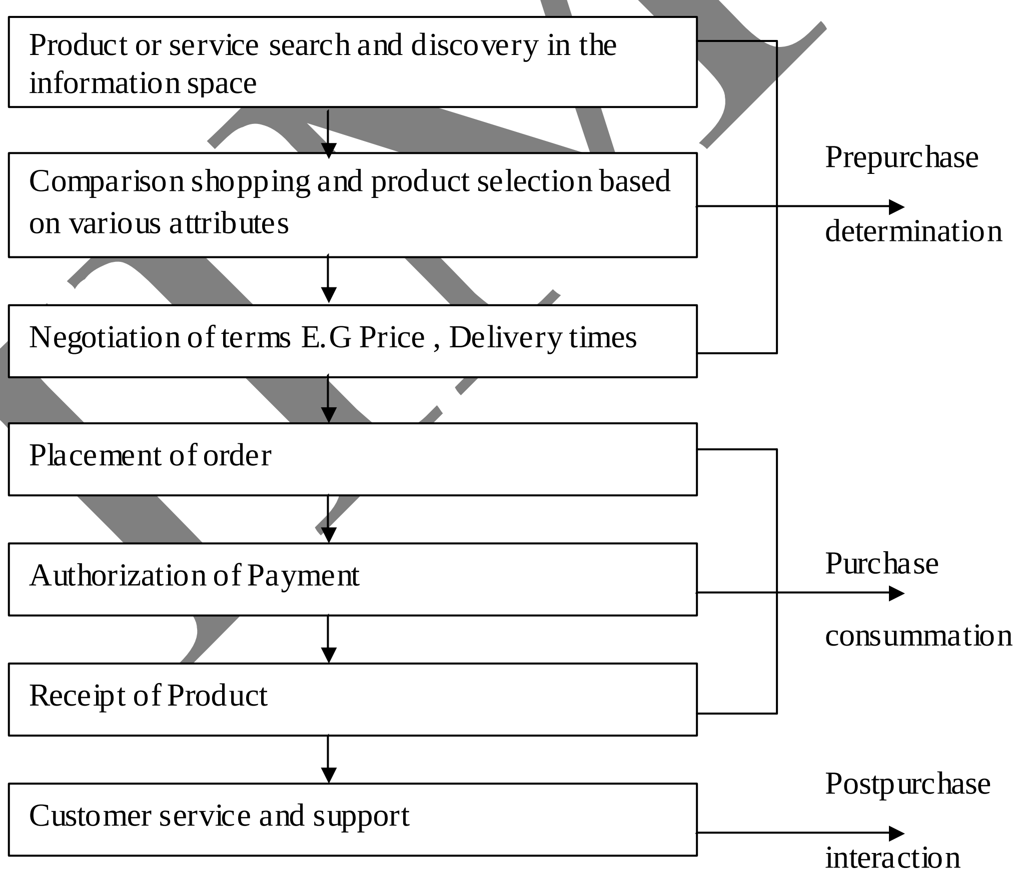
It defines the interaction between the consumer and the merchant for online commerce. This is necessary because to buy and sell goods a buyer, a seller and other parties must interact in ways that represent standard business process. A well established standard process for processing credit card purchasers has contributed to the wide spread dissemination of credit cards. The establishment of common mercantile process model is expected to increase the convenience for consumers.

Mercantile models from the Consumers Perspective:

The online consumer expects quality and convenience, value, low price etc. to meet their expectations and understand the behaviour of online shopper there is a need for the business process models that provides the standard product / service purchasing process. The process model for a consumer point of view consists of seven activities that can be grouped into three phases. They are

1. Pre phase
2. purchase consumption
3. post purchase interaction phase.

Steps taken by customer in purchasing:



1. **Pre purchase Determination:** this phase includes search and discovery for a set of products in the larger information space applicable of meeting customers

requirements and product selection from the smaller set of products based on attribute comparision.

2. **Purchase Consumption:** this phase includes mercantile protocols that specify the flow of information and documents associated with purchasing and negotation with merchants for suitable terms such as price availability and delivery dates.
3. **Post Purchase interaction:** this phase includes customer service and support to addresses customers complaints, product returns & product defects.

Pre Purchase Preparation:

From the consumer point of view any major purchase can be assumed to involve some amount of pre purchase deliberation. Pre purchase deliberation is defined as elapsed time between the consumer's first thinking about buying and actual purchase itself. Information search should constitute the major part of duration but comparison of alternatives and price negotiations would be included in continuously evolving information search and deliver process.

To deliberate, consumers have to be watchful for the new or existing information which are essential for purchase decision process. Information on consumer characteristics with reduced purchase deliberation time can be quite valuable when attempting to target, selective communications to desired audience properly. Thus not much attention have been paid to this important research area which may dictate success or failure of online shopping. Consumers can be categorized into three types

1. Impulsive buyers
2. Patient buyers
3. Analytical buyers

1. **Impulsive buyers:** these buyers purchase the product quickly.
2. **Patient buyers:** who purchase products after making some analysis or comparision.
3. **Analytical buyers:** who do substantial research before making the decision to purchase product or services.

Marketing researchers have isolated several types of purchasing.

1. **Specifically planned purchase:** the need was recognized on entering the store and the shopper brought the exact item planned.
2. **Generally planned purchases:** the need was recognized, but the shopper decided in-store on the actual manufacture of the item to satisfy the need.
3. **reminder purchases:** the shopper was reminded of the need by some store influence. This shopper is influenced by in-store advertisements and can substitute products readily.
4. **Entirely unplanned purchases:** the need was not recognized entering the store.

Purchase Consumption:

After identifying the product to be purchased by the buyer and the seller must interact in some way (e-mail, on-line) to carry out the mercantile transactions. The mercantile transaction is defined as the exchange of information between the buyer and seller followed by necessary payment depending upon the payment model mutually agreed on, they may

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interact by exchanging currently i.e. backed by the third party such as the central bank, master card, visa card etc.

A single mercantile model will not be sufficient to meet the needs of everyone. In very general terms a simple mercantile protocol would require the following transaction where the basic flow remains the same .

1. Through e-mail, online the buyer contacts the vendors to purchase a product or service. This might be done online through e-mail (or) through e-catalogue etc.
2. Vendor states the price.
3. Buyer and vendor may or may not engage in a transaction.
4. If satisfied buyer authorizes payment to the vendor with an encrypted transaction containing the digital signature.
5. Vendor contacts the billing service of the buyer to verify the encrypted authorization for authentication.
6. Billing service decrypts the authorization and checks the buyer account balance and puts a hole on the amount transfer.
7. Billing service give the vendor green signal to deliver the product.
8. On notification of adequate funds to cover financial transaction, vendor delivers the goods to buyer or in the case of information purchase provides a crypto key to unlock the file.
9. on receiving the goods the buyer signs and delivers receipt. Vendors then tell billing service to complete the transaction.
10. At the end of the billing cycle buyer receives a list of transactions.

The following are the two types of mercantile protocols where the payment is in the form of electronic cash and credit cards.

1. **Mercantile process using digital cash:** a bank mints (prints) electronic currency or e-cash. Such a currency is simply a series of bits that the issuing bank can be verified to be valid. This currency is kept secured by the use of cryptographic techniques. After being issued some e-cash a buyer can transfer to a seller in exchange for goods upon receiving a e-cash the sellers can verify authenticity by sending it to the issuing bank for verification. E-cash issuing banks make money by charging either buyer or seller or both. A transaction fee for the use of their E-cash.

   E-cash is similar to paper currency and has the benefits of being anonymous (hidden) and easily transmitted electronically. It still entails the risk of theft or loss. However, and so requires significant security by the buyer when storing e-cash.

2. **Mercantile Transaction Using Credit Cards:** two major components of credit card transaction in the mercantile process are
   - Electronic Authorization
   - Settlement

   In the authorization process in the retail transaction, the 3rd party processor (tpp) captures the information at the point of sale and transmit the information to the credit card issue for authorization, communicated a response to the merchant and electronically stores the information for the settlement and reporting. Once the information leaves the merchants premises the entire process takes few seconds. The benefits of electronic processing include a reduction of credit card losses, lower merchant transaction costs, faster consumer checkout.

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Credit card authorization is processed at the point of sale terminal using dial-up phone access into the TPP networks. The credit card no is checked against the database and the transaction is either approved typically in a few seconds. A similar procedure is used for debit cards and check verification once the electronic authorization function is completed. The information is processed within the system for client reporting. The data are then transmitted for settlement to the appropriate institution processor.

After the transaction is completed a set of activities related to account settlement are initiated. In a credit card or debit card transaction the merchant account number is credited and or either credit card issuer is notified to enter the transaction or the card holders checking account is debited automatically. A settlement institution then enter the transaction data into the settlement process. In addition to the data computer also takes cars of the settlement function through electronic transaction processing. This electronic transaction processing also provides other services such as 24 hr network, helpdesk which response to enquires from merchant location etc.

Post Purchase Interaction:

As long as there is payment for services there will be references, disputes, other customer service issues that need to be considered. Returns and claims are an important part of purchasing process that impact the administrative costs, scrap and transportation expenses and customers relations. To overcome these problems many companies design their mercantile process for one way i.e., returns and claims must flow upstream.

The following are the complex customer service challenges that arise in the customized retaining which have not fully understood or resolved.

1. **Inventory Issues:** to serve a customer properly a company should inform a customer right from when an item is ordered to it is sold out, otherwise the company will have a disappointed customer.
2. **database Access and Compatibility Issues:** unless the customer can instantly access all the computers of all the direct response vendors likely to advertise on the information super highway on a real time basis, with compatible software to have an instant access to the merchants inventory and database.
3. **Customer service issues:** Customers often have questions about the product such as colour, size, shipment etc. and other things in mind can resolved only by talking to an order entry operator.

Mercantile process model from merchants perspective:

E-commerce order management cycle:

To order to deliver cycle from the merchant perspective has been managed with an eye towards standardization and cost. This is based on assumption that an organization must create a set of operating standard for service and production. They perform to those standards while minimizing the cost. To fully realize and maintain a competitive advantage in the online environment it is necessary to examine the order management cycle (OMC) that also includes the traditional order to delivery cycle. However the OMC has the following generic steps.

1. **Pre sale Interaction:**

   a) **Order planning and order generation:**
   The business process begins long before an actual order placed by the customer. The production planners develops the final forecast used to high workers and built inventory.
   Order planning leads into order generation. Orders are generated into number of wages into e-commerce environment such as sales force broad cast. Since personalized e-mail to customer or creates WWW web page.

   b) **Cost Estimation and Pricing:**
   Pricing is the bridge between the customer needs and company capabilities pricing at the individual order level depends on understanding value to the customer i.e, generated by each order etc. through order based pricing it is difficult to generate greater profits that are indicated by pricing.

2. **Product service purchase and delivery:**

   a) **Order Receipt and entry:**After the acceptable price code the customer enters the order receipts and entries paid in OMC.
   b) **Order selection and prioritization:** customer service representatives are responsible for choosing which to accept and order to decline. Not all customer order created equal, some or better business and some are fit into the companies capabilities and offers healthy profits. Companies also make gains by the way they handle over priority i.e, to check which orders to execute faster.
   c) **Order Scheduling:** during this phase prioritized orders get slotted into an actual production or operational sequence. Production people seek to minimize equipment change over communication between various function units is most essential in this phase of OMC.
   d) **Order fulfillment and delivery**: during order fulfillment and delivery the actual provision of product or service is made. While the details vary from industry to industry in almost in every company this step has become increasingly complex. Often order fulfillment involves multiple functions and location. Different parts of any order may be created in different manufacturing facilities and merged yet another site or order may be manufactured in one location warehoused in a second and installed in the third. In some businesses fulfillment includes third party vendor. In service operations it can mean sending individuals with different talent to the customers site. The more complicated task the more coordination required across the organization.
   e) **Order billing and payment** : after the order has been fulfilled and delivered billing is typically handled by the finance staff who view their job as getting the bill out effectively and collecting quickly i.e, the billing function is designed to serve the needs of the company not the customer service.

Post Sale Interaction:

   a) **Customer service and support:** this phase plays an interestingly important role in all Elements of a company's profit equation, customer value, price and cost. Depending on the specifications of business it can include elements such as physical installation of a product, repair and maintenance, customer training, equipment upgrading and

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disposal. Thus post sale service can affect customer satisfaction and company profitability of the year. But in most companies the post sale service people are not linked to any marketing operation, internal product development effort or quality assurance team.

Electronic payment systems:

Electronic payment systems are emerging in banking, retail, healthcare, online markets And even government organizations and infact anywhere money needs to change hands. The emerging payment technology was labeled as electronic fund transfer(EFT). EFT was defined as any transfer of funds initiated through an electronic terminal telephonic instrument or computer or magnetic tape so as to order, instruct or authorize a financial institution to debit or credit an account. It utilizes computer telecommunication components both to supply and to transfer money or financial assets.

EFT can be segmented into three broad categories.

1. Banking and financial Payments (such as ATm)
2. Retail payments (such as debit cards)
3. Online E-commerce payments.

Online E-Commerce Payments:

(a) Token Based Systems :
   1. E-Cash (Digi-cash)
   2. E-cheque (Net Cheques)
   3. Smart cards or debits cards.

(b) Credit card based systems:
   1. Encrypted credit cards.
   2. Third party Authorization numbers

(c) Digital Token based Electronic payments systems:

It is a new financial instrument. The electronic token which will be in the form of e-cash or e-cheques. They are designed in various forms of payments packed by a bank or a financial institution. E-tokens are of three types

1. Cash or real type: transactions are settled with exchange of electronic currency. An example of online currency is e-cash.
2. Debit or prepaid: Users pay in advance for the privilege of getting information. Examples of prepaid payment mechanisms are smart cards, electronic purses that store electronic money.
3. Credit or postpaid: the server authentication the customers and verifies with the bank that funds are adequate before purchase examples of postpaid mechanisms are credit or electronic cheques.

E-cash:

E-cash is a new concept in online payment systems because it combines computersied convenience with security and privacy that improve all paper cash. Its versatility opens up a host of new market and applications.

E-cash focuses on replacing cash as a principle payment system in consumer oriented e-payments. To displace cash the electronic payment systems need to have some qualities of cash that current credit and debit cards lack. Cash can be held and used by anyone even those who don't have an account in a bank and cash places no risk on the part of the acceptor that the medium of exchange may not be good.

Properties of E-cash:

e-cash must have the following four properties.

1. Monetary value
2. Interoperability.
3. Retrievability.
4. Security.

Monetary value:

e-cash must have monetary value. It must be backed by either cash bank authorized credit card or bank certified cashier cheque. When e-cash is created by one bank, is accepted by others reconsideration must occur without any problems.

Interoperability:

E-cash must be interoperable i.e., exchangeable. It must be operatable in place of other e-cash, paper cash, goods and services, electronic benefit transfer etc.

Retrievability.

E-cash must be storable and retrievable. Remote storage and retrieval would allow users to exchange e-cash from home or office or while traveling. The cash could be stored on a remote computers memory in smart cards or in other easily transported standard or special purpose devices.

Secuirty:

E-cash may not be easy to copy or tamper with while being exchange. This includes preventing or detecting duplication and double spending.

E-cash in action:

E-cash is based on cryptography systems called digital signatures. This method involves a pair of numeric keys. One for locking(encoding) and the other for unlocking(decoding). Messages encoded with one numeric key can only be decoded with other numeric key. The encoding key kept