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Retail Information System and E-Retailing

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MBA - RETAIL MANAGEMENT

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Retail Information System & E-Retailing

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- ➢ To acquaint the students with the environmental, institutional, decisional and procedural aspects of retailing through the internet.

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E-commerce Marketing – Online branding – Online Market research – E-commerce Marketing communication – Online advertising – Online promotions – Costs and benefits of online communication

References

1. **Chetan Bajaj, Rajnish Tuli, Varma and Srivastava,** RETAIL MANAGEMENT, *Oxford University Press, New Delhi.*

2. **Giridhar Joshi,** INFORMATION TECHNOLOGY FOR RETAIL, *Oxford University Press, New Delhi.*

UNIT - I

Unit Structure

Lesson 1.1 - Retail Information Systems

Learning Objectives

The objectives of this lesson are to

➢ Present the purpose of the Retail Information System

➢ Explain the structure of the Retail Information System

➢ Introduce RetailPro, a popular Retail Management Software

At the end of this lesson, you will be able to

➢ Understand the role and purpose of Information Systems in a Retail environment

➢ Comprehend the structural components of a Retail Information System

➢ Comment on the features of a Retail Management Software

Introduction

Retailers are seeking to expand operations into different channels and one of the most critical factors in growing and enhancing business operations is establishing a comprehensive technology framework that supports these developments. According to industry research, merchants are increasingly turning to retail information systems to develop multi-channel operations through data consolidation and a unified technological infrastructure.

Many major retailers are finding that in order to succeed in today's retail environment, they need to adapt their business models to keep pace with emerging markets

and changing customer expectations according to Ignify, a leading e-commerce solutions provider. By creating a seamless, consistent, and comprehensive multi-channel strategy through innovative retail software systems, merchants are better equipped to sustain and grow business in different channels.

Retail Information System – A Holistic Perspective

Purpose of Retail Information Systems

Merchants are quickly understanding the importance of connected, varied retail channels, and are citing it as one of their top business priorities. According to a report titled "Succeeding in Multi-Channel Commerce" by Acquity Group, 56% of merchants surveyed either have or plan to have integrated systems for shoppers across sales channels — website, email, mobile, catalog and social — in the next two years.

Another primary business investment for retailers is updating existing operational systems. With retailers now realizing that supply chain systems once thought robust cannot meet rising customer expectations, the 2012 RIS/Gartner Retail Technology Study titled "Embracing Change" states that 25% of merchants with real time inventory systems have systems that are up-to-date, with 15% – the next highest level – saying they have started but not finished the process of updating their systems.

With the meteoric rise of smart phones as a major consumer technology platform, merchants are also looking to embrace this new technology and initiate a mobile commerce strategy. In the 2012 RIS/Gartner Retail Technology Study, the majority of retailers surveyed are either planning or testing a mobile commerce strategy, or have an existing strategy – 46% of merchants are currently in the planning stages; 24% have pilots in progress; and 10% have a fully functional mobile strategy in place.

In addition to new, rising technologies, traditional brick-and-mortar stores also form an important part of a multi-channel retail plan. Creating a differentiated shopping experience for customers is a key factor in enhancing brick-and-mortar store retail operations, a concept that merchants recognize and are trying to incorporate. One such practice that addresses this is enabling customers to place orders for out of stock and specialty items from the store, with retailers providing self-service interactive screens in-store that allow customers to place those orders.

To effectively manage order processes – especially if customers are creating specialty orders – merchants require a cohesive order distribution system. Of the merchants surveyed

in the 2012 RIS/Gartner Retail Technology Study who have an order distribution system in place, 25% said they have their systems up-to-date, with 15% saying they have started but not finished.

By re-evaluating existing retail business and technology practices, and by delivering a fully connected, integrated shopping experience to customers, retailers will gain a significant advantage over the competition.

Retail Information System – Structure

A Retail Information System anticipates the information needs of retail managers; collects, organizes, and stores relevant data on a continuous basis; and directs the flow of information to the proper decision makers.

The Supply Environment, Demand Environment and the Operational Environment are managed by the Retail Information System seamlessly to deliver value to the organization as well as its stakeholders. A holistic view of the various aspects of the Retail Information System is shown in the figure below.
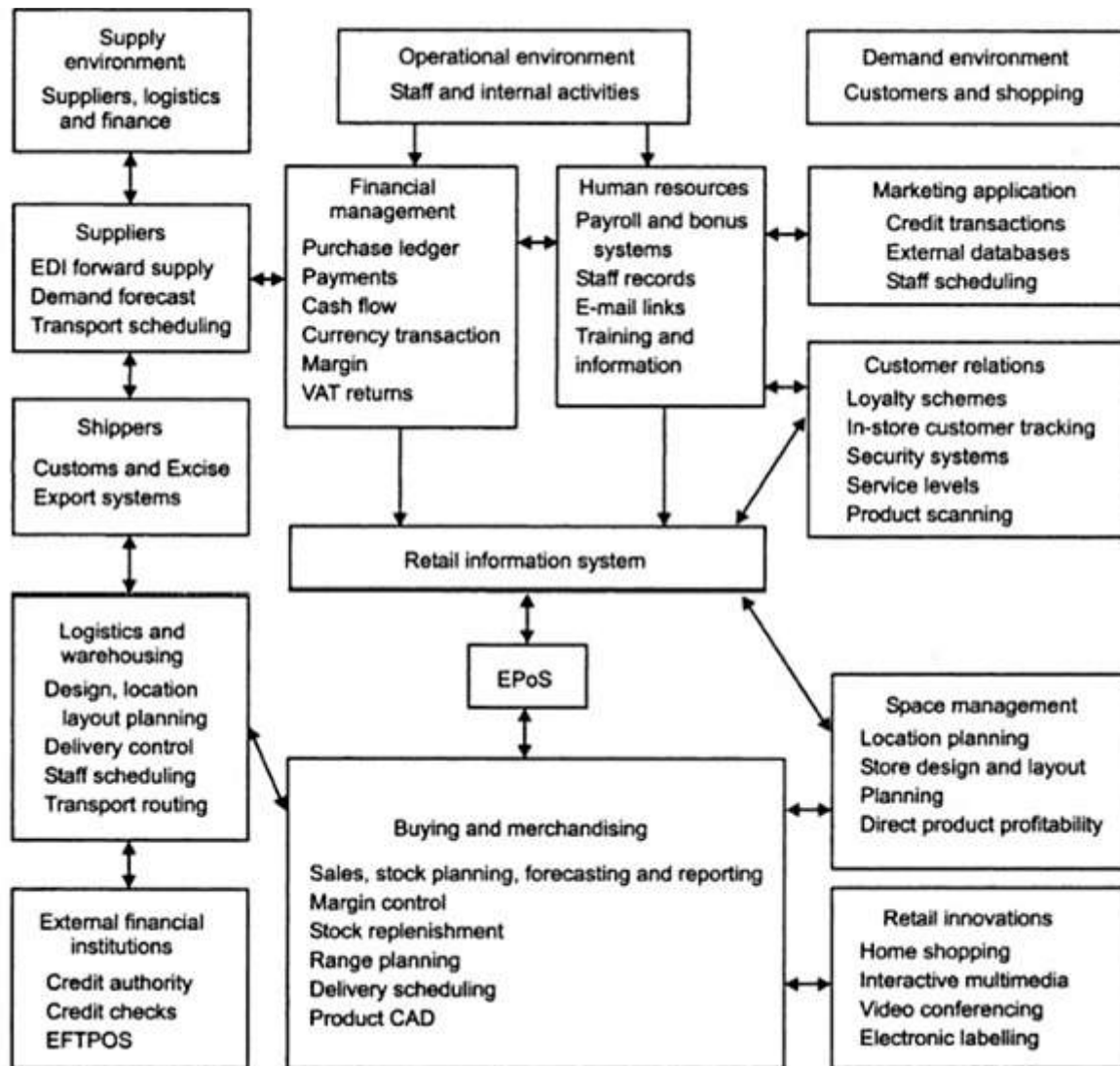
Supply Environment

 ➢ Suppliers
 ➢ Shippers
 ➢ Logistics and Warehousing
 ➢ External financial Institutions

Demand Environment

 ➢ Marketing Application
 ➢ Customer Relations
 ➢ Space Management
 ➢ Retail Innovations

Operational Environment

 ➢ Financial Management
 ➢ Human Resources
 ➢ Buying and Merchandizing

Structure and components of a Retail Information System

Retail Pro –Retail Management Software

Benefits of Retail Pro

Retail Pro is a total retail management system that covers Point of Sale, Store Operations, Customer Management, Back-Office, Analytics and Reporting, and other functions. Retail Pro 9 is one of the most comprehensive retail management software solutions available. Retail Pro 9 increases operational efficiency to deliver increased productivity and ultimately widen profit margins.

The feature-rich Point of Sale (POS), Store Operations, Back Office applications, and in-depth Reporting and Analytics offer extremely powerful retail management tools while allowing for endless customization and tailoring.

Flexibility to accommodate a variety of business models allows Retail Pro 9 to power the retail management system needs of specialty retailers of all sizes, from owner-operated brick and mortar stores to large corporate-run chains and nearly everything in between, including franchise operations.

With Retail Pro 9's powerful inventory management, reporting, and security, it's easy for retailers to improve operational performance and increase profitability.Retail Pro 9 is one of the few specialty retail solutions that can work seamlessly across borders. The retail management software is built as an international solution from the architecture up, allowing retailers to do business in multiple currencies while supporting local tax laws in any geography or language.

Standard processes, like the retailers' beginning and end of day procedures, can be effortlessly defined to meet a structured or unstructured methodology. Retail Pro 9's inherent flexibility allows retailers to decide what information gathering or procedures are executed by your team.

Retail Pro 9 is fully integrated with several accounting packages, including Sage MAS 90, Sage Business Works, Quickbooks, and Microsoft Dynamics GP: Accounting. Retail Pro's Universal Accounting Link can save valuable time and increase data accuracy between retail and financial systems.

Retail Pro 9's native API provides a proven foundation to meet integration requirements for the retail industry trusted ERP solutions.Retail Pro 9 provides seamless integration of E-Commerce with the retailers existing brick and mortar business.Retail Pro 9's intuitive user interface is extremely agile and adaptable. Easy to use and highly extensible, Retail Pro 9's user interface is designed to increase efficiency while promoting the retailer's brand. The user-friendly graphical interface is nearly limitless in the number of configurations, allowing the freedom to easily tailor screens to fit the retailer's exact requirements.

The robust and flexible reporting consolidates and presents all transactional data into easy-to-use reports to improve store performance.

An integrated reporting solution preloaded with a wide array of standard reports helps to make better, more informed decisions. Where the retailer's needs extend beyond the core reports one can leverage the power of an ODBC-compliant report writer to generate custom-tailored data providing one with actionable information.

Features of Retail Pro

Point of Sale and Checkout

- Quick and flexible item entry using barcodes, general descriptions, manual inventory lookup or optional touch screen item buttons

- Flexible customer lookup using name, phone, company or miscellaneous information like store card or driver's license

- Display as much or as little item and customer information as required on screen

- Issue and track fully-integrated gift cards, gift certificates and store credit across multiple store locations in real-time

- Fully integrated EFT payment processing that is fast, secure, reliable and PCI compliant.

- Centralized processing of merchandise returns and exchanges with built-in verification reduce fraudulent returns

- Automatic discounting/pricing at point of sale based on customer type (retail, wholesale, employees), number of units sold or season (date)

- Speed up POS transactions with user-defined touch screen cash buttons and quantity (multiplier) buttons

- Accept and utilize an unlimited number of foreign currencies at point-of-sale

- Easily place sales receipts on hold as needed, and un-hold them from any POS terminal

- Easily launch your e-commerce website (or a competitor's website) from point-of-sale to compare prices

- Perform quick price checks (including tax) and stock inquiries directly from point of sale without creating a new sales receipt

- Discreetly track specific suspicious activities like sales cancellations and system reboots occurring at point-of-sale that may require further investigation

- Quickly and discreetly track miscellaneous marketing and demographic information at point of sale to use later to better understand your customers and track your marketing ROI

- Easily track non-sale cash added or removed from the cash register, such as petty cash used to buy office supplies for the store

Layaways, Special Orders & Gift Registries

- ➢ Track layaways, customer special orders and backorders and take an unlimited number of deposits, which can be suggested and/or required

- ➢ Easily convert sales transactions to layaways or special orders

- ➢ Setup and manage gift registries that are available across multiple stores or only at a specific store location

Customer Management, Retention & Loyalty

- ➢ Track an unlimited number of customers

- ➢ Setup an unlimited number of user-defined fields to track miscellaneous customer info, such as size, favorite color, favorite brand, birthday, etc.

- ➢ Determine exactly what information is required for new customers to ensure that employees are entering all relevant information into the system

- ➢ Quick and easy access to customer purchasing history allows sales reps to provide personalized service and meaningful recommendations to customers

- ➢ Use Customer Security Levels to control exactly what Personally Identifiable Information about your customers can be viewed and/or edited by employees

- ➢ Integrated customer loyalty program allows for tier rewards based on customer spending, visits, profitability and other metrics

- ➢ Segment customers for marketing campaigns based on customer specific KPIs and/or purchasing metrics

- ➢ For a filtered list of customers (or a customer segment), easily print labels for targeted mailings, export to Excel for further manipulation or send to e-mail marketing programs

Inventory Control & Management

- ➢ Track inventory items across the entire product life cycle - from purchasing, to receiving, to transfers, to sales

- ➢ Quickly view on-hand, sold, received, on-order and in-transit quantities for each item across all store locations

- Track an unlimited number of inventory items and associated item images

- Predefine an unlimited number of style grid templates for all your apparel inventory management needs

- Create an unlimited number of user-defined fields to track miscellaneous attributes

- Assign an unlimited number of barcodes for each item

- Define an unlimited number of pricing levels for each item for store-based and customer-based pricing

- Track merchandise movement within sub locations of the same store location (ex: from stockroom to sales floor or sales floor to display area)

- Set maximum discount % to specific items to limit the impact of discounts on the items' profitability

- Create kits to bundle items together

- Track serial numbers through the entire product life cycle (from receiving to sales) or on specific transactions only

- Setup an unlimited number of tax codes to track item-specific taxing requirements, like local and regional-based tax structures

- Changes and corrections to item descriptions are applied system-wide so data remains consistent

Purchase Order Management & Transfers

- Automatically create purchase orders based on existing stock, minimum/maximum stock levels and customer order commitments

- Optimize merchandise replenishment through the transfer of overstocked or low-selling items based on need or as an even distribution

- Effectively manage your purchasing for all stores via a single 'master' purchase order and have those goods distributed automatically to the stores in need of stock

- Quickly and efficiently create purchase orders that meet vendor minimum order requirements (pre-packs)

- Prevent the ordering of specific items that have been discontinued or are out of season

- Receive merchandise with or without referencing a purchase order

- Distribute Advanced Shipping Notices to your stores to inform them of what to expect in their shipments prior to the goods meeting their destination

- Print barcodes and labels as needed or as part of the receiving process

Reports Library & Key Performance Indicators

- Personalized reports within seconds

- Over 150+ prebuilt reports available to help you run the business and make better decisions.

- Monitor sales activity throughout the day using graphical reports by store, vendor, employee and even hour of day for key metrics such as total sales, average sales and margin

- Analyze sales data to measure the effectiveness of pricing campaigns and to guide purchasing

- Built in statistics and KPIs available for inventory items and customers viewable directly from within Retail Pro or through the prebuilt reports

  - Item-level statistics including Sell Thru %, Stock to Sales Ratio, Turn, Days of Supply, Gross Margin Return on Investment (GMROI) help you better understand what's happening in your business and make more profitable decisions

  - Customer-level statistics including Total Visits, Average Sales Amount, Average Unit Items Sold, Average Margin $ help you better understand your customer's purchasing behavior and can be used to develop more targeted marketing campaigns and provide better customer service

- Designate role-based access levels to each report to ensure sensitive information is protected and reports are distributed safely and securely

- Schedule reports to run automatically

- Export reports to Excel, Notepad, PDF, HTML or Crystal Reports for further manipulation

- For more sophisticated reporting needs, any ODBC-compliant reports writer (like Crystal Reports) can be used to create custom reports for Retail Pro

Integrated E-Commerce

- Fully integrated E-Commerce allows near real time inventory and customer data sharing with Retail Pro saving you time

- Flexibility to custom design your online store to stay in tune with your brand and control every aspect of the customer experience

- Securely manage online payments and know your customers' information is safe

- Easily manage the fulfillment of web sales from picking ticket generation to shipment confirmation & tracking

- Web sales automatically appear in Retail Pro as sales transactions which can be seen in customer history

- Drive sales with advanced web features like featured items, promotions and active cross-sell suggestions

- Leverage built-in Search Engine Optimization and support for Social Media tools

- Track online sales activity in real-time with reports on sales, payments, backorders, and shipping

Ease of Use & Flexibility

- Each and every Retail Pro screen can be fully customized and designed without any programming to ensure that the screen is intuitive, relevant, and follows your business processes

- All printed documents (Sales Transactions, Sales Orders, Purchase Orders, etc.) can be fully customized and designed to ensure the documents adhere to your branding

- Every label, description and message in Retail Pro can be fully translated into any language or modified to your specific needs

Employee Security, Management & Productivity

- Flexible commission tracking system that allows appropriate rewards for differing levels of employee productivity

- Easily split a single commission between multiple employees involved in the same sale

- Create an unlimited number of user-defined security groups that controls user access to specific areas and functions within Retail Pro

- Accurately track employee sales performance by recording specific employee details for each sales transaction and optionally requiring users to logon between each transaction

- ➢ Establish sales goals for stores and individual employees that can then be compared to sales performance

- ➢ Limit the amount of discounts each employee is able to give at point of sale

Support for Franchise Businesses

- ➢ Support for both single and multi-brand franchising models

- ➢ Gain broad visibility into franchisee sales performance as well as detailed transactional data for all levels of business - for a single franchisee store, all stores across the entire franchise enterprise, and everything in between

- ➢ Achieve greater accuracy and transparency into franchisee business activity and revenue numbers in order to verify and expedite royalty payments and fees

- ➢ Gather actionable information on customer activity, marketing/sales effectiveness and employee efficiency in order to monitor, improve and enhance the franchise business

- ➢ Provide franchisees with access to their own data (sales, merchandising, inventory information, employee productivity, pricing, promotions and more) while ensuring that the data remains secure and inaccessible to others franchisees

- ➢ Maintain visibility into franchisees across borders with automatic conversion of currencies to single currency when viewing or reporting on franchisee information

- ➢ Increase sales and customer loyalty by issuing and tracking fully-integrated gift cards, gift certificates and store credit across the entire franchise enterprise

- ➢ Create purchase orders for specific stores, all stores for a franchisee or all stores across all franchisees to take advantage of volume discounts

- ➢ Quickly and easily manage inventory updates and changes across all franchisees

- ➢ Optionally share customer information across all franchisees

Retail Pro- Screenshots

The following screenshots below show some of the screens in Retail Pro 9 software. Sample report screenshots are also included below.

[*Source:* http://www.retailprosoftware.com/retailpro/screenshots.php]
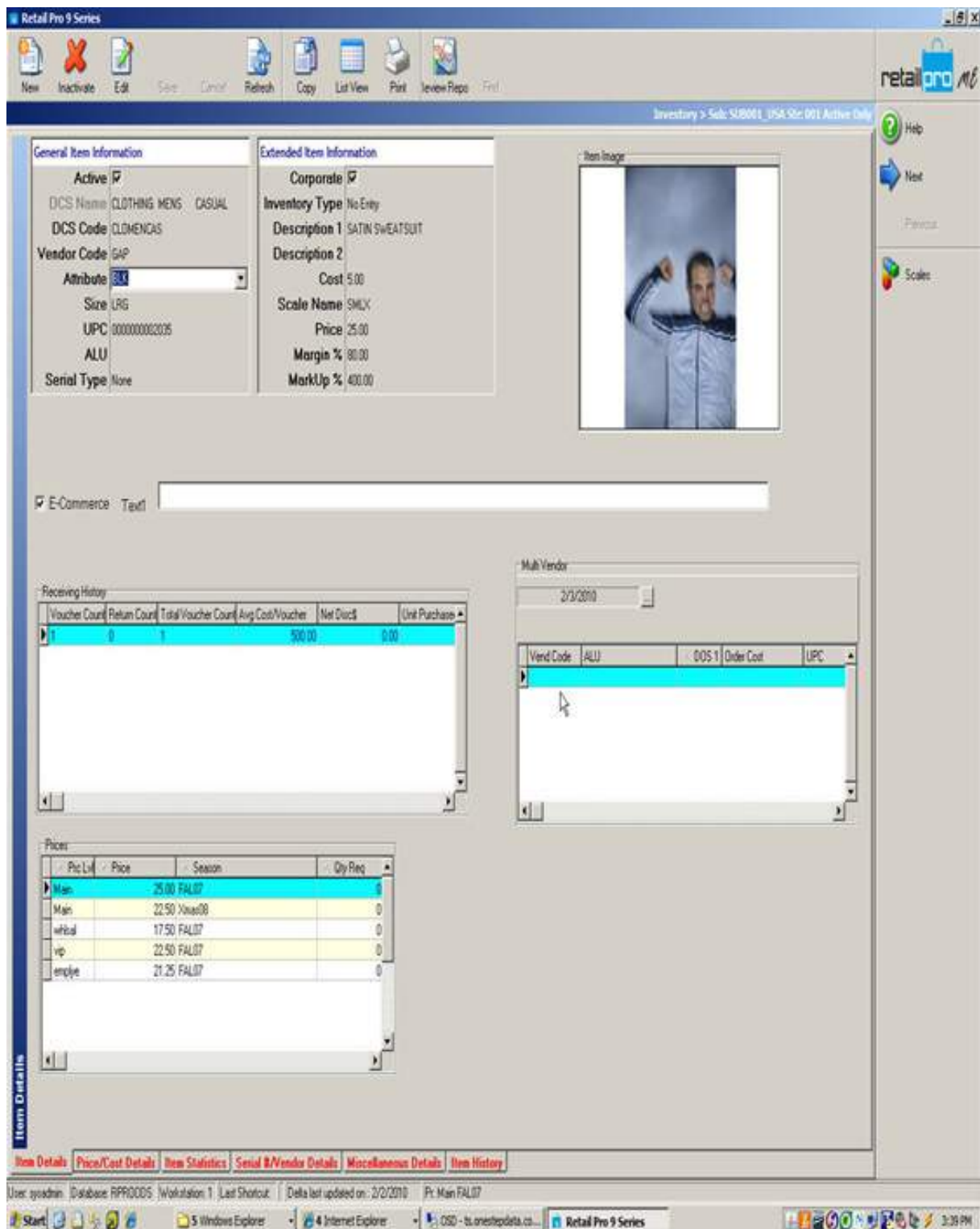
Illustrative Screenshot of Inventory Item in Retail Pro – Retail Management software

[*Source:* http://www.retailprosoftware.com/retailpro/screenshots.php]

Illustrative Screenshot of Purchase Order in Retail Pro – Retail Management software

[*Source:* http://www.retailprosoftware.com/retailpro/screenshots.php]
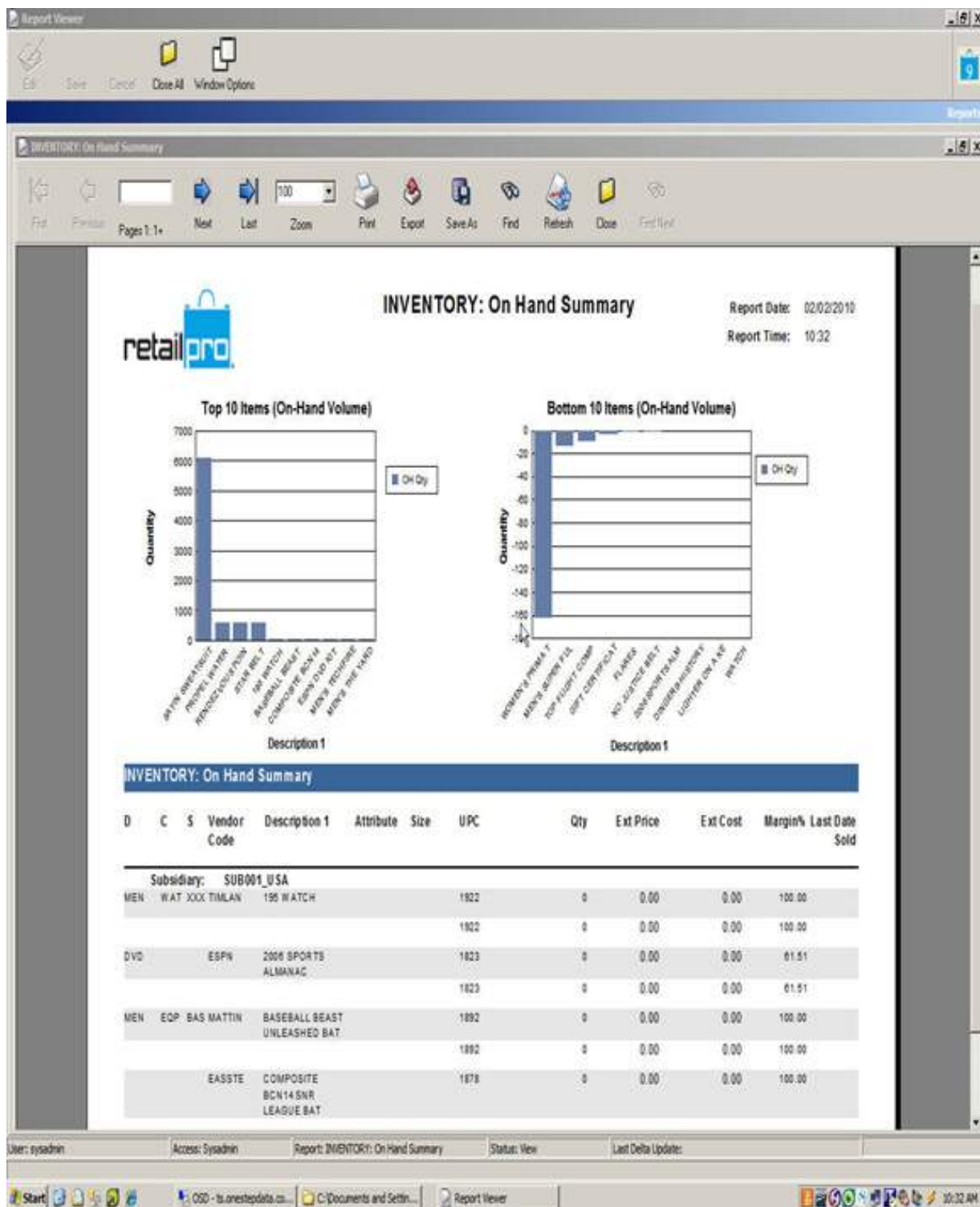
Illustrative Screenshot of Inventory On-Hand Summary Report in Retail Pro – Retail Management software

[*Source:* http://www.retailprosoftware.com/retailpro/screenshots.php]
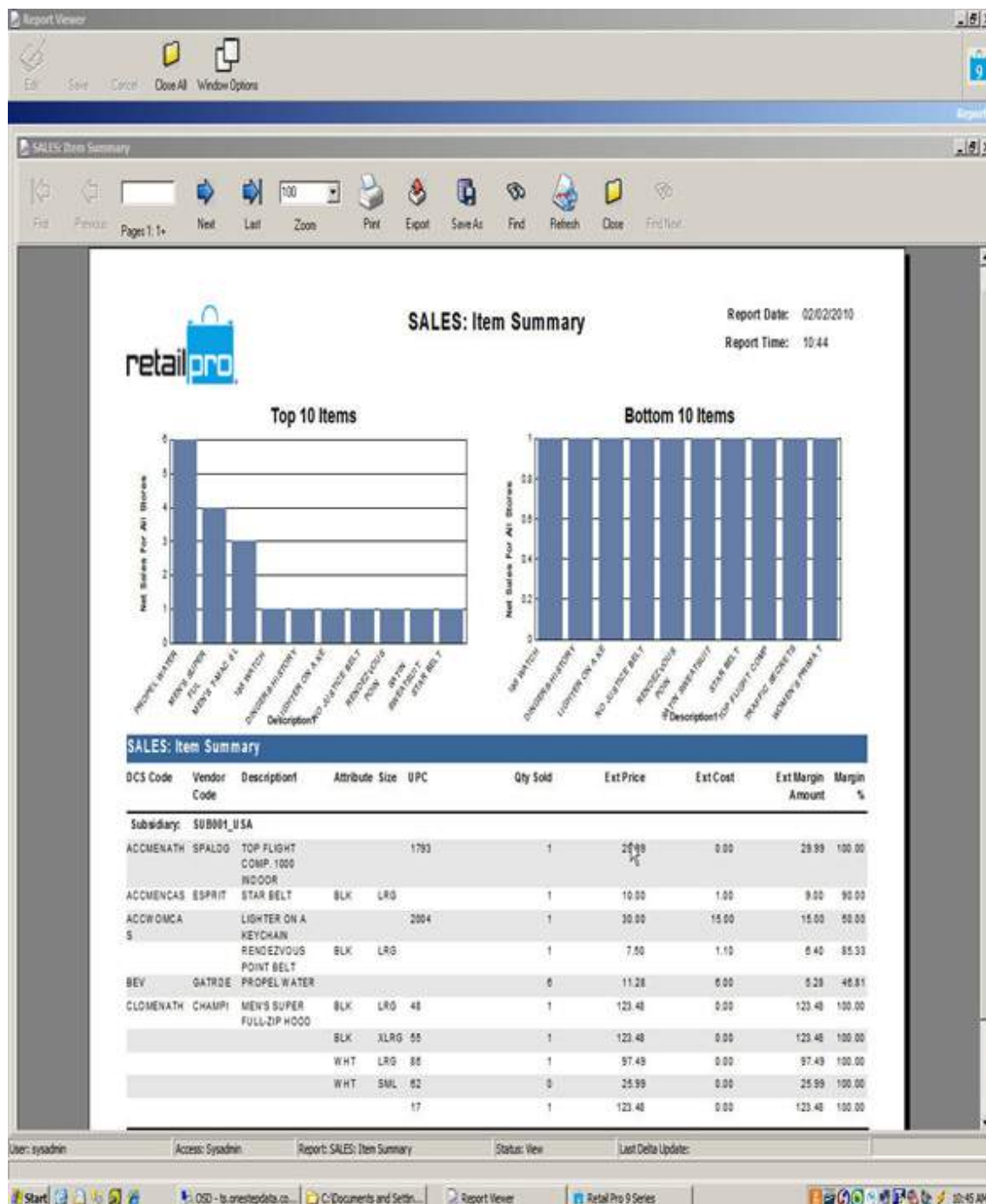
Illustrative Screenshot of Sales – Item Summary Report in Retail Pro – Retail Management software

Conclusion

This lesson has discussed the role and purpose Information Systems in the Retail environment. It also described the structure of a Retail Information System by delineating the components in the Supply environment, demand environment and operation environment of a Retail business. With illustrations from a popular Retail Management Software, namely, Retail Pro, this lesson has highlighted the useful features of a Retail Information System.

Learning Objectives

The objectives of this lesson are to

- ➢ Highlight the importance of marketing research to a retailer
- ➢ Outline the steps involved in conducting marketing research
- ➢ Explain the tools for collecting data from customers
- ➢ Describe the role of technology in gathering data in a retail environment
- ➢ Explain the new technologies available for gathering data in a retail store

At the end of this lesson, you will be able to

- ➢ Understand the importance and process of marketing research
- ➢ Develop an awareness about the use of technology for data collection in a retail store
- ➢ Appreciate the utility of bar code and RFID tags which are commonplace in a retail environment

Introduction

Marketing decisions involve issues that range from fundamental shifts in the positioning of a business or the decision to enter a new market to narrow tactical questions of how best to stock a grocery shelf. The context for these decisions is the market planning process, which proceeds sequentially through four stages; situation analysis, strategy development, marketing program development, and implementation. This is a never-ending process, so the evaluation of past strategic decisions serves as an input to the situation assessment. During each stage, marketing research makes a major contribution to clarifying and resolving issues and then choosing among decision alternatives. Marketing research is not an immediate or an obvious path to finding solutions to all managerial problems. A manager who is faced with a particular problem should not instinctively resort to conducting a marketing research to find a solution to the problem but should consider various factors before ordering marketing research which will be discussed later in this lesson.

Marketing Research

Introduction to Marketing Research

Retail marketing research implies the following steps: the definition of the problem to be enquired, secondary data examination, data examination, solution proposal and solution implementation. If the problem is not correctly defined, applying a secondary data might enlighten the situation, but if secondary data is not available, primary data is the only option. The potential disadvantages might be: costs, limited access, collecting irrelevant data.

Kinds of Questions Addressed by Marketing Research

I. Planning	a.	What kinds of people buy our products? Where do they live? How much do they earn? How many of them are there?
	b.	Are the markets for our products increasing or decreasing? Are there promising markets that we have not, yet reached?
	c.	Are the channels of distribution for our products changing? Are new types of marketing institutions likely to evolve?
II. Problem Solving	a.	Product
		1. Which of various product designs is likely to be the most successful?
		2. What kind of packaging should we use?
	b.	Price
		1. What price should we charge for our products?
		2. As production costs decline, should we lower our prices or try to develop higher quality products?
	c.	Place
		1. Where, and by whom, should our products be sold?
		2. What kinds of incentives should we offer the trade to push our products?
	d.	Promotion
		1. How much should we spend on promotion? How should it be allocated to products and to geographic areas?
		2. What combination of media - newspapers, radio, television, magazines - should we use?
III. Control	a.	What is our market share overall? In each geographic area? By each customer type?
	b.	Are customers satisfied with our products? How is our record for service? Are there many returns?
	c.	How does the public perceive our company? What is our reputation with the trade?

Source: CHURCHILL, 1995, P.9.

Questions that marketing research can answer

Marketing Research (MR) rather briefly refers to all types of Research activities conducted in the field of marketing within the similar process. Meanwhile the American Marketing Association defines MR, is the function which links the consumer, customer and public to the marketer through information that is used to identify and define marketing

opportunities and problems; refine and evaluate marketing actions, monitor marketing performance and improve understanding of marketing as a process. MR specifies the information related to these issues, designs the methods for collecting information, manages and implements the data collection1process, analyzes the data and derives the results and finally communicates the findings and their implications.

There are important elements in this definition. MR deals with all phases of both goods and services marketing. It involves the application of research techniques to the solution of marketing problems of any sort, be they planning, problem solving, or control issues. The definition indicates that MR links the organization with its market environment.

In addition to its role in the actual collection of data and their analysis, it plays an important role for the implications of what the collected information suggests. Therefore for MR to be effective it should be relevant, timely, efficient, accurate and ethical.

Marketing Research Process

MRinvolves the determination of the marketing strategy to enter the market that had been previously examined. We have to establish a marketing policy based, on the information collected in market research. For example,

➢ What will be the prices of our products?

➢ How shall we organize marketing channels?

➢ What marketing policies are followed by marketing?

These questions could be answered by the marketing policy. Meanwhile, in most cases market and marketing research are interrelated and being used interchangeably. In order to address all the issues or functions noted above, all the data must first be systematically gathered, recorded and analysed; secondly, through the interpretation of these data one should prepare the Research Report. These tasks are logically viewed as a sequence called the marketing research process, which consists of the following steps:

1. Formulate the Problem
2. Determine Research Design and Data Sources
3. Design Data Collection Methods and Forms
4. Design Sample and Collect Data
5. Analyze and Interpret Data
6. Prepare the Research Report

Although, these steps usually occur in this general order, the development of research purpose that links the research to decision making, and the formulation of research objectives that serves to guide the research, is unquestionably the most important steps in the research process. If the steps taken are correct, the research stands a good chance of being both useful and appropriate. If they are bypassed or wrong, the research will then almost surely be wasteful and irrelevant. A typical research process is shown in the figure below.
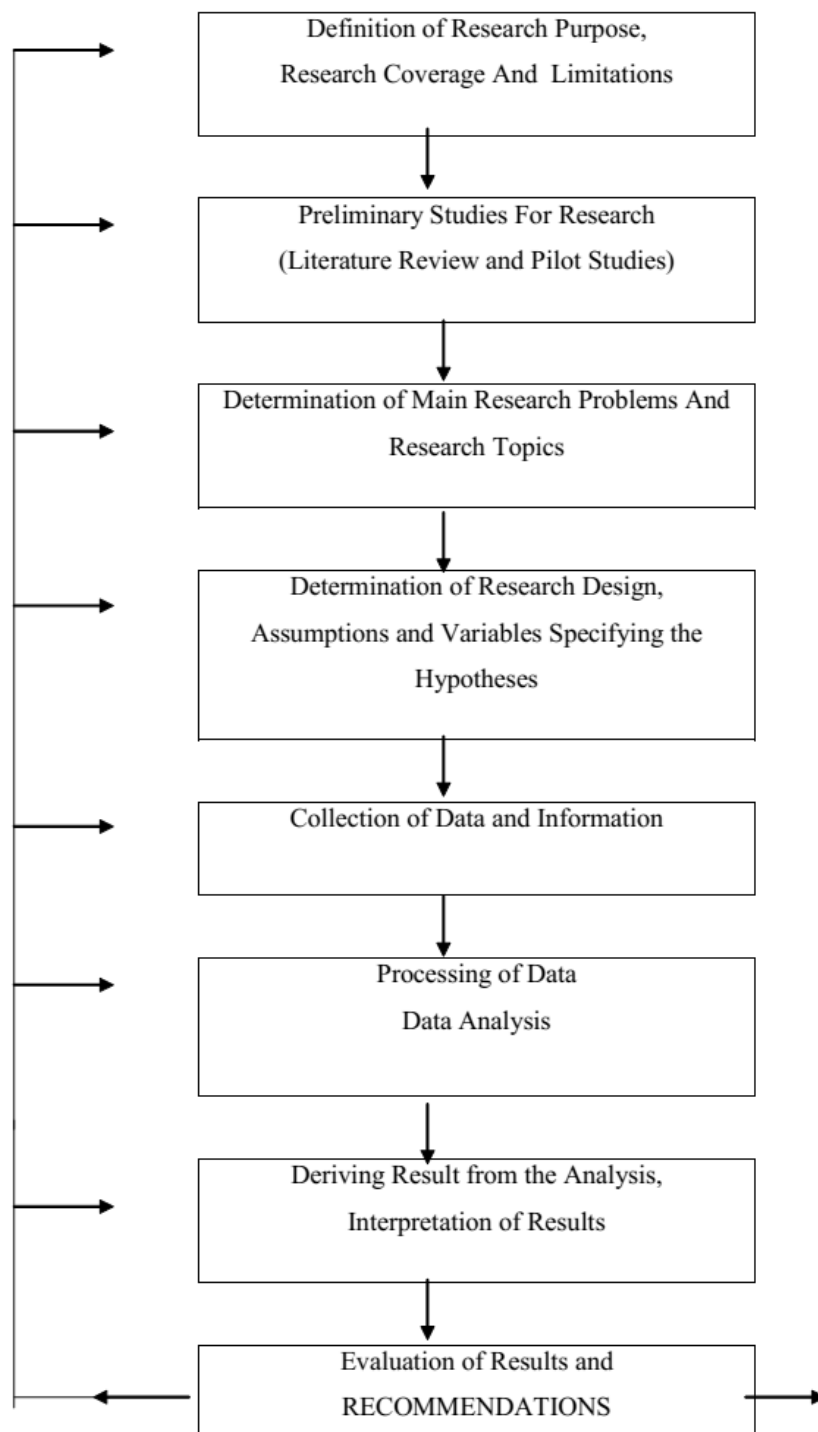
Steps in Marketing Research process

Typical questions which need resolving in each stage

Stage in the Process	Typical Questions
Formulate problem	What is the purpose of the study - to solve a problem? Identify an opportunity?
	Is additional background information necessary?
	What information is needed to make the decision?
	How will the information be used?
	Should research be conducted?
Determine research design	How much is already known?
	Can a hypothesis be formulated?
	What types of questions need to be answered?
	What type of study will best address the research questions?
Determine data collection method and forms	Can existing data be used to advantage?
	What is to be measured? How?
	What is the source of the data ?
	Are there any cultural factors that need to be taken into account in designing the data-collection method? What are they?
	Are there any legal restrictions on the collection methods? What are they?
	Can objective answers be obtained by asking people?
	How should people be questioned?
	Should the questionnaires be administered in person, over the:-phone, or through the mail?
	What specific behaviours should the observers record?
	Should electronic or mechanical means be used to make the observations?
	Should structure or unstructured items be used to- collect the data?
	Should the purpose of the study be made known to the respondents?
	Should rating scales be used in the questionnaires?
Design sample and collect the data	What is the target population?
	Is a list of population elements available?
	Is a sample necessary?
	Is a probability sample desirable?
	How large should the sample be?
	How should the sample be selected?
	Who will gather the data?
	How long will the data gathering take?
	How much supervision is needed?
	What operational procedures will be followed?
	What methods will be used to ensure the quality of the data collected?
Analyze and interpret the data	Who will handle the editing of the data?
	How will the data be coded?
	Who will supervise the coding?
	Will computer or hand tabulation be used?
	What tabulations are called for?
	What analysis techniques will be used?
Prepare the research report	Who will read the report?
	What is their technical level of sophistication?
	Are managerial recommendations called for?
	What will be the format of the written report?
	Is an oral report necessary?
	How should the oral report be structured?

Source: CHURCHILL, 1995, P.85.

Functions to be performed in each step of the Marketing Research process

One of the more valuable roles that MR can play is to determine the definition of the problem to be solved. Only when the problem is carefully and precisely defined, can research be designed to provide pertinent information. Part of the process of problem definition includes specifying the objectives of the research project that might be undertaken. Each project should have one or more objectives. A problem well defined is half solved, this is especially true in MR, for it is only when the problem has been clearly defined and the objectives of research precisely stated that research can be designed properly.

Research Design is simply the framework for a study used to guide in collecting and analyzing data. The source of information for a study and the research design go hand in hand. They both depend on how much is known about the problem.

If relatively little is known about the phenomenon to be investigated, exploratory research will be warranted. It is used when one is seeking insights into the general nature of a problem, the possible decision alternatives, and relevant variables that need to be considered. Typically, there is little prior knowledge on which to build the research methods which are highly flexible, unstructured and qualitative. Exploratory research is also useful for establishing priorities among research questions and for learning about practical problems of carrying out the research. Studies may involve reviewing published data, interviewing people, conducting focus groups, investigating literature. This type of research can be applied to any problem for which little is known. The output of an exploratory study will not be answered but more specific questions or statements of tentative relationships will be addressed. A survey of literature and analysis of selected cases can also be used to advantage in exploratory research.

If, on the other hand, the problem is precisely and unambiguously formulated, Descriptive or Causal research is needed. In this research design, data collection is not flexible but is rigidly specified, with respect to both data collection forms and the sample design.

Descriptive Research embraces a large proportion of MR. The purpose is to provide an accurate picture of some aspects of marketing environment. In descriptive research hypotheses often will exist, but they may be tentative and speculative. In general, the relationships studied will not be causal in nature. However, they may still have utility in prediction. They generally employ a structured questionnaire and the emphasis is on generating an accurate picture of relationships between and among variables. Descriptive studies typically rely heavily on cross tabulation analysis or other means of investigating the association among variables, such as Regression Analysis. The great majority of Descriptive studies are cross sectional, although some use longitudinal information.

When it is necessary to show that one variable causes or determines the values of other variables, a causal research approach must be used. Evidence of a relationship or an association among the variables is useful; otherwise, we would have no basis for even inferring that causality might be present. To go beyond this inference we must have reasonable proof that one variable preceded the other and that there were no other causal factor that could have accounted for the relationship. Because the requirements for proof of causality are so demanding, the research question and relevant hypotheses are very specific.

The research designer has a wide variety of research methods to consider, either independently or in combination. They can be grouped first, according to whether secondary or primary sources of data are used. Secondary data are already available, because they were ready or collected for some other purposes. Primary data are collected to address a specific objective. A researcher who cannot find the data needed in secondary sources, resort to primary data collection.

The types of data of interest to marketing research include:

- ➢ Demographic/Socio Economic Characteristic,
- ➢ Psychological/Life Style, Attitudes/Opinions,
- ➢ Awareness /Knowledge, Intentions/Motivations,
- ➢ Behaviour Of Individual Or Groups

For primary data collection, survey (communication) methods could be used in different ways, such as personal or group interviews, telephone and mail surveys. in addition to that, observations may also be used for primary data.

Experiments are, also, designed in various forms like Latin Square, Split Runs, Factorial Design, Difference Tests and other forms. Experiments are the best means we have for making inferences about cause and effect relationships, because, if designed properly; they provide the most compelling evidence about concominant variation, time order of occurrence of variables, and elimination of other factors. A key feature of experiment is that research is able to control some factors. Because the emphasis is on testing a specific relationship, causal design demands a clear specification of what is to be and how it is to be measured. Structural data collection instruments should be used. Experiments could also use observational mode of data collection.

Surveys can be designed to capture a wide variety of information, generally, through the interview. Respondents have been selected by using different sampling methods.

However, the problems of getting meaningful results from the interview process stem from the need to reasonably satisfy the following conditions:

- ➢ Population has been defined correctly
- ➢ Sample is representative of the population
- ➢ Respondents to be interviewed are available and willing to cooperate.
- ➢ Respondents understand the question
- ➢ Respondents have the knowledge, opinions, attitudes or facts required.
- ➢ Respondents are willing and able to respond.
- ➢ Interviewer understands and records the responses correctly

However, those conditions often are not satisfied because of interviewer error, ambiguous interpretation of both questions and answers, and errors in formulating responses.

The researcher may amass a mountain of data, but these data are useless unless the findings are analyzed and the results interpreted in the light of the problem at hand. Data analysis generally involves the coding and editing of data, tabulation and statistical analysis and interpretation of the results.

Data Analysis in MR has been conducted for finding the basic statistical parameters from the data, and for examinations among the variables.

Statistical tests applied to the data, if any, are somewhat unique to the particular data collection instruments used in the research. Those tests should be anticipated before data collection is begun, if possible, to assure that the data and analysis will be appropriate to the problem as specified. One useful classification of these considerations is that the appropriate techniques depend on the type of data, the research design, and the assumptions underlying the test statistics and its related consideration, the power of the test. The statistical techniques can be broadly classified as Univariate and Multivariate techniques, based on the nature of the problem.

Univariate techniques are appropriate when there is a single measurement of each of the sample objects, or when there is several measurement of each of the observations, but each variable is analyzed in isolation. On the other hand, Multivariate techniques are appropriate for analyzing data when there are two or more measurements of each observation and variables are to be analyzed simultaneously. Multiple Regression, Discriminant Analysis, Variance Analysis for Multiple Dependent Variables, Canonical Correlation,

Factor Analysis, Cluster Analysis, e.g., are typical examples of multivariate techniques. On the other hand, Chisquare, T Test, Z Test for two or more samples and analysis of variance is included in Univariate techniques.

Writing the Research Report is the final step or is the end of the journey. The research report is the document submitted to management or to the public and it summarizes the research results and conclusions. It is all that many executives will see of the research report, and it becomes the standard by which that research is judged. Thus, it is imperative that the research report be complete, accurate, clear and concise.

Tools for Collecting Data

There are several data collection methods, each with its own advantages and disadvantages. Problems researched with the use of appropriate methods greatly enhance the value of the research. Data can be collected in a variety of ways, in different settings—field or lab—and from different sources, as we have just discussed. Data collection methods include interviews—face-to-face interviews, telephone interviews, computer-assisted interviews, and interviews through the electronic media; questionnaires that are either personally administered, sent through the mail, or electronically administered; observation of individuals and events with or

without videotaping or audio recording; and a variety of other motivational techniques such as projective tests. Interviewing, administering questionnaires, and observing people and phenomena are the three main data collection methods in survey research. Projective tests and other motivational techniques are also sometimes used to tap variables. In such cases, respondents are usually asked to write a story, complete a sentence, or offer their reactions to ambiguous cues such as inkblots or unlabeled pictures. It is assumed that the respondents project into the responses their own thoughts, feelings, attitudes, and expectations, all of which can be interpreted by trained psychologists.

Although interviewing has the advantage of flexibility in terms of adapting, adopting, and changing the questions as the researcher proceeds with the interviews, questionnaires have the advantage of obtaining data more efficiently in terms of researcher time, energy, and costs. Unobtrusive methods of data collection such as its extraction from company records have the advantage of accuracy. For instance, sales records will probably give a truer and more reliable picture of the purchase patterns of customers than information elicited directly from the respondents. Projective tests are usually administered by researchers who have had training in administering them and interpreting the results. Though some management research has been done using projective techniques, they are more frequently

used in marketing research. Modern technology is increasingly playing a key role in shaping data collection methods. Computer-assisted surveys, which help both interviewing as well as preparing and administering questionnaires electronically, are on the increase. Computer-assisted telephone interviewing (CATI), interactive electronic telephonic surveys, as well as administering questionnaires through electronic mail (e-mail), are now being used to facilitate data gathering.

Some of the software available for questionnaire design, response data entry, data analysis, and web and e-mail surveys are SumQuest or SQ Survey Software, Professional Quest, and Perseus.

The choice of data collection methods depends on the facilities available, the degree of accuracy required, the expertise of the researcher, the time span of the study, and other costs and resources associated with and available for data gathering.

Interviewing

One method of collecting data is to interview respondents to obtain information on the issues of interest. Interviews could be unstructured or structured, and conducted either face to face or by telephone or online.

- Unstructured interviews are so labeled because the interviewer does not enter the interview setting with a planned sequence of questions to be asked of the respondent. The objective of the unstructured interview is to bring some preliminary issues to the surface so that the researcher can determine what variables need further in-depth investigation.

- Structured interviews are those conducted when it is known at the outset what information is needed. The interviewer has a list of predetermined questions to be asked of the respondents either personally, through the telephone, or through the medium of a PC. The questions are likely to focus on factors that had surface d during the unstructured interview s and are considered relevant to the problem.

- In face-to-face or direct interviews, the researcher can adapt the questions as necessary, clarify doubts, and ensure that the responses are properly understood, by repeating or rephrasing the questions. The researcher can also pick up nonverbal cues from the respondent.

- The main advantage of telephone interviewing, from the researcher's point of view, is that a number of different people can be reached (if need be, across the country or even internationally) in a relatively short period of time.

> With computer-assisted interviews (CAI), thanks to modern technology, questions are flashed onto the computer screen and interviewers can enter the answers of the respondents directly into the computer. There are two types of computer-assisted interview programs: CATI (computer-assisted telephone interviewing) and CAPI (computer-assisted personal interviewing).

Questionnaires

A questionnaire is a preformulated written set of questions to which respondents record their answers, usually within rather closely defined alternatives. Questionnaires are an efficient data collection mechanism when the researcher knows exactly what is required and how to measure the variables of interest.

Questionnaires can be administered personally, mailed to the respondents, or electronically distributed.

> When the survey is confined to a local area, and the organization is willing and able to assemble groups of employees to respond to the questionnaires at the workplace, a good way to collect data is to personally administer the questionnaires.

> The main advantage of mail questionnaires is that a wide geographical area can be covered in the survey. They are mailed to the respondents, who can complete them at their convenience, in their homes, and at their own pace. However, the return rates of mail questionnaires are typically low.

Observational Surveys

Whereas interviews and questionnaires elicit responses from the subjects, it is possible to gather data without asking questions of respondents. People can be observed in their natural work environment or in the lab setting, and their activities and behaviours or other items of interest can be noted and recorded.

> Where the observer has a predetermined set of categories of activities or phenomena planned to be studied, it is a structured observational study.

> Observing events as they take place may also be a part of the plan as in many qualitative studies. In such cases, the observer will record practically everything that is observed. Such a study will be an unstructured observational study.

Role of Technology in Gathering Data

Shopping habits have changed drastically in the past few years. Retailers are looking for new technologies that may help them comprehend and adapt faster to a new scenario within the store. Manufacturers of consumer packaged goods are also trying to boost sales investing in new analytics that may help them develop products based on what consumers want. Shoppers are getting savvier and competition is fierce, marketers believe that one of the ways of keeping up with them is by understanding their own customers better than anyone else. Observation is the key to shopper research as it helps discern between what shoppers say and what they actually do.

Ecommerce sites like Amazon have based their success in leveraging the power of information. By monitoring consumers and detecting patterns to improve navigation and offers and employing cookies to remember personal settings, they have been able to personalize shopping experiences. Likewise, several tools have emerged to provide real-time in-store analytics and they are already being implemented worldwide. Companies are testing these technologies with the objective of using them to decide how to improve store layouts, reward frequent buyers and offer customized coupons, for example.

Some years ago, most observational research was carried out by in-store observers. They were responsible for collecting shopper activity data for further analysis. Even though the approach offers a detailed level of information on demographics, it is very costly and time consuming. It requires trained personnel and it is almost impossible to track behaviour 24×7.

Technologies Used to Acquire Data

In-store video cameras are being used to gain insights into store traffic and see where conversion occurs. **Video intelligence** offers general route data, stopping points and may help gain insights to improve workforce management but lack of data at the product level; they may be used to fix traffic bottleneck in real time – showing which aisles are popular or how many cash registers need to be open at a specific time. But the system relies heavily on efficient scheduling and forecasting traffic and demand. This may take up to two years to implement properly, though.

High-resolution video cameras are also being tested for facial analysis by monitoring shoppers' reactions and moods. In general, using in-store cameras create an overwhelming volume of information that may require a fulltime data scientist to process. Footages need to be stored and labelled for future reference as well.

In order to attain foot traffic information, some retail firms embed **wireless transmitters** in shopping carts, around the store and combine them with overhead sensors that provide useful data about how shoppers move and where they stop. One disadvantage is that this is specifically tied to the cart, not the shopper. How often do we notice abandoned shopping carts for long periods of time while shoppers wander elsewhere? What happens with multi-member groups?

Probably in an attempt to solve this issue, some experiments are being made with individual **RFID cards** being distributed to separate shoppers. This offers more accurate information detailing specific behaviour in real time although it requires customers´ collaboration and loses objectivity.

Radio frequency identification (RFID) is an automatic identification system – like bar codes – that transmits the identity (a unique serial number) of an object or person wirelessly, using radio waves. RFID tags are used in many industries and contain electronically stored information.

An Electronic Product Code (EPC) is one common type of data stored in a tag. When EPC tags are attached to products or promotional material, customers can acquire more relevant information or exchange prizes while in the store. In turn, the store is able to record those customers' behaviours by the way they are handling the products.

For example, it can reveal how many times a certain product has been moved by potential buyers or it can activate digital content displays near those products when placed on a RFID hotspot.

The software gathers each read event (each time a product is handled) specifying movements of the items throughout the day. This information can then be used to compare that data with actual purchases at the point of sale. New marketing insights may arise as RFID tags will help discern the level of interest that each item generates in shoppers and may indicate if the digital content displayed helps boost sales of those products.

Eye-tracking technology has been around for many decades; nowadays it is being used for testing advertising, user interfaces and websites as well. There are companies that provide eye-tracking glasses to shoppers in controlled environments to test where they focus their attention along the path to purchase.This technology works with an eye tracker that records exactly where the shopper is looking and for how long. This recorded footage is later used by analysts and moderators to carry out a qualitative interview with the shopper and ask further questions regarding the decisions made in the shopping context.

Use of eye-tracking technology in a retail environment

The clear advantage of using eye-tracking technology is that it provides valuable information regarding visibility (signage, products and merchandising) at the point-of-sale. By understanding how shoppers navigate and "see" the store, marketers will be able to minimize confusion and frustration and improve engagement with brands where it matters the most. Nothing can be sold without being seen first.

The disadvantage of this type of monitoring is that it requires shoppers' collaboration and involvement in an artificial environment and that it is not applicable for a quantitative study of more than a hundred shoppers for now.

Some retailers use **3D sensors** (like Microsoft Kinect and Primesense) and proprietary algorithms for tracking shopper behaviour in the store, creating real event metrics at product level. As the cameras track movements, it does not affect shoppers' behaviors nor does it need their collaboration. This technology detects where conversion occurs, creates hot activity zones in maps, flow analysis and delivers valuable reports with no need of further data scientists.

Retailers can measure shelf events 24×7 with no additional personnel cost. In this way, it generates metrics similar to Google Analytics for the real world. It can also be usedto react in real time nudging the shopper with highly targeted and contextualized messages (Mobile Advertising, Digital Signage Information).
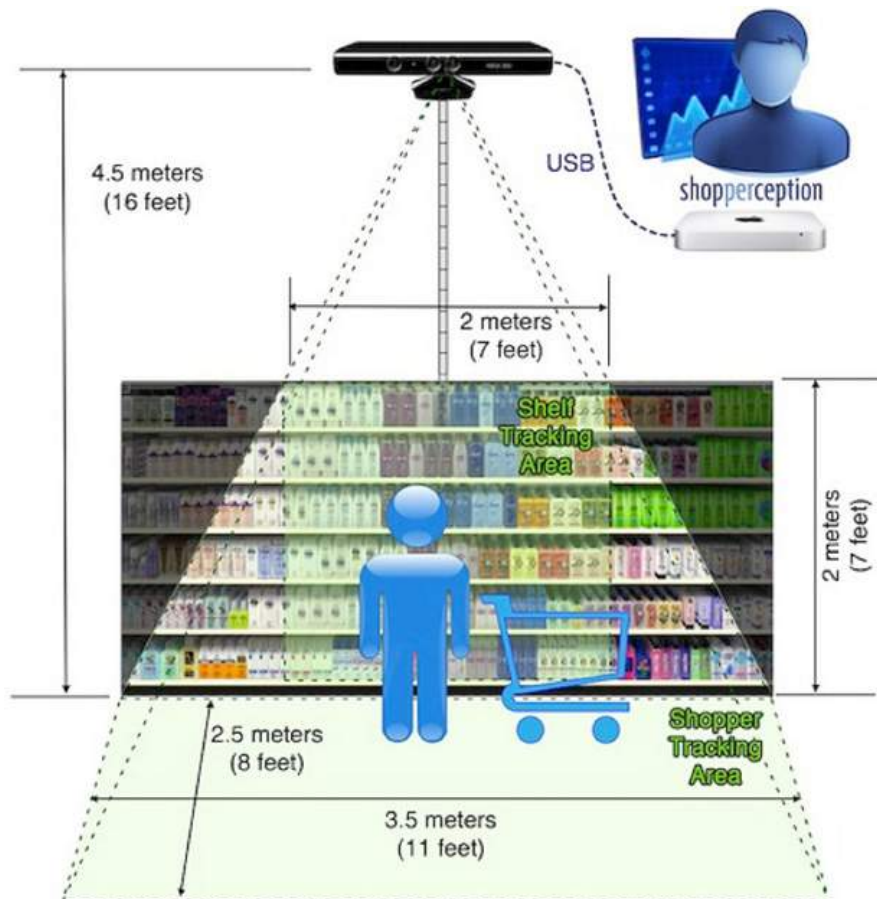
Use of technology that leverages motion sensors to provide in- store advertising, market research and operations solutions for a Retailer

To determine the specific placement and share of consumer attention for retail items, in addition to 3D motion, heat tracking cameras are placed over shelves and aisles. These determine what customers reach for and look at, creating heat maps of popular items like the one below.
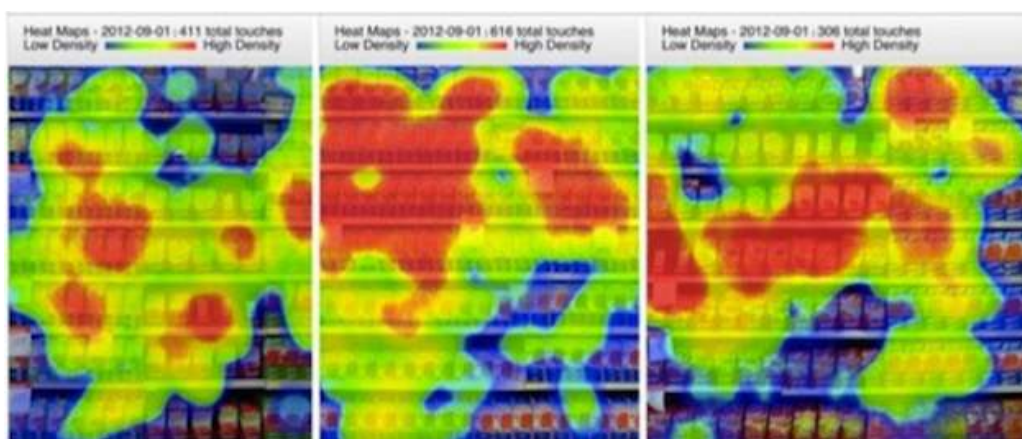
Use of heat-tracking technology in a Retail environment

There are also solutions that provide **smart phone tracking** to monitor foot traffic within shopping malls and stores. This is done by using the phone's International Mobile Subscriber Identity number or Media Access Control address that is transmitted when the device's Wi-Fi is enabled.

Nomi is a start-up that lets retailers track shoppers through their mobile phones, by allowing in-store wireless routers to pick up nearby phone signals and pull out completely anonymous, non-invasive data.

The data presented by Nomi is similar to what you find on Google Analytics, such as how many returning customers visit the store, the number of unique visits each day, and the average time spent in the store.

Nomi presents the data in a clean, visual representation and allows retailers to measure the success of various marketing campaigns such as how a new window display, or Facebook promotion can affect foot traffic.

[*Source:* http://www.psfk.com/2013/02/retailers-tracking-shoppers.html]

Use of location-based marketing technology to track Smartphones in a Retail environment

This allows retailers to monitor shoppers' movements within stores and also to combine this information with previous visits of the same shopper as each smart phone provides a unique identity.

This is a huge opportunity for retailers and brands to better engage with this hyper-connected shopper and enhance the omnichannel experience as well as delivering relevant messages to the right shopper at the right time and place. The shopping experience can become more personalized and timely by tracking buyers' location and online activity in real time once the buyer opts-in to receive the service.

As we have already discussed, with geofencing, a consumer inside a specified area receives certain ads, while a consumer outside the area does not. Being hyper local, these applications offer a significant opportunity to drive foot traffic into stores.

When a shopper volunteers to provide some personal information, either by downloading a retailer's app or using its Wi-Fi, a profile of that shopper is created. It can provide salespeople and marketers with the number of recent visits to that store, what products that shopper browsed on the retailers' website, purchase history and even the path the shopper took the last time he visited the store.

Some consumers seem pleased to trade privacy for deals, but privacy should never be taken lightly, though. For example, when Nordstrom posted a sign telling customers they were being tracked, some shoppers were unnerved and some complaints were filled.

Studies reveal that shoppers are more prone to sharing personal information in exchange for some kind of deal, prize or incentive. For example, 47 percent of women would willingly share their mobile phone location with a retailer in return for a $5 credit, and 83 percent would do so for a $25 credit. Behavioural data collected from wireless handheld devices, digital videography, eye-tracking and tools like Shopperception(www.shopperception.com) has impacted the way companies think about in-store marketing.

By focusing on what shoppers do – as opposed to what shoppers say they do, strategies are now grounded on observed shopper behaviour instead of assumptions. Retailers and brands have the opportunity to track and analyze valuable shopper information that will help create new ways to engage with their customers, seduce new shoppers and foster long-term loyalty at the same time

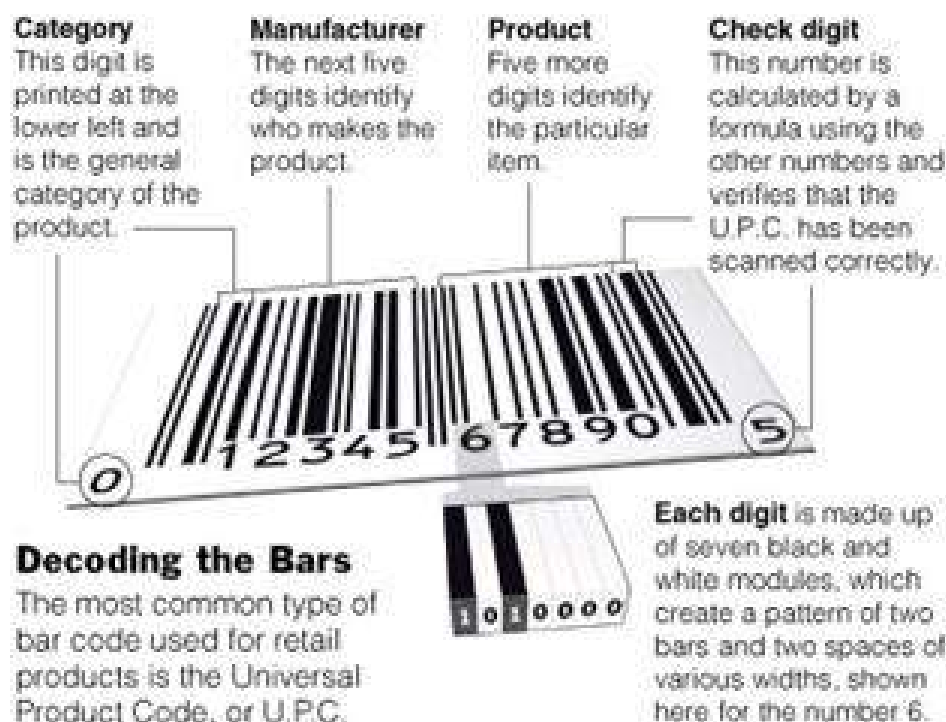**Universal Product Codes and Barcodes**

One-dimensional (1-D) barcodes, such as the Universal Product Code (UPC) commonly seen on the price tags and packages of products in a retail or grocery store, consist of a series of vertical bars and spaces. They are classified as one-dimensional because the information contained in them is communicated only by the difference in their

horizontal dimension—the width of the bars and spaces—and their position from left to right. Differences in the second, vertical dimension of the bars and spaces—whether they are taller or shorter—does not matter; all that counts is how wide they are and what order they are placed in.

The numbers generally indicate both the manufacturer and the specific product. A UPC Code does not carry any price information. When the code is scanned the store's computer will check that product against the current price stored in its database. This allows stores to set their own prices.
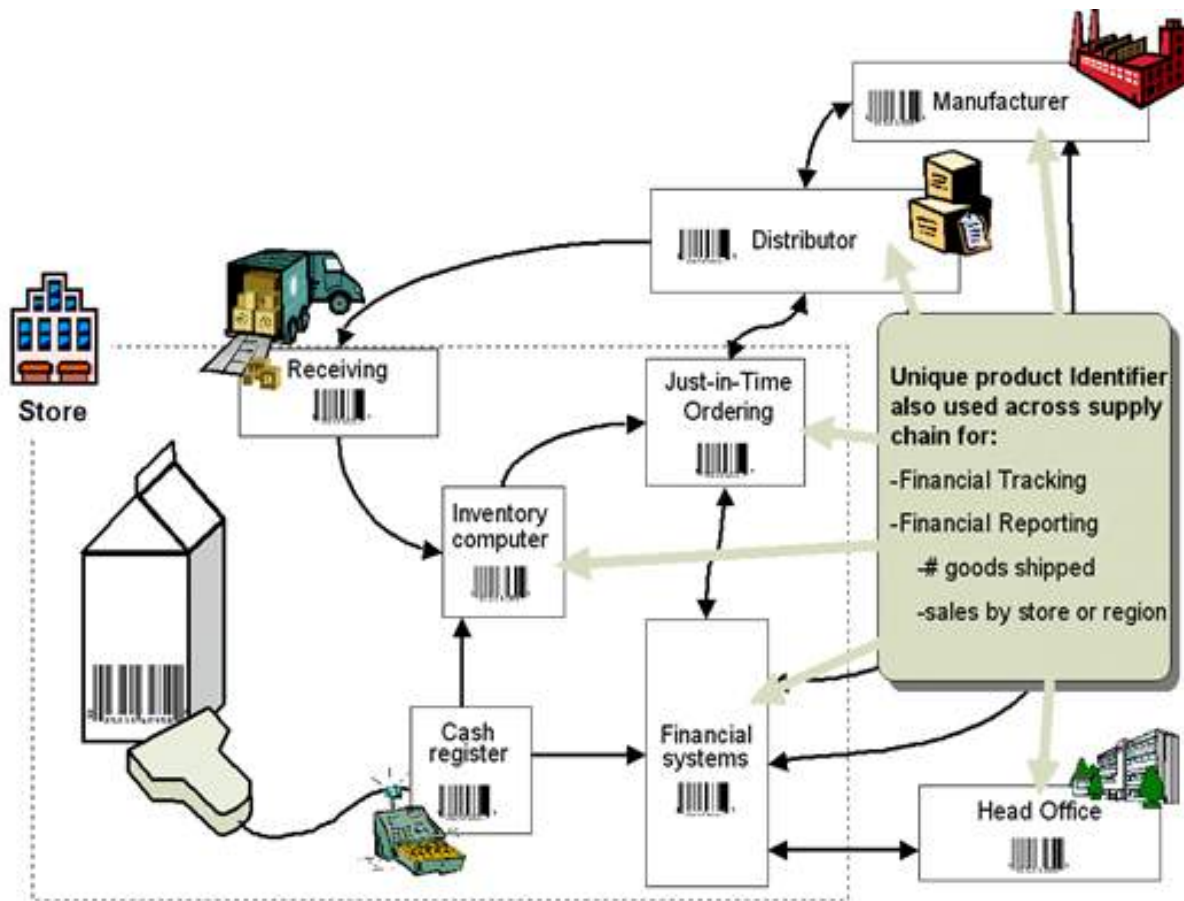
After the commercial introduction of 1-D barcodes in 1966, they quickly gained widespread acceptance. In time, however, demand grew for new types of codes that could hold more information and use more character types, yet occupy a smaller space.

Attempts were consequently made to increase the amount of data contained in barcodes by increasing the number of bars or creating multiple-barcode layouts. These efforts, however, resulted in a larger barcode area, complicated reading requirements and increased printing costs.

Category
This digit is printed at the lower left and is the general category of the product.

Manufacturer
The next five digits identify who makes the product

Product
Five more digits identify the particular item

Check digit
This number is calculated by a formula using the other numbers and verifies that the U.P.C. has been scanned correctly.

1 2 3 4 5 6 7 8 9 0
0   5

Decoding the Bars
The most common type of bar code used for retail products is the Universal Product Code, or U.P.C.

1 0 1 0 0 0 0

Each digit is made up of seven black and white modules, which create a pattern of two bars and two spaces of various widths, shown here for the number 6.

Descriptions in a bar code

Use of Unique product identifier in a Retail environment

Some of the benefits of using barcodes are as follows.

Accuracy

In the days before barcode technology, many businesses relied on clerks to manually enter information about packages that came across their desks. In the transportation industry, where packages change hands several times, the likelihood of human error increased considerably. Because barcodes offer a reliable way to accurately read encoded information, the technology all but eliminates the possibility of human error. Workers can instantly identify packages and products with a high rate of accuracy.

Speed

To keep manual data entry errors at a minimum, clerks often spend a considerable amount of time examining packages, reading identification information and correcting data they did not key properly. Barcodes significantly speed the process of registering packages by reducing the act of reading and keying identification numbers to little more

than pointing a scanner at the barcode. In a retail environment, for example, clerks can use barcode technology to ring up dozens or even hundreds of products within minutes. In the transportation industry, sophisticated barcode scanners can instantly read package information from hundreds of coded packages as the boxes make their way down conveyor belts.

Inventory Control

Because nearly every package features some sort of barcode, businesses can use the technology to maintain tight and accurate control over inventory. Warehouses, for example, can scan barcodes on packages as they enter and exit the facility to maintain a record of every package housed at the warehouse. When these packages arrive at retailers, store staff can scan the products as they go on shelves and compare those records with records of barcodes scanned at the register to maintain inventory data. Similarly, transportation companies can scan package barcodes when accepting cargo, and then scan the packages again when delivering it. Companies that link their inventory control to online portals can instantly update package status and notify customers when packages arrive, depart or get delivered.

Cost

The proliferation of barcodes and availability of inexpensive equipment have made barcodes affordable for almost any organization. Even small businesses can download barcode fonts from the Internet, often for free, and begin labelling packages and inventory. Many smart phones now include apps that scan and interpret barcodes, and users can download barcode applications for free from a number of sources. In a large organization, barcode technology can be significantly cheaper to deploy than other inventory control methods.
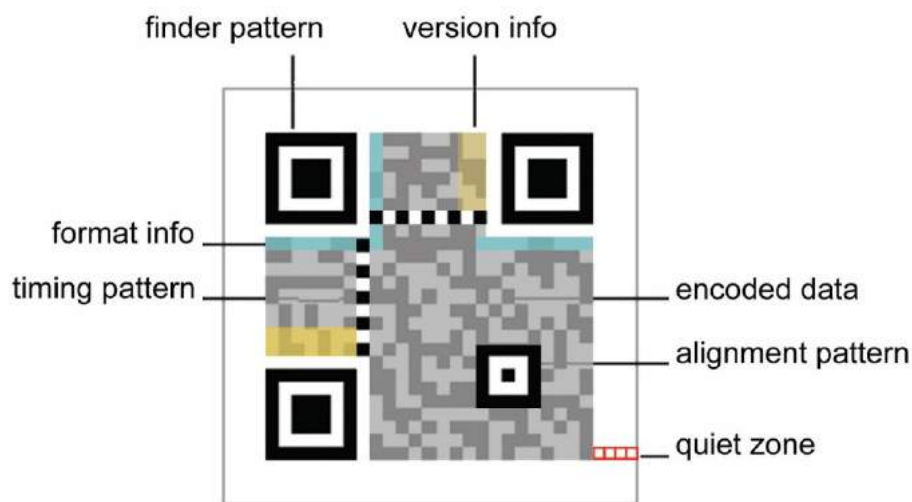
QR Codes

The QR (Quick Response) Code is a two-dimensional (2-D) matrix code that belongs to a larger set of machine-readable codes, all of which are often referred to as barcodes, regardless of whether they are made up of bars, squares or other-shaped elements. Compared with 1-D codes, 2-D codes can hold a larger amount of data in a smaller space, and compared with other 2-D codes, The QR Code is used in fields as diverse as manufacturing and mobile marketing. The QR Code can hold much more data still. In addition, an advanced error-correction method and other unique characteristics allow the QR Code to be read more reliably and at higher speeds than other codes.

Like written language, barcodes are visual representations of information. Unlike language, however, which humans can read, barcodes are designed to be read and understood (decoded) by computers, using machine-vision systems consisting of optical laser scanners or cameras and barcode-interpreting software.

Since its introduction in 1994, the QR Code has gained wide acceptance in such diverse industries as manufacturing, warehousing and logistics, retailing, healthcare, life sciences, transportation and office automation.

Now with the explosive growth of smart phones, the QR Code is also being used in mobile marketing and advertising campaigns as a fast and effective way of connecting with customers and providing end-user content, including Web links, mobile coupons, airline boarding passes, etc.

Unlike 1-D barcodes, the QR Code is a 2-D matrix code that conveys information not by the size and position of bars and spaces in a single (horizontal) dimension, but by the arrangement of its dark and light elements, called "modules," in columns and rows, i.e. in both the horizontal and vertical directions. Each dark or light module of a QR Code symbol—a specific instance of a code—represents a 0 or 1, thus making it machine intelligible. The various parts that make up a typical QR Code are shown in the figure below.

[*Source:* http://qrcrazy.blogspot.in/]

Descriptions in a QR code

Some of the benefits of QR codes are listed below.

*Fast, omnidirectional scanning:*Position-detection patterns in three corners of a symbol allow the QR Code to be read from any angle within 360 degrees, eliminating

the need to align the scanner with the code symbol. The position-detection patterns also eliminate any background interference, ensuring stable high-speed reading.

*High-capacity data storage:*A single QR Code symbol can contain up to 7,089 numerals—over 200 times the amount of data as a traditional 1-D barcode.

*Small size:*A QR Code can hold the same amount of data contained in a 1-D barcode in only one-tenth the space.

*Error correction:*Depending on the error-correction level chosen, a QR Code symbol can be decoded even if up to 30% of the data is dirty or damaged.

Many types of data: The QR Code can handle numerals, alphabetic characters, symbols, Japanese, Chinese or Korean characters and binary data.

Distortion compensation: A QR Code symbol can be read even if its image is on a curved or otherwise distorted surface.

Linkability (Structured Append): A QR Code symbol can be divided into up to 16 smaller symbols to fit long, narrow spaces. The smaller symbols are read as a single code, regardless of the order in which they are scanned.

Direct Marking: The QR Code's high degree of readability under low-contrast conditions allows printing, laser etching or dot-pin marking (DPM) of a symbol directly onto a part or product.

How QR codes work

1. The QR code is scanned by a device, in this case a smart phone.
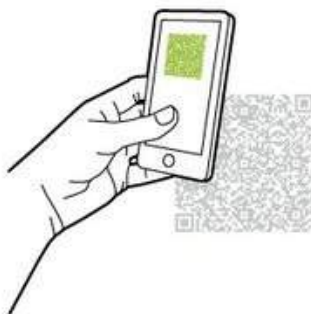
2. QR code software on the phone analyzes the image and extracts encoded information.

3. The decoded information — such as text, numbers or even website addresses — is displayed on the device.

Sources: Open Mobile Alliance; tech-faq.com

The working of a QR code

There are several real-life examples of QR codes being put into effective use by businesses in general and retailers in particular. Here are some of those examples:

- Germany uses QR codes to inform travellers about bus or train routes.

- A company in Great Britain put QR codes on its sushi (a Japanese food delicacy), to let customers how fresh it is.

- A Korean grocery store opened a virtual store in a subway station, so travellerscould shop while they waited for the train. The products are purchased online and then delivered later that day.

- Department Store JCPenny's Santa Tags allowed customers to personalize holiday gifts with a QR code gift tag that contained a recorded message from the giver.

- Department store Macy's has started using QR codes on clothing signage that take customers to fashion tips from designers on how to wear the clothes.

- The Cleveland Museum of Art placed QR codes next to exhibits to direct visitors to online or audio tours via their phones, or to provide more in-depth information.

- Spotify's modern day mixtape app allows you to send a greeting card with a custom QR code that lets you share a playlist with the recipient.

- Mountain Dew and Taco Bell partnered on a promotion in which customers scanned QR codes on drink cups to get free music downloads. The campaign earned the companies more than 200,000 downloads.

- Google's Favorite Places campaign identified 100,000 businesses in the U.S. as "Favorite places on Google." Those businesses received a window decal with a unique QR code, which passersby could scan to find information about that business, read reviews, star the business as their favorite and more.

Some real-life images of people purchasing items by scanning QR Codes are shown in the figures below.

A person purchasing items by scanning QR Codes in his Smartphones

People purchasing items by scanning QR Codes in their Smartphones

Radio Frequency Identification (RFID)

RFID is a technology that allows an object or person to be identified at a distance by means of radio waves. The RFID devices or tags are attached to containers, shipping cartons, or even behind labels on individual items, They then transmit data about the object in which they are embedded. The RFID technology has two distinct advantages over barcodes. The devices can hold more data and update the data stored. First, the devices can keep track of where an item has been in the supply chain and even where it is stored in a distribution center. Second, the data on the devices can be acquired in harsh environments

without a visual line of sight, which is impossible with barcodes. RFID can significantly decrease warehouse, distribution and inventory costs, increase margins and provide better in-stock positions.

The four components of a basic RFID system are the host computer, the reader, the antenna and the transponder, or tag. The host computer initiates the chain of events, causing the reader to "interrogate" its field via the antenna, which broadcasts electromagnetic waves over a given range. A tag passing within that range detects the reader's activation signal. The reader reads the data encoded in the tag's integrated circuit, or silicon chip, and sends it to the host computer for processing.RFID tags, like barcodes, will become familiar in more forms as usage grows, but many of them are already familiar sights. Hard plastic anti-theft tags are attached to merchandise in stores. Screwshaped tags can be screwed into wooden items or trees, creditcard-shaped tags facilitate access applications, and tags embedded in tiny glass capsules are inserted under the skin of animals for identification. Heavy-duty tags as large as 4 by 6 inches are useful for tracking large shipment containers or trucks, railroad cars and heavy machinery. An RFID tag is shown below.
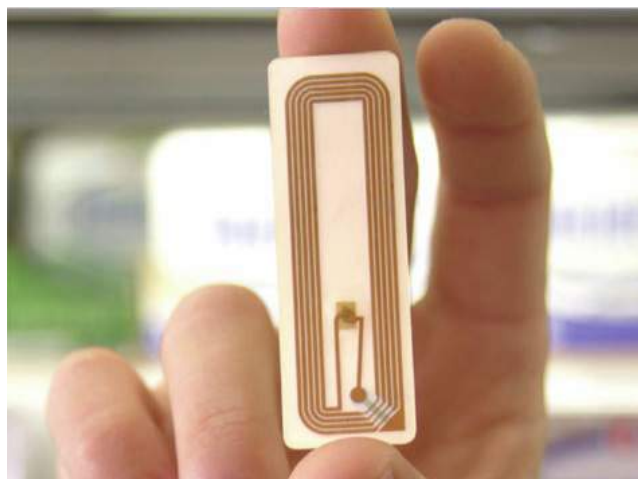
[*Source:* www. asiafoodjournal.com]
A close-up view of a RFID tag

Tags may obtain their power in several different ways. The power source is an essential property of a tag, since it will determine a tag's potential read range, lifetime, cost, and what kind of functionalities it may offer. The power source will also be important in determining how a tag may be oriented and what physical forms it may take.

There are three main classes of tag power sources: active, semi-passive, and passive. Active tags have their own source of power, such as a battery, and may initiate communication to a reader or other active tags. Because they contain their own power source, active tags typically have a much longer operating range than passive-tags. Large asset and

livestock tracking applications often use active tags, since the items they are attached to (e.g. railcars, shipping containers, or cattle) are high in value and have physical space for a bulkier, rugged tag.

A key feature of active tags is that they are able to initiate their own communication with readers. Advanced active tags, or "smart dust", might even form ad hoc peer networks with each other. One useful application of active tags is in shipping containers, which can fall off ships over rough seas. These missing containers sometimes are not accounted for until well after the ship has docked. An active tag with an accelerometer sensor could detect when it was falling off a stack of containers and broadcast a log of its demise before it sank into the ocean. Active tags could also function as security alarms using the same functionality.

By contrast a semi-passive (or semi-active) tag has an internal battery, but is not able to initiate communications. This ensures that semi-passive tags are only active when queried by a reader. Because semi-passive tags do have an internal power source, they do offer a longerreader range than passive attacks, but at a higher cost.

An example application that often uses semi-passive tags is electronic tollbooths. Semipassive tags are typically affixed to the inside of a car's windshield. When the car passes through a tollbooth, it will initiate a query to the semi-passive tag and read an account identifier from the tag. The on-board battery lets the tag beread from a considerable distance. However, since the tag only needs to broadcast when queried, it can remain idle most of thetime andsave power. Semi-passive tags are also often used in pallet-level tracking or tracking components like automobile parts during manufacture.

Passive tags have neither their own power source, nor the ability to initiate communication. Passive tags obtain energy by harvesting it from an incoming RF communication signal. At lower frequencies, this energy is typically harvested inductively, while at higher frequencies it is harvested through capacitance.

While passive tags have the shortest read range of all three powering types, they are the cheapest to manufacture and the easiest to integrate into products. Batteries are relatively expensive and cannot easily be incorporated into some items, like paper packaging. For this reason, passive tags are the most common tags. EPC tags are passive.

Lacking an internal power source dictates many properties of passive tags. First, they cannot operate without the presence of a reader, although passive tag could temporarily cache some energy in a capacitor. Because of their necessarily weak response signal, passive tags are often more sensitive to environmental noise or interference.

A comparison of the three types of RFID tags is shown in the table below.

Tag Type	Passive	Semi-Passive	Active
Power Source	Harvesting RF energy	Battery	Battery
Communication	Response only	Response only	Respond or initiate
Max Range	10 M	> 100 M	> 100 M
Relative Cost	Least expensive	More expensive	Most expensive
Example Applications	EPC Proximity cards	Electronic tolls Pallet tracking	Large-asset tracking Livestock tracking

[*Source:* http://www.eecs.harvard.edu/]

Types of RFID tags – a comparison

An RFID reader is shown in the picture below.


[*Source:* www.rfidjournal.com]

A close-up view of an RFID reader

RFID technology is an increasingly important enabler of omni-channel retailing. Especially important to apparel retailers is item-level RFID, in which RFID tags are attached to individual garments. Commonly integrated into the product's hangtag or pricing label, the tags are read by handheld or fixed RFID readers, providing real-time inventory visibility throughout the supply chain. The system enables store management, sales associates, even connected customers, to have the accurate, real-time product location and availability data so crucial to omnichannel retailing success.
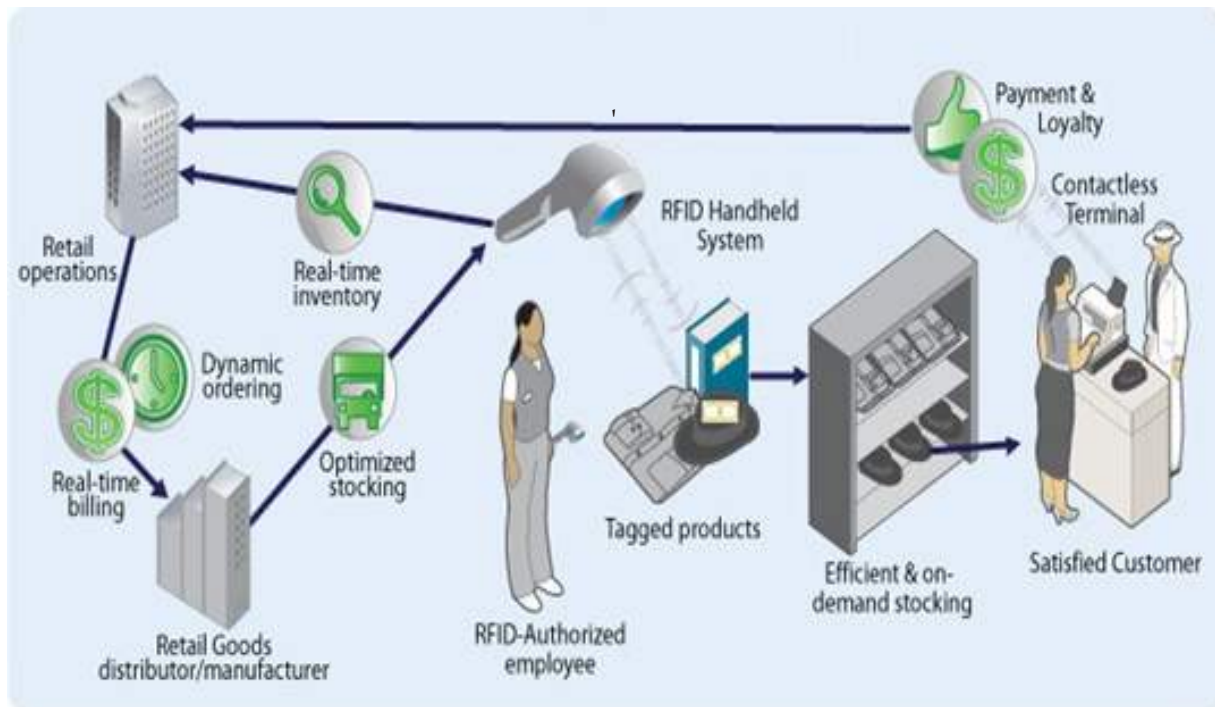
[*Source:* www.skyetek.com]

Use of RFID tags in a Retail environment

Garment Tracker
How Wal-Mart's 'electronic product code' system works

1 Suppliers add RFID (radio-frequency ID) sensors to jeans at the point of manufacture.

2 Workers scan the garment with electronic readers and build a database detailing all the sizes and custom fits available.

3 Workers scan the stacks of jeans to discover which sizes have sold out and need to be replenished.

4 Customers who purchase the jeans take the sensors home when they leave the store, but throw them in the trash along with other packaging before wearing them.

Scanner

The sensors are placed on removable labels, such as the ones stapled on jeans that detail their size and fit.

The electronic reader instantly tells whether the sizes are still available in the back of the store, and where they sit.

Privacy advocates worry this tags exposes consumers to the possibility that criminals or unscrupulous marketers will scan their garbage to learn their purchasing behavior.

Source: the company

[*Source:* Wall Street Journal]

Use of RFID tags for Garment tracking in a Retail Supply Chain

Some common applications of RFID are listed below.

Tracking and Identification

- ➢ Large assets, e.g. railway cars and shipping containers
- ➢ Livestock with rugged tags
- ➢ Pets with implanted tags
- ➢ Supply-chain management with EPC
- ➢ Inventory control with EPC
- ➢ Retail checkout with EPC
- ➢ Recycling and waste disposal

Payment and Stored-Value Systems

- ➢ Electronic toll systems
- ➢ Contact-less Credit Cards, e.g. American Express Blue card
- ➢ Stored-valued systems, e.g. ExxonMobil Speedpass
- ➢ Subway and bus passes
- ➢ Casino tokens and concert tickets

Access Control

- ➢ Building access with proximity cards
- ➢ Ski-lift passes
- ➢ Concert tickets
- ➢ Automobile ignition systems

Anti-Counterfeiting

- ➢ Casino tokens, e.g. Wynn Casino Las Vegas
- ➢ High-denomination currency notes,
- ➢ Luxury goods, e.g. Prada
- ➢ Prescription drugs

According to a report on RFID by Motorola, for the brick-and-mortar omnichannel retailer, the benefits of RFID-optimized inventory control are substantial. They include:

Optimized stock levels: Out-of-stocks are a prime source of frustration for both customers who can't find what they want, and retailers who can't sell it to them. RFID-driven just-in-time replenishment enables you to drastically reduce, or even eliminate, costly, non-productive out-of-stock situations.

Higher unit sales: With accurate inventory visibility, retailers can sell what they don't have, which can dramatically increase unit sales. If the store doesn't have the right size or colour the customer wants, the retailer can find it by simply checking inventory, not just in the backroom but across the entire supply chain.

Less Margin Erosion: With full inventory visibility, it's easy to see which items are selling, or not selling, in each location. The RFID-enabled supply chain enables the retailer to quickly ship items to the regions or locations where they are selling better. That means fewer markdowns and less margin reduction. In addition, end-to-end visibility improves loss prevention from theft, misplacement and inventory inaccuracy.

Multiple inventory counts: For many brick-and-mortar retailers, taking inventory is an excruciating, time-consuming and expensive task. Many stores have to close for inventory and are forced to lose sales as they are shuttered for one or more days. RFID-enabled inventories, utilizing item-level RFID tags, allow stores to take inventory more than simply once a year. Some stores are even able to take inventory on a daily basis. RFID makes taking inventory less expensive, much more accurate and up to 90% faster than traditional methods.

More efficient allocation: As the storefront increases its omnichannel role of being a direct-to-customer fulfilment centre, end-to-end visibility is essential. RFID systems make it simpler and faster to view inventory and choose the most efficient location from which to ship an order, both in terms of product availability and proximity to the customer.

Reduction in DC capacity: By providing end-to-end inventory visibility and the ability to allocate and ship products efficiently from any part of the supply chain, RFID solutions are also helping retailers streamline their operations. As inventory silos are eliminated, the need for high-capacity warehouses and distribution centres is lessened and safety stock requirements are reduced, saving substantial dollars in capital and manpower costs.

Conclusion

This lesson has highlighted the importance of marketing research to a retailer. The marketing research process has been clearly outlined with a focused discussion on the tools

for collecting data from customers. Further the role of technology in gathering data in a retail environment is described. The real-life retail applications of new technologies available for gathering data in a retail store are illustrated. Some of the technologies discussed in this lesson are bar codes, QR codes, RFID tags, in-store video cameras, wireless transmitters in shopping carts, eye-tracking technology, 3-D motion sensor technology, heat-tracking technology and Smartphone tracking.

Self Assessment Questions

1. What is the purpose served by a Retail Information System for a Retailer?
2. Draw the structure of a Retail Information System and explain its components.
3. Describe in detail - the players and activities - in the following aspects of a Retail Information System of a Retailer.

     a. Supply Environment   b. Demand Environment   c. Operational Environment

4. Explain the following features of Retail Pro, a retail management software

   - Point of Sale and Checkout
   - Inventory Control & Management
   - Purchase Order Management & Transfers
   - Reports Library & Key Performance Indicators

5. What are the franchise business support features in Retail Pro?
6. What are the integrated e-commerce support features in Retail Pro?
7. Describe the types of consumer data of interest to a Retailer?
8. What kind of questions can be answered by marketing research for a Retailer?
9. Draw a comparison among the three popular data collection methods - interview, questionnaire, observation methods?
10. What are the benefits of using barcodes for a Retailer?
11. What are the customer and retailer benefits of using QR codes in a Retail environment?
12. Explain how the following technologies may help a retailer to improve its productivity and marketing performance?

   - In-store video cameras
   - Wireless transmitters in shopping carts
   - Eye-tracking technology
   - 3-D motion sensor technology
   - Heat-tracking technology
   - Smartphone tracking

13. What are the components of a basic RFID system? How is it useful to a retailer?
14. How does the RFID technology become an enabler of omni-channel retailing?
15. Explain the working of the following retail technologies:

     a. Bar codes   b. QR codes

Unit Structure

Lesson 2.1 - E-Retailing

Learning Objectives

The objectives of this lesson are to

- ➢ Highlight the differences between offline and e-retailing
- ➢ Present an overview of the global e-retailing scenario
- ➢ Describe the features of online retailing and their impact on retail environment
- ➢ Explain the types of e-retailing
- ➢ Describe the concept of forecasting in E-Retailing

At the end of this lesson, you will be able to

- ➢ Differentiate between online and offline retailing
- ➢ See the scope and growth of e-retailing worldwide
- ➢ Understand the impact of e-retailing on the retail environment
- ➢ Know and distinguish between the types of e-retailing

Introduction

Technology has blurred the lines and created a retail industry open for business anytime, anywhere and in any way the customer prefers to shop. Smart retailers are capitalizing on this by seizing strategic opportunities to flawlessly amalgamate their physical and virtual channels in an attempt to personalize customer experiences. The internet's capacity

to provide information, facilitate two-way communication with customers, collect market research data, promote goods and services and ultimately to support the online ordering of merchandise, provides retailers with an extremely rich and flexible new channel (Basu and Muylle, 2003).The internet thus gives retailers a mechanism for: broadening target markets, improving customer communications, extending product lines, improving cost efficiency, enhancing customer relationships and delivering customized offers (Srinivasan et al., 2002).

E-retailing – Overview

Electronic Retailing or e-Retailing (also known as or e-tailing) is defined as the selling of retail goods on the internet.

E-tailing has emerged as an increasingly integral channel utilised by retailers as a way to reach consumers and improve market share amidst increasing competition. It is seen as an inherent part of any retailer's multi channel strategy. Now, with mobile smart phone and tablet technology blurring the lines between physical and online retailing, consumers are altering their shopping behaviour in order to interact with both channels in a more fluid manner. A comparison between traditional retailing and e-retailing is shown in the figure below.

Retailing Versus E-Tailing

	Retailers	E-Tailers
Physical expansion (when revenue increases as the number of visitors grows)	• Expansion of retailing platform to include more locations and space	• Expansion of e-commerce platform to include increased server capacity and distribution facilities
Physical expansion (when revenue does not increase as the number of visitors grows)	• May not need physical expansion • Expand marketing effort to turn "window shoppers" into effective shoppers	• May still need physical expansion to provide sustainable services • Expand marketing to turn "pane shoppers" into effective shoppers
Technology	• Sales automation technologies such as POS systems	• Front-end technologies • Back-end technologies • "Information" technologies
Customer relations	• More stable due to nonanonymous contacts • More tolerable of disputes due to visibility • "Physical" relationships	• Less stable due to anonymous contacts • More intolerant of disputes due to invisibility • "Logical" relationships
Cognitive shopping overhead	• Lower cognitive shopping overhead due to easy-to-establish mutual trust	• Higher cognitive shopping overhead due to hard-to-establish mutual trust
Competition	• Local competition • Fewer competitors	• Global competition • More competitors
Customer base	• Local area customers • No anonymity • Fewer resources needed to increase customer loyalty	• Wide area customers • Anonymity • More resources needed to increase customer loyalty

Source: Lee and Brandyberry (2003).

Difference between offline and online retailing

Global E-Retailing Scenario

Although E-retailing is a worldwide phenomenon, online retail is not similar in all geographies. Local, cultural, regulatory and infrastructure issues that impact on physical retailing also affect the virtual world, and hence – even online – retailing can be a very local business. According to a study conducted in 2013 by Cushman and Wakefeld, the UK is currently the most developed online market, followed by the USA, Germany, France, the Netherlands, South Korea, Japan and then Switzerland and the Nordic markets.

E-retail is expected to grow at a fast rate due to high consumer demand. The Indian e-retail market is expected to reach $76 billion (approximately ₹ 4.5 lakh crore) by 2021 from the current $600 million (about ₹ 3,500 crore), according to data from Technopak.

Cushman and Wakefeldstate that online retailing has been growing at an average of over 18% per annum globally over the last three years compared with sales through other channels at just 1.3% pa, and its market share has risen to 4.0% from 2.2% nearly five years ago. This has been a global phenomenon, with every part of the globe increasingly wired for sales, with market share highest in North America (6%) and Western Europe (4.7%) followed by Asia pacific (3.6%), but recent growth (2009-12) strongest in Asia (33.9%), Latin America (21%) and Eastern Europe (17%).

Source: Euromonitor, Cushman & Wakefield

Share of online retail sales in Global retail sales

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According to Euromonitor, global retail sales reached $14,587.1bn in 2012, a 2% increase from 2011. Non-store internet retailing accounted for $579.9bn, 4% of the total figure. More interestingly however, the growth rate in 2012 was 17.7% year-on-year. This considerable growth rate in online retail sales has emphasized the need for retailers to assess their bricks and mortar strategy to acclimatize to the rapid rate of change in consumer behaviour. The $579.9bn global e-tail market equates to an average online retail spend of $83 per capita. It has recorded a growth of 14.8% from 2007-2012 (compound growth) compared to a total retail growth of just 0.9% over the same period.

INTERNET RETAIL SALES BY COUNTRY IN 2012

| RANK	COUNTRY	$ MILLION
1	USA	186,942
2	China	75,322
3	United Kingdom	54,737
4	Japan	54,640
5	Germany	32,021
6	France	29,705
7	South Korea	26,137
8	Brazil	13,089
9	Russia	12,250
10	Canada	5,994
11	Netherlands	5,752
12	Italy	5,725
13	Australia	5,153
14	Finland	4,886
15	Poland	4,864
16	Norway	4,591
17	Sweden	4,518
18	Switzerland	4,235
19	Denmark	3,820
20	Turkey	3,765

Source: Euromonitor International, Cushman & Wakefield

Online Retail Sales (by country) in 2012

According to the analysis of 142 countries by Euromonitor, the USA is the largest market in the world by some margin, with approximately $187 billion of retail sales transacted online. This accounts for almost a third of all internet retail sales around the world, emphasizing the importance and the size of the market in a global context. The USA is followed by china in second and the United Kingdom in third. the ranking of the top 20

markets is nevertheless dominated by Europe with 13 countries, followed by Asia pacific with 4 and the Americas with 3. indeed, while the Americas are the largest region in terms of sales, this is primarily due to the USA, with only brazil and Canada in the top 20 and other countries still lagging behind. The size of the global online market is estimated at approximately $580 billion, a figure which has more than doubled over the last five years and is expected to continue growing on the back of stronger internet sales across all regions, particularly in Asia pacific.

The total online spend varies greatly between regions and within each region due to a number of variables, including internet penetration rates, mobile phone usage, cyber security and the logistical infrastructure within a country. Regionally North America has the largest online retail market with over $192.9bn spent, representing 33.3% of the total global online retail market. This is followed by Western Europe (28.8%) and Asia pacific (28.4%). At a country level, online retail as a percentage of total retail spend in South Korea is ranked number one in the world, accounting for 12.7% of all retail sales. this is followed by the UK (9.7%) and Finland (8.6%), compared with a global average of 4%. The figure below shows the internet retail sales by region.

INTERNET RETAIL SALES BY REGION IN 2012
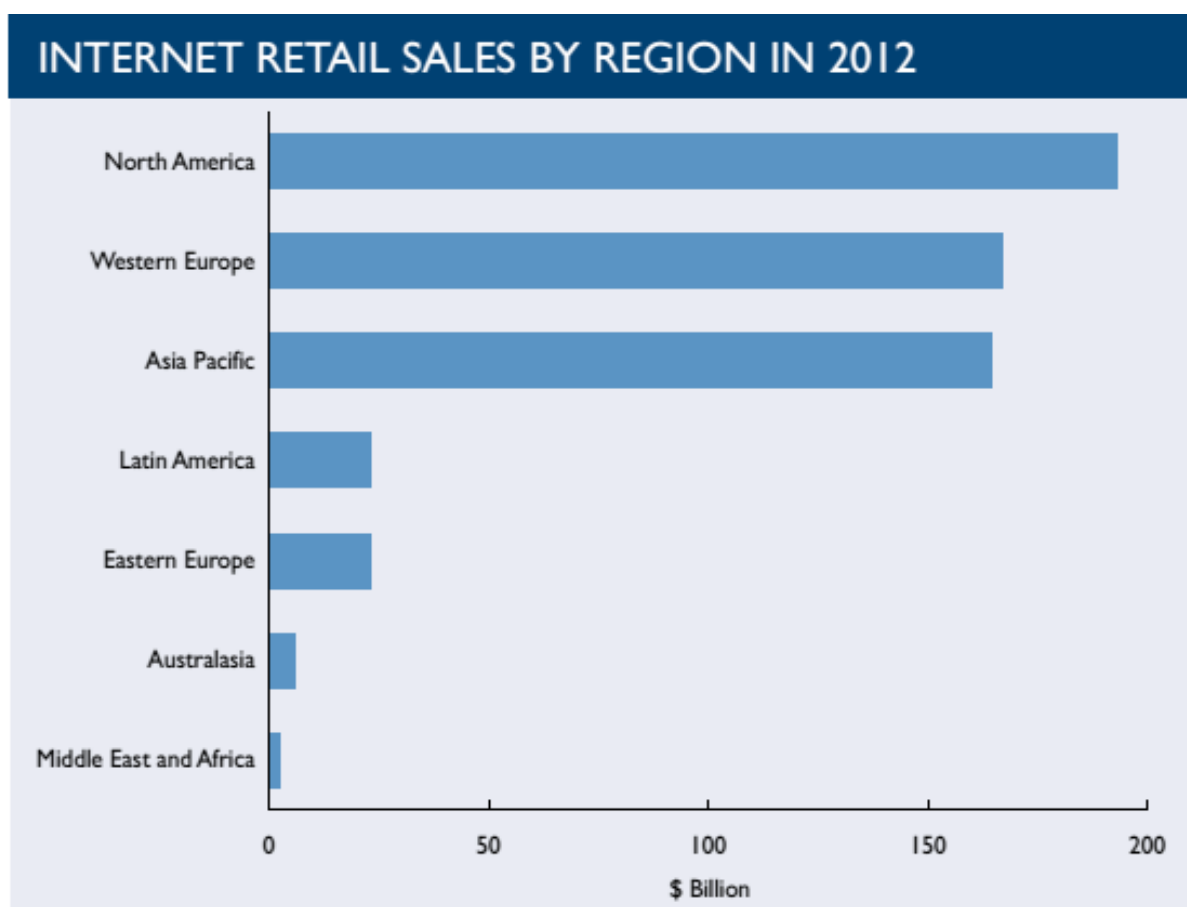
Source: Euromonitor International, Cushman & Wakefield

Online Retail Sales (by region) in 2012

The importance of online shopping has gradually taken centre stage as rising internet sales in some parts of the world, coupled with anaemic total retail spending, have translated into a larger market share – best exemplified by Western Europe, where overall total retail sales have slowed significantly. According to Euromonitor data, total sales (fixed currency) in the region have fallen by 1.3% per annum since 2007, in contrast to the 14.1% growth recorded online. The global picture was also not too different, with total retail sales edging up by 0.9% over the same period and internet sales surging 14.8%. As a consequence, the share of internet sales as a proportion of total retail trade has increased steadily and this trend is expected to continue in the medium term.

ONLINE SALES BY REGION AS % OF TOTAL RETAIL SALES (2012)
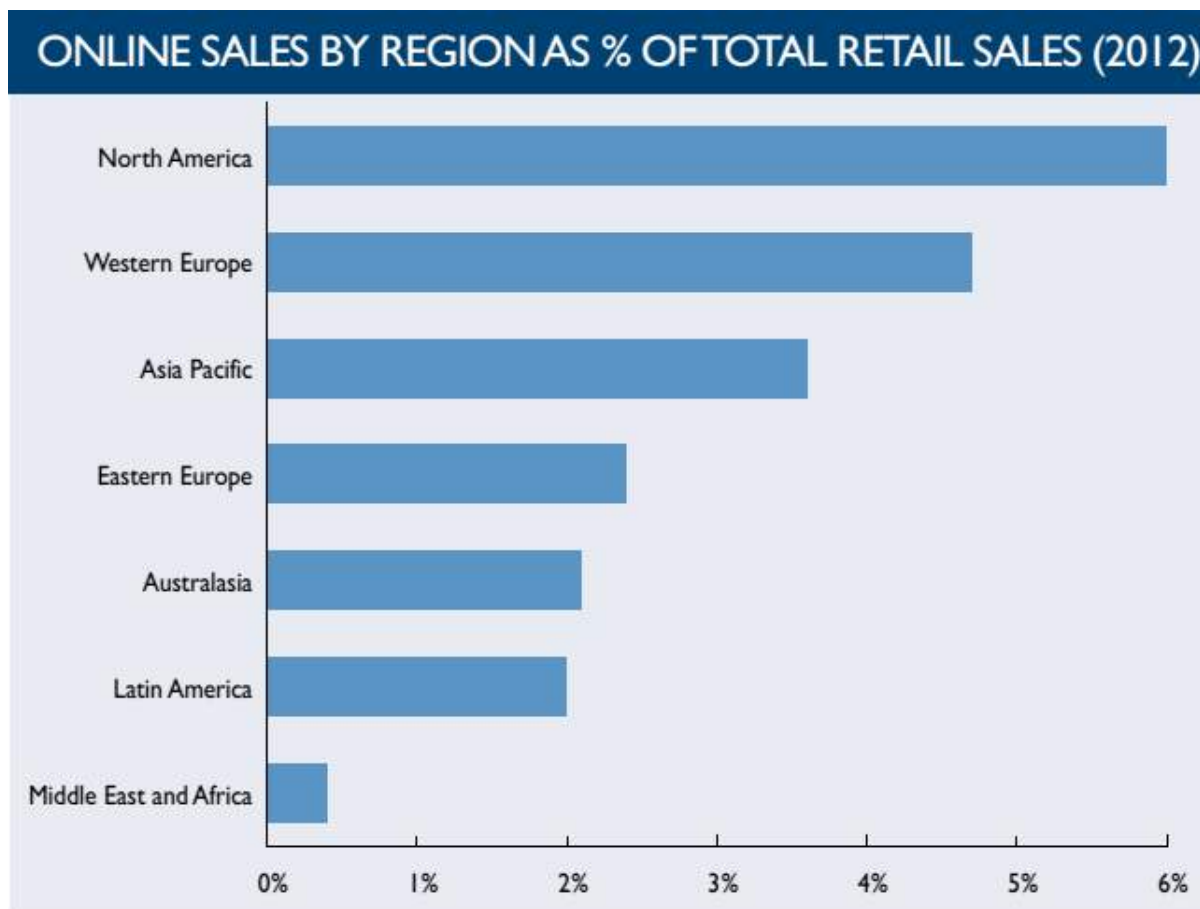
Source: Euromonitor International, Cushman & Wakefield

Online Sales (by region) as % of Total Retail sales in 2012

Benefitting from a developed retail and technological landscape and to some extent a more compact geography, South Korea had the highest percentage of internet retail sales as a proportion of total retail sales, with 12.7%. Similar factors also impacted on Northern European markets, with the United Kingdom in second spot (9.7%), followed by Finland in third with 8.6%.

ONLINE SALES AS % OF TOTAL RETAIL SALES (2012)		
RANK	COUNTRY	%
I	South Korea	12.71
2	United Kingdom	9.67
3	Finland	8.58
4	Suriname	7.75
5	Ireland	6.70
6	Denmark	6.60
7	USA	6.53
8	Norway	5.76
9	Czech Republic	5.65
10	Germany	5.14
II	France	5.08
12	Guam	4.76
13	Malta	4.74
14	Poland	4.60
15	Sweden	4.59
16	Netherlands	4.22
17	China	4.11
18	Slovakia	3.97
19	Japan	3.88
20	Switzerland	3.88

Source: Euromonitor International, Cushman & Wakefield

Online Sales (by country) as % of Total Retail sales in 2012

Features of E-Retailing

Feature	Technological Dimension	Impact on E-Retailing Environment
Ubiquity	Internet Technology is available everywhere, at work, at home, and elsewhere via mobile device, anytime	➢ Marketplace is created or extended beyond traditional boundaries and removed from a geographic location ➢ Shopping can take place anywhere ➢ Reduced shopping costs. ➢ Customer convenience enhanced

Global Reach	Technology reaches beyond national boundaries across the globe	➤ Commerce is enabled across cultural and national boundaries seamlessly and without modification ➤ Marketplace includes potentially billions of consumers and millions of businesses world wide
Universal Standards	There is one set of technology standard, namely Internet Standards	➤ Only one set of technical media standards across the world
Richness	Video, Audio and Text Messages are possible	➤ E-Commerce technologies have changed the traditional tradeoff between Richness and the Reach ➤ The Internet and web can deliver to an audience of millions rich marketing messages in a way not possible with traditional technologies like radio, TV and magazines
Interactivity	The technology that allows two way communication between merchant and consumer	➤ Consumers are engaged in a dialogue that dynamically adjusts the experience to the individual, and make the consumer a co-participant in the process of delivering goods to the market. (which is not possible in other mediums like TV, radio) ➤ Similar to face-to-face experience but on a massive global scale
Information Density	The technology reduces information cost and raises quality	➤ Information processing, storage and communication costs drop dramatically while accuracy & timeliness improve. ➤ Information becomes plentiful, cheap and accurate
Personalization/ Customization	Technology allows personalized messages to be delivered to individuals as well as groups	➤ Personalization of marketing messages and customization of products and services are based on individual characteristics

Social Technology	User content generation and social networking	➢ Innovative Internet social &business models enable user content creation &distribution, &support social networks

Features of online retailing and their impact on retail environment

Types of E-Retailing

A wide variety of types encompasses the realm of e-retailing like wholesalers and retailers of goods and services. Sales may be made based on list prices or through auction. Two major models of E-tailing are the Merchant model and the Affiliate Model.

Merchant Model

➢ **Virtual Merchant** -or e-tailer, is a retail merchant that operates solely over the web. E.g. amazon.com

➢ **Catalog Merchant** – A mail-order business with a web-based catalog. Combines mail, telephone and online ordering. E.g. Lands' End

➢ **Brick and Clicks** - traditional brick-and-mortar retail establishment with web storefront. E.g. Barnes & Noble

➢ **Clicks and Bricks** – Originally online retailers who now have a physical presence. E.g. bharatmatrimony.com, makemytrip.com

➢ **Bit Vendor** - a merchant that deals strictly in digital products and services and, in its purest form, conducts both sales and distribution over the web. E.g. Apple iTunes Music Store

Affiliate Model

In contrast to the generalized portal, which seeks to drive a high volume of traffic to one site, the affiliate model provides purchase opportunities wherever people may be surfing. It does this by offering financial incentives (in the form of a percentage of revenue) to affiliated partner sites. The affiliates provide purchase-point click-through to the merchant. It is a pay-for-performance model — if an affiliate does not generate sales, it represents no cost to the merchant. The affiliate model is inherently well-suited to the web, which explains its popularity. Variations include banner exchange, pay-per-click, and revenue sharing programs. [Barnes & Noble, Amazon.com]

- ➢ **Banner Exchange** - Trades banner placement among a network of affiliated sites.
- ➢ **Pay-per-click** - Site that pays affiliates for a user click-through
- ➢ **Revenue Sharing** - Offers a percent-of-sale commission based on a user click-through in which the user subsequently purchases a product

Forecasting E-Retailing

Retailers make use of modern data-gathering techniques to optimize e-retail delivery of products to the customer base. Forecasting in e-retail involves utilizing existing data to predict future events and, more specifically, consumer behaviour. Existing data and market research varies by the types of products a retailer sells, but the basic means of forecasting in retail follows similar patterns, even across different product lines.

In e-retailing, forecasting serves to predict and meet the demands of consumers in e-retail while controlling pricing and inventory. Holding excess inventory adds to overhead costs for a business. Forecasting helps the retailer to meet the demands of the customer by understanding consumer purchase patterns better.

Methods of Forecasting

In creating retail forecasts, analysts consider product price, marketing and promotions to develop and plan for projected consumer reactions at the point of sale. Methods of identifying and understanding past trends in retail sales involve incorporating economic indicators into the data. Unemployment rates, the rate of inflation, levels of household debt, available disposable income, and growth of the national gross domestic product - the total value of all goods and services produced in the country - are all part of the information used in forecasting. In addition, current, recent and projected near-future activity in the stock market is taken into consideration to gauge consumer confidence in the economy.

Accurate forecasts that meet the forthcoming consumption demands of customers help e-retailers to maximize and extend profits over the long term. Forecasting permits price adjustments to correspond with the current level of consumer spending patterns. Maintaining and controlling a sufficient but moderate inventory that meets the need without being excessive also adds to long-term profits in the retail industry.

Revenue optimization systems help the e-retail planner make better decisions on regular product pricing, promotional activity and markdown pricing Such systems are designed to optimize an objective (e.g., maximize revenue, maximize margin or minimize inventory).

Factors Affecting E-Retail Sales

Internal Factors

- Product changes, style, quality
- Service changes, type, quality
- Shortages, production capability
- Promotional effort changes
- Sales Motivation plans
- Price changes
- Shortages, inventory
- Shortages/working capital
- Distribution methods used
- Credit policy changes
- Labour Problems

External Factors

- Seasons
- Holidays
- Special events
- Competition, direct
- Competition, indirect
- External labour events
- Productivity changes
- Family formations
- Births and deaths
- Fashions or styles
- Population changes
- Consumer earnings
- Political events
- Weather

Challenges in Forecasting

Some of the challenges faced by retailers while forecasting are

- Scale of problems (large number of items to forecast)
- Intermittent demand (slow and erratic sales for many items)
- Assortment instability (frequent new-item introductions and seasonal assortment changes)
- Pricing and promotional activity

Conclusion

This lesson provided an introduction to e-retailing which has emerged as a strong, growing trend worldwide influencing consumer behaviour and impacting retail strategies. Different types of e-retailing have been presented. They offer a choice between a stand-alone retail strategy (i.e. merchant model) or stand-along retail strategy (i.e. affiliate model). The following case study will illustrate the decisions that an e-retailer will have to take regarding this retail strategy.

Self Assessment Questions

1. How is e-retailing different from offline retailing as we know it?

2. What are the features of online retailing? Describe the disruptive impact that they have had on the retail environment.

3. Explain the following types of e-retailing?
   a. Merchant model
   b. Affiliate model

4. How can an e-retailer forecast the sales, say for the forthcoming festival season? What are the factors that this retailer will have to take into consideration while making a sales forecast.

CASE STUDY

The Sweet Smell of Success – Story of a Perfume E-Retailer

[Adapted from CNN/Money article by Les Christie, dated June, 2005]

Her business, Perfume Bay, an online seller of perfume, body care products, and make-up products, grew out of a mom-and-pop retail store in downtown Los Angeles that was run by her parents, Vietnamese refugees. "They came here in 1980 with nothing and speaking no English," says Jacquelyn Tran, who was three-years-old when she arrived in California. "They worked odd jobs, and Mom helped out selling cosmetics and perfumes at a local swap meet."

After a couple of years they saved enough to set up a flea market booth for themselves. Then, in 1987, they opened up a bricks-and-mortar operation. "It was really scary for them," says Tran. "It was the first time they had ever signed a store lease. But they took the risk and it was a big success. It was the first cosmetics/perfume store to open in the area." Within a few years, the family had two more stores nearby.

Growing up, Jacquelyn spent many weekends and other off-hours working in the family business. "I loved handling the perfumes," she says. "It gave me a lot of experience working with shoppers and vendors." Her very adaptable and entrepreneurial parents not only learned English quickly, they also became fluent in Spanish, and attracted a large Latin clientele.

In the late 1990s, her parents sold one of the stores and her father opened a wholesale operation. Jacquelyn, fresh out of college at the University of California at Irvine and helping out in the wholesale operation, started to toy with the notion of setting up an Internet retailer. "It started out more as a hobby," she says. "I was just interested in the Internet and thought it would be a neat idea to have an Internet store."

Basics Training

Perfume Bay was born in her mind, but Tran had a lot of work to do. She researched extensively. She found very few perfume stores on the Web. Her parents didn't understand her quest, but encouraged her nonetheless. "They didn't know anything about it but said, 'If you think you can do it, go ahead.'"

She had to find a Web designer and learn how to do business on line, collect money, fulfill orders. She wasn't very Internet savvy either and tried to get up to speed by researching and talking with designers of e-tail sites. "I wanted a nice, classy site for perfume lovers looking for hard-to-find items and discontinued brands," she says. She finally launched in 1999, but it would be two years before she would devote her full energies to the company. Not surprisingly, those first two years fell flat. "I made plenty of mistakes," says Tran.

"Mostly about where to spend advertising money. I bought too many keywords. There were many search engines offering keyword buys that would give you priority when people did a search." These ads didn't yield enough traffic and she wasn't getting many orders. She was still Perfume Bay's only employee.

First Scent of Success

Back at the drawing board, Tran decided that she would run her business as a Yahoo! store. Many of the services she needed were available through the company. They provide advertising and fulfillment help and the merchants on the site constitute a kind of community. She found a new designer, Synertech, who "really understood my business," she says. "It's really important for customers to be able to find products, add them to their shopping cart, and check out easily."

After the makeover, Tran noticed a quick increase in business. It has grown steadily, even spectacularly, ever since. By late 2003, Perfume Bay was doing so well that Jacquelyn convinced her parent to close their L.A operations in favor of the online store. She found a 16,000-foot warehouse near the family's Huntington Beach home and set up there. Her father still runs the wholesale business and there's a modest retail store at the warehouse, but the bulk of the volume comes through the Internet.

Tran's strategy is to carry a deep inventory. "We have something for everyone," she says. One of the most popular pages on her site is where customers can find newly launched fragrances. Another lets customers know about particularly hot products. "We have very loyal customers," says Tran, "and we try hard to give them what they want."

Perfume Bay now has 10 fulltime employees. Tran has expanded advertising to local television and gets good results from regular e-mails to existing customers. She has started to explore possible cross-promotional deals with other e-tailers such as florists and jewellers. Tran's "hobby" grossed more than $6 million in 2004. "I never imagined I would be where I am today," she says.

[P.S. Currently, perfumebay is beautyencounter.com after eBay filed and won a suite claiming trademark infringement because of the 'generic+bay' form of domain name. A screenshot of the recent homepage, 'about us' page and Yahoo! Small business homepage are included here as annexure for your reference]

Questions for Discussion

a. Comment on the e-commerce model adopted by Perfume Bay.
b. Critically comment on Perfume Bay's e-retail strategy and the decision to shift to Yahoo! Small Business.

Annexure – I Screenshot of the homepage of Perfume Bay e-retailer

Annexure – II Screenshot of the 'About us' page of Perfume Bay e-retailer

Annexure – III Screenshot of Yahoo! Small Business page for e-retailers

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The objectives of this lesson are to

- ➢ Describe the B2C e-commerce business models
- ➢ Discuss the emergence and growth of mobile commerce (m-commerce)

At the end of this lesson, you will be able to

- ➢ Classify the e-commerce business models based on the supplier and consumer of content/service

- ➢ Understand the drivers (in terms of consumer motives and enabling technologies) of m-commerce and its market acceptance

Introduction

Electronic commerce (e-commerce) is often thought simply to refer to buying and selling using the Internet; people immediately think of consumer retail purchases from companies such as Ebay. But e-commerce involves much more than electronically mediated financial transactions between organizations and customers. E-commerce should be considered as all electronically mediated transactions between an organization and any third party it deals with. By this definition, non-financial transactions such as customer requests for further information would also be considered to be part of e-commerce.

A business model is a set of planned activities (sometimes referred to as business processes) designed to result in a profit in a marketplace. A business model is not always the same as a business strategy although in some cases they are very close insofar as the business model explicitly takes into account the competitive environment (Magretta, 2002). The business model is at the center of the business plan. A business plan is a document that describes a firm's business model. A business plan always takes into account the competitive environment. An e-commerce business model aims to use and leverage the unique qualities of the Internet and the World Wide Web (Timmers, 1998). A summary of the various E-commerce business models is shown in the table below.

Source: Adapted from Chaffey 2009]

Classification of e-commerce business models

B2C- Business-to-Consumer

While the term e-commerce refers to all online transactions, B2C stands for "business-to-consumer" and applies to any business or organization that sells its products or services to consumers over the Internet for its own use. A practical classification (along with examples from the Indian e-commerce industry) of B2C Ecommerce is given in table .

Auction/Reverse Auction	Deals	e-Retailer	Directories	Private Shopping Club
ebay.in	snapdeal.com	flipkart.com	sulekha.com	fashionandyou. com
mybids.in	mydala.com	lenskart.com	olx.in	qvendo.com
mastibids.com	motadeals.com	jabong.com	justdial.com	brandmile.com
bestpricebid.com	dealsandyou.com	myntra.com	asklaila.com	99labels.com
almostfree.in	koovs.com	Inkfruit.com	quikr.com	bagittoday.com
jeetle.in	Khojguru.com	indiatimes.com	zomato.com	exclusively.in

surewinbid.com	deals2buyindia.in	Homeshop18.com	click.in	brandsvillage.com
bid2win.in	dealzindia.com	pepperfry.com	kayak.co.in	fetise.com
auctions.snapbid.in	crazeal.com	infibeam.com	indiatourplanner.com	theprivatesales.com
bidjeeto.com	Coupondunia.in	zivame.com	shaadi.com	papapays.com

A practical classification of B2C e-commerce businesses in India

Auction Sites

Most online auctions are central websites that allow multiple people to list their items up for auction on the site. The individual people who sell items through the site are responsible for everything regarding the sale, with the site acting only as a third-party venue to make the sale possible. Once the item is up for sale on the auction site, other members can find it either through a central search through the auction site or through a search engine search for the item's keywords. Once the buyer makes up his mind to buy the item, the buyer places a bid on the item. The buyer may win the item for this amount or he may be outbid by another buyer before the end of the auction. Once the item has been paid for, the seller ships the item directly to the buyer.

An example of a popular Auction website is shown below.
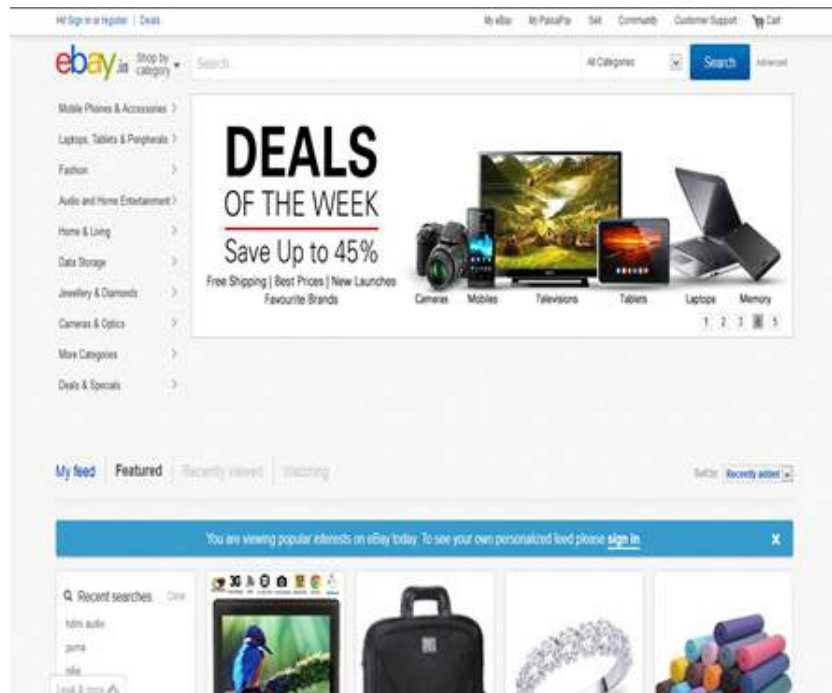
[*Source:* www.ebay.in]

Illustrative screenshot of an auction site (B2C) e-commerce

Deals Website

Deals Websites are very popular among online shoppers. Once you subscribe to the service and they send you daily e-mails with deals from companies, usually local and mostly manufacturers, restaurants and service based businesses. Many times, the deal is at least 50 percent off of the regular price, which makes it a great way to try a product or service at a greatly reduced rate. Deals stay active for anywhere from a day to a week, depending on the company.

An example of a popular Deals website is shown below.
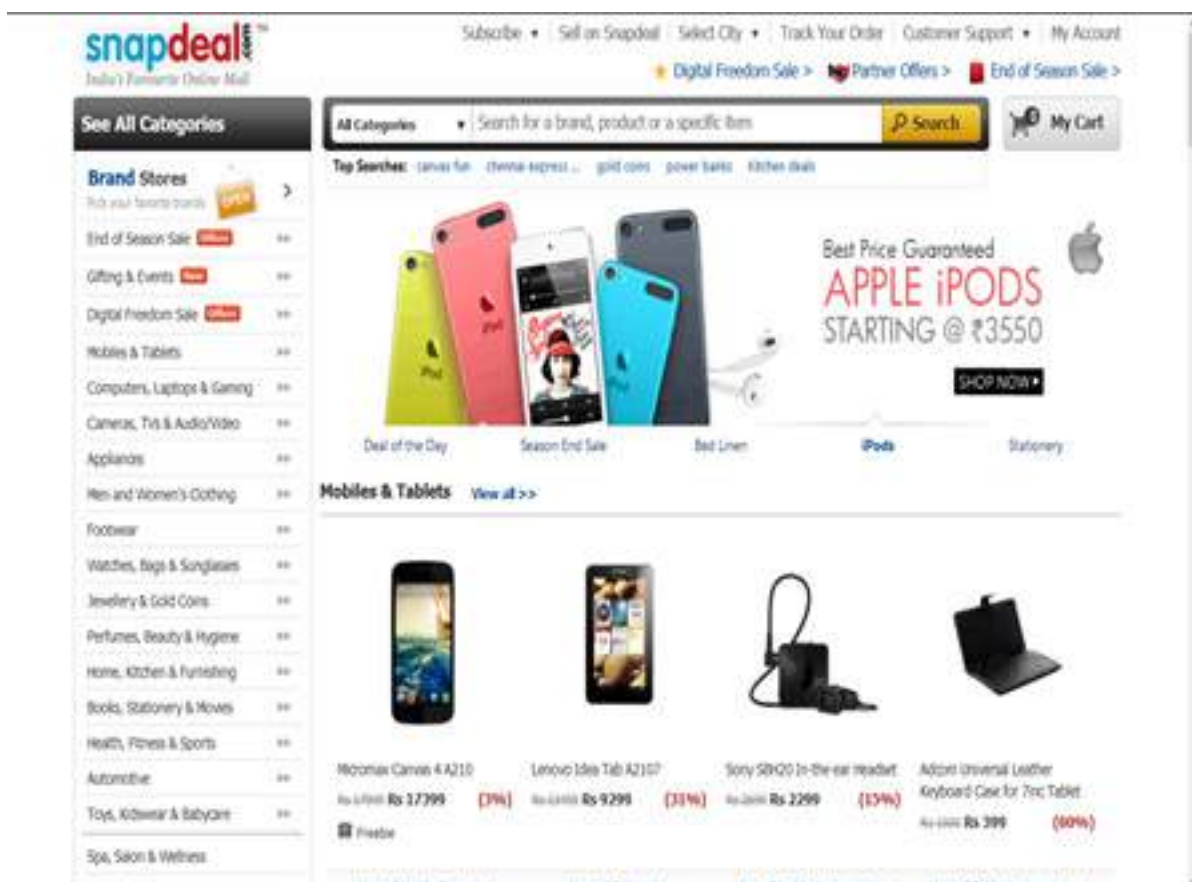
Illustrative screenshot of a Deals site (B2C) e-commerce

E-Retailer Website

The Internet has helped millions of end-users shop from their homes only. E-Retailer sites like Amazon, Flipkart etc provide a wide range of options to the consumers who can order the desired merchandise through internet. Usually sites like these have a wide assortment of products across brands and categories. The buyer chooses the items that

he needs and ads them to his virtual shopping cart. Once the payment is done through net banking, debit or credit cards, the goods are delivered at the address the customer requests for. Many e-Retailers offer the option to user to pay Cash-On-Delivery also. The transportation charges are sometimes borne by the consumer himself or offered free by the e-Retailer.

An example of a popular e-Retailer website is shown below.
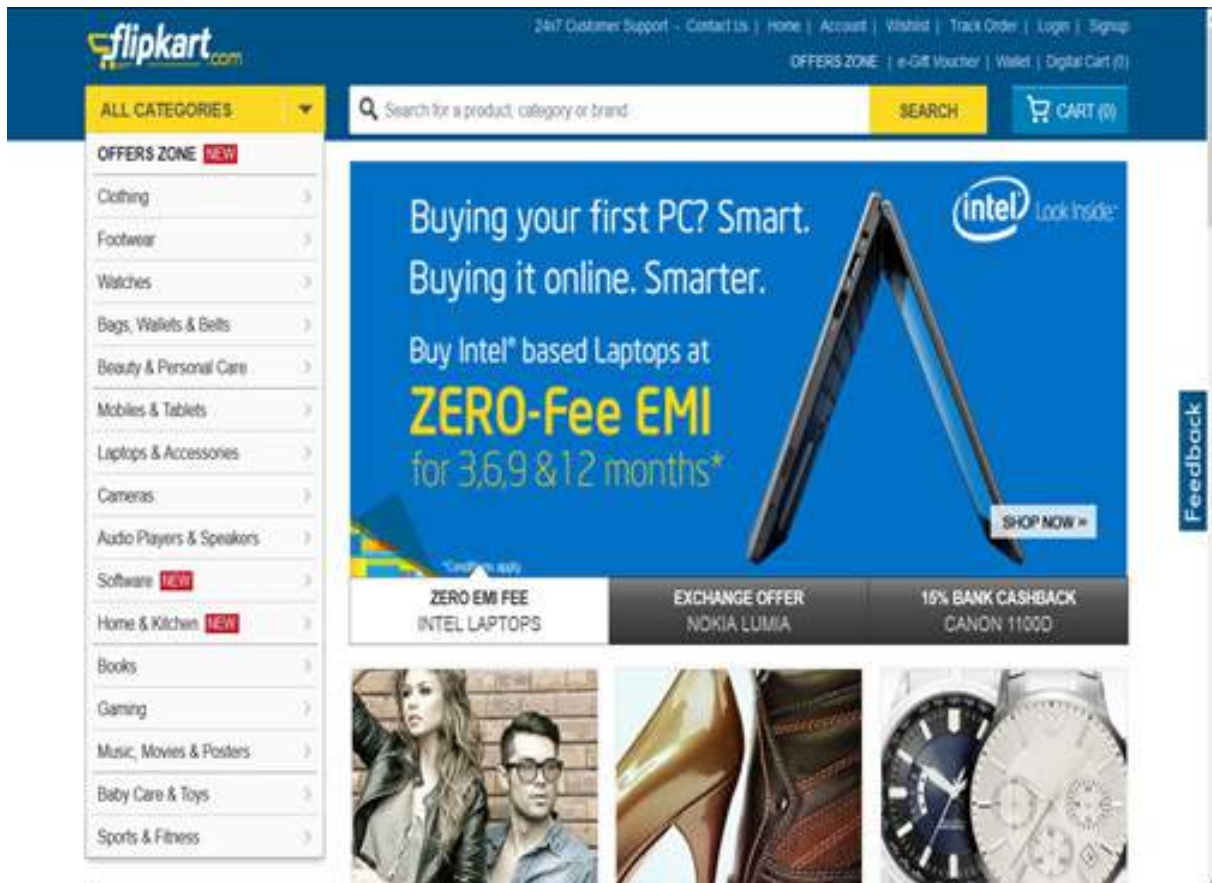
[*Source:* www.flipkart.com]
Illustrative screenshot of an e-retailer site (B2C) e-commerce

Directory Website

It is an internet enabled electronic platform that facilitates communication for the purposes of advertising and distributing information pertaining to goods and/ or services. They do not endorse, market or promote any of the listings, postings or information, nor do they at any point in time come into possession of or engage in the distribution of any of the goods and/ or services, users have posted, listed or provided information about on their site.

An example of a popular Directory website is shown below.
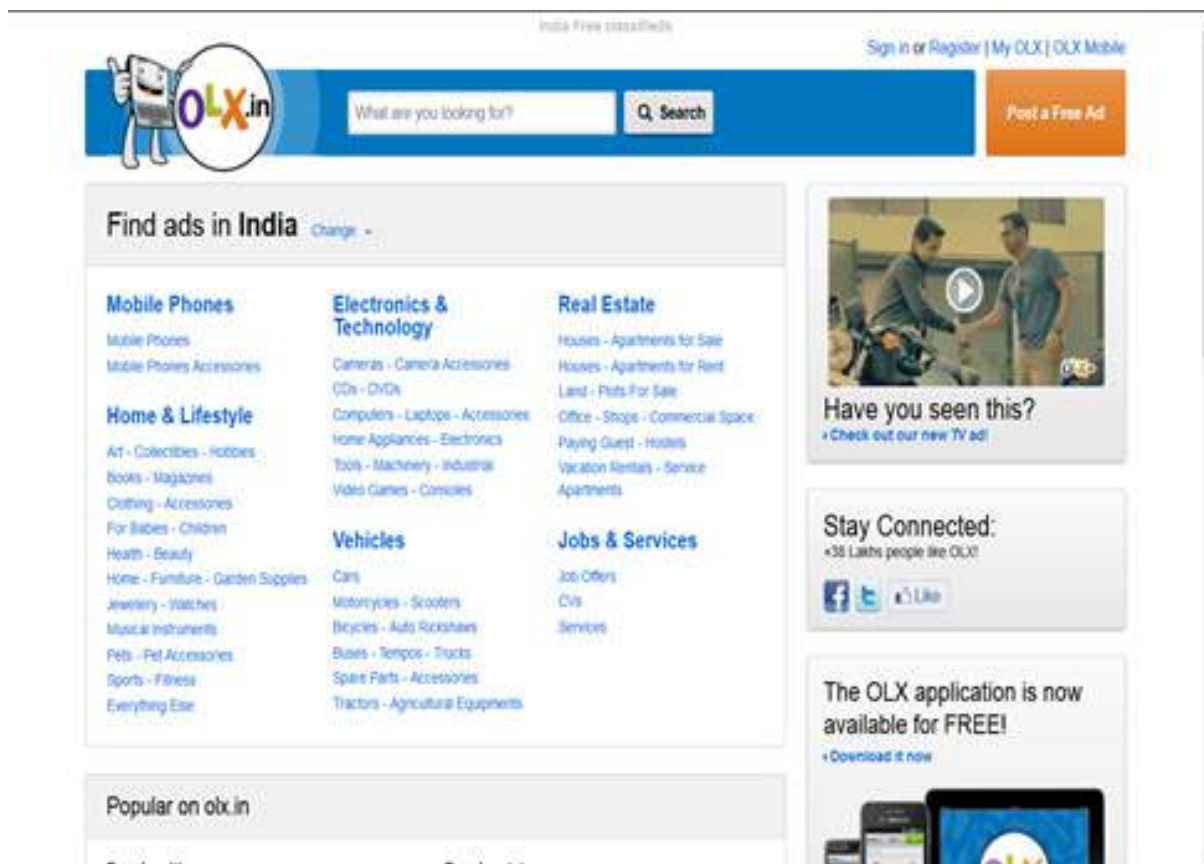
[*Source:* www.olx.in]

Illustrative screenshot of a classified business site (B2C) e-commerce

Private Shopping Club

While most online stores operate by opening their virtual doors to just about everyone, there is a niche segment of ecommerce retailing that thrives on exclusivity. Private shopping sites typically buy the excess merchandise directly from luxury brands and designers, and then mark items up to make a profit. Private shopping clubs require a person to be approved as a member before they can shop the items offered by the store.

Registering as member helps users be prepped and notified about upcoming sale events by e-mailers, SMS and through their social networking pages. These sites offer for sale a limited number of highly discounted merchandise from luxury retailers for a short period of time. Each event clears out on a first-come, first-serve basis.

An example of a popular Private Shopping Club website is shown below.

[*Source:* http://www.fashionandyou.com]
Illustrative screenshot of a private shopping club site (B2C) e-commerce

M-Commerce

Mobile Commerce is any transaction, involving the transfer of ownership or rights to use goods and services, which is initiated and/or completed by using mobile access to computer-mediated networks with the help of an electronic device. Mobile commerce was introduced back in 1997 when Coca Cola installed the first two mobile phone enabled vending machines in Finland. They were able to send mobile payments to the vending machines via SMS text messages. It was in the same year and country that a mCommerce based banking service was introduced as well. The first mCommerce internet platform was launched in 1999 by a Japanese company called I-mode. I-Mode is similar to T-Mobile's web2go browsing interface which allows users the ability to browse the net, view email, download games and access other services.

The advent of mass market smart phones is making it possible to reimagine conventional bricks and mortar commerce. Well designed mobile commerce services can create a rich and consistent consumer experience both online and in store, while forging a deeper relationship between merchants and their consumers. They can also cut retailers' costs and open up new revenue streams for businesses large and small.

Ultimately, mobile commerce will evolve to support the entire consumer experience, which involves far more than a visit to a single store. Consumers are looking for versatile and wide ranging services that help them with research, travel directions, parking, vouchers, loyalty, dining, entertainment and many other aspects of an outing to a town centre or a destination retailer.

How smartphone owners access mobile retail	Q3 2010	Q3 2011	Growth
Consumers access retailers in the mobile realm via the web, apps and texts. Access through sites and apps is growing quickly while texting is growing slowly, comScore finds. Source: comScore			
Via sites	8.7	14.1	62%
Via apps	3.6	7.6	111%
Via texts	3.4	4.1	20%

Mobile retail – access mode using Smartphones

According to a new report from Juniper Research, The value of mobile commerce transactions conducted via mobile handsets and tablets will exceed $3.2 trillion by 2017, up from $1.5 trillion in 2013. According to a report published by Adyen, the global payments solutions company, Consumers use their mobile devices for 15% of all retail purchases. Tablets edge out smart phones (10% and 5% respectively). The retail sector has experienced perhaps the biggest impact from so-called "sofa shopping", with shoppers transacting on mobile devices while at home.

Retailers must develop specific applications or responsive sites for tablets, as evidence shows it leads to increased revenue. Mobile accounts for nearly 15% of all ticketing purchases, including concerts, movies, sports and theatrical events. Of that 15%, smartphones comprise 9% of the transactions with tablets accounting for the remainder. Adyen notes that this is a category that has been driven by the attraction of purchased products/services instantly being delivered to mobile devices. Mobile also accounts for 15% of digital content purchases with includes books, movies, music, software, and services. Smart phones still edge out tablets 8% to 7% respectively.

While most early mCommerce activity involved the purchase of digital goods such as digital audio files, games and ringtones, the rise in coming years will be spurred by the diversification of mobile payments. Although the "lion's share" of transactions will originate within the mobile banking industry, retail and other technology uses will bring additional value to the overall number of mobile transactions.

Specifically, airlines and retail stores will contribute to this growing trend. Airlines have expanded electronic ticketing platforms and actively encourage increased engagement through mobile apps not only with ticket purchasing options but also with loyalty reward programs and other advantages.

The mCommerce advantage to retail is twofold. First, more physical products are being purchased through mobile devices, particularly as the tablet begins to replace the laptop for at-home computer use.

Second, brick-and-mortar stores are taking advantage of mobile apps to provide high-quality and engaging user experiences via mobile coupons and Near Field Communication (NFC) payments, which are made using a mobile device.

M-Commerce: The reasons consumers buy

The latter payment option has been predicted as a catalyst for the growing mobile payment field, even though no specific platform has yet gained widespread adoption. Positive indicators of a shift come from a recent Visa and Samsung NFC alliance and from success by Starbucks' system that allows customers to pay with smart phones as is shown in the figure below.

Near Field Communication (NFC) payments at Starbucks

Another, less obvious contributor to mobile commerce involves the "unbanked" — individuals who do not have a bank account. The report reveals that many people in developing areas, including regions of Africa and the Indian subcontinent, have historically not had access to a bank account or credit card.

However, a much larger percentage does have access to mobile phones and will use them for financial transactions.

The e-ticketing initiative of Indian Railways has been one of the most passenger-friendly initiatives of Indian Railways. In order to further expand the reach of ticketing, the Indian Railways has launched ticketing through mobile phones.

The objective was to tap the potential of mobile phone market in India and thereby facilitate the common man, by providing him any-where, any-time and hassle free booking option. This will enable people using non- internet based mobile phones to easily access Railway ticketing services through SMS/IVRS/USSD. The scheme is user-friendly, secure and also eco-friendly, as no print out is required.

SMS-based mobile ticket booking feature from IRCTC

Alternatively, it is also possible to book railways tickets on ones mobile device using ngpay as shown below. ngpay is India's largest mall on mobile where you one book all travel tickets, movie tickets, send gifts or do your shopping - easily and securely.

Open ngpay on your mobile phone. Depending on your phone model, you may find ngpay in the Applications or Games folder.
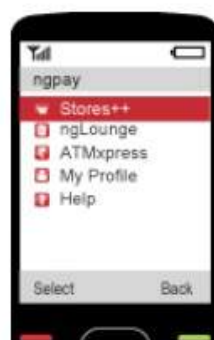
Select Stores++

Select IRCTC from Stores++

Select Reservation

Enter journey details
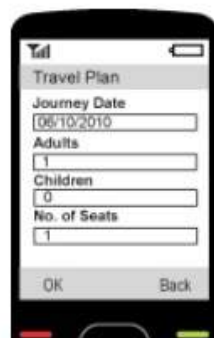
Enter travel requirements
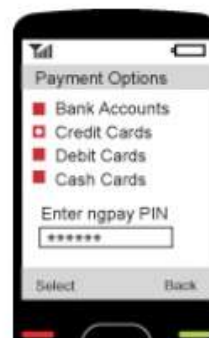
Select option to pay for the tickets

Your tickets are booked

Mobile ticket booking at IRCTC website using ngpay's service

The figure below highlights the pivotal role mobile operators can play in persuading customers to visit a store, by enriching the experience in store and in providing useful information after the customer has left the store. In each case, operators can use their capabilities to provide a suite of valuable services to retailers and their customers
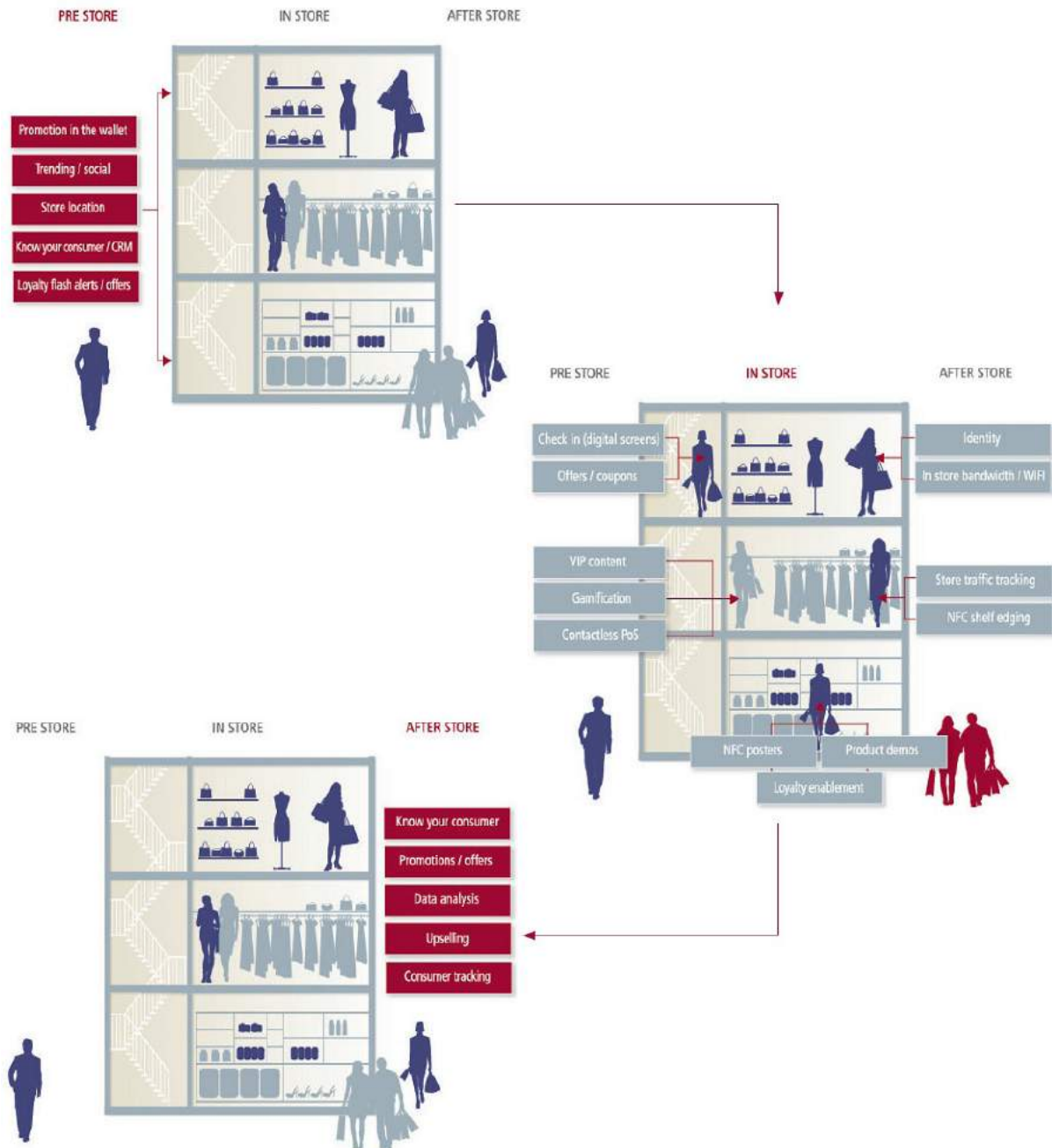
Operator aggregated service offering in retail. Source: GSMA

Role of mobile operators in the retail ecosystem

Self Assessment Questions

1. Draw a classification scheme of e-commerce models.

2. Present a practical classification of B2C e-commerce models. Illustrate the working of each type with examples.

3. Discuss the drivers behind the acceptance and growth of m-commerce.

4. Explain how Near Field Communication (NFC) systems enable m-commerce.

5. Discuss the role of mobile operators in the retail ecosystem.

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Learning Objectives

The objectives of this lesson are to

➢ Present the importance of online privacy and security in the e-retail environment

➢ Discuss measures to ensure safety and privacy online

➢ Explain the contents of an e-retailer's privacy policy

At the end of this lesson, you will be able to

➢ Understand the privacy and security threats that prevail in a e-retail environment

➢ Understand various safety measures to protect online privacy and security

➢ Develop a privacy policy for an e-retailer

Introduction

Globally, businesses and organizations rely on personal information disclosed by consumers during online transactions to develop strategies to enhance the online experience and maximize profitability. Companies that can influence their customers to disclose personal information online are likely to have greater opportunities to leverage the online channel to increase revenues. However, research indicates that issues such as privacy and security of networks and encryption policies influence adoption and success of e-commerce practices

By just clicking a mouse or touching a screen, shoppers can buy nearly any product online - from groceries to cars, from insurance policies to home loans. The world of electronic commerce, also known as e-commerce, enables consumers to shop at thousands of online stores and pay for their purchases without leaving the comfort of home. Consumers expect merchants to not only make their products available online, but to make payments a simple and secure process. However, the same things can go wrong shopping online as in the real world. Sometimes it is simply a case of a computer glitch or poor customer service. Other times, shoppers are cheated by clever scam artists.

A February 2008 survey by Pew Internet found that 66% of Americans surveyed have purchased a product online because it is convenient and saves time. While the survey reported that over half those surveyed experienced frustration, confusion, or being overwhelmed with information, the greatest concern for online shoppers, 75%, was in sending credit card and personal information over the Internet.

Just as shoppers should take measures to protect themselves in brick-and-mortar stores – such as protecting their PIN numbers when checking out and not leaving purses unattended – online shoppers also need to take sensible precautions.

Ensuring Safety Online

Shopping at Secure Web Sites

Secure sites use encryption technology to transfer information from your computer to the online merchant's computer. Encryption scrambles the information you send, such as your credit card number, in order to prevent computer hackers from obtaining it en route. The only people who can unscramble the code are those with legitimate access privileges. Here's how you can tell when you are dealing with a secure site:

➢ If you look at the top of your screen where the Web site address is displayed (the "address bar"), you should see https://. The "s" that is displayed after "http" indicates that Web site is secure. Often, you do not see the "s" until you actually move to the order page on the Web site.

➢ Another way to determine if a Web site is secure is to look for a closed padlock displayed on the address bar of your screen. If that lock is open, you should assume it is not a secure site.

Of course, transmitting your data over secure channels is of little value to you if the merchant stores the data unscrambled. You should try to find out if the merchant stores the data in encrypted form. If a hacker is able to intrude, it cannot obtain your credit data and other personal information. Be sure to read the merchant's privacy and security policies to learn how it safeguards your personal data on its computers.

Researching the Web Site

If the company is unfamiliar, do your homework before buying their products. If you decide to buy something from an unknown company, start out with an inexpensive order to learn if the company is trustworthy.

Reliable companies should advertise their physical business address and at least one phone number, either customer service or an order line. Call the phone number and ask questions to determine if the business is legitimate.

Even if you call after hours, many companies have a "live" answering service, especially if they don't want to miss orders. Ask how the merchant handles returned merchandise and complaints. Find out if it offers full refunds or only store credits.

Web Site's Privacy and Security Policies

Every reputable online Web site offers information about how it processes your order. It is usually listed in the section entitled "Privacy Policy." You can find out if the merchant intends to share your information with a third party or affiliate company. Do they require these companies to refrain from marketing to their customers? If not, you can expect to receive "spam" (unsolicited email) and even mail or phone solicitations from these companies.

You can also learn what type of information is gathered by the Web site, and how it is – or is not – shared with others. The online merchant's data security practices are also often explained in the Privacy Policy, or perhaps a separate Security Policy.

Look for online merchants who are members of a seal-of-approval program that sets voluntary guidelines for privacy-related practices, such as TRUSTe (www.truste.org), Verisign (www.verisign.com), or BBBonline (www.bbbonline.org).

However, be aware that a strong privacy policy and membership in a Web-seal program don't guarantee that the Web merchant will protect your privacy forever. Policies can change. The company can file for bankruptcy and sell its customer data base. The Web merchant might be purchased by another company with a weaker privacy policy.

Cookies and Behavioural Marketing

Online merchants as well as other sites watch our shopping and surfing habits by using "cookies," an online tracking system that attaches pieces of code to our Internet browsers to track which sites we visit as we search the Web.

"Persistent" cookies remain stored on your computer while "session" cookies expire when you turn the browser off. Online merchants use cookies to recognize you and speed up the shopping process the next time you visit. You may be able to set your browser to

disable or refuse cookies but the tradeoff may limit the functions you can perform online, and possibly prevent you from ordering online. Generally, you will need to enable session cookies to place an order.

Privacy advocates worry that as more and more data is compiled about us — without our knowledge or active consent — it will be combined to reveal a detailed profile, even our actual identities. This data is often collected to market goods and services to us, encouraging us to buy them. There are a number of companies that specialize in targeted online advertising called "behavioral marketing." Companies say consumers benefit by being exposed to more targeted advertising, and that online merchants can make more money more efficiently by targeting the right shoppers.

For example, you might buy a book on golf from Amazon, visit the Professional Golfer's Association site, purchase golf shoes onEbay, and search online for golf courses near your home. When you do, a cookie or your computer's Internet Protocol (IP) address could be used to generate golf-related ads. When you open the USA Today site to read the morning news, you may see an ad offering you a new set of clubs at a discount. When you go back to Amazon later that day you might be offered a biography of Tiger Woods.

Password Privacy

Many online shopping sites require the shopper to log-in before placing or viewing an order. The shopper is usually required to provide a username and a password.

Never reveal your password to anyone. When selecting a password, do not use commonly known information, such as your birth date, mother's maiden name, or numbers from your driver's license or Social Security number. Do not reuse the same password for other sites, particularly sites associated with sensitive information.

Web Site Address

The address bar at the top of your device's screen contains the web site address (also called the URL, or Uniform Resource Locator). By checking that address, you can make sure that you are dealing with the correct company.

Don't click on any link embedded within a potentially suspicious email. Instead, start a new Internet session by typing in the link's URL into the address bar and pressing "Enter" to be sure you are directed to a legitimate Web site.

Phishing

Identity thieves send massive numbers of emails to Internet users that ask them to update the account information for their banks, credit cards, online payment service, or popular shopping sites. The email may state that your account information has expired, been compromised or lost and that you need to immediately resend it to the company.

Some emails sent as part of such "phishing" expeditions often contain links to official-looking Web pages. Other times the emails ask the consumer to download and submit an electronic form.

Legitimate businesses don't ask for sensitive information via email. It is not wise to respond to any request for financial information that comes to you in an email. One must not click on any link embedded within a suspicious email, and always call the retailer or financial institution to verify the account status before divulging any information.

Printed or Saved Copies of Orders

After placing an order online, you should receive a confirmation page that reviews your entire order. It should include the costs of the order, your customer information, product information, and the confirmation number.

We recommend you print out or save a copy of the Web page(s) describing the item you ordered as well as the page showing company name, postal address, phone number, and legal terms, including return policy. Keep it for your own records for at least the period covered by the return/warranty policy.

Often you will also receive a confirmation message that is e-mailed to you by the merchant. Be sure to save and/or print this message as well as any other e-mail correspondence with the company.

Merchant's Cancellation, Return and Complaint-Handling Policies

Even under the best of circumstances, shoppers sometimes need to return merchandise. Check the Web site for cancellation and return policies. Be sure to check for the following:

➢ Who pays for shipping?
➢ Is there a time limit or other restrictions to the return or cancellation?

- Is there a restocking charge if you need to cancel or return the order?

- Do you get a store credit, or will the company fully refund your charges to your credit card? If the merchant only offers store credits, find out the time restriction for using this credit

- Does the merchant post a phone number and/or e-mail address for complaints?

- How long has the company been in business?

- Will they still be around when you need them?

- Is there an easy, local way for you to get repairs or service?

- Is there a warranty on the product, and who honors that guarantee?

- What are the limits, and under what circumstances can you exercise your warranty rights?

Don't expect less customer service just because a company operates over the Internet. This is especially important if you are buying something that may need to be cleaned or serviced on occasion.

Single-use Card Numbers

Consumers using some brands of credit cards can get "virtual credit cards," or single-use card numbers, that can be used at an online store. Virtual credit cards use a randomly generated substitute account number in place of your actual credit card number. They can also be used to buy goods and services over the phone and through the mail but can't be used for in-store purchases that require a traditional plastic card.

With this free service, you never need to give out your real credit card number online. You can configure the expiration date and the maximum amount allowed for a virtual credit card. Once used, the card is tied to the merchant where it was used, and cannot be used elsewhere.

Privacy Policy

A privacy policy is a written, published statement that articulates the policy position of an organization on how it handles the personally identifiable information that it gathers and uses in the normal course of business. The policy should include information relating to the processes of information collection, analysis, maintenance, dissemination, access, expungement, and disposition.

The purpose of a privacy policy is to articulate publicly that the agency will adhere to legal requirements and agency policy determinations that enable gathering and sharing of information to occur in a manner that protects personal privacy interests. A security policy alone may not adequately address the protection of personally identifiable information or the requirements of a privacy policy in their entirety. A privacy policy is an essential ingredient of sound management and can be developed before, during, or after implementation of any information gathering practice. The optimal time to develop a privacy policy is in the design phase of the system.

An online privacy policy will make perfectly clear to consumers what information is collected and stored and how the information is being used. It will state whether there will be third party distribution of that information in addition to the choices consumers have in that regard. Even if the website doesn't collect information, consumers won't know this unless it's published as part of the privacy policy. This will help establish consumers' comfort level and increase advertizing and marketing opportunities online. There should be a declaration as to the dedication of the company to guarantee online privacy as wells as steps that are taken to maintain it.

In such a competitive market, building trust is a vital part of the success of an online business. Online privacy isn't only a concern for consumers. If retailers don't make it a priority in their business plan, they could be losing potential sales because visitors don't feel safe giving the information necessary to process a transaction.

As popular as internet shopping has become recently, internet privacy continues to be a point of contention for consumers, and anybody who spends time on the internet is at least aware of the potential pitfalls that can come when personal information gets into the hands of someone with less than honourable intentions. An easily accessed and well thought out online privacy policy communicates to the customers that retailers respect them and are willing to do all that is necessary to keep their information safe and secure. It lets customers know that online privacy is as important to retailers as it is to them.

When it comes to creating consumer trust in the world of ecommerce, the significance of online privacy cannot be stressed enough. Any organization which does business on the internet has a responsibility to develop and establish a privacy policy that will protect them and those who do business with them.

There are also online tools available for retailers to generate custom privacy policies. One such policy generator tool is shown in the screenshot next page.

Example for an online service to generate custom privacy policies

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A Sample Real-Life Privacy Policy

Flipkart.com's Privacy Policy

We value the trust you place in us. That's why we insist upon the highest standards for secure transactions and customer information privacy. Please read the following statement to learn about our information gathering and dissemination practices.
Note:

➢ Our privacy policy is subject to change at any time without notice. To make sure you are aware of any changes, please review this policy periodically.

> ➢ By visiting this Website you agree to be bound by the terms and conditions of this Privacy Policy. If you do not agree please do not use or access our Website.

> ➢ By mere use of the Website, you expressly consent to our use and disclosure of your personal information in accordance with this Privacy Policy. This Privacy Policy is incorporated into and subject to the Terms of Use.

1. Collection of Personally Identifiable Information and Other Information

When you use our Website, we collect and store your personal information which is provided by you from time to time. Our primary goal in doing so is to provide you a safe, efficient, smooth and customized experience.

This allows us to provide services and features that most likely meet your needs, and to customize our Website to make your experience safer and easier. More importantly, while doing so we collect personal information from you that we consider necessary for achieving this purpose.

In general, you can browse the Website without telling us who you are or revealing any personal information about yourself. Once you give us your personal information, you are not anonymous to us. Where possible, we indicate which fields are required and which fields are optional. You always have the option to not provide information by choosing not to use a particular service or feature on the Website.

We may automatically track certain information about you based upon your behaviour on our Website. We use this information to do internal research on our users' demographics, interests, and behaviour to better understand, protect and serve our users. This information is compiled and analysed on an aggregated basis. This information may include the URL that you just came from (whether this URL is on our Website or not), which URL you next go to (whether this URL is on our Website or not), your computer browser information, and your IP address.

We use data collection devices such as "cookies" on certain pages of the Website to help analyse our web page flow, measure promotional effectiveness, and promote trust and safety. "Cookies" are small files placed on your hard drive that assist us in providing our services. We offer certain features that are only available through the use of a "cookie".We also use cookies to allow you to enter your password less frequently during a session.

Cookies can also help us provide information that is targeted to your interests. Most cookies are "session cookies," meaning that they are automatically deleted from your hard drive at the end of a session. You are always free to decline our cookies if your browser permits, although in that case you may not be able to use certain features on the Website and you may be required to re-enter your password more frequently during a session.

Additionally, you may encounter "cookies" or other similar devices on certain pages of the Website that are placed by third parties. We do not control the use of cookies by third parties.

If you choose to buy on the Website, we collect information about your buying behaviour. If you transact with us, we collect some additional information, such as a billing address, a credit / debit card number and a credit / debit card expiration date and/or other payment instrument details and tracking information from cheques or money orders. If you choose to post messages on our message boards, chat rooms or other message areas or leave feedback, we will collect that information you provide to us. We retain this information as necessary to resolve disputes, provide customer support and troubleshoot problems as permitted by law. If you send us personal correspondence, such as emails or letters, or if other users or third parties send us correspondence about your activities or postings on the Website, we may collect such information into a file specific to you. We collect personally identifiable information (email address, name, phone number, credit card / debit card / other payment instrument details, etc.) from you when you set up a free account with us. While you can browse some sections of our Website without being a registered member, certain activities (such as placing an order) do require registration. We do use your contact information to send you offers based on your previous orders and your interests.

2. Use of Demographic / Profile Data / Your Information

We use personal information to provide the services you request. To the extent we use your personal information to market to you, we will provide you the ability to opt-out of such uses. We use your personal information to resolve disputes; troubleshoot problems; help promote a safe service; collect money; measure consumer interest in our products and services, inform you about online and offline offers, products, services, and updates; customize your experience; detect and protect us against error, fraud and other criminal activity; enforce our terms and conditions; and as otherwise described to you at the time of collection.

In our efforts to continually improve our product and service offerings, we collect and analyse demographic and profile data about our users' activity on our Website. We identify and use your IP address to help diagnose problems with our server, and to administer our Website. Your IP address is also used to help identify you and to gather broad demographic information. We will occasionally ask you to complete optional online surveys. These surveys may ask you for contact information and demographic information (like postal code, age, or income level). We use this data to tailor your experience at our Website, providing you with content that we think you might be interested in and to display content according to your preferences.

Cookies

A "cookie" is a small piece of information stored by a web server on a web browser so it can be later read back from that browser. Cookies are useful for enabling the browser to remember information specific to a given user. We place both permanent and temporary cookies in your computer's hard drive. The cookies do not contain any of your personally identifiable information.

3. Sharing of Personal Information

We may share personal information with our other corporate entities and affiliates to help detect and prevent identity theft, fraud and other potentially illegal acts; correlate related or multiple accounts to prevent abuse of our services; and to facilitate joint or co-branded services that you request where such services are provided by more than one corporate entity. Those entities and affiliates may not market to you as a result of such sharing unless you explicitly opt-in. We may disclose personal information if required to do so by law or in the good faith belief that such disclosure is reasonably necessary to respond to subpoenas, court orders, or other legal process. We may disclose personal information to law enforcement offices, third party rights owners, or others in the good faith belief that such disclosure is reasonably necessary to: enforce our Terms or Privacy Policy; respond to claims that an advertisement, posting or other content violates the rights of a third party; or protect the rights, property or personal safety of our users or the general public. We and our affiliates will share / sell some or all of your personal information with another business entity should we (or our assets) plan to merge with, or be acquired by that business entity, or re-organization, amalgamation, restructuring of business. Should such a transaction occur, the new business entity will be required to follow this privacy policy with respect to your personal information.

4. Links to Other Sites

Our Website links to other websites that may collect personally identifiable information about you. Flipkart.com is not responsible for the privacy practices or the content of those linked websites.

5. Security Precautions

Our Website has stringent security measures in place to protect the loss, misuse, and alteration of the information under our control. Whenever you change or access your account information, we offer the use of a secure server. Once your information is in our possession we adhere to strict security guidelines, protecting it against unauthorized access.

6. Choice/Opt-Out

We provide all users with the opportunity to opt-out of receiving non-essential (promotional, marketing-related) communications from us on behalf of our partners, and from us in general, after setting up an account. If you want to remove your contact information from all flipkart.com lists and newsletters, please visit http://www.flipkart.com/unsubscribe.php

7. Advertisements on Flipkart.com

We use third-party advertising companies to serve ads when you visit our Website. These companies may use information (not including your name, address, email address, or telephone number) about your visits to this and other websites in order to provide ads about goods &services of interest to you.

8. Your Consent

By using the Website and/ or by providing your information, you consent to the collection and use of the information you disclose on the Website in accordance with this Privacy Policy, including but not limited to Your consent for sharing your information as per this privacy policy. If we decide to change our privacy policy, we will post those changes on this page so that you are always aware of what information we collect, how we use it, and under what circumstances we disclose it.

Self Assessment Questions

1. How would you identify which e-retail websites are secured for shopping?
2. How do the e-retailers use Cookies to do behavioural marketing/targeting?
3. What is the role played by the Privacy policy of an e-retailer?
4. What are the contents of an e-retailer's privacy policy?
5. Explain the threat posed by phishing for an e-retailer and its customer?

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UNIT- III

Unit Structure

Lesson 3.1 - Intellectual Property Rights (Ipr)

The objectives of this lesson are to:

➢ Explain the importance of intellectual property rights protection in e-commerce

➢ Highlight the elements of a website that can be protected

➢ Describe the components of a Web Development agreement

At the end of this lesson, you will be able to:

➢ Identify the elements of a website that can be protected through IPR

➢ Understand the steps in protecting a website from any infringement

➢ Develop a web development agreement

Introduction

A company's website can be a great tool for promoting business online and for generating sales. However, as Web commerce increases, so does the risk that others may copy the look and feel of a company's website, some of its features or the content. The risk also increases that one may be accused of unauthorized use of other people's intellectual assets.

Elements of the Website that can be Protected

E-commerce systems, search engines or other technical Internet tools may be protected by patents or utility models;

a) Software, including the text-based HTML code used in websites, can be protected by copyright and/or patents, depending on the national law;

b) A website design is likely to be protected by copyright; For example, Amazon.com patented its one-click ordering system.

c) Creative website content, such as written material, photographs, graphics, music and videos, may be protected by copyright;

d) Databases can be protected by copyright or by sui generis database laws;

e) Business names, logos, product names, domain names and other signs posted on your website may be protected as trademarks;

f) Computer-generated graphic symbols, screen displays, graphic user interfaces (GUIs) and even web pages may be protected by industrial design law;

g) Hidden aspects of a website (such as confidential graphics, source code, object code, algorithms, programs or other technical descriptions, data flow charts, logic flow charts, user manuals, data structures, and database contents) can be protected by trade secret law, as long as they are not disclosed to the public and reasonable steps have been taken to keep them secret.

Protecting the Website

Protecting IP rights

➢ Register the trademarks;

➢ Register a domain name that is user-friendly and reflects the trademark, business name or character of a business. If the domain name can also be registered as a trademark, then it is advisable to do so, since it strengthens the case to enforce rights against anyone else who tries to use the name to market similar products and services, and prevents someone else from registering the same name as a trademark;

➢ Think about patenting online business methods, in countries where such protection is available;

- Register the website and copyright material in countries which provide this option at the national copyright office;

- Take precautions about disclosure of trade secrets. It must be make sure that all who might get to know about the confidential business information (such as, employees, maintenance contractors, website hosts, Internet providers) are bound by a confidentiality or non-disclosure agreement;

- Consider to take an IP insurance policy that would cover the legal costs should there be a need to take enforcement action against infringers. Make sure that its existence is known about, for example by posting a notice on the website. This could deter potential infringers.

Letting people know that the Content is protected

- It is a good idea to mark the trademarks with the trademark symbol ®, TM, SM or equivalent symbols. Equally, a copyright notice (the symbol © or the word "Copyright" or abbreviation "Copr."; the name of the copyright owner; and the year in which the work was first published) can be used to alert the public that the copyright material is protected.

- Another option is to use watermarks that embed copyright information into the digital content itself. For example, a music file might be watermarked by using a few bits of some music samples to encode ownership information. The digital watermark may be there in a form that is readily apparent, much like a copyright notice on the margin of a photograph; it may be embedded throughout the document, in the manner of documents printed on watermarked paper; or it may be embedded so that it is normally undetected and can be extracted only if one knows how and where to look. Visible watermarks are useful for deterrence, invisible watermarks can aid in tracing a work online and proving theft.

- A time stamp may be used. This is a label attached to digital content that demonstrates what the state of the content was at a given time. Digital time stamping is useful because it is otherwise simple to modify both the body of a digital document and the dates associated with it that are maintained by the operating system (e.g., the creation date and modification date). A specialized time-stamping service may be involved to provide a trusted source for the information contained in the time stamp.

Letting people know what use they can make of the Content

Consider having a copyright statement on every page of a website that spells out the business' terms on use of the page. Viewers would at least know what they can do with the page (for example, whether or not, and on what conditions, they are allowed to create links to the site, download and print material from the site), and who to contact to get a copyright clearance in relation to any material on the site.

Controlling Access and use of your Website Content

Technological protection measures may be used to limit access to the works published on a website only to those visitors who accept certain conditions upon the use of the works and/or have paid for such use. The following techniques are commonly used:

➤ Online agreements are frequently used to grant visitors only a limited license to use content available on or through a website.

➤ Encryption - Typically, software products, phonograms and audiovisual works may include encryption to safeguard them from unlicensed use. When a customer downloads a content file, special software contacts a clearinghouse to arrange payment, decrypts the file, and assigns an individual "key" -such as a password -to the customer for viewing or listening to the content.

➤ Access control or conditional access systems - In its simplest form, such systems check the identity of the user, the identities of the content files, and the privileges (reading, altering, executing, etc.) that each user has for each file. Access to the electronic content may be configured in numerous ways. For example, a document might be viewable but not printable; may be only used for a limited time; or may be tethered to the computer on which it was originally downloaded.

➤ One may release only versions of insufficient quality for the suspected misuses. For instance, one can post images on a website with sufficient detail to determine whether they would be useful, for example, in an advertising layout, but with insufficient detail and quality to allow reproduction in a magazine.

➤ Fingerprints are like hidden serial numbers which enable one to identify which customer broke his/her license agreement by supplying the property to third parties.

Topics to be Included in a Web Development Agreement

When negotiating an agreement for the actual creation of a website with the website developer, one should have a clear long-term vision of the market for his/her product or service. A good agreement should give all the rights one needs for the foreseeable future use of the website. All too often businesses lose opportunities because they gave away or did not acquire the necessary rights to capitalize upon their website.

The web development agreement should at least deal with the following issues:

a) Scope of work to be performed – Specify exactly what will be developed. Will the developer be responsible not only for writing the computer code, but also for the design and appearance? Will he register a domain name? Will he provide consulting services? Is he responsible for the maintenance and updating of the site? And so on.

b) Ownership of material – Specify the ownership details of each element of the website. Receive the ownership rights or a license that is broad enough for the using the website. Consider the following:

  ➢ Who owns IP rights in the different components of the website that are created by the website developer (e.g. computer code, graphics, text, website design, digital files used for creating the site, etc.)? As this is primarily a price issue, one should carefully contemplate what is needed to own versus what only needs a license to use. National laws may impose mandatory requirements for transferring the IP rights; the agreement must comply with such conditions.

  ➢ Who owns IP rights in material that are provided to the website developer for use on the website? It is normally the case that the client firm will supply trademarks, product logos, literary information and other subject matter that it owns. It would be prudent to include a list of website elements wherein the ownership of such material is clearly confirmed.

  ➢ For any elements in which the website designer owns IP rights, the right to sublicense, make changes and so on will be required. If it is important for a firm to be able to update the website by self, or have it updated by another website developer, then it should make sure to obtain a perpetual license to make modifications to the site.

  ➢ For any elements in which IP rights are owned by someone other than the firm or the website developer (e.g., text, trademarks or software), who is responsible for getting permission to use such third party material?

➤ Who owns IP rights in the software that displays a firm's website and runs the components of the website? If the developer (or a third party) retains ownership and the firm only receives a license that is specific to intended use, then license with broad scope is necessary (considering scenarios to switch developers and operating systems; expanding the use of the sites to additional business entities, etc.).

➤ Can the website developer use the design as a model for other websites? Can he/she license the software or any other things built into a firm's site to its competitors?

c) Warranties – Each party should warrant that it owns or has permission to use any material that it provides for the website and that the contents do not violate any law or regulation.

d) Maintenance and update – Maintenance of the site includes such things as changes, updates, troubleshooting or repairs. The level of maintenance and the price terms must be detailed. Will the developer update the site and if so, how often? What kind of endeavor is he responsible for? What kind of actions will he take when the service interrupts or brakes down?

e) Confidentiality – While divulging confidential information about a business or allowing access to its facilities, one should include a confidentiality or non-disclosure clause in the web development agreement. This can protect against unauthorized disclosure of trade secrets.

f) Liability – Who will bear the responsibility for the links to other sites, the designation of keywords and metatags? Who will be liable in the event of any trademark or other claims?

g) The website development agreement will also need to include clauses related to fees and payment, indemnification, disclaimers, limitation of liability, jurisdiction and applicable law, etc.

Important Points When Creating, Launching, Maintaining or Developing a Website

a) Caution must be exercised while linking – Hyperlinks to other websites are a useful service to one's customers, but in many countries there is no clear law on when and how the links can be used. In most cases, links are completely legal and no permission is needed from the linked site to include a link. However, some types of links can create legal liability:

➤ Links that lead web users to sites containing illegal content (a pirated copy of a song, perhaps, or an unlawful software program) may subject a firm to legal liability.

➤ Links that comprise a company's logo may violate copyright, trademark or unfair competition laws. It makes sense to get permission for them.

➤ Deep links are links that go straight to a specific page other than a website's home page. For example, instead of linking to the home page of a newspaper, a deep link might take the user directly to a newspaper article within that site. Deep linking is generally not allowed if it is a way of bypassing a subscription or payment mechanism, or if it is expressly forbidden by the site itself. It is necessary in such cases to obtain permission.

➤ Framing means dividing a firm's webpage into separate framed regions and display the contents of someone else's site within a frame at the firm's site. The difference with normal linking is that the user is linked to another website in such a way that it is not obvious that what he is viewing is from another website. In lining or mirroring occurs when one incorporates (or "inline") a graphic file from another website into his/her own website. For example, a user at a firm's website can, without leaving the site, view a picture featured on another site. Framing and in lining are controversial practices, because they can create the impression that the information belongs to the website doing the framing or in lining. Permission needs to be sought before doing this.

b) Watch out with meta tagging –Meta tags are keywords or phrases embedded in a website's HTML code which are invisible to the visitors of the website but are read by some search engines. In theory, metatags allow website developers to provide information making search engines more efficient. However, instead of using terms that properly describes the site; some website developers place the names of competing companies in their metatags. For example, a small chocolate shop may bury the famous trademark "Godiva" in a metatag. Then, anyone searching for "Godiva" would be directed to the chocolate shop's site. This kind of deceptive use of another company's trademark in a metatag may constitute unfair competition or trademark infringement.

c) Choose carefully the domain name so that there is no conflict with an existing trademark or other designations (such as International Non-proprietary Names for Pharmaceutical Substances, names of intergovernmental organizations, names of persons, trade names and geographical indications). It is strongly advisable to do

a trademark search before registering the domain name, since domain registrars generally do not check if a requested name violates an existing trademark. If a firm's domain name conflicts with someone else's trademark, the firm could lose the right to it if the trademark owner takes legal action against it.

d) Be sure not to disclose trade secrets–Any confidential business information that gives a business a competitive advantage, such as sales methods, consumer profiles, lists of suppliers, manufacturing processes, marketing plans, etc. can be protected by trade secret law or laws on unfair competition. If a trade secret is disclosed, even accidentally, it will no longer be the protected information. Before a website goes live, every page should be scrutinized to make sure that it does not contain any confidential business information of commercial value.

e) Be sure not to disclose patent-related information–In order to obtain a patent, an invention must be "new" or "novel". This means that the invention must not have been disclosed to the public prior to the filing of a patent application. If a business has conceived a valuable invention for which it wishes to obtain a patent, then it should abstain from any marketing efforts or disclosures of information relating to the invention prior to filing a patent application. Offering the products for sale on the website will destroy the novelty of the invention and render it not patentable. Equally, when products are marketed on the website and the description of the product discloses its innovative qualities, such a disclosure will most likely bar from obtaining patent protection.

f) Respect other people's personal data-If a firm's website receives consumer information, it is important to comply with the applicable data protection or privacy laws. The firm may be obliged to take certain steps to assure consumers that personally identifiable information is protected, and to display a clear privacy policy on its site.

g) Immediately remove infringing material-If someone complains about an unauthorized use related to a firm's website, that firm should remove that material (or disable the link to that material) pending resolution of the dispute. Continuing to use infringing material after being notified may aggravate the claim and increase the chances of being found liable (and increase the amount of damages).

h) The online agreements should be enforceable - If a firm sell products or services on its website, or allow users to download software, it may have specific agreements posted on its site that contain warranty information or disclaimers, limits on liability and other significant terms. Generally, for a person to be bound by the terms of an

agreement, he must indicate in some way that he agrees to the terms. If a firm wishes for terms in its online licenses and other agreements to be enforced, then its website must be structured so that the agreement terms are reasonably apparent and users have the opportunity to review and agree to the terms, or to disagree and opt out, before proceeding through the site. Additionally, there should be a mechanism for users to indicate their assent. The best practice is to have the agreement appear on the screen as the first step of the ordering or downloading process. The user should be required to scroll through to the bottom of the agreement and click an "I accept" bottom before he can access to the site. This scrolling through and clicking assent process will help ensure that the agreement is an enforceable "clickwrap" agreement.

i) Post notices and disclaimers–Notices and disclaimers are rarely a cure-all for legal claims, but if a notice or disclaimer is prominently displayed and clearly written, it may limit or even prevent a firm's liability. Its notices and disclaimers should be tailored to fit the specifics of its website. For instance, if its website posts reviews of mobile phones and offers links to resellers, it might post a disclaimer in a visible place on its site stating "If this site provides links to other sites, the owner of this site is not liable for any information on or practices of the linked sites, nor does a link indicate any association with or endorsement by the linked site to this site."

Self Assessment Questions

1. Which elements of a website can be protected through IPR?
2. Describe the components of a Web Development agreement.
3. What is the procedure to be following in 'linking' to an external website so as to avoid copyright violation in the future?
4. What is the purpose of 'disclaimers' on a website?
5. What are the ways to communicate copyrights protection on a website?

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Learning Objectives

The objectives of this lesson are to:

➢ Explain the capabilities of an electronic storefront for an e-retailer

➢ Describe an approach to develop an E-Commerce Landscape

➢ Present the development approaches in building an e-retail infrastructure

At the end of this lesson, you will be able to:

➢ Understand the functions of an electronic storefront for an e-retailer

➢ Compare the different development options in building an e-retail infrastructure

➢ Know the types of e-commerce software packages and how to choose the appropriate tool or package

Introduction

Once it has been determined that a business can benefit from an online presence, the business type, the product line, the business's organization, and the budget dictate what functionality the Web site should have and how the Web site should be developed. Companies can choose from a number of different types of Web sites, including B2C, B2B, exchanges, and the like. Sites of a particular type (e.g., retailer, provider of business services, manufacturer, distributor/wholesaler, media, travel/entertainment) usually use the same underlying applications and provide similar sorts of functionality. Although this simplifies the task of creating the underlying application architecture, the site requirements must still be considered carefully.

B2C Storefronts

An electronic storefront must support the same tasks that a physical store supports. In particular, an electronic storefront (a seller's Web site where purchases can be made) needs to offer certain capabilities to buyers and to the merchant as shown in the table below.

Capabilities Needed by Users of Electronic Storefronts

Buyers need the ability to:	Sellers need the ability to:
• Discover, search for, evaluate, and compare products for purchase using e-catalogs.	• Provide access to a current catalog of product offerings, allowing prospective buyers to analyze and evaluate the offerings.
• Select products to purchase and negotiate or determine their total price.	• Provide an electronic shopping cart in which buyers can assemble their purchases.
• Place an order for desired products using a shopping cart.	• Verify a customer's credit and approve the customer's purchase.
• Pay for the ordered products, usually through some form of credit.	• Process orders (back-end services).
• Confirm an order, ensuring that the desired product is available.	• Arrange for product delivery.
• Track orders once they are shipped.	• Track shipments to ensure that they are delivered.
	• Provide the means for buyers and visitors to register at the site, to make comments, or to request additional information.
	• Answer customers' questions or pass queries and requests to a Web-based call center.
	• Analyze purchases in order to customize buyers' experiences.
	• Provide Web-based post-sale support.
	• Create the capability for cross-sell and up-sell.
	• Provide language translation if needed.
	• Measure and analyze the traffic at the site to modify and maintain the various applications.

[*Source:* Adapted from Turban et al, 2008]

Capabilities required from electronic storefronts

In order to provide these capabilities, an electronic storefront should have the following functions (Nickerson 2002):

> ➤ A product presentation function provides the customer with information about the product through the user interface (browser). The information presented can include product advertisements, detailed product specifications, product views, and

sample product presentations. This function can include additional features such as language selection, product search, and customization for customer preferences.

➢ An order entry function allows a customer to place an order for selected products.

➢ Information about each product ordered is added to the electronic shopping cart, which is a database of orders in process. This function is linked to the enterprise's inventory system in order to check product availability. It also requires access to the enterprise's customer database to update and use customer data.

➢ An electronic payment function enables the customer to pay for the order and, thus, complete the transaction. Payment options may include credit card, debit card, COD, check (before delivery), and invoice (after delivery). Security is very important in the electronic payment function. The function should provide the necessary security through Secure Socket Layer (SSL), Secure Electronic Transactions (SET), or some other protocol, and customers should be apprised of the security provisions.

➢ An order fulfillment function provides for the delivery of the product to the customer. The delivery can be digital for products such as music, software, and information. This function is linked to the enterprise's inventory system so that the inventory database can be updated when the order is fulfilled.

➢ A customer service function provides assistance to customers who have problems or questions related to the purchasing process. Options for providing customer service include FAQs, toll-free telephone numbers, e-mail, and chat rooms.

➢ The product support function provides assistance to the customer after the product has been received. This support may include initial setup and installation, regular operation, troubleshooting, return policy, ongoing maintenance, and warranty or non warranty repair or replacement.

A Five-Step Approach to Developing an E-Commerce Landscape

A well-developed Web site not only adds to the value of the product or service being offered; it also enhances the worth of the company. Therefore, it is important that a firm choose the correct development strategy in order to obtain the greatest return on its investment. The diversity of e-business models and applications, which vary in size from small stores to global exchanges, requires a variety of development methodologies and approaches.

For example, small storefronts with a few key components can be developed with HTML, Java, or another programming language. They also can be implemented with

commercial packages, leased from an application service provider (ASP), or purchased from a site builder. Larger or special EC applications can be developed in-house or outsourced. Building medium to large applications requires extensive integration with existing information systems, such as corporate databases, intranets, enterprise resource planning (ERP), and other application programs. Therefore, although the process of building EC systems can vary, in many cases, it tends to follow a fairly standard format.
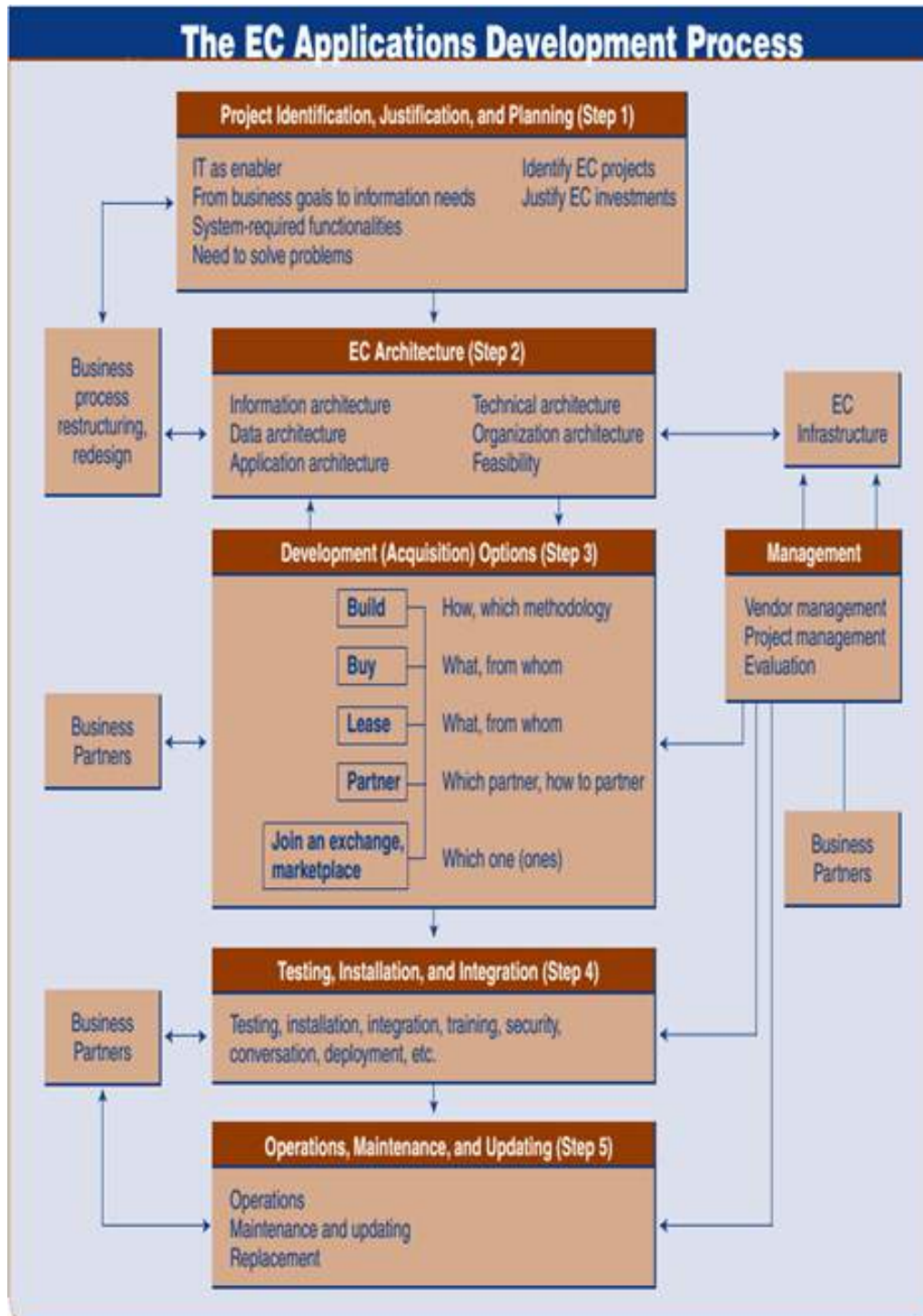
[*Source:* Adapted from Turban et al, 2008]

The e-commerce applications development process

The traditional systems development life cycle (SDLC) used in Software Engineering systematically lead developers through six analysis and design stages: problem identification, analysis, logical design, physical design, implementation, and maintenance.

However, innovative new software and hardware are enabling a move to a more streamlined approach to e-commerce development. The figure below shows the five major steps needed to develop a typical e-commerce application.

Identifying, Justifying, and Planning EC Systems

EC applications, like all other information systems, are usually built to enable one or more business processes. Consequently, their planning must be aligned with that of the organization's overall business plan and the specific processes involved.

The first step is a decision to go with a specific application, with a timetable, budget, and assigned responsibility. This step is typically performed in-house (with consultants if required). All other steps can be completed either in-house or outsourced.

Creating an EC Architecture

EC architecture is a plan for organizing the underlying infrastructure and applications of a site. The plan specifies the following:

➢ Information and data required to fulfill the business goals and vision
➢ Application modules that will deliver and manage the information and data
➢ Specific hardware and software on which the application modules will run
➢ Necessary security, scalability, and reliability required by the applications
➢ Human resources and procedures for implementing the architecture

Various IT tools and methodologies can be used to support the creation of application architecture. Because the creation of architecture is an iterative process, collaborative methodologies, such as joint application development (JAD), are especially useful in identifying and modifying system requirements.

Once the architecture is cleared by the top management and the project gets final approval, a decision about how to develop the specific EC application must be made and a development option chosen.

Selecting a Development Option

EC applications can be developed through several alternative approaches. The major options are:

➢ Build the system in-house.

➢ Have a vendor build a customized system.

➢ Buy an existing application and install it, with or without modifications, by yourself or through a vendor.

➢ Lease standard software from an application service provider (ASP), lease as a service or lease via utility computing.

➢ Enter into a partnership or alliance that will enable the company to use someone else's application.

➢ Join a third-party e-marketplace, such as an auction site, a bidding (reverse auction) site, or an exchange, that provides needed capabilities to participants (e.g., Yahoo! Store).

➢ Use a combination of approaches.

Once an option is chosen, the system can be developed. At the end of this step, an application is ready to be installed and made available. No matter what option is chosen, there is a strong possibility that the firm will work with vendor(s) and/or software provider(s). In this case, the firm will need to manage its vendor relationships

Installing, Testing, Integration, and Deploying EC Applications

Once a system has been developed, the next step involves getting the application up and running in the selected hardware and network environment. One of the steps in installing an application is connecting it to back-end databases, to other applications, and often to other Web sites. For example, if a prospective customer orders a product from a site, it would be helpful if the site could determine if the product is in stock. To do this, the ordering system would need to be connected to the inventory system. This step can be done in-house or outsourced.

At this point, the modules that have been installed need to be tested. Sommerville (2004) recommends a series of different tests:

➢ Unit testing - Test each module one at a time.

➢ Integration testing - Test the combination of modules acting in concert.

> ➢ Usability testing - Test the quality of the user's experience when interacting with the site.

> ➢ Acceptance testing - Determine whether the site meets the firm's original business objectives and vision.

Once all the Web site applications pass all of the tests, they can be made available to the end users. At this stage, issues such as conversion strategies, training, and resistance to change may need to be addressed.

Operations, Maintenance, and Updating

It usually takes as much time, effort, and money to operate and maintain a site as it does to build and install it in the first place. To enjoy continual usage, a site needs to be updated continually. For example, at a B2C site new products need to be added to the catalog, prices need to be changed, and new promotions need to be run. These changes and updates need to undergo the same testing procedures used during the installation process.

Additionally, usage patterns and performance need to be studied to determine which parts of the underlying applications should be modified or eliminated from the site.

Development Options in Building E-Retail Infrastructure

If the desired Web site is relatively simple, a firm may decide to build the Web site itself. However, the firm must ask a few questions: Is the firm capable of developing the site? Does the firm have access to the proper tools to create the pages? If the firm does not have these capabilities, it is usually best to turn over the task to a professional developer. The ideal developer is one who can design a site with the correct look and feel, who has an in-depth knowledge of search engine optimization, and who is able to correctly handle any complex coding that may be required.

Regardless of the complexity of the site, three basic options for developing an EC Web site are available:

(1) Develop the site in-house, either from scratch or with off-the-shelf components;

(2) Buy a packaged application designed for a particular type of EC site; or

(3) Lease the application from a third party. Each of these approaches has its benefits and limitations.

In-House Development: Insourcing

The first generation of e-commerce development was accomplished largely through proprietary programming and in-house development). Using this approach, the Internet browser serves as the development platform. The programmers write e-commerce systems using a combination of HTML and script languages. Databases developed on top of a database management system (DBMS) usually serve as the information repository to store e-commerce data. Although this first generation of e-commerce development has built up valuable experience and achieved industrial momentum, the lack of reusability (i.e., the likelihood a segment of source code can be used again to add new functionalities with slight or no modification) in current applications and the lack of interoperability (i.e., the ability to connect people, data and diverse systems, standards) created a great barrier to widespread applications.

Companies that have the resources to develop their e-business application in-house may follow this approach in order to differentiate themselves from the competition, which may be using standard applications that can be bought or leased. Insourcing is a challenging task that requires specialized IT resources. For this reason, most organizations usually rely on packaged applications or completely outsource the development and maintenance of their EC sites.

Buy the Applications

A number of commercial packages provide standard features required by e-commerce applications. These packages are ready to turn on and operate. This option is also known as a turnkey approach; the package is ready to use without further assembly or testing.

The turnkey approach involves buying a commercial package, installing it as is, and starting it up. Buying a commercial package requires much less time and money than in-house development. When selecting a particular package, the package should not only satisfy current needs, it must also be flexible enough to handle future ones; otherwise the package may quickly become obsolete. Additionally, because one package can rarely meet all of an organization's requirements, it is sometimes necessary to acquire multiple packages. In this case, the packages need to be integrated with each other and with other software and data. This option has several major advantages:

- ➢ Many different types of off-the-shelf software packages are available.
- ➢ It saves time and money (compared to in-house development).

- The company need not hire programmers specifically dedicated to an EC project.
- The company knows what it is getting before it invests in the product.
- The company is neither the first nor the only user.
- The price is usually much lower than the in-house option.
- The vendor updates the software frequently.

This option also has some major disadvantages:

- Software may not exactly meet the company's needs.
- Software may be difficult or impossible to modify, or it may require huge process changes.
- The company may experience loss of control over improvements and new versions.
- Off-the-shelf applications can be difficult to integrate with existing systems.
- Vendors may drop a product or go out of business.

The buy option is especially attractive if the software vendor allows for modifications. However, the option may not be as attractive in cases of high obsolescence rates or high software cost. In such cases, leasing may be a more appealing option.

Outsourcing/Leasing E-Commerce Applications

The use of outside contractors or external organizations (often software vendors) to acquire e-commerce applications is called outsourcing. It is a method of transferring the management and/or day-to-day execution of an entire business function to a third-party service provider. Outsourcing is a valuable option that more and more companies are using. In many cases, systems need to be built quickly, and the special expertise of outside contractors and software vendors is necessary.

Several types of vendors offer services for creating and operating e-commerce applications:

- Software houses - Many software companies offer a range of outsourcing services for developing, operating, and maintaining e-commerce applications.

- Outsourcers and others - IT outsourcers and management consultants offer several outsourcing services.

- Telecommunications companies - Increasingly, the large telecommunications companies are expanding their hosting services to include the full range of IT and e-commerce solutions.

Through leasing, new entrants into e-business (usually smaller firms) are able to establish a market presence in a much shorter period of time.

Other Development Options

Besides the three major options for developing EC applications (buy, develop in-house, and outsource/lease), several other options are currently available and are appropriate under certain circumstances:

➢ Join an e-marketplace - With this option, the company "plugs" itself into an e-marketplace. For example, a company can place its catalogs in Yahoo!'s marketplace. Visitors to Yahoo!'s store will find the company's products and will be able to make purchases. The company pays Yahoo! monthly space-rental fees. In such a case, Yahoo! is a hosting service for the company as well. As for development, the company will use templates to build its store, and it can start to sell after only a few hours of preparation work.

➢ Join an auction or reverse auction third-party site - Joining a third-party site is yet another alternative. Again the plug-in can be done quickly. Many companies use this option for certain e-procurement activities.

➢ Joint ventures - Several different joint-venture partnerships may facilitate e-business application development. For example, four banks in Hong Kong developed an e-banking system. In some cases, a company can team up with another company that already has an application in place.

➢ Join a consortium - This option is similar to the previous one, except that the company will be one of the e-market owners. Thus, the company may have more control over the market architecture.

➢ Hybrid approach - A hybrid approach combines the best of what the company does internally with an outsourced strategy to develop contracted partnerships. Hybrid models work best when the outsourced partner offers a higher level of security, faster time-to-market, and service-level agreements.

Criteria for Selecting a Development Approach

If a company decides to buy or lease an EC application, the following representative selection criteria need to be considered:

➢ Flexibility - Commercial packages need to be modified or adapted to the specific requirements of an application. Therefore, it is important to evaluate the extent to which a package can be adapted and the willingness of the vendor to perform or support the adaptation.

➢ Information requirements - The selected package should satisfy the information requirements of the EC application under development. Information collection, storage, and retrieval capabilities and the database structure should be carefully examined.

➢ User friendliness - User friendliness is especially important for B2C, G2C, and some B2B sites. In these cases, if an application is difficult for the average visitor or customer to use, then it will have an immediate impact on it use and subsequently the bottom line.

➢ Hardware and software resources - The computer type (e.g., desktop, laptop, mainframe) and the operating system (e.g., Windows, LINUX, Mac) required by the package must be compatible with the existing platform.

➢ Installation - The installation effort required to implement the package is another important consideration. Some packages are complex and their installation requires extensive consultation. The installation process may also take a considerable amount of time and expertise.

➢ Maintenance services- Because e-commerce application requirements are changing constantly, ongoing maintenance is required. It is important to consider how often the package needs to be updated and whether the vendor provides assistance for its maintenance.

➢ Vendor quality and track record - It is less risky to acquire an e-commerce package from a vendor who has a good reputation and track record than from one with a less-than-stellar or unknown reputation.

➢ Estimating costs - The costs of e-commerce projects are usually difficult to assess and often underestimated. In addition to the obvious costs associated with development, it is also important to factor in the costs of installation, integration, customization, training, and maintenance.

➢ Personnel - Staffing requirements should be planned for in advance to ensure that the organization has the appropriate human resources for systems development (in the case of inhouse development), implementation, operation, and maintenance.

➢ Technological evolution - Planning ahead for technological evolution facilitates the upgrade of e-commerce applications and enables the organization to adopt innovations more quickly than the competition.

- Scaling - System scalability refers to how big a system can grow in various dimensions to provide more service. The growth of scale is facilitated or constrained by the system architecture.

- Performance - System performance is a critical factor for business success, particularly when the system is used for e-commerce. Performance is measured by two main metrics: latency and throughput. Latency measures the time required to complete an operation such as downloading a Web page. Throughput measures the number of operations completed in a given period of time.

- Reliability - System failures and downtime are costly. When an e-commerce application fails, business is interrupted; at best the company loses sales; at worst it loses customers. System reliability can be enhanced through the use backup systems.

- Security- Security is critical to the adoption and diffusion of e-commerce. Data and information flow in e-commerce, as well as stored data, may include private and/or proprietary information. Thus, a selected package must meet strict security requirements.

E-Commerce Software Packages and Suites

Whether a company opts to purchase or lease its EC applications, two basic categories of software are available: functional packages, such as electronic catalogs, and merchant server software, such as e-commerce suites.

Functional Software Packages

Standard functional software packages are available from a large number of vendors specifically for storefront construction. An example can be found at monstercommerce. com. This site offers dozens of software packages in the following areas: setting up your site, merchandising, inventory, payment options, hosting, shopping, tax, sales analysis, databases and systems, customer service, site design and layout, repeat customer accommodation, and security. Each includes a wide variety of features.

Electronic catalogs are the virtual version of traditional product catalogs. Like its paper counterpart, an electronic catalog contains written descriptions and photos of products, along with information about various promotions, discounts, payment methods, and methods of delivery. Electronic catalogs are included in merchant server software, which includes features that make it simple and relatively inexpensive to develop. A catalog operation includes a straightforward pricing and product configuration.

Merchant Server Software

Merchant server software commonly includes the following features:

➢ Templates or wizards for creating a storefront and catalog pages with pictures describing products for sale

➢ Electronic shopping carts that enable consumers to gather items of interest until they are ready for checkout

➢ Web-based order forms for making secure purchases (either through SSL encryption or the SET protocol)

➢ A database for maintaining product descriptions, pricing, and customer orders

➢ Integration with third-party software for calculating taxes and shipping costs and for handling distribution and fulfillment

A single server is used to handle product presentation, order processing, and payment processing. Likewise, a single database is used to store the catalog (i.e., product descriptions) and handle the details of customer orders. The pages of the electronic catalog are created dynamically from the product descriptions contained in the catalog database.

E-Commerce Suites

An e-commerce suite is a type of merchant server software that consists of an integrated collection of a large number of e-commerce tools and components that work together for e-commerce applications development. They offer builders and users greater flexibility, specialization, customization, and integration in supporting complete front- and back-office functionality. In an e-commerce suite, the functionality is distributed across a number of servers and databases instead of relying on a single server and database, as with less sophisticated merchant server systems.

Major Components of an EC Suite

Process Supported	Back-end databases	Operational Systems Utilized
Catalog Creation and Update	Catalog	
Customer Management	Customer	
Order Management	Order	Fulfillment Systems
Accounts Receivable	Payment	Financial Network

[*Source:* Adapted from Turban et al, 2008]

Major components of an e-commerce suite

The elements displayed in the figure above are indicative of the components contained in a typical EC suite, the processes supported by an EC suite, and the back-end databases and operational systems utilized by the processes. Over the past few years, the e-commerce suite market space has experienced a substantial amount of consolidation. Among the major products that remain on the market are Microsoft's Commerce Server 2007, IBM's WebSphere Commerce suite, and Oracle's EC applications.

Connecting to Databases and Other Enterprise Systems

Connecting to Databases

Virtually every e-commerce application requires database access. For example, when a customer orders a product online, the product description, inventory count, and order information are likely to be retrieved from and stored in one or more databases. An e-commerce application can be connected to a back-end database in a variety of ways. Today, most of these connections are accomplished via a multi-tiered application architecture, such as the one depicted in the figure below
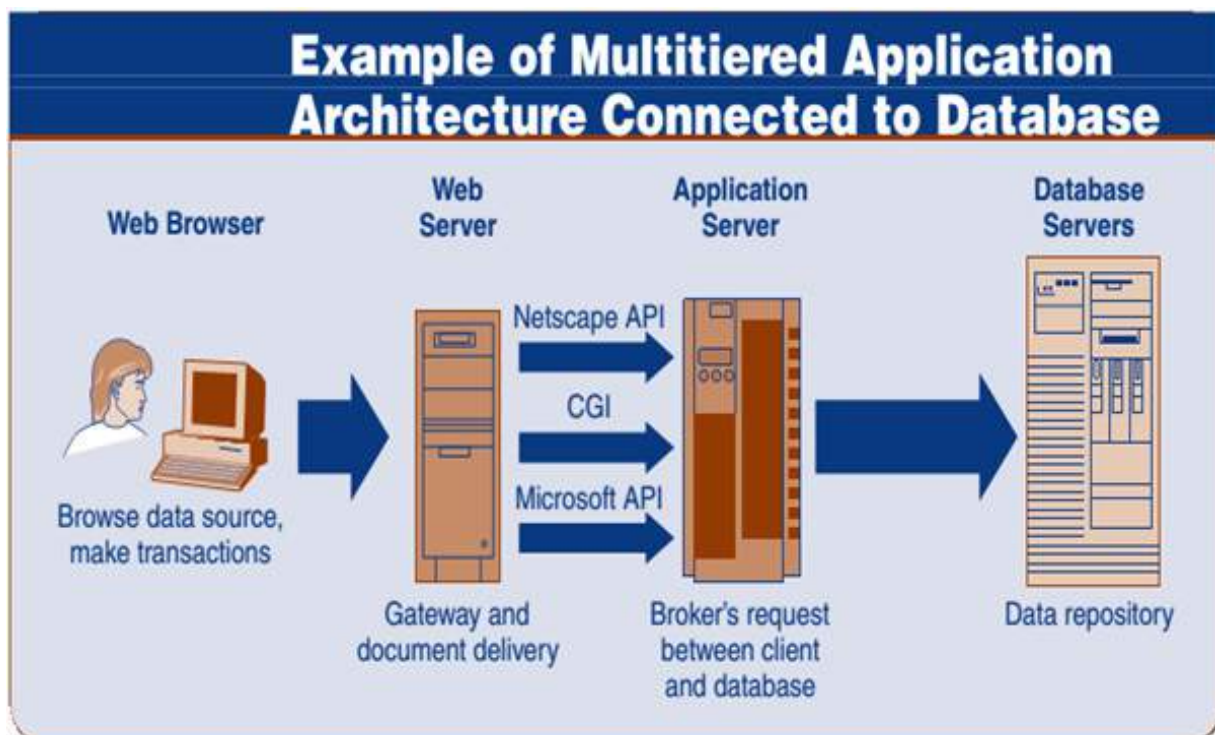
Source: Systinet. *Introduction to Web Services Architecture.* Burlington, MA: Systinet Corp., 2002, p. 6.

E-commerce application connects to databases

This architecture has four tiers:

1. A Web browser that presents data and information to and collects data from the end user

2. A Web server that delivers Web pages, collects the data sent by the end user, and passes data to and from the application server

3. An application server that executes business rules (e.g., user authorization), formulates database queries based on the data passed by the Web server, sends the queries to the back-end database, manipulates and formats the data resulting from the database query, and sends the formatted response to the Web server

4. A database server in which the data are stored and managed and database requests are processed this separation of functions makes it easier to change any tier (or layer) without impacting the other layers. Thus, an application server can be designed to interface or communicate with a wide variety of databases and database management systems (e.g., Oracle, MS SQL Server, DB2 etc.).

Integrating EC Applications and Back-End Systems

Several technologies can be used to integrate an e-commerce application with a back-end database. Many of the commercial electronic catalogs and e-commerce suites have built-in integration capabilities. If a company wants to build its own database interface, a couple of options are available. First, all of the Web scripting languages (e.g., PHP, JSP, and Active Server Pages [ASP]) have commands that simplify the process. More specifically, these scripting languages enable a programmer to build Web pages that can issue queries to a back-end (relational) database and process the database's response to the query. Second, a number of specialized application servers are available that simplify the task of integrating an e-commerce EC application with one or more back-end databases. Among these specialized servers, BEA Inc.'s WebLogic Server 9.2 (bea.com) is a market leader.

In addition to connecting to back-end databases, most EC applications also require integration with a variety of other systems—ERP, CRM, SCM, EDI, data warehouses, and other important internal systems—both inside and outside the company. Again, electronic catalogs and e-commerce suites usually have built-in modules for integration with these systems. The integration can also be handled with a class of software called enterprise application integration (EAI). These products focus on the integration of large systems. TIBCO (tibco.com), webMethods (webmethods.com), and IBM's WebSphere InterChange Server (ibm.com) are examples of companies that have offerings in the EAI arena.

Middleware

E-commerce users interact with Internet applications through a variety of devices whose characteristics and performance figures span an increasingly wide range. Applications use communication protocols and intermediate software that resides on top of the operating systems to perform the following functions:

➢ Hiding distribution (i.e., the fact that an application is usually made up of many interconnected parts running in distributed locations)

➢ Hiding the heterogeneity of the various hardware components, operating systems, and communication protocols

➢ Providing uniform, standard, high-level interfaces to the application developers and integrators so that applications can be easily composed, reused, ported, and made to interoperate

➢ Supplying a set of common services to perform various general-purpose functions to avoid duplicating efforts and to facilitate collaboration between applications

The intermediate software layers have come to be known under the generic name of middleware. Middleware is essentially a separate program that provides an interface between diverse client and server systems. Its main function is to mediate interaction between the parts of an application or between applications. IBM is the leading provider of middleware.

Vendor and Software Selection

Many organizations, especially SMEs, do not have the time, financial resources, or technical expertise required to develop today's complex e-business systems. This means that most e-commerce applications are built with hardware, software, hosting services, and development expertise provided by outside vendors. Thus, a major aspect of developing an e-commerce application revolves around the selection and management of these vendors and their software offerings. Martin et al. (2002) identified six steps in selecting a software vendor and a package.

Identify Potential Vendors

Potential vendors can be identified from software catalogs, lists provided by hardware vendors, technical and trade journals, consultants experienced in the application area, peers in other companies, and Web searches. These sources often yield so many vendors and

packages that one must use some preliminary evaluation criteria to eliminate all but a few of the most promising ones from further consideration.

Determine the Evaluation Criteria

The most difficult and crucial task in evaluating a vendor and a packaged system is to determine a weighted set of detailed criteria for choosing the best vendor and package.

Some areas in which detailed criteria should be developed are vendor characteristics, functional requirements of the system, technical requirements the software must satisfy, the amount and quality of documentation provided, and vendor support of the package.

Evaluate Vendors and Packages

Vendor responses to an RFP (*request for proposal*) generate massive volumes of information that must be evaluated to determine the gaps between the company's needs (as specified by the requirements) and the capabilities of the vendors and their application packages.

Often, the vendors and packages are given an overall score by assigning an importance weight to each of the criteria, ranking the vendors on each of the weighted criteria (say 1 to 10) and then multiplying the ranks by the associated weights. A short list of potential suppliers can be chosen from those vendors and packages with the highest overall scores.

Choose the Vendor and Package

Once a short list has been prepared, negotiations can begin with vendors to determine how their packages might be modified to remove any discrepancies with the company's desired e-commerce application. Thus, one of the most important factors in the decision is the additional development effort that may be required to tailor the system to the company's needs or at least to integrate it into the company's environment.

Negotiate a Contract

The contract with the software vendor is very important. Not only does it specify the price of the software, but it also determines the type and amount of support to be provided by the vendor.

Establish a Service Level Agreement

Service level agreements (SLAs)are formal agreements regarding the division of work between a company and its vendors. Such divisions are based on a set of agreed-upon milestones, quality checks, "what-if " situations, how checks will be made, and what is to be done in case of disputes.

Usage Analysis and Site Management

To improve EC Web sites, it is advisable to monitor what customers are doing there (usage analysis). Both B2C and B2B Web sites require a thorough understanding of the usage and patterns—the who, what, where, when, and how. This can be done by analyzing Web log files.

Every time a user accesses a Web server, the server logs the transaction in a special access log file. Access logs are text files in which each line of the file details an individual access. Regardless of the type of Web server, access logs use a common log file format. This makes them easy to analyze and compare. Because log files can become quite voluminous, it is hard to analyze the accesses by hand. For this reason, most Web server EC software vendors provide free software for analyzing access log files. Commercial products that provide more sophisticated log analyses also are available (e.g., NetIQ's WebTrends). Google Analytics is also a useful tool to gather data related to site usage and traffic.

Access logs provide a variety of statistics that can be used for analyzing and improving marketing and advertising strategies. Among the more valuable statistics are:

➤ Pageviews by time slot - Pageview statistics allow frequent review of the number of site accesses. Grouping pageviews by "time bucket" (time slot) also enables a company to ascertain the time slots, such as morning, afternoon, or evening, during which customers visit the site.

➤ Pageviews by customers' log-in status - This information helps determine whether requiring customers to log in is worthwhile. For instance, if the number of pageviews of customers who log in is substantially greater than those who do not, the company may find the login requirement effective and worthwhile.

➤ Pageviews by referrers - Some customers are drawn or referred to the site by clicking on banners or links on other Web sites. Knowing the source of such referrers is useful for assessing the effectiveness of the location of banners, and customers' interests can also be determined from the nature of the Web site with those banners.

➤ Pageviews by visitor's hardware platform, operating system, browser, and/or browser version - These types of pageviews enable a company to obtain information on the hardware platform (e.g., Mac or PC) and browser type (e.g., Internet Explorer or Google Chrome) used by the viewer.

➤ Pageviews by visitor's host - This type of pageview provides information on the customers' host sites. Knowing where customers are coming from can enable the company to target potential customers via popular hosts such as Yahoo!

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Lesson 3.3 - Building of E-Commerce Websites

Learning Objectives

The objectives of this lesson are to:

- ➢ Explain the importance of a good website for an e-commerce company
- ➢ Describe a useful framework (the 7*C*s) to understand the elements of an e-commerce website

At the end of this lesson, you will be able to:

- ➢ Observe an e-commerce website in terms of the 7*C*s framework
- ➢ Identify the elements of a website that make up each of the 7*C*s

Introduction

An e-commerce website or online store front is the interface between the firm and the customer. This user interface is virtual and largely, a visual representation of the firm's chosen vale proposition. Like a retail store front, it answers questions that prospective customers may have like whether the site is worth visiting or what products and services the site sells. What are the messages that it communicates – exclusivity, low price, ease of use? Consistent with a tightly constructed business model, an effectively designed website should both attract target segment customers and discourage others. Compelling sites communicate the core value proposition of the company and provide a rationale for visiting the site or shopping there.

7Cs framework of an E-Commerce Website

On the Internet, there is a virtual interaction between the firm and the customer and hence, 'face-to-face' encounters that are common in the traditional retail environment get replaced by 'screen-to-face' interactions. Seven design elements of customer interface (that is, the transaction-enabled e-commerce website) have been suggested by Rayport and Jaworski (2002). They include content, customization, community, commerce, context, communication and connection. The following section describes each one of these seven website design elements.

Elements of the 7Cs Framework - Context

Context captures how the Web site is delivered. It consists of functionality and aesthetics (look and feel). Functionality deals with two issues: organizing content into sets of pages (layout) and providing users with a means of navigation (performance). Layout refers to three aspects: section breakdown, linking structure, and navigation tools. Section breakdown is concerned with how a piece of information is partitioned into sets of pages; linking structure with how each page is linked to the others; and navigation tools with the means of moving throughout the site. The aesthetic nature of sites is established by visual characteristics, including colours used throughout the site (colour scheme) and visual themes that help deliver a message. Some websites combine the functional and aesthetic orientations to represent a hybrid approach which incorporates both orientations. The standard dimensions of *Context* are shown in the following figure and Figure shows a screenshot of IRCTC's mobile webpage as an illustrative example for the *Context* element.

Dimensions of Context

VISUAL	PERFORMANCE
Section Breakdown ➤ The way the site is organized into subcomponents	**Speed** ➤ The time required to display a site page on the user's screen
Linking Structure ➤ The site's approach to linking alternative sections	**Reliability** ➤ How often is the site down? ➤ Percent of times that the site correctly downloads to user
Navigation Tools ➤ Facilitate how the user moves through the site	**Platform Independence** ➤ How well the site runs on various platforms
Color Scheme ➤ The colors used throughout the site	**Media Accessibility** ➤ The site's ability to run on various devices
Visual Themes ➤ Help to tell the stories portrayed across the site	**Usability** ➤ The ease with which the site can be navigated by users

[*Source:* Adapted from Rayport*et al.* 2008]

The *context* element of an e-commerce website

An example of the mobile version of the popular website of IRCTC is shown below.

[*Source:* https://www.irctc.co.in/mobile]

An illustrative example for the *Context* element

Elements of the 7Cs Framework - Content

While context focuses on presentation, *content* focuses on what a site delivers. It comprises offering mix, appeal mix, multimedia mix, and content type. Offering mix is the mix of product and service information on a Web site (e.g., collected items for outdoor sports), appeal mix refers to promotional and communication messaging (e.g., customer support), multimedia mix deals with the choice of media (e.g., pictures of products supported by audio narration), and content type refers to the degree of time-sensitivity: current-content versus reference-content according to high/low time-sensitivity.

Dimensions of Content
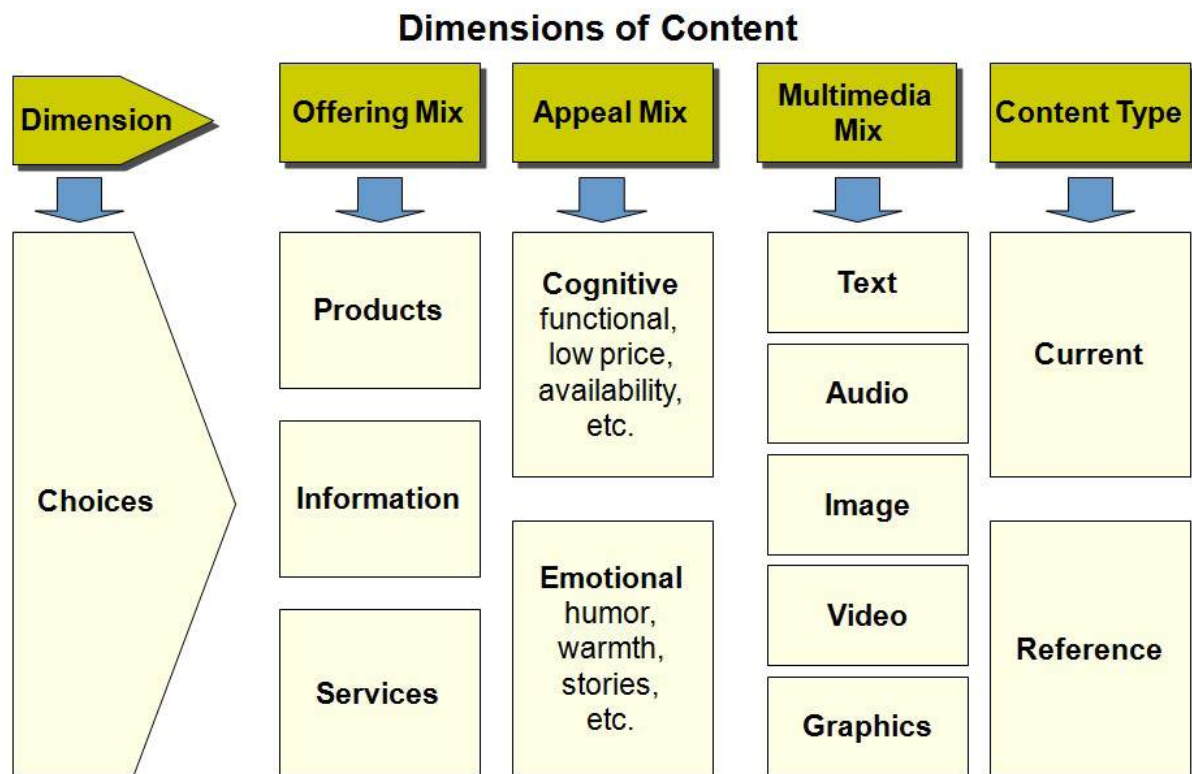
[*Source:* Adapted from Rayport *et al.* 2008]

Dimensions of *content* element of an e-commerce website

An illustrative example of a travel website is shown below. It showcases a broad range of content (including information) and uses a variety of multimedia to highlight various properties.
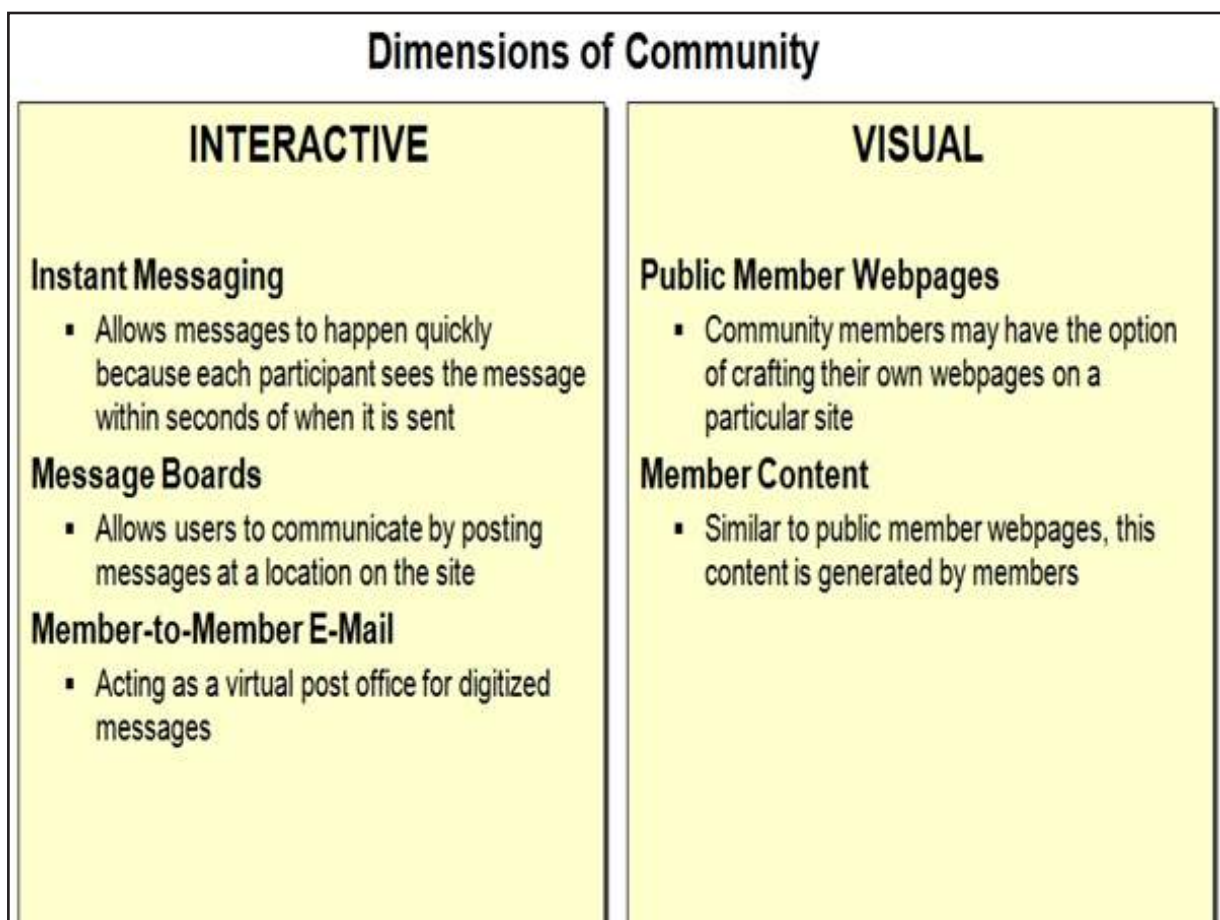
[*Source:* http://www.travelguru.com/]

An illustrative example for the *Content* element

Elements of the 7Cs framework - Community

Community concerns the interaction between and among the website users (i.e., user-to-user communication), including a feeling of membership and a sense of involvement. User-to-user communication can occur between two users or involve many. It serves to organize favourable customers and to increase their loyalty. Furthermore it is expected that they play a critical role as opinion leaders for general customers through word-of-mouse, which is the online equivalent for word-of-mouth. Customer postings and guestbook comments are certain instances of community-building, though not in a dynamic sense. The community element is divided into interactive communication and non-interactive communication.

Examples of interactive communication tools include instant messaging, message boards, and member-to-member e-mailing lists. On the other hand, some users seek non-interactive communication rather than be involved in a direct exchange of responses.

Dimensions of Community

INTERACTIVE

Instant Messaging
- Allows messages to happen quickly because each participant sees the message within seconds of when it is sent

Message Boards
- Allows users to communicate by posting messages at a location on the site

Member-to-Member E-Mail
- Acting as a virtual post office for digitized messages

VISUAL

Public Member Webpages
- Community members may have the option of crafting their own webpages on a particular site

Member Content
- Similar to public member webpages, this content is generated by members

[*Source:* Adapted from Rayportet al. 2008]

Dimensions of *community* element of an e-commerce website

An example of the community related facilities available to users of a popular e-commerce site is shown below.

[*Source:* http://community.ebay.in/]
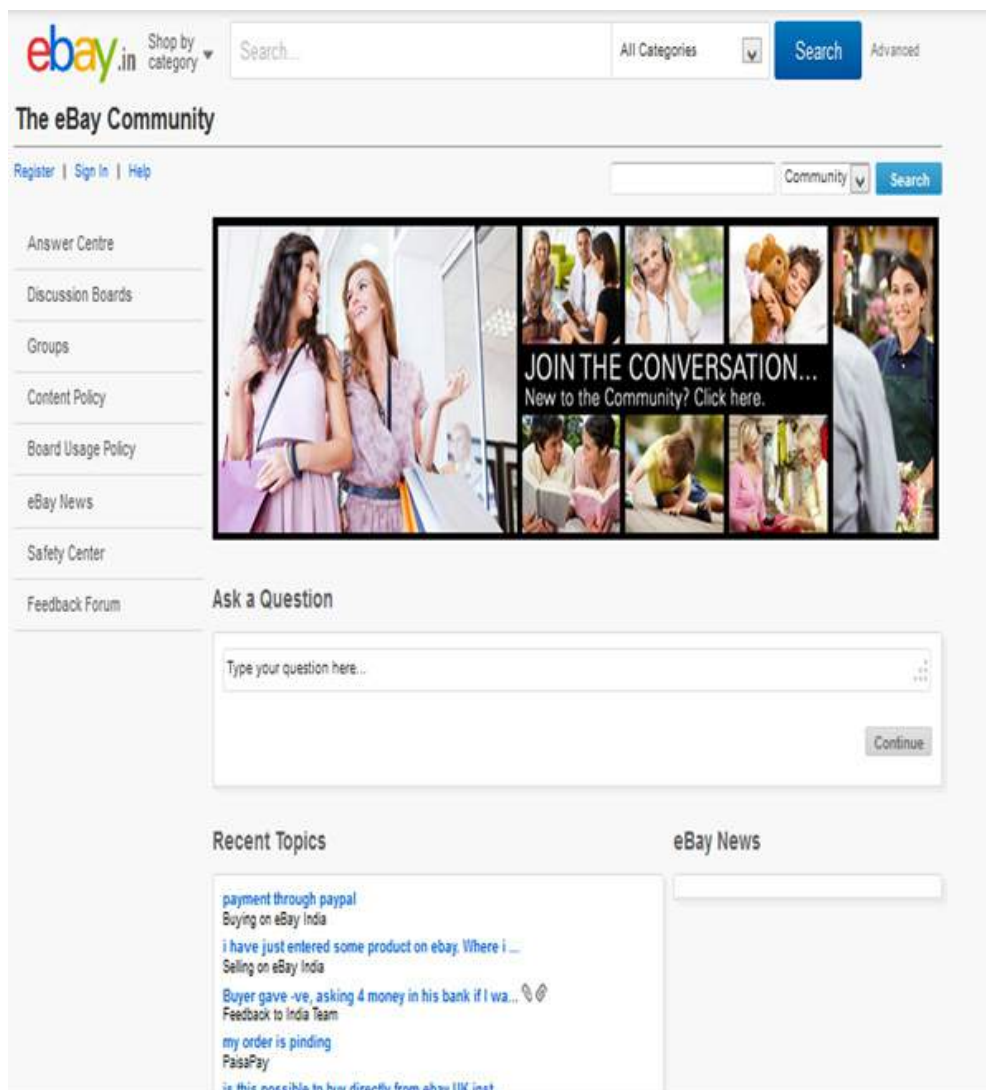
An illustrative example for the *Community* element

Elements of the 7Cs Framework - Customization

Customization means the website's ability to tailor itself to different users or to allow users to personalize the site. Service that allows customers to design personal itineraries by themselves is a good example of customization. Websites offering multiple language support and search (on the basis of a personal query) facility may be credited for this design element. Customization happens in two ways: one, the sitetailors itself (tailoring) to suit the requirements of the use or the site is tailored by each user (personalization). The following figure describes these two dimensions of customizations.

Dimensions of Customization

PERSONALIZATION

Log-in Registration
- The site recognizes return users and configures itself accordingly

Cookies
- Temporary files that track and gather data about user's behavior

Personalized E-Mail Accounts
- Provided free-of-charge to site users

Content and Layout Configuration
- Users select layout and content based on their interests

Storage
- Sites provide virtual hard-disk storage

Agents
- Programs designed to perform simple tasks

TAILORING

Based on Past User Behavior
- Many sites adjust themselves dynamically based on a user's past behavior and preferences

Based on Behavior of Other Users With Similar Preferences
- Some sites make recommendations to the user based on preferences of other users with similar profiles

[*Source:* Adapted from Rayport *et al.* 2008]

Dimensions of *customization* element of an e-commerce website

An example of the customization offered by a leading online retailer is shown below.

[*Source:* http://www.landsend.com/]

An illustrative example for the *Customization* element

Elements of the 7Cs Framework - Communication

Communication is defined as the dialogue between sites and their users and has three forms: broadcast, a one-way information exchange from an organization to users (e.g., e-mail notification), interactive, a two-way communication between an organization and a user (e.g., customer service request), and hybrid, a combination of broadcast and interactive (e.g., freeware distribution).

Dimensions of Communication

BROADCAST

Mass Mailings
- Broadcast transmissions of large volumes of e-mail targeted at large audiences

FAQs
- Answers to frequently asked questions

E-Mail Newsletters
- Inform site subscribers of site changes, special offers, etc.

Content-Update Reminders
- E-mail reflecting user interest in a particular content area

Broadcast Events
- Events can be broadcast from a website (webcast) that allows limited user control over such things as camera angle

INTERACTIVE

E-Commerce Dialogue
- Organizations and users trade e-mails regarding order placement, tracking and fulfillment

Customer Service
- Organizations can provide customer service through trading e-mails or live online dialogue

User Input
- User-generated content such as supplier ratings and user feedback to the site

[*Source:* Adapted from Rayport *et al.* 2008]

Dimensions of *communication* element of an e-commerce website

An example of the communication offered to customers by a leading online retailer is shown below.

An illustrative example for the *Communication* element

Elements of the 7Cs Framework - Connection

Connection refers to the extent of formal linkage from one site to others. It is characterized according to the degree of linkage and the amount of information quoted from other sites: outsourced content, percent of home site content, and pathways of connection.

Dimensions of Connection

Links	Home Site Background	Outsourced Content

Links can take the user completely outside of the home site

Links can take the user to a new site, but the home site is still in the background

Site content is derived from third parties

% of Home Site Content	Pathway of Connection	KEY

%?

What percentage of content originates from the home site and how much is outsourced?

?

Does the site lead users to other sites, or does it simply retrieve information from outside sites?

KEY

■ Home site

☐ Connected Sites

[*Source:* Adapted from Rayport*et al.* 2008]

Dimensions of *connection* element of an e-commerce website

An example of the connection to and from other sites on a leading online travel website is shown below.

[*Source:* http://www.yatra.com/YT/airlines/]

An illustrative example for the *Connection* element

Elements of the 7Cs Framework - Commerce

Commerce means the website's capability to enable commercial transactions. Online reservation, payment and cancellation features indicate a highly commerce-oriented website. The commerce dimension deals with the interface that supports the diverse facets of business transactions, such as a shopping cart, security, orders through affiliates, order tracking, and delivery options.

Dimensions of Commerce

TOOLS FOR ENABLING COMMERCE

Registration
- Allows the site to store information about users and user preferences

Shopping Cart, One-Click Shopping
- Facilitates online shopping by making it more user-friendly

Security, Credit-Card Approval
- Enables online transactions by allowing users to securely share credit-card information

Orders Through Affiliates
- Sites must be able to track orders that come from and go to affiliates

Configuration Technology
- Users can test product compatibility, and price trade-offs and product substitutions online.

Order Tracking, Delivery Options
- Once orders are placed on the site, users can choose how they would like their products delivered and track those orders from the site to their front door.

[*Source:* Adapted from Rayport*et al.* 2008]

Dimensions of *commerce* element of an e-commerce website

An example of the shopping cart feature in the commerce dimension of a leading online retailer is shown below.

An illustrative example for the *Commerce* element

The extent to which an e-commerce website is successful depends upon how well all of the 7*C*s work together to support its value proposition and business model. Two concepts

are particularly helpful in understanding the synergy among the 7Cs: fit and reinforcement. Fit refers to the role of each of the 7Cs in creating, delivering and sustaining the value proposition for the customer. Reinforcement refers to how the 7Cs complement each other to provide a consistent user interface for the customer.

Self Assessment Questions

1. What are the functions of an electronic storefront?
2. Explain the steps involved in developing a typical e-commerce application.
3. What do you mean by the term e-commerce architecture?
4. What are the development options in building an e-retail infrastructure.
5. If a company decides to buy or lease an e-commerce application, what representative selection criteria need to be considered while implementing this decision?
6. What are the types of e-commerce software packages? Explain their utility.
7. Explain the following terms:
   a. E-commerce suite
   b. Middleware
8. Discuss the criteria for vendor and software selection in e-commerce infrastructure development.
9. Describe the role of usage analysis in e-commerce infrastructure development.

CASE STUDY

The following image is a screen of FabIndia's website. FabIndia is a popular ethnic apparel bricks-and-clicks retailer. Carefully observe the screenshot of FabIndia's homepage and identify the elements that make up each of the 7Cs of e-commerce website design.

✴✴✴✴
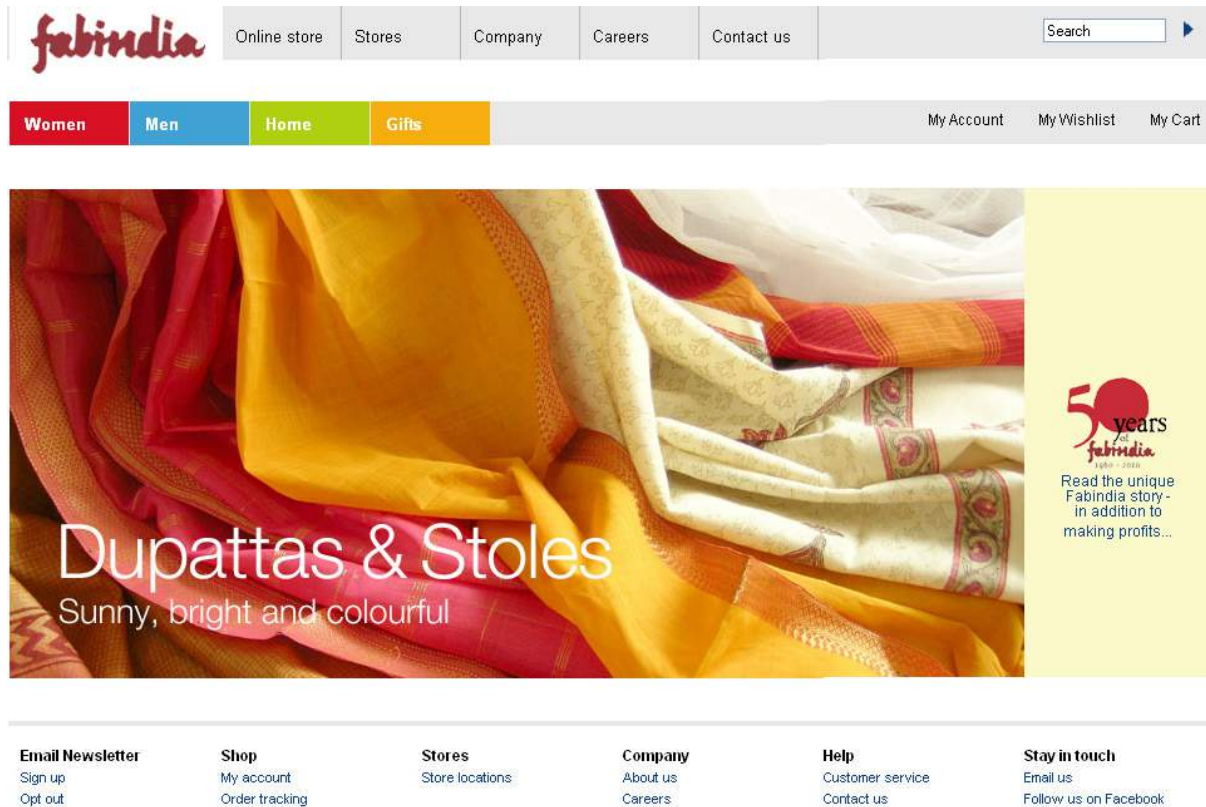
Unit Structure

Lesson 4.1 **-** Introduction to E-commerce and E-Commerce Payment System

Learning Objectives

The objectives of this lesson are to:

➢ Provide a re-look into e-commerce in the context of online payments

➢ Introduce the tools used in the implementation of e-commerce payment systems

➢ Understand the types of e-commerce payment systems

At the end of this lesson, you will be able to:

➢ Appreciate the transaction-enabling role of online payments

➢ Explain the differences between traditional and electronic payment systems

➢ Understand the working of Secure Electronic Transaction (SET) & Secure Sockets Layer (SSL)

➢ Explain the utility of the common types of e-commerce payment options

Introduction

E-commerce is an industry where buying and selling of product or service is conducted over electronic systems such as the Internet and other computer networks. Electronic commerce draws on technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems. Modern electronic commerce typically uses the World Wide Web at least at one point in the transaction's life-cycle, although it may encompass a wider range of technologies such as e-mail, mobile devices social media, and telephones as well. Electronic commerce is generally considered to be the sales aspect of e-business. It also consists of the exchange of data to facilitate the financing and payment aspects of business transactions. This is an effective and efficient way of communicating within an organization and one of the most effective and useful ways of conducting business. The effects of e-commerce are

already appearing in all areas of business, from customer service to new product design. It facilitates new types of information based business processes for reaching and interacting with customers-online advertising and marketing

Evolution of E-Commerce

From the very beginning, the potential of the internet as a radically different and a highly effective communications channel appeared obvious: global reach, ease of access, enhanced interactivity, flexibility and speed, ability to communicate large amounts of information, cost efficiency and ease of maintenance. Such capabilities were soon to be harnessed in a wide variety of sectors, such as defence, banking, manufacturing, healthcare and education. However, it was quickly recognised that it was amongst retailers that the most significant impact of the internet was likely to be experienced. More specifically, retailers soon realised the internet's potential to provide information, facilitate two-way communication with customers, collect market research data, promote goods and services and ultimately to support the online ordering of merchandise, provides an extremely rich and flexible new retail channel. According to Pyle, the internet's "global connectivity opens up new avenues for business in a manner that traditional commerce conduits cannot match".

Although electronic shopping did not emerge in any organised and substantive way until the mid-1990s, its arrival had been widely heralded for many years, beforehand. Indeed, almost 30 years before it did eventually burst onto the retail scene, Doddy and Davidson (1967) had presented a powerful vision of how the future of retailing lay in consumers directly using computer terminals to order their goods directly from central warehouses. Despite experiencing a lengthy period of gestation, and a significant amount of prior hype, when electronic commerce did eventually become a reality, its actual arrival still generated a huge amount of interest amongst academics, politicians, industrialists, bankers, managers, entrepreneurs and particularly retailers. Ultimately, it was the internet's unique "capacity to deliver tangible economic gains" that was the primary catalyst for the explosion of interest and activity in electronic business. Particularly when it became clear that the internet could deliver: distribution efficiency; assortments of complementary merchandise; collection and utilisation of customer information; and the ability to offer unique or unusual merchandise.

The potential of the internet as a vehicle for promoting goods and capturing sales was clear, early commentators also recognised that there were many significant barriers and hurdles that would need to be overcome before this state of affairs could be achieved. The lack of security of internet sites and the absence of suitable online payment systems, coupled with slow connection times and limited access to the internet by potential customers, were all significantly impeding its commercial development. The consumers had serious

concerns about the security of internet retailing but also expressed serious doubts about the legitimacy and longevity of some internet businesses. Worries about the legality of transactions, and the lack of reliable information on the effectiveness of this paradigm was also added to the growing list of concerns for conducting business.

Arguably, the commercial liberation of the internet networks in 1989, started the gold rush era of the internet and it was suggested that the internet could potentially reshape the commercial world. Subsequently, there was a great deal of hyperbole issuing from media articles, consultant reports and management journals suggesting that the online trading environment offered opportunity for new virtual businesses to dominate existing businesses in established trading environments. As excitement grew about this radically different retail environment, free from the traditional restrictions of time and space, speculation increased that it would ultimately be able to achieve a position of dominance in global markets.

The radical change in the retail environment demanded a new way to transact where the buyer doesn't physically meet the seller and still trust the services that are rendered. With these increased pressure of transactional integrity there was a demand for highly secured ways to transact in terms of payment that is to be made.

The **payment system** is an operational network - governed by laws, rules and standards - that links bank accounts and provides the functionality for monetary exchange using bank deposits. The payment system is the infrastructure (consisting of institutions, instruments, rules, procedures, standards, and technical means) established in effect the transfer of monetary value between parties discharging mutual obligations. Its technical efficiency determines the efficiency with which transaction money is used in the economy, and risk associated with its use. What makes it a "system" is that it employs cash-substitutes; traditional payment systems are negotiable instruments such as drafts (e.g., checks) and documentary credits such as letter of credits. With the advent of computers and electronic communications a large number of alternative electronic payment systems have emerged. These include debit cards, credit cards, electronic funds transfers, direct credits, direct debits, internet banking and e-commerce payment systems. Some payment systems include credit mechanisms, but that is essentially a different aspect of payment. Payment systems are used in lieu of tendering cash in domestic and international transactions and consist of a major service provided by banks and other financial institutions.

Payment systems may be physical or electronic and each has their own procedures and protocols. Standardisation has allowed some of these systems and networks to grow to a global scale, but there are still many country and product specific systems. Examples of payment systems that have become globally available are credit card and automated

teller machine networks. Specific forms of payment systems are also used to settle financial transactions for products in the equity markets, bond markets, currency markets, futures markets, derivatives markets, and options markets and for transfer funds between financial institutions both domestically using clearing and Real Time Gross Settlement (RTGS) systems and internationally using the Society for worldwide Interbank Financial Telecommunication (SWIFT) network.

The term **electronic payment** can refer narrowly to e-commerce - a payment for buying and selling goods or services offered through the Internet, or broadly to any type of electronic funds.

Electronic Payment Systems (EPS)

An e-commerce payment system facilitates the acceptance of electronic payment for online transactions. Also known as a sample of Electronic Data Interchange (EDI), e-commerce payment systems have become increasingly popular due to the widespread use of the internet-based shopping and banking. Issues of trust and acceptance play a more significant role in the e-commerce world than in traditional businesses as far as payment systems are concerned. Traditionally, a customer sees a product, examines it, and then pays for it by cash, check, or credit card (Figure). In the e-commerce world, in most cases the customer does not actually see the concrete product at the time of transaction, and the method of payment is performed electronically.
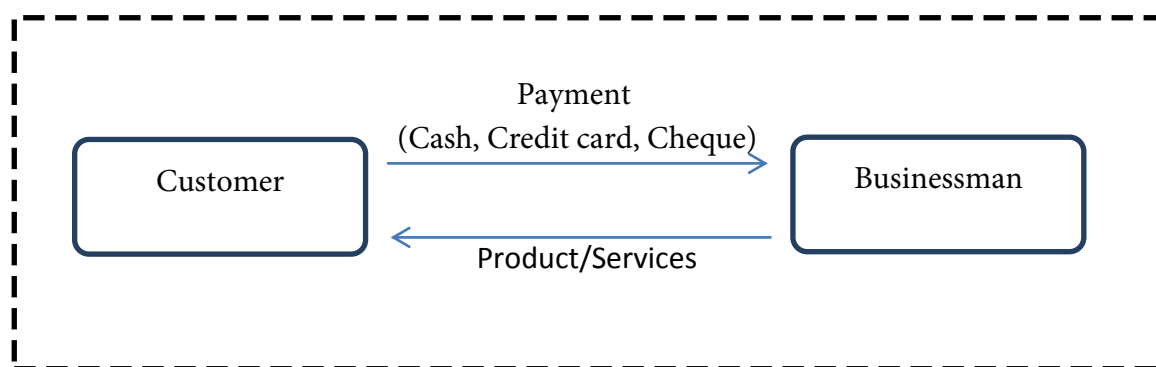
Traditional Payment System

EPSs enable a customer to pay for the goods and services online by using integrated hardware and software systems. The main objectives of EPS are to increase efficiency, improve security, and enhance customer convenience and ease of use. Although these systems are in their immaturity, some significant development has been made. There are several methods and tools that can be used to enable EPS implementation (Figure)
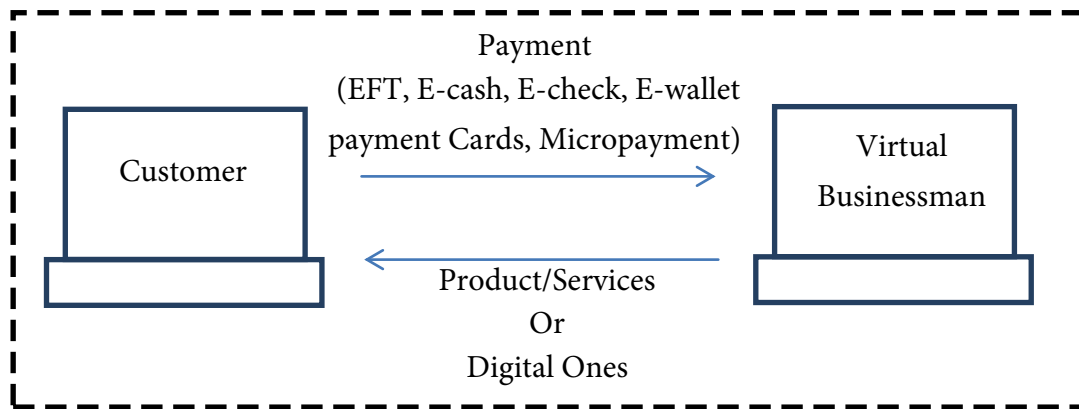
Electronic Payment System

While customers pay for goods/services by cash, check, or credit cards in conventional businesses, online buyers may use one of the following EPSs to pay for products/services purchased online:

> Electronic funds transfer (EFT): EFT involves electronic transfer of money by financial institutions.

> Payment cards: They contain stored financial value that can be transferred from the customer's computer to the businessman's computer.

> Credit cards: They are the most popular method used in EPSs and are used by charging against the customer credit.

> Smart cards: They include stored financial value and other important personal and financial information used for online payments.

> Electronic money (e-money/e-cash): This is standard money converted into an electronic format to pay for online purchases.

> Online payment: This can be used for monthly payment for Internet, phone bills, etc.

> Electronic wallets (e-wallets): They are similar to smart cards as they include stored financial value for online payments.

> Micro-payment systems: They are similar to e-wallets in that they include stored financial value for online payments; on the other hand, they are used for small payments, such as kurus in Turkey.

> Electronic gifts: They are one way of sending electronic currency or gift certificates from one individual to another. The receiver can spend these gifts in their favorite online stores provided they accept this type of currency.

Although these groups appear to be separate, there is some overlap among them. When the industry matures, this duplication in naming and function ought to be renamed. For example, e-wallets can be classified as payment cards when they are used to store credit card information or as e-money when they store electronic currency. The standardization of payment mechanisms on the Internet is essential to the success of e-commerce.

Businesses offering domestic and international services must have assurance that payment will be received, that it is secure and that it is valid. Addressing security issues is crucial to the acceptance of online payment standards: consumers and merchants must be able to trust that their information is kept intact and remains secure during transmission. SET and SSL are two standards that protect the integrity of online transactions.

Secure Electronic Transaction (SET) & Secure Sockets Layer (SSL)

Secure Electronic Transaction (SET) was a communications protocol standard for securing credit card transactions over insecure networks, specifically, the Internet. SET was not itself a payment system, but rather a set of security protocols and formats that enabled users to employ the existing credit card payment infrastructure on an open network in a secure fashion.

SET allowed parties to identify themselves to each other and exchange information securely. SET used a cryptographic blinding algorithm that, in effect, would have let merchants substitute a certificate for a user's credit-card number.

If SET were used, the merchant itself would never have had to know the credit-card numbers being sent from the buyer, which would have provided verified good payment but protected customers and credit companies from fraud.

A SET system includes the following participants:

- Cardholder
- Merchant
- Issuer
- Acquirer
- Payment gateway
- Certification authority

How SET Transactions Work
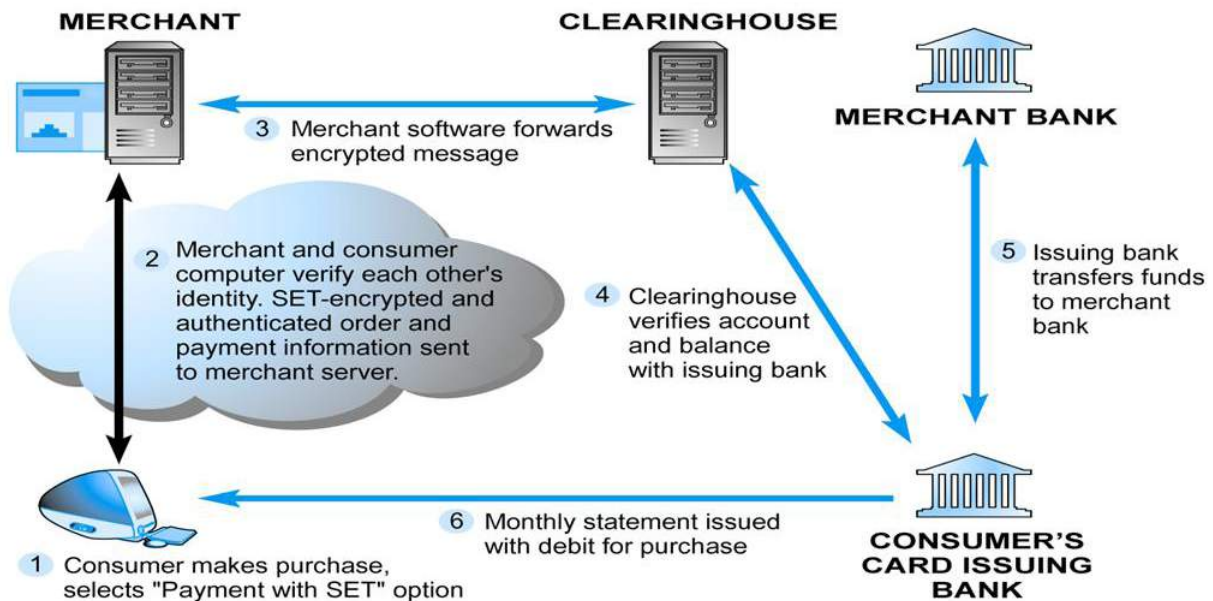
The working of Secure Electronic Transactions (SET)

The sequence of events required for a transaction is as follows:

➢ The customer obtains a credit card account with a bank that supports electronic payment and SET

➢ The customer receives an X.509v3 digital certificate signed by the bank.

➢ Merchants have their own certificates

➢ The customer places an order with the merchant.

➢ The merchant sends the customer his public key and a copy of his certificate so that the customer can verify that it›s a valid store.

➢ The customer sends the merchant:

- His certificate.
- His order details encrypted with the merchant›s public key
- His bank account details encrypted with the bank›s public key.

➢ The merchant requests payment authorization by sending the bank:

- The payment details encrypted with the bank›s public key.
- The customer›s bank account details encrypted with the bank›s public key.

(Note that the merchant doesn't know the client's payment details.)

> ➢ The bank sends the merchant a confirmation encrypted with the merchant's public key.

> ➢ The merchant sends the client the bank's response encrypted with the client's public key.

> ➢ The merchant ships the goods or provides the service to the customer.

> ➢ The merchant sends the bank a transaction request encrypted with the bank's public key.

> ➢ The bank transfers the payment to the merchant.

An important innovation introduced in SET is the **dual signature.** The purpose of the dual signature is the same as the standard electronic signature: to guarantee the authentication and integrity of data. It links two messages that are intended for two different recipients. In this case, the customer wants to send the order information (OI) to the merchant and the payment information (PI) to the bank. The merchant does not need to know the customer's credit card number, and the bank does not need to know the details of the customer's order. The link is needed so that the customer can prove that the payment is intended for this order.

The message digest (MD) of the OI and the PI are independently calculated by the customer. The dual signature is the encrypted MD (with the customer's secret key) of the concatenated MD's of PI and OI. The dual signature is sent to both the merchant and the bank. The protocol arranges for the merchant to see the MD of the PI without seeing the PI itself, and the bank sees the MD of the OI but not the OI itself. The dual signature can be verified using the MD of the OI or PI. It doesn't require the OI or PI itself. Its MD does not reveal the content of the OI or PI, and thus privacy is preserved.

SSL Protocol

Secure Sockets Layer, a protocol developed by Netscape for transmitting private documents via the Internet. SSL uses a cryptographic system that uses two keys to encrypt data – a public key known to everyone and a private or secret key known only to the recipient of the message. Both Netscape Navigator and Internet Explorer support SSL, and many Web sites use the protocol to obtain confidential user information, such as credit card numbers. By convention, URLs that require an SSL connection start with https: instead of http.

Another protocol for transmitting data securely over the World Wide Web is Secure HTTP (S-HTTP). Whereas SSL creates a secure connection between a client and a server, over which any amount of data can be sent securely, S-HTTP is designed to transmit individual messages securely. SSL and S-HTTP, therefore, can be seen as complementary rather than competing technologies. Both protocols have been approved by the Internet Engineering Task Force (IETF) as a standard.
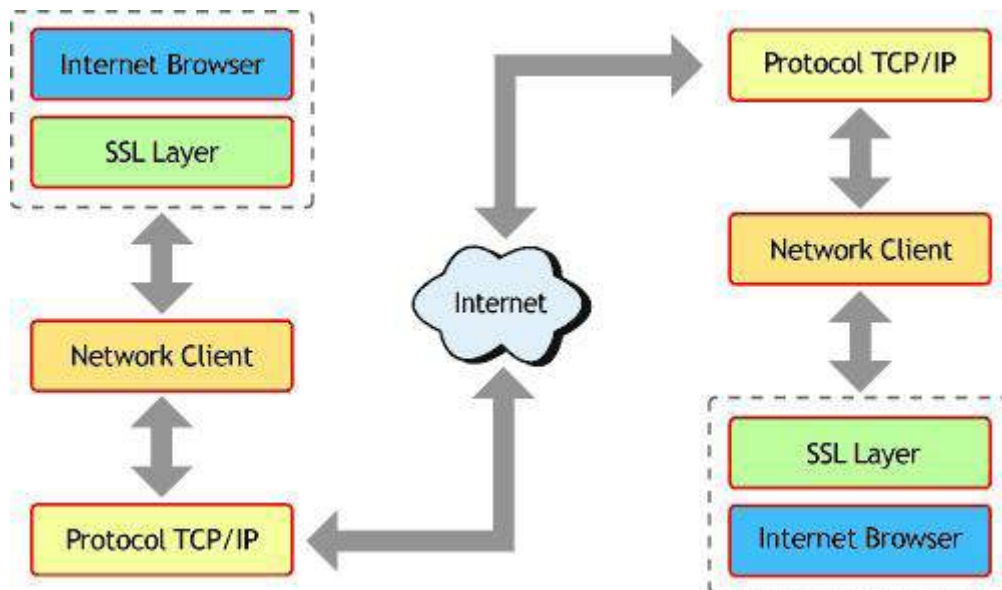
The working of Secure Sockets Layer

SSL Layer protects the integrity of online transactions by providing secure environment for transactions.

Types of Electronic Commerce Payment Systems

As per the increased role of the virtual transactions where the buyer meets the seller and procure goods/services, the necessity for the secured payment systems increased. Special electronic payment systems have been developed to pay for goods electronically on the Internet. Electronic payment systems for the Internet include the following systems:

1) Credit cards account for 80 percent of online payments in the United States and about 50 percent of online purchases outside the United States. The more sophisticated electronic commerce software has capabilities for processing credit card purchases on the Web. Businesses can also contract with services that extend the functionality of existing credit card payment systems. Digital credit card payment systems extend the functionality of credit cards so they can be used for online shopping payments. They make credit cards safer and more convenient for online merchants

and consumers by providing mechanisms for authenticating the purchaser's credit card to make sure it is valid and arranging for the bank that issued the credit card to deposit money for the amount of the purchase in the seller's bank account.

2) Digital wallets make paying for purchases over the Web more efficient by eliminating the need for shoppers to enter their address and credit card information repeatedly each time they buy something. A digital wallet securely stores credit card and owner identification information and provides that information at an electronic commerce site's "checkout counter." The digital wallet enters the shopper's name, credit card number, and shipping information automatically when invoked to complete the purchase. Amazon.com's 1-Click Shopping, which enables a consumer to fill in shipping and credit card information automatically by clicking one button, uses electronic wallet technology. MSN Wallet, MasterCard Wallet, and America Online's Quick Checkout are other digital wallet systems.

3) Micropayment systems have been developed for purchases of less than $10, such as downloads of individual articles or music clips that would be too small for conventional credit card payments. Accumulated balance payment systems or stored value payment systems are useful for such purposes.

4) Accumulated balance digital payment systems enable users to make micropayments and purchases on the Web, accumulating a debit balance that they must pay periodically on their credit card or telephone bills. IPIN has been widely adopted by online music sites that sell music tracks for 99 cents. It invoices customers through existing consumer billing services such as telephone and wireless service companies, Internet service providers, and banks. PaymentOne and Trivnet enable consumers to charge small purchases to their monthly telephone bill.

5) Stored value payment systems enable consumers to make instant online payments to merchants and other individuals based on value stored in a digital account. Online value systems rely on the value stored in a consumer's bank, checking, or credit card account and some of these systems require the use of a digital wallet. E-count offers a prepaid debit account for online purchases.

6) Smart cards are another type of stored value system used for micropayments. A smart card is a plastic card the size of a credit card that stores digital information. The smart card can store health records, identification data, or telephone numbers, or it can serve as an "electronic purse" in place of cash. The Mondex and American Express Blue smart cards contain electronic cash and can be used to transfer funds

to merchants in physical storefronts and to merchants on the Internet. Both are contact smart cards that require use of special card-reading devices whenever the cards need to transfer cash to either an online or offline merchant. (Internet users must attach a smart card reader to their PCs to use the card. To pay for a Web purchase, the user would swipe the smart card through the card reader).

7) Digital cash (also known as electronic cash or e-cash) can also be used for micropayments or larger purchases. Digital cash is currency represented in electronic form that moves outside the normal network of money (paper currency, coins, checks, credit cards). Users are supplied with client software and can exchange money with another e-cash user over the Internet or with a retailer accepting e-cash. eCoin.net is an example of a digital cash service. In addition to facilitating micropayments, digital cash can be useful for people who do not have credit cards and wish to make Web purchases.

8) Web-based peer-to-peer payment systems have sprung up to serve people who want to send money to vendors or individuals who are not set up to accept credit card payments. The party sending money uses his or her credit card to create an account with the designated payment at a Web site dedicated to peer-to-peer payments. The recipient "picks up" the payment by visiting the Web site and supplying information about where to send the payment (a bank account or a physical address). Today PayPal has become a popular peer-to-peer payment system.

9) Digital checking payment systems, such as Western Union Money Zap and e-Check, extend the functionality of existing checking accounts so they can be used for online shopping payments. Digital checks are less expensive than credit cards and much faster than traditional paper-based checking. These checks are encrypted with a digital signature that can be verified and used for payments in electronic commerce. Electronic check systems are useful in business-to-business electronic commerce.

10) Electronic billing presentment and payment systems are used for paying routine monthly bills. They enable users to view their bills electronically and pay them through electronic fund transfers from bank or credit card accounts. These services support payment for online and physical store purchases of goods or services after the purchase has taken place. They notify purchasers about bills that are due, present the bills, and process the payments. Some of these services, such as Check Free, consolidate subscribers' bills from various sources so that they can all be paid at one time.

Credit Cards

Over the years, credit cards have become one of the most common forms of payment for e-commerce transactions. With credit cards emerging as the major contributors towards the e-commerce transactions it would be difficult for an online retailer to operate without supporting credit and debit cards due to their widespread use says Turban et al. Increased security measures include use of the card verification number (CVN) which detects fraud by comparing the verification number printed on the signature strip on the back of the card with the information on file with the cardholder's issuing bank.

Also online merchants have to comply with stringent rules stipulated by the credit and debit card issuers (Visa and MasterCard) this means that merchants must have security protocol and procedures in place to ensure transactions are more secure. This can also include having a certificate from an authorized certification authority (CA) who provides PKI (Public-Key infrastructure) for securing credit and debit card transactions.

Despite widespread use in North America, there are still a large number of countries such as China, India and Pakistan that have some problems to overcome in regard to credit card security.

In the meantime, the use of smartcards has become extremely popular. A Smartcard is similar to a credit card; however it contains an embedded 8-bit microprocessor and uses electronic cash which transfers from the consumers' card to the sellers' device. A popular smartcard initiative is the VISA Smartcard. Using the VISA Smartcard you can transfer electronic cash to your card from your bank account, and you can then use your card at various retailers and on the internet.

There are companies that enable financial transactions to transpire over the internet, such as PayPal and Citadel EFT. Many of the mediaries permit consumers to establish an account quickly, and to transfer funds into their on-line accounts from a traditional bank account (typically via ACH transactions), and *vice versa*, after verification of the consumer's identity and authority to access such bank accounts. Also, the larger mediaries further allow transactions to and from credit card accounts, although such credit card transactions are usually assessed a fee (either to the recipient or the sender) to recoup the transaction fees charged to the mediary. The speed and simplicity with which cyber-mediary accounts can be established and used have contributed to their widespread use, although the risk of abuse, theft and other problems—with disgruntled users frequently accusing the mediaries themselves of wrongful behavior—is associated with them.

Illustrative screen shot of an online payment using Credit Card

Digital Wallets

A Digital Wallet is a system that securely stores users' payment information and passwords for numerous payment methods and websites. By using a digital wallet, users can complete purchases easily and quickly with near-field communications technology. They can also create stronger passwords without worrying about whether they will be able to remember them later. Digital wallets can be used in conjunction with mobile payment systems that allow customers to pay for purchases with their smart phones. They can also be used to store loyalty card information and digital coupons.

Digital Wallet is also known as an e-wallet. By storing all of a consumer's payment information securely and compactly, digital wallets largely eliminate the need to carry a physical wallet.

Also, digital wallets are a potential boon to companies that collect consumer data. The more companies know about their customers' purchasing habits, the more effectively they can market to them. The downside for consumers is a loss of privacy. Increasingly, digital wallets are being made not just for basic financial transactions but to also authenticate the holder's credentials.

For example, a digital-wallet could potentially verify the age of the buyer to the store while purchasing alcohol. It is useful to approach the term 'digital wallet' not as a singular technology but as three major parts: the system (the electronic infrastructure) and the application (the software that operates on top) and the device (the individual portion).

A digital wallet has both a software and information component. The software provides security and encryption for the personal information and for the actual transaction. Typically, digital wallets are stored on the client side and are easily self-maintained and fully compatible with most e-commerce Web sites. A server-side digital wallet, also known as a thin wallet, is one that an organization creates for and about you and maintains on its servers.

Server-side digital wallets are gaining popularity among major retailers due to the security, efficiency, and added utility it provides to the end-user, which increases their enjoyment of their overall purchase. The information component is basically a database of user-inputted information. This information consists of your shipping address, billing address, payment methods (including credit card numbers, expiry dates, and security numbers), and other information. The key point to take from digital wallets is that they're composed of both digital wallet devices and digital wallet systems.

With the increased usage of this Digital Wallet system, we have many service providers. Some of the top Digital Wallet providers are listed below.

Google Wallet

Instead of tapping your credit card on the NFC machine at the checkout counter, all you have to do is wave your smartphone or tap it on the machine to make your payments. It'll be able to identify the credit card information linked on your Google account.

For this to work, Google Wallet requires Near Field Communication (NFC) technology available, which unfortunately is only available on certain smartphones and tablets. You link your debit or credit card to your Google account and you can leave your wallet at home – but at the moment, it only works with phones and credit cards from the US and only in the US. Currently, it supports 20+ merchants on the ground and online, promising more merchants to come.

Illustration of Google Wallet

Apple's Passbook

Apple's Passbook was introduced in iOS 6 and relies on scanning 2D barcodes to help you manage your movie, concert and airline tickets as well as loyalty cards and coupons for selected merchants. The result is that you get location and time-based notifications when you're near a cafe where you can use your loyalty card or when your airline, movie or concert ticket is nearing its due date.
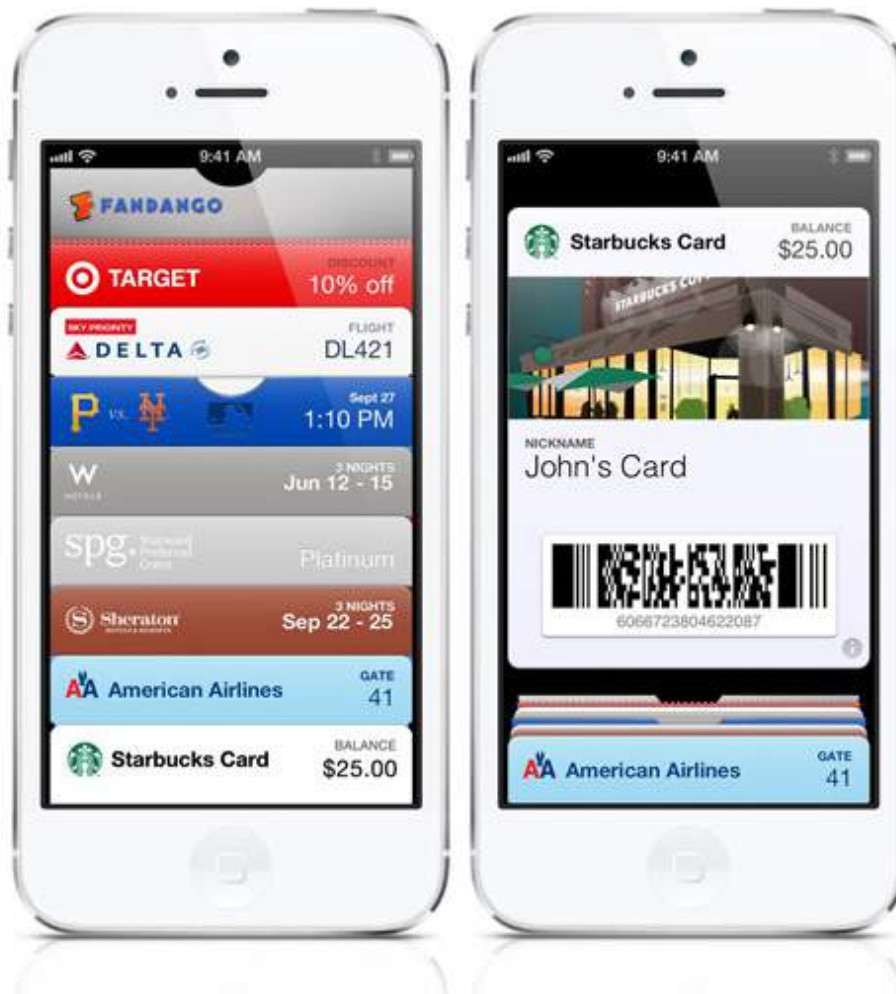
Illustration of Google Wallet

You add passes through apps that support Passbook (link opens iTunes). So instead of bringing your grocery coupons and stack of loyalty cards wherever you go, you can store it in Passbook. Unlike Google Wallet, you cannot use your debit or credit card for purchases in-store, however you can use BillGuard to view your bank balance and other related information on your iPhone.

Lemon Wallet

Available for iOS, Android and Windows Phone Lemon Wallet is a very powerful app that allows you to store and use your debit, credit, ID, insurance member and loyalty cards. It turns all of that information into a barcode to be scanned by merchants. You can also connect payment cards to your bank allowing you to check your balance and transactions from within the app.

Illustration of Lemon Wallet

The app is passcode protected throughout with a 4-pin passcode; even when accessing your other cards within the app, it'll ask you to input the passcode again. One more good feature is that it allows you to take pictures of receipts for tax purposes or to track your own spending.

Micropayments

A micropayment is a financial transaction involving a very small sum of money that is done in Online. This term micropayment or micro transaction is sometimes used to the sale of virtual goods in online games, most commonly involving an in game currency or service bought with real world money and only available within the online game. There were many vendors that came up with micropayment systems and the vendor decides the transaction limit. PayPal defines a micropayment as a transaction of less than 12 USD while Visa prefers transactions under 20 Australian dollars, and while micropayments were originally envisioned to involve much smaller sums of money, practical systems to allow transactions of less than 1 USD have seen little success. IBM's Micro Payments planned to allow vendors and merchants to sell content, information, and services over the Internet for amounts as low as one cent.

Some of the Micropayment systems are

- ➢ Flattr
- ➢ M-Coin
- ➢ Payclick

- ➢ Znak it!
- ➢ Zong
- ➢ Paypal

Illustration of Zong, a popular Micropayment System

Accumulated Balance

Accumulated Balances are similar to the micropayments as we discussed in 4.2.3. Accumulated balances are more like the monthly telephone bill. These systems are used to make micropayment and purchases on the web. The shoppers receive invoice through their convenient utility bills such as telephone bill, electricity bill, internet bill etc. For example, Payment One charges its customers to their monthly telephone bill. This comes handy for most of the online subscriptions.

PayOne, a popular e-commerce payment using Accumulated Balance
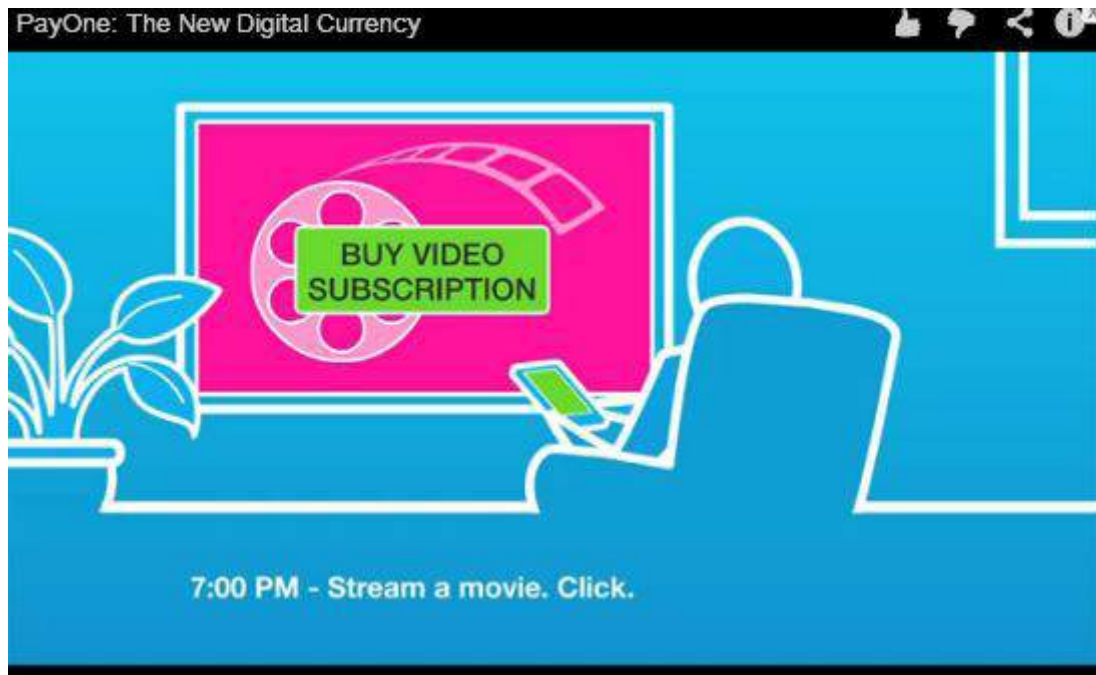
PayOne, a popular e-commerce payment using Accumulated Balance

Stored Value Payment Systems

Stored value payment systems are a form of electronic payment technology. They coexist with credit and debit technology and principally target the low value transactions. Online stored value systems have very low transaction cost. Stored value systems are based on creating a form of electronic value, for example on smart cards or as computer files.

The value can be bought (withdrawn) anytime and spent in optional parts at a later date. The organizations that aim to terminate the circulation of cash and reduce the costs of administration and processing of credit cards use these payment systems. According to Gary W. Lorenz, the technology used in stored value systems often is determined by certain protection factors. Off-line accountable and on-line stored value systems provide similar feature sets; it would be difficult for a cardholder to perceive any difference.

On-line systems, however, are held to a higher standard of consumer protection. They prohibit unsolicited issuance, limit cardholder liability, require error resolution procedures, provide re-credits for alleged errors, and require initial disclosure, terminal receipts, and balance and transaction history upon request. The best example can be Travel cards or meal cards.

Illustration of a stored value payment system

Smart Cards

A smart card resembles a credit card in size and shape, but inside it is completely different. First of all, it *has* an inside — a normal credit card is a simple piece of plastic. The inside of a smart card usually contains an **embedded microprocessor**. The microprocessor is under a gold contact pad on one side of the card. Think of the microprocessor as *replacing* the usual magnetic stripe on a credit card or debit card.

Magnetic stripe technology remains in wide use in the United States. However, the data on the stripe can easily be read, written, deleted or changed with off-the-shelf equipment. Therefore, the stripe is really not the best place to store sensitive information. To protect the consumer, businesses in the U.S. have invested in extensive online mainframe-based computer networks for verification and processing. In Europe, such an infrastructure did not develop — instead, the card carries the intelligence.

The microprocessor on the smart card is there for **security**. The host computer and card reader actually "talk" to the microprocessor. The microprocessor enforces access to the data on the card. If the host computer read and wrote the smart card's random access memory (RAM), it would be no different than a diskette.

Smarts cards may have up to 8 kilobytes of RAM, 346 kilobytes of ROM, 256 kilobytes of programmable ROM, and a 16-bit microprocessor. The smart card uses a serial interface and receives its power from external sources like a card reader. The processor uses a limited instruction set for applications such as cryptography.

The most common smart card applications are:

- Credit cards
- Electronic cash
- Computer security systems
- Wireless communication
- Loyalty systems (like frequent flyer points)
- Banking
- Satellite TV
- Government identification

Smart cards can be used with a smart-card reader attachment to a personal computer to authenticate a user. Web browsers also can use smart card technology to supplement Secure Sockets Layer (SSL) for improved security of Internet transactions. Visa's Smart Card FAQ shows how online purchases work using a smart card and a PC equipped with a smart-card reader. Smart-card readers can also be found in mobile phones and vending machines.

Illustration of e-commerce payment using Smart Card

Digital Cash

Digital cash aims to mimic the functionality of paper cash, by providing such properties of anonymity and transferability of payment. Digital cash is intended to be implemented data which can be copied, stored, or given as payment (for example, attached to an email message, or via a USB stick, bluetooth, etc). Just like paper currency and coins, digital cash is intended to represent value because it is backed by a trusted third party (namely, the government and the banking industry).

Most money is already paid in electronic form; for example, by credit or debit card, and by direct transfer between accounts, or by on-line services such as PayPal. This kind of electronic money is not digital cash, because it doesn't have the properties of cash (namely, anonymous and off-line transferability between holders).

Digital Cash system provides a lot of advantages as well as few disadvantages. Here is the summary of the pros and cons of this system:
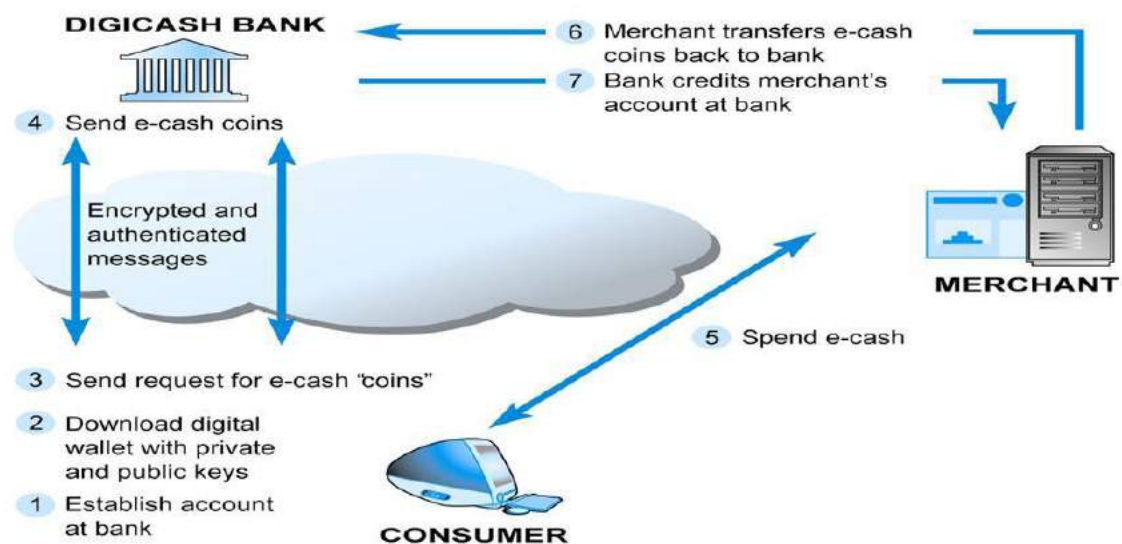
Illustration of e-commerce payment using Digital Cash

Pros

➢ Provides fully anonymous and untraceable digital cash:

➢ No double spending problems (coins are checked in real time during the transaction).

➢ No additional secure hardware required

Cons

> Communications overhead between merchant and the bank.

> Huge database of coin records — the bank server needs to maintain an ever-growing database for all the used coins' serial numbers.

> Difficult to scale, need synchronization between bank servers.

> Coins are not reusable

Web Based Peer-to-Peer (P2P) Payment Systems

As the Internet settled down to credit card payments as the primary payment mechanism for e-commerce, it also became apparent that individuals wanted to be able to pay each other online. This is most visible for auction sites, such as eBay, that promote transactions between individuals, not just businesses. However, individuals can't take credit cards, and there is no widespread alternative on the Internet.

To solve this problem, companies like PayPal, Yahoo and others have created so-called peer-to-peer payment systems. In these systems, individuals can instruct the service to send payments to anyone with an e-mail address. The individual pays the service with a credit card or direct debit from a bank account. The recipient receives instructions for retrieving the payment, and the service provider collects a small fee.
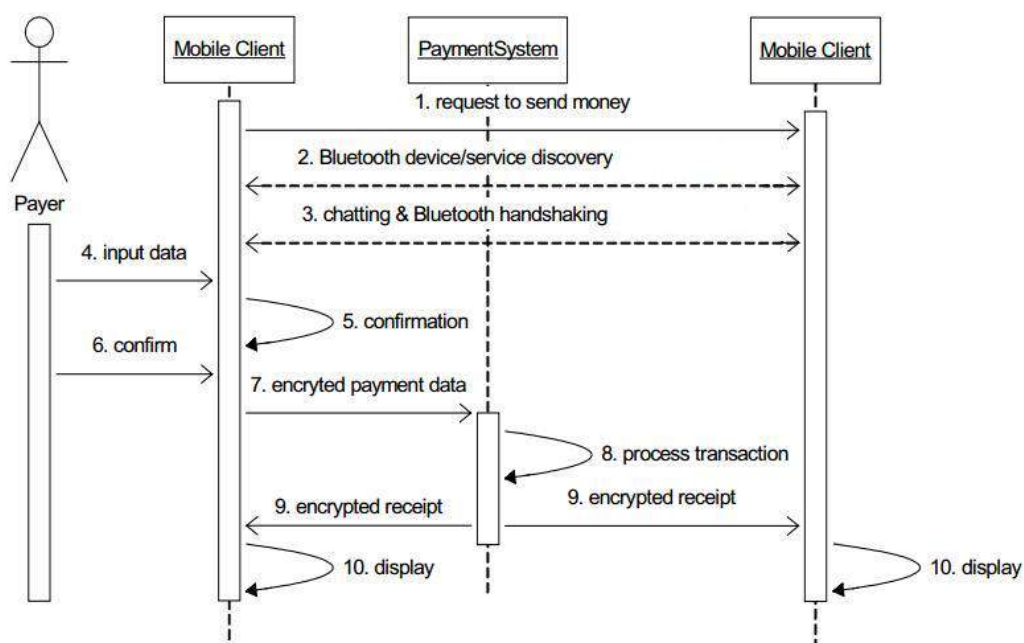
P2P-Paid payment transaction sequence

Illustration of a web-based peer-to-peer payment systems

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Digital Checking Payment Systems

Digital checking payment systems are the payment systems where account entry information are checked electronically. This procedure can be applied to a wide range of payment systems as bank transfer, direct debit, debit cards, credit cards and checks. All required steps from the initiating to the closing of a payment can be done electronically. Main advantages of Digital checking payment systems are a high level of speed, of security and of processing efficiencies due to the utilization of existing advantages of paper-based payment systems in combination with advantages of electronic usage in general. This payment system uses a wide range of security techniques as authentication, public key cryptography, digital signatures, certificate authorities and encryption. Often, the providers of this payment system uses the state of the art security techniques and combines some security techniques together.

Zipmark is one of the best examples of this type of payment system. With Zipmark, any business can accept payments in minutes and be sure that they won't be faced with the complexity of merchant accounts, variable pricing, bad transactions or arbitrary delays. Get your money in your account when you get paid. The premise behind Zipmark is that there are some businesses who just cannot pay using PayPal, Square, or any other service. Instead, they must use a signed and authorized check as payment to another company. The company says that it has created a new payment type by developing a real-time electronic check to direct deposit settlement platform. The service will create an actual check image from a specific payer and even deposit the funds directly into the biller's bank account.

Illustration of Digital Checking Payment System using Zipmark

Electronic Billing Systems

This is the payment system that uses to pay bills electronically on a periodic basis. It is covered mostly under monthly bills such as telephone bills, electricity bills, university payments and etc. Many Researches show that there is increase in customer satisfaction and loyalty with these billing systems and the payments made online. In this case the payer is notified about their bills that are due, present the bills, and process the payments. They enable users to view their bills electronically and pay them through electronic fund transfers from bank or credit card accounts. These services support payment for online and physical store purchases of goods or services after the purchase has taken place.

Illustration of an electronic billing system

Mobile Payment Systems

This is one of the fast emerging and much sophisticated E-commerce payment systems. With the increase of mobile presence in our daily life, the advancements in security aspects of Mobile Commerce (M-commerce) bring the world before your mobile. Instead of paying with cash, cheque, or credit cards, a consumer can use a mobile phone to pay for a wide range of services and digital or hard goods. Although the concept of using non-coin-based currency systems has a long history, it is only recently that the technology to support such systems has become widely available. Mobile payment system is being adopted all over the world in different ways and its market for goods and services are increasing exponentially.

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NGPAY

NGPAY is India's largest mall on mobile that supports Travel, Entertainment, shopping and Bill payments/recharges. It accept all major debit and credit cards. To pay using your card, you will need to enter your card number, expiry date, three-digit CVV number (optional for debit cards). Payments made on ngpay are absolutely safe and secure. Transacting on ngpay is as safe as an ATM transaction. ngpay provides 128-bit end-to-end financial grade security. It has been independently certified for financial transactions by leading security firms and financial institutions. Every time you have to make a payment for a transaction, you will need to enter your unique 6-digit PIN. This PIN number is NOT stored on your handset, so hacking your stolen phone will not put you at any risk. With the gain of momentum in m-Commerce NGPAY emerged as the leading firm in this type of payment system.
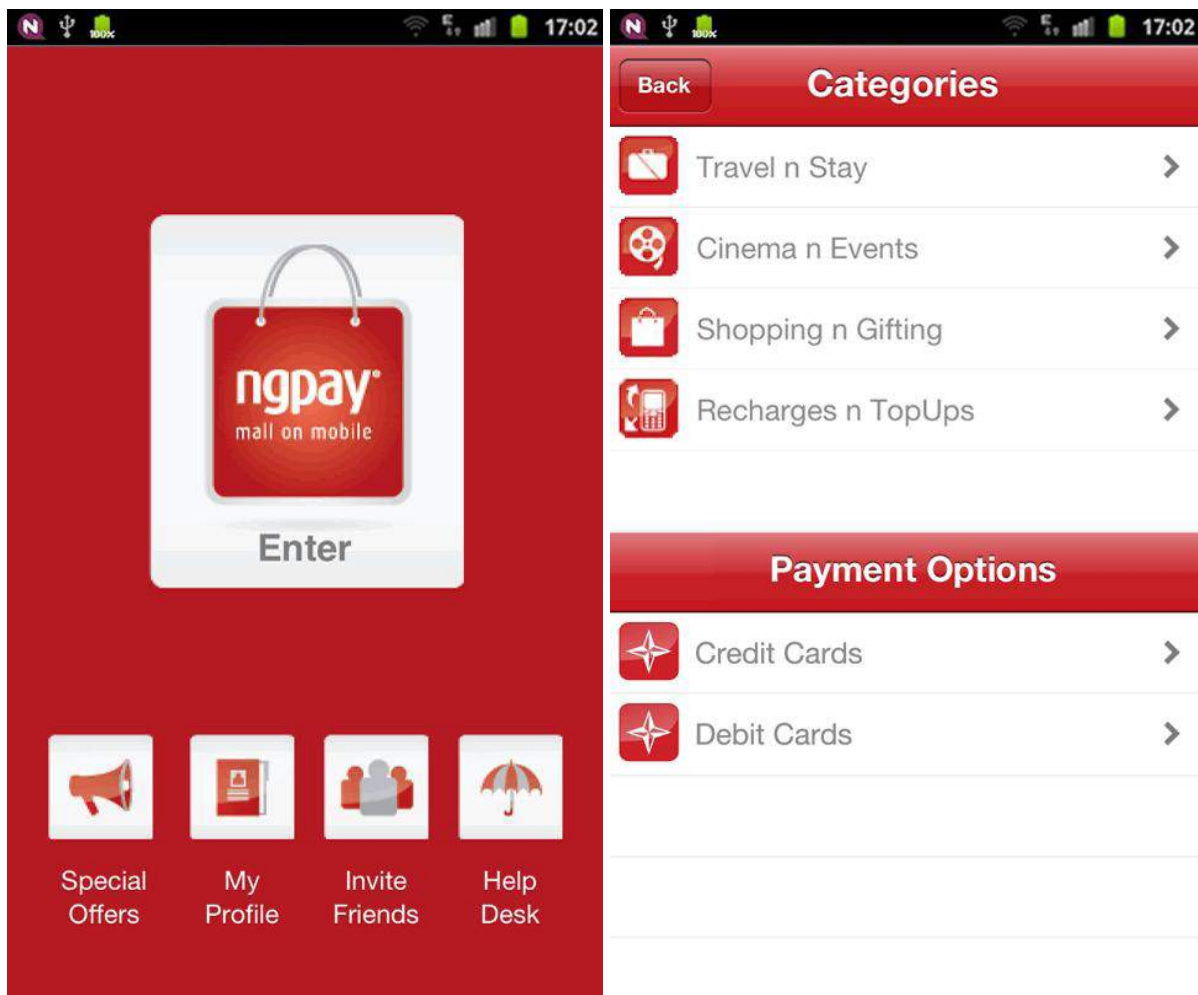
Features of NGPAY, a popular mobile payment system in India
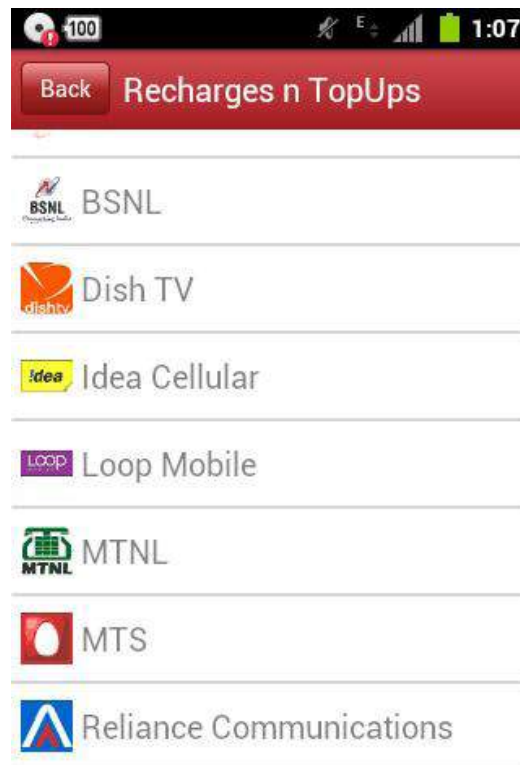
Illustration of the working of NGPAY, a popular mobile payment system
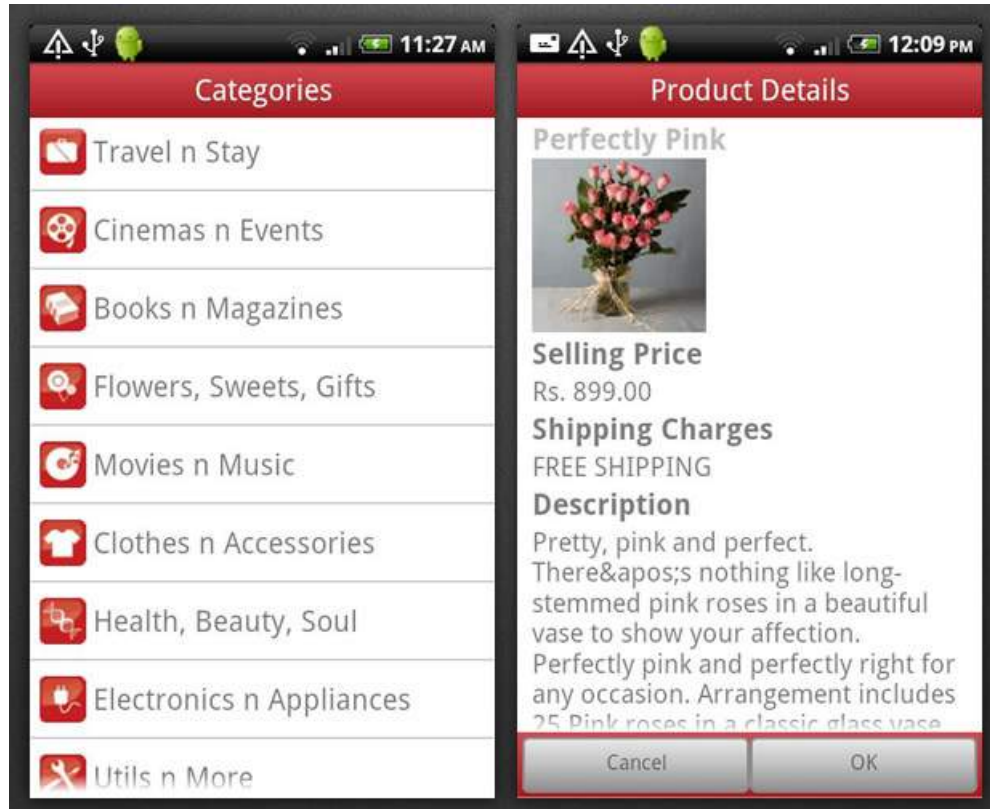
Illustration of the working of NGPAY, a popular mobile payment system

Benefits of E-Commerce

Few innovations in human history encompass as many benefits to organizations, individuals, and society as does e-commerce. These benefits have just begun to materialize, but they will increase significantly as EC expands. The major benefits can be summarized as:-

To Organizations

➢ Expands a company's marketplace to national and international markets. With minimal capital outlay, a company can quickly locate more customers, the best suppliers, and the most suitable business partners worldwide.

➢ Enables companies to procure material and services from other companies, rapidly and at less cost.

➢ Shortens or even eliminates marketing distribution channels, making products cheaper and vendors' profits higher.

➢ Decreases (by as much as 90 percent) the cost of creating, processing, distributing, storing, and retrieving information by digitizing the process.

➢ Lowers telecommunications costs because the Internet is much cheaper than value-added networks (VANs).

➢ Helps some small businesses compete against large companies.

➢ Enables a very specialized niche market.

To Customers

➢ Frequently provides less expensive products and services by allowing consumers to conduct quick online searches and comparisons.

➢ Gives consumers more choices in selecting products and vendors.

➢ Enables customers to shop or make other transactions 24 hours a day, from almost any location.

➢ Delivers relevant and detailed information in seconds.

➢ Enables consumers to get customized products, from PCs to cars, at competitive prices.

➢ Makes it possible for people to work and study at home.

➢ Makes possible electronic auctions that benefit buyers and sellers.

➢ Allows consumers to interact in electronic communities and to exchange ideas and compare experiences.

- Enables individuals to work at home and to do less traveling, resulting in less road traffic and lower air pollution.

- Allows some merchandise to be sold at lower prices, thereby increasing people's standard of living.

- Enables people in developing countries and rural areas to enjoy products and services that are otherwise are not available. This includes opportunities to learn professions and earn college degrees, or to receive better medical care.

- Facilitates delivery of public services, such as government entitlements, reducing the cost of distribution and chance of fraud, and increasing the quality of social services, police work, health care, and education.

Limitations of E-Commerce

Counterbalancing its many benefits, EC has some limitations, both technological and non-technological, which have slowed its growth and acceptance. Those limitations and inhibitors are listed in Table below. Some have been contributing factors in the failures of many EC projects and dot-com companies in recent years. As time passes, the limitations, especially the technical ones, will lessen or be overcome.

In addition, appropriate planning can minimize the negative impact of some of them. Despite its limitations and failures, e-commerce has made very rapid progress. Also, various B2B activities, e-auctions, e-government, e-learning, and some B2C activities are ballooning. As experience accumulates and technology improves, the ratio of EC benefits to cost will increase, resulting in an even greater rate of EC adoption.

Technical Limitations

- Lack of universally accepted standards for quality, security, and reliability.
- Insufficient telecommunications bandwidth.
- Still-evolving software development tools.
- Difficulties in integrating the internet and EC applications and software with some existing (especially legacy) applications and databases.
- Need for special web servers in addition to the network servers.
- Expensive and/or inconvenient Internet accessibility for many would-be users.

Non-Technical Limitations

➢ Unresolved legal issues.

➢ Lack of national and international government regulations and industry standards.

➢ Lack of mature methodologies for measuring benefits of and justifying EC.

➢ Many sellers and buyers waiting for EC to stabilize before they take part.

➢ Customer resistance to changing from a real to a virtual store. People do not yet sufficiently trust paperless, faceless transactions.

➢ Perception that EC is expensive and under secured.

➢ An insufficient number (critical mass) of sellers and buyers exists for profitable EC operations.

CASE STUDY 1

Google Wallet

From since Google announced Google Wallet, its innovative new smartphone payments platform there is a question of how will you, a smartphone owner, actually use this technology? This case study helps us find the answer.

Using an embedded NFC (near-field communications) chip, Google Wallet is an open platform (and an Android app) that will allow you to use credit cards, coupons, store loyalty cards, etc without actually swiping each card. Instead, you'll simply tap your phone up to a payment receiver to complete a transaction. For those who've used MasterCard, Visa, American Express, or Discover PayPass wireless systems, where you can tap your credit card to wirelessly pay, this isn't a completely foreign concept. For the rest of you, just think of tapping as you would credit card swiping. Google Wallet is being sent to all Google Nexus S owners via an over-the-air update soon and the field trial is over. Visa, MasterCard, American Express, and Discover have all signed on board. It is available around the country, though we need to check for the more compatible handsets.

Assuming you have a NFC compatible Android phone and have installed the Google Wallet app, the next step is activating a credit card. The steps to do this are pretty simple. You simply enter the account number, type of card, and the relevant personal information. Google then verifies this information with the credit card company and First Data (which securely runs the backend of much of the financial industry). Once you activate the card via email, you can use it however you wish; however, you can spend up to $100 without entering the activation code.

Google has also included a prepaid card with every Google Wallet. You can use this like a debit card, filling it up with a set amount of cash through a credit card or bank account. This type of card is especially useful for those who are a bit weary of the security risks associated with using a full credit card.

Making a transaction is fairly easy. You must have the Google Wallet app open, at least one credit card activated (that is accepted at the store you are at), and then place your phone no further than two inches from a receiver (seen above). This is similar to how PayPass technologies work. With one "tap," you'll pay for your item, get a credit on any reward programs you're a part of, and use any coupons you've gathered. The process looked excessively simple and automated during Google's in-house demonstration. Real world use could prove to be more complicated, but we are hopeful.

Google made a point to say how much of a focus is on security. "Security is very important to us. It was a fundamental consideration from day one," said a Googler named Rob von Behren. He explained that on top of being able to lock your wallet and deactivate cards easily, Google is taking extra measures using a combination of hardware and software. It complies with all PayPass standards, but has added security measures. If your phone is off or your screen is dark, NFC is disabled. On top of that, if the screen is on, NFC is enabled, but the secure element is off, making it impossible to do a transaction. Only when the app is open and you've entered your four digit PIN, will it work. Google sends information to several secure channels for verification. This is seen via the flow chart below.
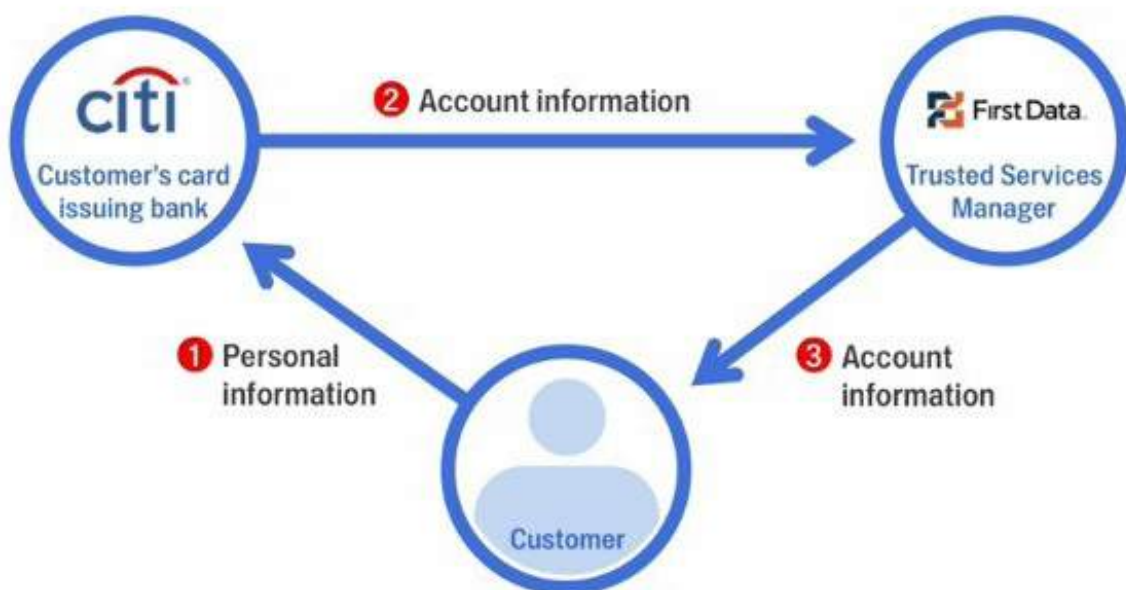
Security checks in using Google Wallet

The trending screenshots and working models of Google Wallet are explained below

Charging your Wallet with Money
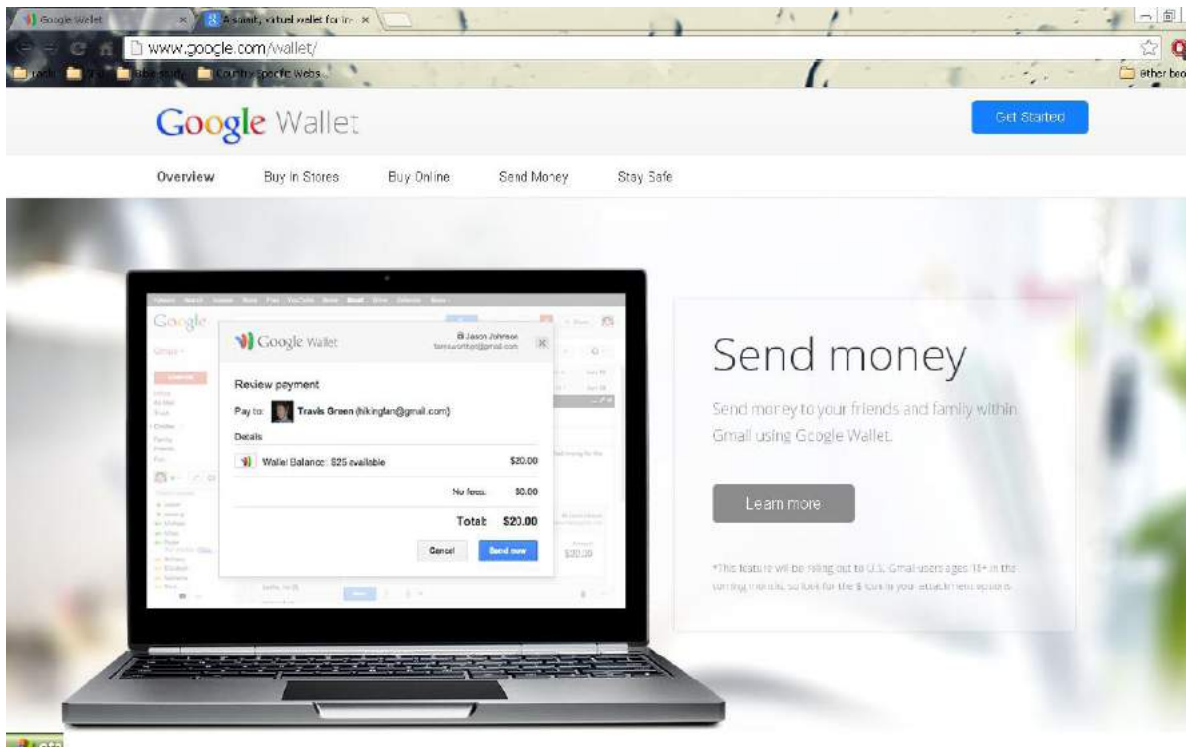
Illustrative screenshot of Google Wallet

Integration of all your cards into your Google Wallet
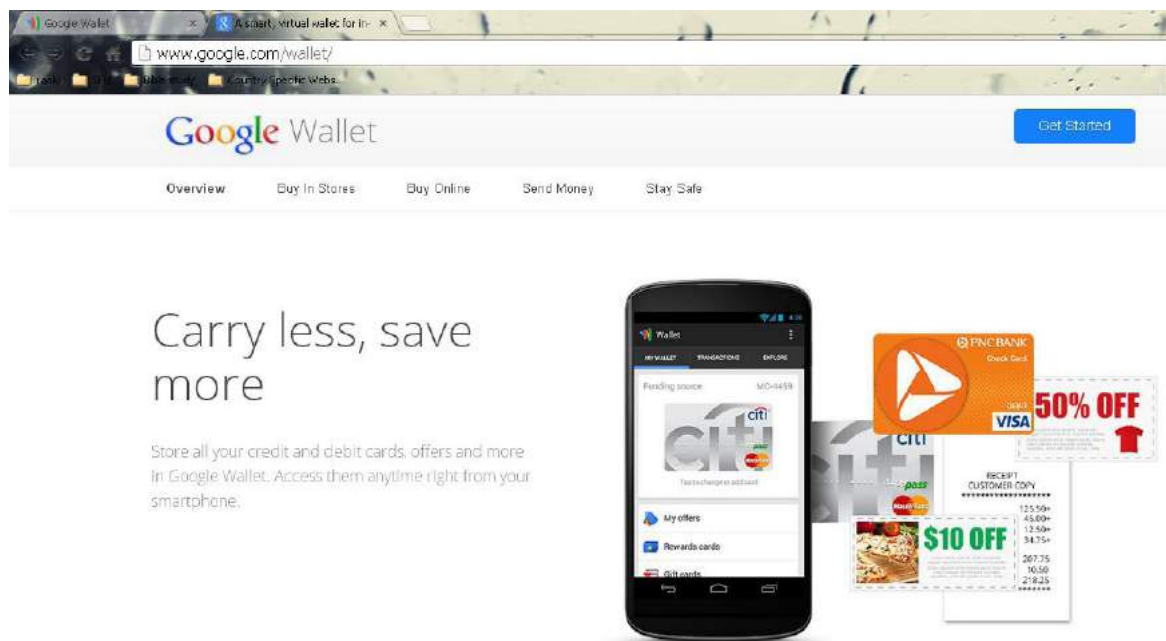
Illustrative screenshot of Google Wallet

Shopping in the Stores
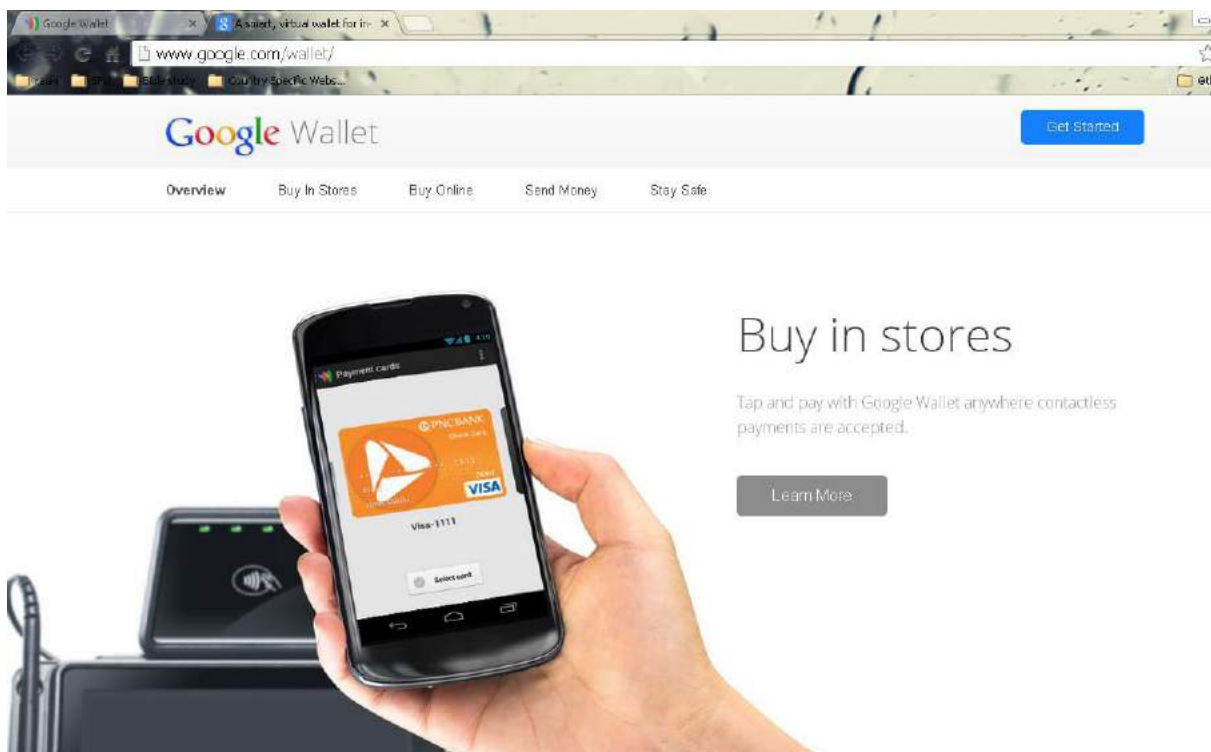
Illustrative screenshot of Google Wallet

Shopping Online
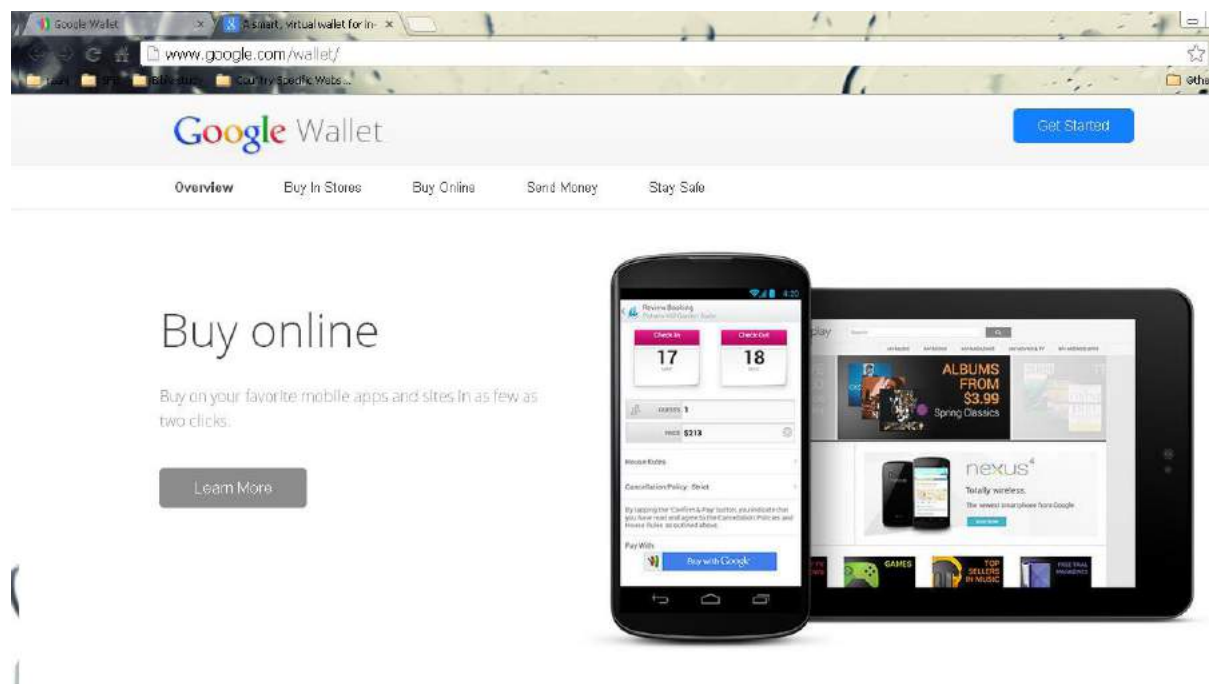
Illustrative screenshot of Google Wallet

Security aspects in Google Wallet
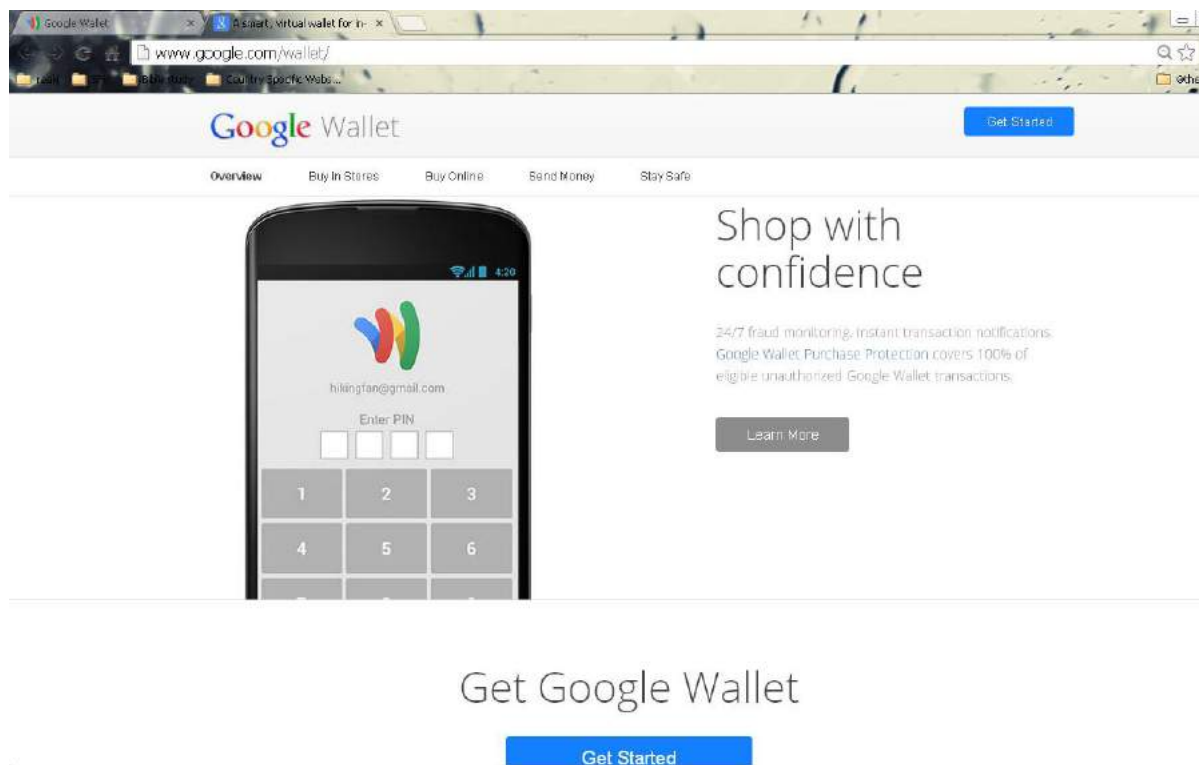
Illustrative screenshot of Google Wallet

CASE STUDY 2

Airtel Money in Kenya

Mobile commerce has been a big success story in Africa. A market deprived of banking services coupled with wide reach of mobile phones – this is a hot bed for innovation in mobile commerce. Airtel is an active player in this arena with "Airtel Money" as its flagship product. Airtel Money addresses many different needs of the consumer. The biggest one is providing banking for the unbanked. It also allows people to cash in and cash out at their nearby authorized Airtel Money retailers. Once money is deposited in their Airtel Money account, it can be used for merchant payments e.g. utility companies, insurance premiums, school fees, tickets etc.

In addition, subscribers can move money from Airtel Money wallet to Bank accounts and vice versa. Transferring money between two Airtel Money accounts is one of the most popular features. International transfers are an extension of the same feature which holds a lot of relevance in the African continent. Africa is home to over a billion plus people, most of whom have little or no access to basic banking or financial services. Banks are primarily available only in large cities. Commercial transactions in large parts of the hinterland are

done entirely in cash. Money transfer between urban and rural regions was difficult. A 100% cash economy places huge overheads in terms of cost of moving the money, overall efficiency of the economy. In addition it leads to theft, pilferage and fraud. In addition the connectivity infrastructure is lacking in large parts of Africa – which hinders the growth of online digital money movement. The solution to this problem was to combine the ever widening reach of mobile phones, the deep distribution network of telecom operators, a simple user interface and a network of merchants who accept digital money payments.

Airtel Money is a STK based application, available on the handset of all Airtel mobile subscribers. The STK application allows us to reach all kinds of handsets from very basic ones to smart phones. It uses encrypted SMS as a bearer. At the heart of the solution lies a robust transaction platform which is based on open standards, re-usable integration points and can handle large transaction volumes.

It allows us to onboard multiple merchants, banking systems, payment gateways such as Master Card, with minimal new development. The entire transaction is processed through multiples systems with each leg handled in a secure manner. Some of the challenges we had to overcome were the stringent security requirements from banks for integration with the banking systems.

The UI had to be simple yet extensible enough to cater to additional transactions in future. The primary users of Airtel Money are not highly educated. Hence, the STK menu had to be simple, familiar and intuitive so that anybody can pick up the phone and use it. We had to design the STK application keeping in mind the limited memory footprint available in the SIM. The biggest challenge however was user adoption – which had to be addressed through continuous communication.

Societal Benefits

> Banking for unbanked
> Convenience of payments
> Digital money flow leading to better efficiency
> Secure and traceable money movement
> Liquidity in remote corners of the country
> Employment for the distribution network
> New payment channel opens up new business opportunities
> Improved collections efficiency

Examples of Benefits

Catholic University of Eastern Africa – Earlier students used to face a lot of problems in paying their tuition fees in time. The only modes of payment were cheques or bank transfers. This was particularly troublesome for international students who didn't have local bank accounts. They used to have someone else pay on their behalf. For students whose parents were in rural areas, receiving cash was a time consuming and unreliable process. Similarly, payments to suppliers, refund to students could only happen through formal banking instruments. Now, all such transactions are possible through Airtel Money – which makes all kinds of payments hassle free and instantaneous. Mumias Sugar Company, Western Kenya The sugar company is primarily located in rural areas. The sugarcane cutters are paid wages weekly.

In absence of any banking instruments, they are paid in cash in sealed envelopes every week. This came with a host of problems such as frauds, thefts, disputes, high cash handling costs & insurance. The sugar company had to hire a cash management company to handle the payments which added to the overall cost of operations. Now, the weekly payments are made through Airtel Money. This brings in transparency in the whole disbursal process. There's a complete ecosystem of authorized Airtel Money retailers in the neighborhood, where workers cash out their wages or transfer some part of it to their family elsewhere. DPL festive It's a bread manufacturer with an extensive distribution network across small shops in Nairobi. Each shop buys a few loafs of bread everyday from the bread company. This results in collection of lots of petty cash by the driver, who is often target of theft. Now, the payment is powered by Airtel Money wherein the shopkeepers directly transfer to the bread company, which gets rid of the cash collection problem to a large extent.

Building acceptability and belief in the minds of the common man has been the biggest challenge. During the initial days of mobile commerce, people used to look for money inside the mobile phone. They had to be educated that the money is now digital, similar to airtime – something that you can't see or feel but can use in your daily life. The regulatory and market scenario around mobile commerce is constantly evolving. The challenge was to architect the system in such a manner that can be easily replicated across countries with minimal change. The system was designed keeping in mind the stringent requirements of banking systems with real time transactions, reconciliations, fraud detection etc. This allows us to deploy it across markets without making significant changes. The security aspect of the solution was given the highest importance with encryption at various levels (h/w & s/w) – SIM, application, database, HSM etc. It gives us the flexibility to get past the initial concerns raised by most parties and focus on advanced features and functionalities such as NFC.
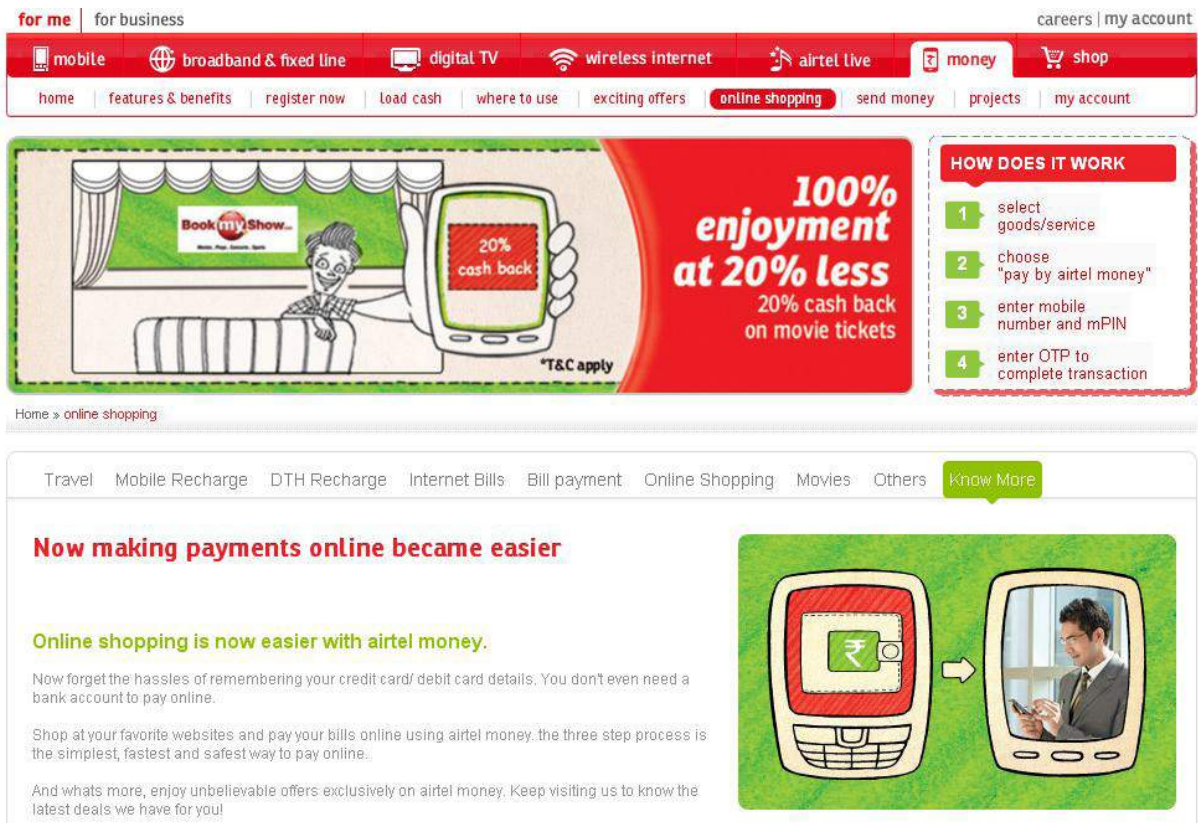
Illustrative screenshot of AIRTEL Money

Self Assessment Questions

1. Differentiate between a traditional and electronic payment system.

2. How does a secure electronic transaction work?

3. Differentiate between Stored value and accumulating balance systems.

4. What are the types of electronic payment systems? Evaluate them based on their pros and cons.

5. Explain how a mobile payment system works.

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Unit Structure

Lesson 5.1 - E-Commerce Marketing

Learning Objectives

The objectives of this lesson are to:

➢ Explain the operational process of e-commerce marketing

➢ Explain the process of brand building in e-commerce

➢ Highlight the importance of marketing research in e-commerce and the popular tools for carrying out marketing research

At the end of this lesson, you will be able to:

➢ View the operational process of e-commerce marketing as customer acquisition, conversion and retention

➢ Consider using Google Analytics and Facebook Insights for analysing website visitor data

➢ Understand the unique challenges of brand building for e-commerce companies

Introduction

The majority of consumers now shop digitally: they begin their shopping journeys online; rely primarily on digital sources to make decisions about products and services; and move back and forth across channels of distribution so readily as to erase channel lines. These digital shoppers also have new expectations for all their shopping experiences - expectations largely shaped by daily use of the Internet. They expect greater visibility into

the information that enables calculations of value (product/pricing comparisons, access to promotions, and how-to insights), they want self-service, and they are more interested in personalized offers and promotions. And, they want a constant connection to the endless information on the Internet. The device that provides the connection is less important than the connection itself.

The operational and management processes of e-marketing
Source: Econsultancy (2008)
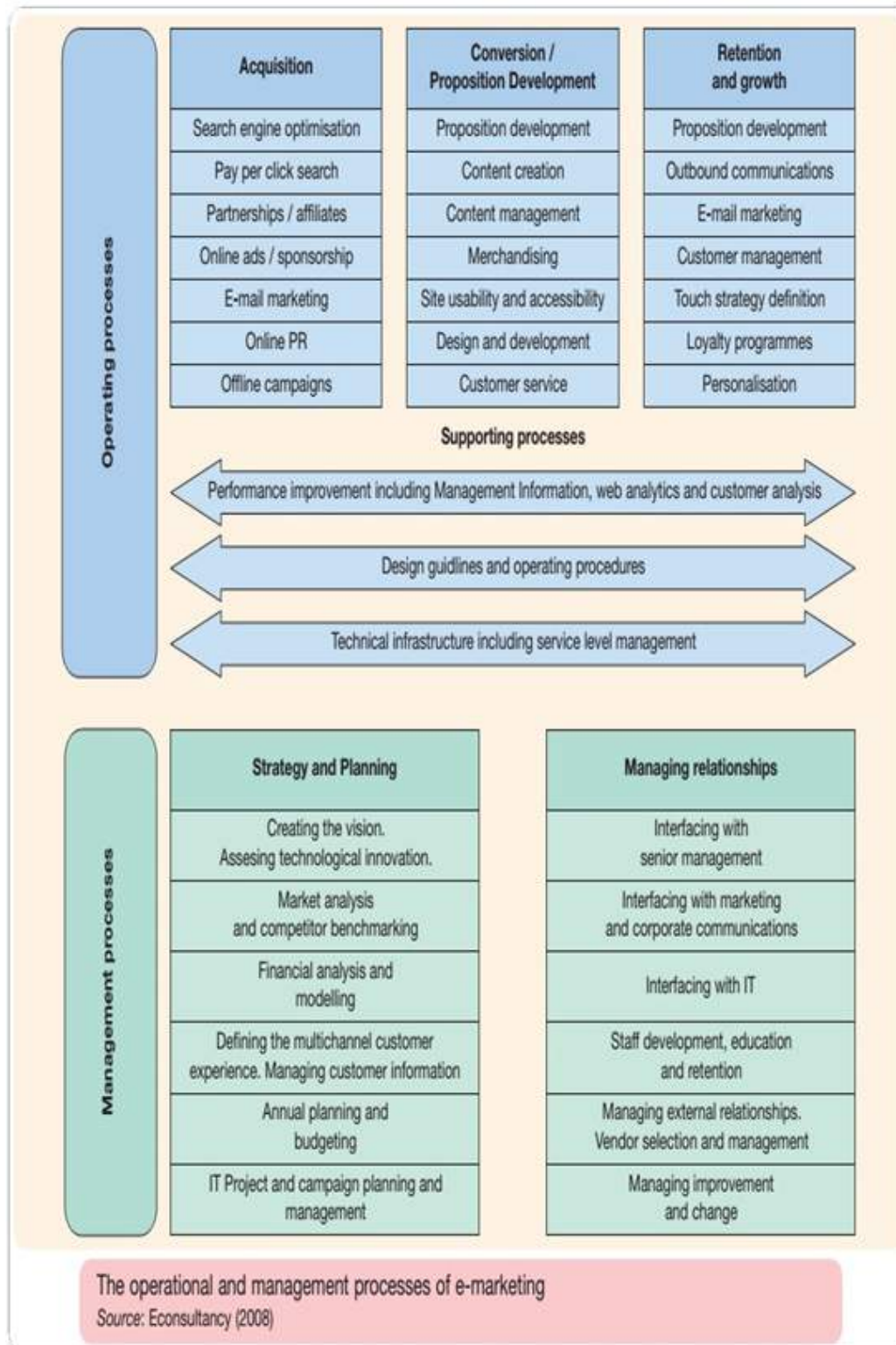
Operational processes in e-commerce marketing

The implications of this digital evolution have been visible to the retail industry for some time. Yet, the results of a recent worldwide survey on shopper behaviour (Cisco IBSG report) make it clear that the industry must now race to "catch and keep" the majority of consumers who effortlessly mash-up digital and physical shopping.

E-Commerce marketing is focused on how a company and its brands use the web and other digital media such as e-mail and mobile media to interact with its audiences in order to meet its marketing goals. The figure below shows that there are three main operational processes involved in e-commerce marketing. These are:

➢ Customer acquisition. Attracting visitors to a web site or promoting a brand through reaching them via search engines or advertising on other sites.

➢ Customer conversion. Engaging site visitors to achieve the outcomes the retailer seeks such as leads, sales or browsing of other content. Developing a suitable customer experience is vital to this.

➢ Customer retention and growth. Encouraging repeat usage of digital channels and for transactional sites, repeat sales.

Online Branding

What comprises a successful online brand? Is it an e-commerce site with high levels of traffic? Is it a brand with good name recognition? Is it a profitable brand? Or is it a site with more modest sales levels, but one that customers perceive as providing good service? Although sites meeting only some of these criteria are often described as successful brands, a successful brand is dependent on a wide range of factors.

Erdemet al. (2002) noted in their study into the impact of brand credibility on consumer price sensitivity that a credible brand signal helps to generate customer value by: (i) reducing perceived risk, (ii) reducing information search costs, and (iii) creating a favourable, trustworthy perception of the organization. This shows the importance of online branding since web sites must give the impression of trust and deliver a favourable experience to encourage first-time and repeat sale.

Many think of branding only in terms of aspects of the brand identity such as the name or logo associated with a company or products, but branding gurus seem agreed that it is much more than that. Abrandis described by Leslie de Chernatony and Malcolm McDonald in their classic 1992 book 'Creating Powerful Brands' as an identifiable product or service augmented in such a way that the buyer or user perceives relevant unique added

values which match their needs most closely. Furthermore, its success results from being able to sustain these added values in the face of competition.

This definition highlights three essential characteristics of a successful brand which we need to relate to the online environment:

➢ Brand is dependent on customer perception;

➢ Perception is influenced by the added-value characteristics of the product;

➢ The added-value characteristics need to be sustainable.

To summarize, a brand is dependent on a customer's psychological affinity for a product, and is much more than the physical name or symbol elements of brand identity. De Chernatony (2001) has evaluated the relevance of the brand concept on the Internet. He also believes that the main elements of brand values and brand strategy are the same in the Internet environment. However, he suggests that the classical branding model of the Internet where consumers are passive recipients of value is challenged online. Instead, he suggests that consumers on the Internet become active co-producers of value where consumers can contribute feedback through discussion groups to add value to a brand. DeChernatony argues for a looser form of brand control where the company facilitates rather than controls customer discussion.

A further method by which the Internet can change branding that was suggested by Jevons and Gabbot (2000) is that online, 'the first-hand experience of the brand is a more powerful token of trust than the perception of the brand'. In the online environment, the customer can experience or interact with the brand more frequently and to a greater depth. As Dayalet al. (2000) say, 'on the World Wide Web, the brand is the experience and the experience is the brand'. They suggest that to build successful online brands, organizations should consider how their proposition can build on these possible brand promises:

➢ The promise of convenience– making a purchase experience more convenient than the real world one, or that with rivals;

➢ The promise of achievement – to assist consumers in achieving their goals, for example supporting online investors in their decision or supporting business people in their day-to-day work;

➢ The promise of fun and adventure– this is clearly more relevant for B2C services;

➢ The promise of self-expression and recognition– provided by personalization services such as GoDaddy where consumers can build their own web site;

➢ The promise of belonging– provided by online communities.

Summarizing the elements of online branding, De Chernatony (2001) suggests successful online branding requires delivering three aspects of a brand: rational values, emotional values and promised experience (based on rational and emotional values). An alternative perspective on branding is provided by Aaker and Joachimsthaler (2000) who refer to 'brand equity' which they define as: *a set of brand assets and liabilities linked to a brand, its name and symbol, that add to or subtract from the value provided by a product or service to a firm and/or to that firm's customers.*
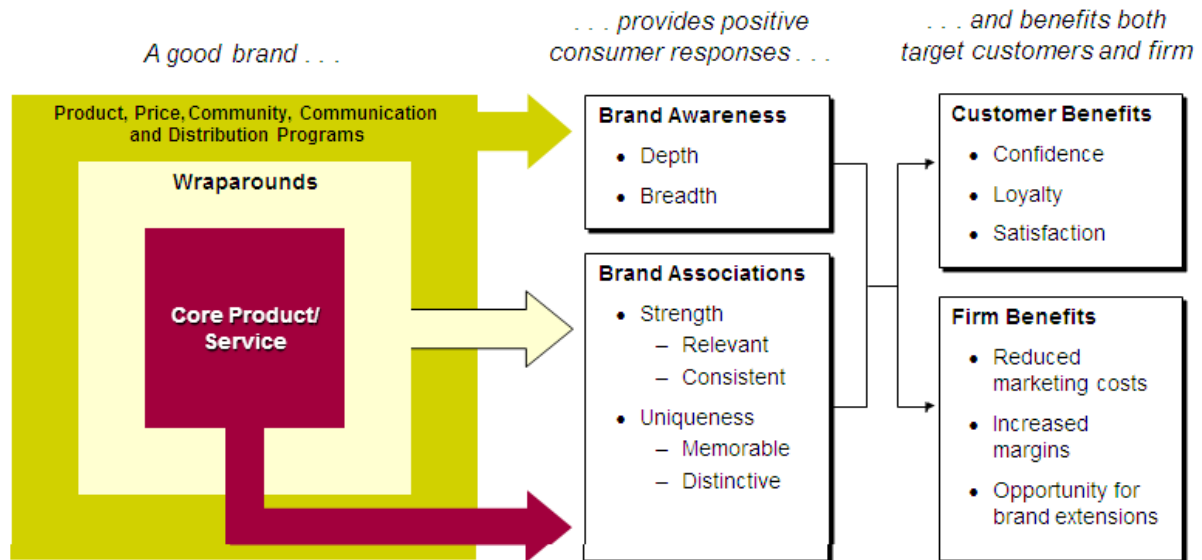
Source: Keller (1996), Aaker (1996), Strategic Market Research Group, Marketspace Analysis

A simple conceptual model of online Brand equity

Brand equity indicates the value provided to a company, or its customers through a brand. Assessing brand equity on the web needs to address the distinctive characteristics of computer-mediated environments, as Christodoulides and de Chernatony (2004) have pointed out. These researchers set out to explore whether additional measures of brand equity were required online. Based on expert interviews they have identified the additional measures of brand equity which are important online, as described in the table below. This includes attributes of the digital medium such as interactivity and customization which combine to form relevance and a great online brand experience. Content is not stressed separately, which is surprising, although they do mention its importance under site design and it is also a key aspect of other attributes such as customization, relevance and the overall experience. Their work on the need for rational, emotional appeal together with the promised experience of the web site is presented

Traditional measures of brand equity and online measures of brand equity	
Traditional measures of brand equity (Aaker and Joachimsthaler, 2000)	**Online measures of brand equity (from Christodoulides and de Chernatony, 2004)**
Price premium	Online brand experience
Satisfaction/loyalty	Interactivity
Perceived quality	Customization
Leadership popularity	Relevance
Perceived value	Site design
Brand personality	Customer service
Organizational associations	Order fulfilment
Brand awareness	Quality of brand relationships
Market share	Communities
Market price and distribution coverage	Web-site logs

[*Source:* Adapted from Chaffey, 2009]

Traditional Vs Online measures of Brand equity

Aaker and Joachimsthaler (2000) also emphasize the importance of developing a plan to communicate the key features of the brand identity and increase brand awareness. Brand identity is again more than the name. These authors refer to it as a set of brand associations that imply a promise to customers from an organization. Ries and Ries (2000) suggest two rules for naming brands. (a) The Law of the Common Name – they say 'The kiss of death for an Internet brand is a common name'. This argues that common names such as Art.com or Advertising.com are poor since they are not sufficiently distinctive. (b) The Law of the Proper Name – they say 'Your name stands alone on the Internet, so you'd better have a good one'.

This suggests that proper names are to be preferred to generic names, e.g. Handbag.com against Woman.com or Moreover.com against Business.com. The authors suggest that the best names will follow most of these eight principles: (1) short, (2) simple, (3) suggestive of the category, (4) unique, (5) alliterative, (6) speakable, (7) shocking and (8) personalized. Although these are cast as 'immutable laws' there will of course be exceptions.

The Internet presents a 'double-edged sword' to existing brands. We have seen that a consumer who already has knowledge of a brand is more likely to trust it. However, loyalty can be decreased because the Internet encourages consumers to trial other brands. This trial may well lead to purchase of brands that have not been previously considered.

The BrandNewWorld (2004) survey showed that in some categories, a large proportion of buyers have purchased from different brands from those they initially considered, for example: Large home appliances (47%), Financial products and services (39%), Holidays and travels (31%), Mobile phones (28%) and Cars (26%).

But, for other types of products, existing brand preferences appear to be more important: Clothing/accessories (22%), Computer hardware (21%), Garden/DIY products (17%) and Home furnishings (6%).

The survey also suggested that experienced Internet users were more likely to switch brands (52% agreed they were more likely to switch after researching online) compared to less experienced users (33%). Of course, the likelihood of a consumer purchasing from an established brand will depend upon the combination of their knowledge of the retailer brand or product brand. The figure below shows that many customers will still buy an unknown manufacturer brand if they are familiar with the retailer brand. This is less true if they don't know the retailer. Significantly, if they don't know the retailer or the brand, it is fairly unlikely they will buy.

When buying online, I will buy a product if...

I am familiar with the retailer	Yes	Yes	No	No
I am familiar with the product brand	Yes	No	Yes	No
	90%	82%	54%	13%

The influence of brand knowledge on purchase. Matrix for question 'I will buy a product if …'
Source: BrandNewWorld: AOL UK/Anne Molen (Cranfield School of Management)/Henley Centre, 2004

[*Source:* Adapted from Chaffey, 2009]

The influence of brand Vs retailer knowledge on online purchase

The Internet has two important characteristics (see the following figure) that lend themselves to use the Internet as a brand-building platform: individualization (by which a customer can have the buying process or the product itself individualized according to his needs) and interactivity (by which responsiveness of the Internet medium results in a continuous dialogue and medium of engagement with the customer)

The 2Is and Branding

Individualization

- Interactivity creates value because the brand is <u>tailored</u> to the individual
- Customers gain a <u>sense of control</u> with respect to the nature and timing of their interactions with the brand
- There is a <u>danger</u> that the brand will stray from its core personality

Interactivity

- <u>Responsiveness</u> becomes a key brand attribute as customers recognize that their concerns are heard and responded to across multiple channels
- The <u>frequency of interaction</u> is increased — leading to the need to freshen content and target messages to specific usage occasions
- Customers expect the brand to <u>evolve</u> in response to their needs and desires

BRANDING

The role of individualization and interactivity in online brand building

Online Marketing Research

Online marketing research aids in marketing decision-making for the online marketer. The virtual nature of the Internet interactions result in customer anonymity at times, but intelligent observation and analysis of the online behaviour data (both real-time click stream data and the static database data) can provide useful insights to the marketers. The following sections present two useful online marketing research tools – Google Analytics and Facebook Insights – which can help online marketers to optimize their webpage performance and boost online conversion of visitors to customers.

Web Analytics

Google Analytics

Google Analytics provides powerful digital analytics for anyone with a web presence, large or small. It's one of the most powerful digital analytics solutions available - and it's free for anyone to use. Google Analytics works by means of a small snippet of code that a firm can include on its website pages. This code snippet activates Google Analytics tracking for the site, which collects and sends visitor activity to its Google Analytics account. Google

Analytics not only lets the firm measure sales and conversions, but also gives fresh insights into how visitors use its site, how they arrived on its site, and how the firm can keep them coming back.

Integrated with AdWords (to know more about this online search advertising program from Google, please visit www.adwords.google.com), users can now review online campaigns by tracking landing page quality and conversions (goals). Goals might include sales, lead generation, viewing a specific page, or downloading a particular file. Google Analytics' approach is to show high-level, dashboard-type data for the casual user, and more in-depth data further into the report set. Google Analytics analysis can identify poorly performing pages with techniques such as funnel visualization, where visitors came from (referrers), how long they stayed and their geographical position. It also provides more advanced features, including custom visitor segmentation. Google Analytics e-commerce reporting can track sales activity and performance.

[*Source:* http://www.google.com/analytics/]
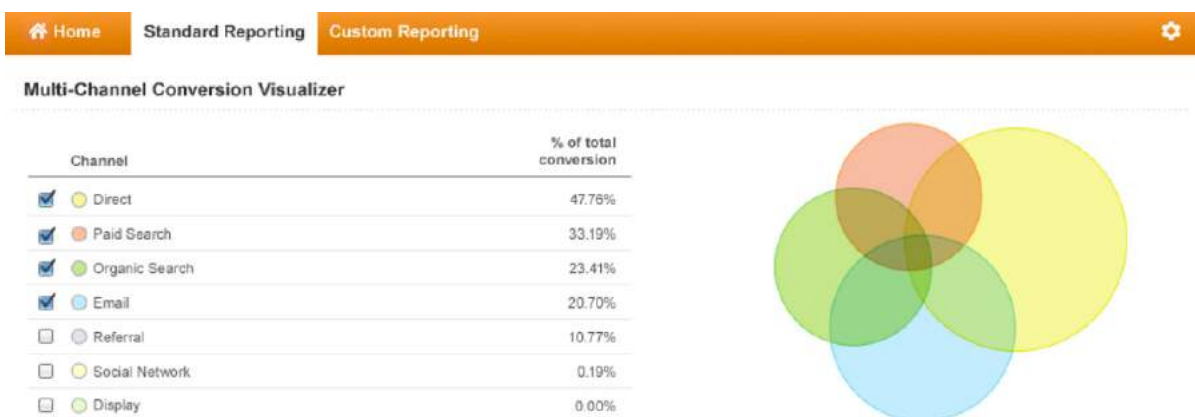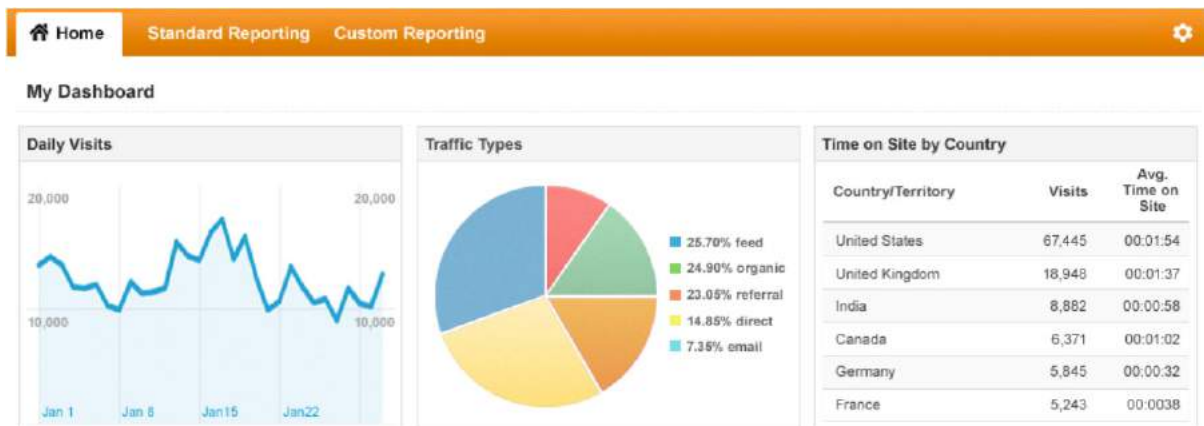
Illustrative screenshots of Google Analytics Dashboard showing traffic analysis

The e-commerce reports show a site's transactions, revenue, and many other commerce-related metrics. A user can have 50 site profiles. Each profile generally corresponds to one website. It is limited to sites which have a traffic of fewer than 5 million page views per month (roughly 2 page views per second), unless the site is linked to an AdWords campaign. Google Analytics includes Google Website Optimizer, rebranded as Google Analytics Content Experiments.

Facebook Insights

Facebook Insights is Facebook's version of web page analysis, which allows a user to keep track of information such as page views, unique views, fan statistics, wall posts, video and audio plays, photo views, and so on. The addition of Insights has allowed page operators, application producers and domain administrators to better understand the user trends for their pages, which can aid content management. Information is gathered on a daily basis, allowing an administrator to view daily or monthly statistics. Facebook has made some major improvements to the metrics it displays.

[*Source:* http://www.blog.hubspot.com/]
Illustrative screenshot from Facebook Insights dashboard

Introduced in 2011, "People Talking about Us" (PTAT) measured how many people were Liking, sharing, commenting, or checking in on your page. Basically, a whole lot of interaction data, aggregated into one metric. According to the Facebook announcement, PTAT will be broken out into five different metrics in the new Insights: "Page Likes, People Engaged (the number of unique people who have clicked on, Liked, commented on, or shared your posts), Page Tags and Mentions, Page Checkins, and other interactions on a Page."

Facebook also updated its "Virality" metric to take clicks into consideration. Before, it measured how many stories were created from one post — basically, any time someone Liked, commented on, or shared a story. Now, Facebook takes clicks on your post into account as well. To reflect this updated metric, Facebook has renamed it the "Engagement Rate." You can see the metric in the new dashboard (shown in figure below)in the bottom right-hand corner.

Facebook's new Page Insights now feature consolidated data for individual posts. Before, data about engagement and reach for one post were scattered all over the Insights dashboard — and some even hidden in the CSV download. Now, you can view reach, engagement, and negative feedback for individual posts all in one place. This feature is shown in the figure below.
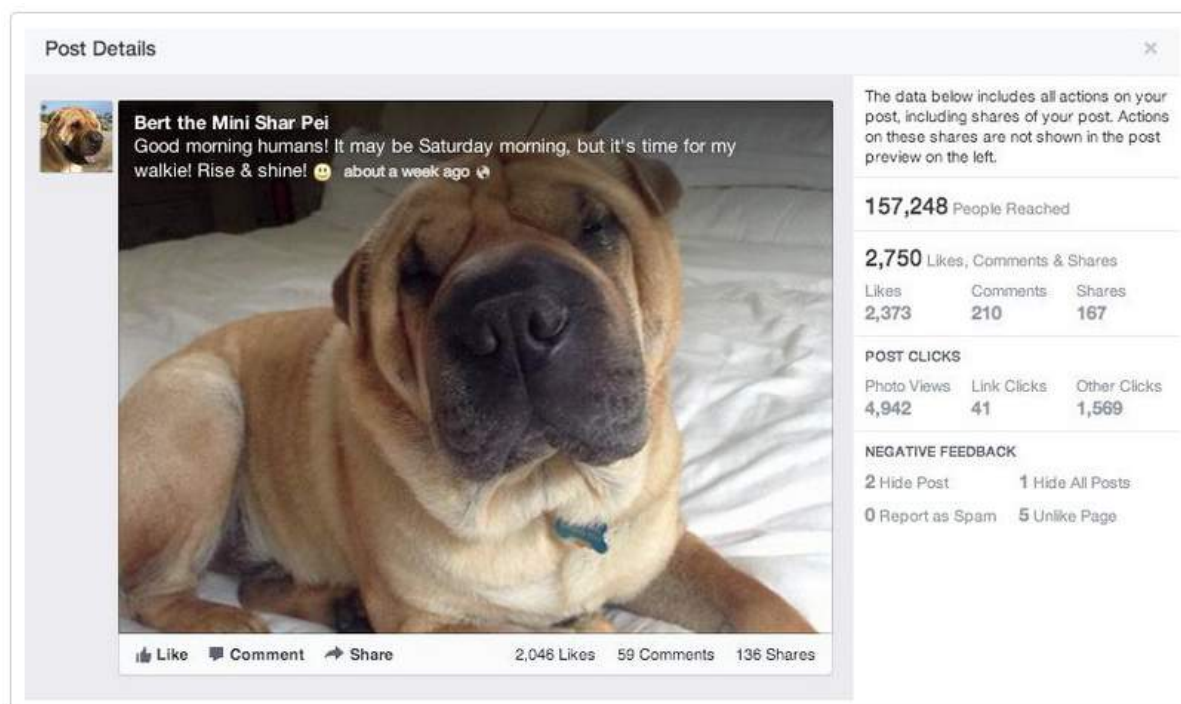
[*Source:* http://www.blog.hubspot.com/]
Illustrative screenshot from the improvised Facebook Page Insights dashboard

The revamped Page Insights also features a brand new "People Engaged" tab, featuring not only the demographic breakdown (age, gender, country, city, and language) of people you reached, but also who you've engaged. This update enables page administrators to more easily identify which content is resonating with which of its audiences, and thus, make smarter decisions about their Facebook content strategy.

Popular Metrics

A campaign will not be successful if it meets its objectives of acquiring site visitors and customers but the cost of achieving this is too high. This constraint is usually imposed simply by having a campaign budget – a necessary component of all campaigns.

However, in addition it is also essential to have specific objectives for the cost of getting the visitor to the site using different referrers such as search engine marketing combined with the cost of achieving the outcomes during their visit. This is stated as the cost per acquisition (CPA) (sometimes cost per action). Depending on context and market of a site, CPA may refer to different outcomes.

Typical cost targets include:

➢ Cost per acquisition – of a visitor
➢ Cost per acquisition – of a lead
➢ Cost per acquisition – of a sale

To control costs, it is important for managers to define a target allowable cost per acquisition such as ₹ 500 for generating a business lead or ₹ 1000 for achieving sign-up to a credit card.

The figure below shows the full range of measures used by digital marketers to control communications expenditure from least sophisticated to more sophisticated as follows:

➢ Volume or number of visitors - This is usually measured as thousands of unique visitors. It is preferable to using page views or hits as a measure of effectiveness, since it is opportunities to communicate with individuals. A more sophisticated measure is reach (%) or online audience share. This is only possible using panel data or audience data tools such aswww.netratings.comorwww.hitwise.com.

Example: An online retailer has one million unique visitors per month.

> Quality or conversion rates to action - This shows what proportion of visitors from different sources take specific marketing outcomes on the web such as lead, sale or subscription. Bounce rates can also be used to assess the relevance and appeal of the page that visitor arrives on.

  Example: Of these visitors 10% convert to an outcome such as logging in to their account or asking for a quote for a product.

> Cost (cost per click) - The cost of visitor acquisition is usually measured specific to a particular online marketing tool such as paid search engine marketing since it is difficult to estimate for an entire site with many visitors referred from different sources.

  Example: ₹ 10 CPC.

> Cost (cost per action or acquisition) - When cost of visitor acquisition is combined with conversion to outcomes this is the cost of (customer) acquisition.

  Example: ₹ 100 CPA (since only one in ten visitors take an action).

> Return on investment (ROI) - Return on investment is used to assess the profitability of any marketing activity or indeed any investment. You will also know that there are different forms of ROI, depending on how profitability is calculated. Here we will assume it is just based on sales value or profitability based on the cost per click and conversion rate.

  ROI = Profit generated from referrer /Amount spent on advertising with referrer A related measure, which does not take profitability into account, is return on advertising spend (ROAS) which is calculated as follows:

  ROI = Total sales revenue generated from referrer /Amount spent on advertising with referrer

> Branding metrics - These tend to be only relevant to interactive advertising or sponsorship. They are the equivalent of offline advertising metrics, i.e. brand awareness (aided and unaided), ad recall, brand favourability and purchase intent. Recorded using tools such as Dynamic Logic (www.dynamiclogic.com).

> Lifetime-value-based ROI - Here the value of gaining the customer is not just based on the initial purchase, but the lifetime value (and costs) associated with the customer. This requires more sophisticated models which can be most readily developed for online retailers and online financial services providers.

  Example: A bank uses a net present value model for insurance products which looks at the value over 10 years but the main focus is on a 5-year result and takes into account:

- Acquisition cost

- Retention rates

- Claims

- Expenses

This is valuable since it helps give them a realistic 'allowable cost per sale' from different communications tools which is needed to get return over 5 years.
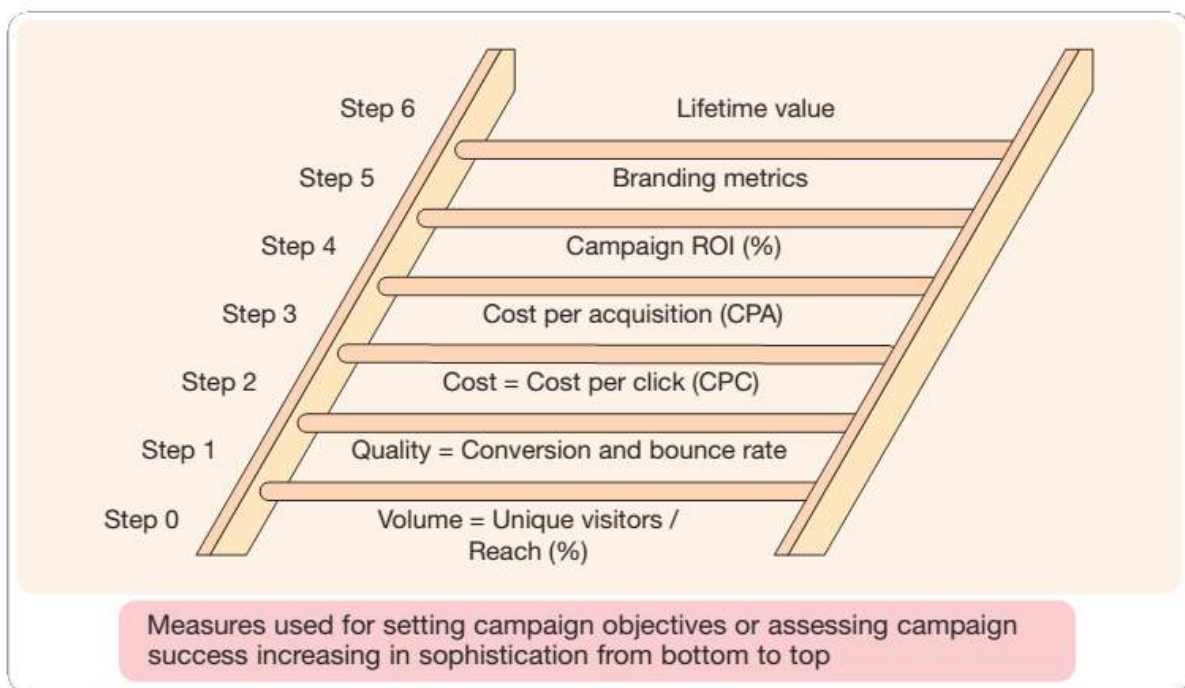
[*Source:* Adapted from Chaffey, 2009]

Hierarchy of measures used for setting online campaign objectives

Online Metrics Collection Methods

Several methods, namely Server-based log-file analysis, browser-based site activity data, panel activity demographic data, Outcome data, online questionnaires, online focus groups and mystery shoppers, are used to collect online metrics for analysis and to aid in marketing decision-making. The following table compares these methods for their relative strengths and weaknesses.

A comparison of different online metrics collection methods

Technique	Strengths	Weaknesses
1 Server-based log-file analysis of site activity	Directly records customer behaviour on site plus where they were referred from Low cost	Not based around marketing outcomes such as leads, sales Size, even summaries may be over 50 pages long Doesn't directly record channel satisfaction Under-counting and over-counting Misleading unless interpreted carefully
2 Browser-based site activity data	Greater accuracy than server-based analysis Count all users, cf. panel approach	Relatively expensive method Similar weaknesses to server-based technique apart from accuracy Limited demographic information
3 Panel activity and demographic data	Provide competitor comparisons Give demographic profiling Avoid under-counting and over-counting	Depend on extrapolation from limited sample that may not be representative
4 Outcome data, e.g. enquiries, customer service e-mails	Record marketing outcomes	Difficulty of integrating data with other methods of data collection when collected manually or in other information systems
5 Online questionnaires Customers are prompted randomly – every nth customer or after customer activity or by e-mail	Can record customer satisfaction and profiles Relatively cheap to create and analyse	Difficulty of recruiting respondents who complete accurately Sample bias – tend to be advocates or disgruntled customers who complete
6 Online focus groups Synchronous recording	Relatively cheap to create	Difficult to moderate and coordinate No visual cues, as from offline focus groups
7 Mystery shoppers Customers are recruited to evaluate the site, e.g. www.emysteryshopper.com	Structured tests give detailed feedback Also tests integration with other channels such as e-mail and phone	Relatively expensive Sample must be representative

Comparison of different online metrics collection methods

Self Assessment Questions

1. Explain the operational process of e-commerce marketing.

2. Compare the different online metrics collection methods.

3. Discuss the usefulness of Google Analytics and Facebook Insights to an online marketer.

4. Explain the popular online metrics used by online marketers.

5. How do the interactivity and individualization characteristics of the Internet influence online branding?

6. How is online brand building different from offline brand building?

CASE STUDY

How Audi Took Control of its Brand Experience

Maintaining control over an online brand experience is tough when you have multiple Web sites in multiple languages. That was Audi's predicament. The Bavaria-based auto-maker found that the brand experience across its 93 Web sites, which are offered in 40 different languages, was inconsistent for its 156 million annual visitors. It needed a way to standardize the experience while still letting international teams maintain a level of creative freedom to present content in ways best-suited to local audiences.

Additionally, Audi's Configurator feature, which lets users personalize their own cars and is used by 90 percent of site visitors, opened in a separate window, interrupting the flow of the online experience. Audi wanted to change that.

Audi standardized its global online presence using tools such as the Adobe Experience Management and Adobe Analytics solutions. Such an exercise yielded the following results:

➢ Encouraged consistent branding worldwide with centralized digital asset management. With the help of Adobe Experience Manager, the Audi marketing team can reach all customers of its Web site—from individual consumers to wholesalers and dealers. It also helped seamlessly integrate the Audi Configurator feature.

➢ Reduced time to market. If Audi changes its lineup, the dealer Web sites will automatically display the updated information. The result is greater productivity and faster time to market for new vehicle information. Audi can upload press releases, marketing information, specifications, and imagery to Adobe Experience Manager, making the content instantly available to all parties and Web sites worldwide.

➢ Audi gained analysis and insights to help predict sales in advance

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Lesson 5.2 - Ecommerce Marketing Communications

The objectives of this lesson are to:

➢ Highlight the prominent role of Internet-based sources of information in driving consumer behaviour

➢ Explain the steps in the marketing communication process

➢ Differentiate the communication characteristics of the new (online) media from the traditional media

➢ Describe the different types of online advertising and the technologies behind them

➢ Present the strengths and weaknesses of different online marketing communication channels

At the end of this lesson, you will be able to:

➢ Understand the online marketing communication process

➢ Understand how online marketing communication is unique

➢ Understand the online marketing communication (promotion) mix

➢ Distinguish between the types of online advertising and ascertain their respective strengths and weaknesses

Introduction

Marketing communications focuses strictly on methods of communicating the brand name and communications that directly promote sales. Marketing includes such things as packaging, product placement/arrangement, and departments of a physical store or on a Web site. Marketing communications encompass all methods by which consumers will receive audio, visual, text-based, or any other exchange with a company to strengthen brand name or promote the sale of products.

Today's digital shoppers increasingly rely on Internet-based sources of information for making purchase decisions. The results of a recent study by Cisco, shown in Figure below revealed continued growth in reliance on Internet-based data among all U.S. shoppers.
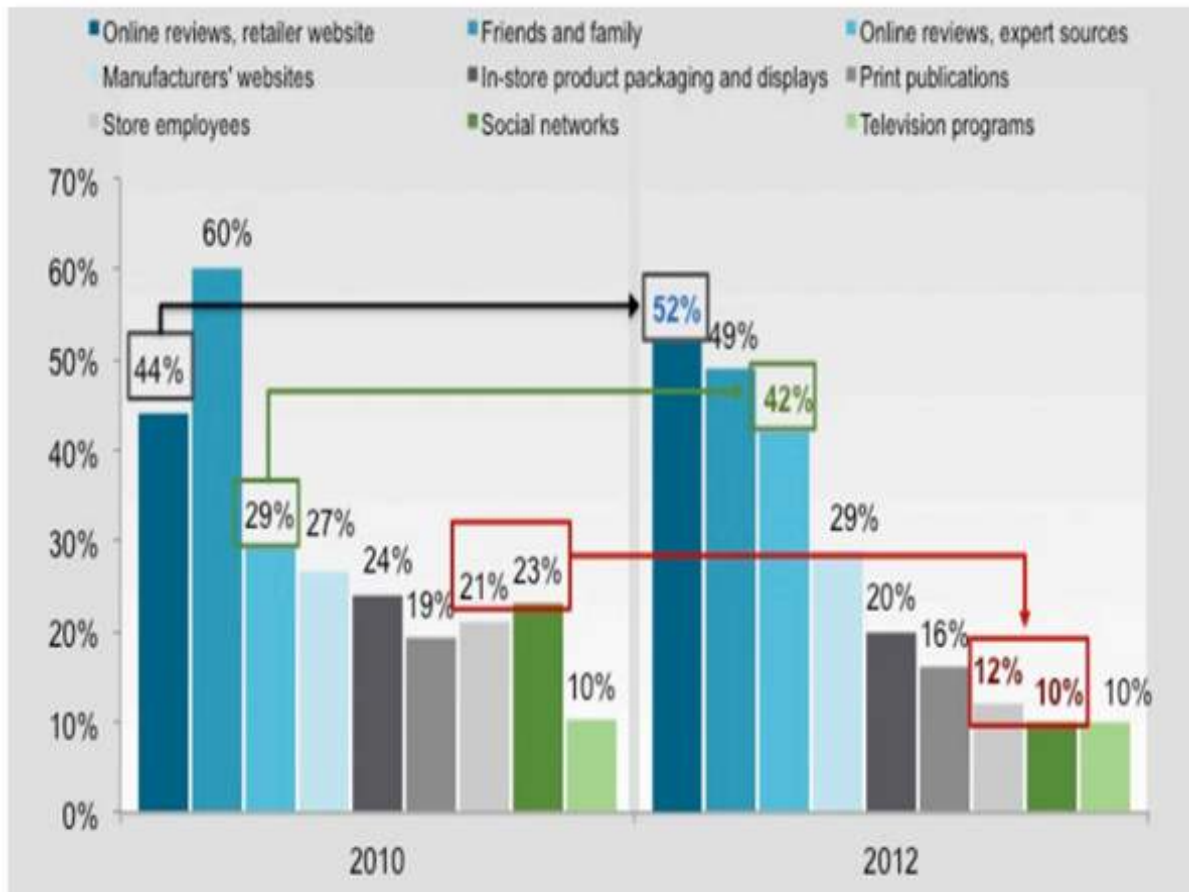
Source: Cisco IBSG, 2010, 2012
2010: N = 1,004; 2012: N = 1,007

[*Source:* http://www.cisco.com/web/]

Sources of information that drive consumer behaviour

The general process used in marketing communication is shown in Figure. It starts with identifying the target audience for the marketing communication. Knowing 'whom to talk to' channelizes the steps that follow in the process. Once the target audience are identified, the communication objective is established. Marketing communication modes such as Attention-Interest-Decision-Action (AIDA) are helpful to establish the objectives. Then the media plan is finalized by evaluating the available media options. The actual message is then created and the marketing communication campaign is done. Afterwards, the campaign effectiveness is evaluated by comparing the post-campaign results with the pre-campaign benchmarks.

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Six Steps of the Communication Process

Step 1	Identify the Target Audience
Step 2	Determine the Communication Objective
Step 3	Develop the Media Plan
Step 4	Create the Message
Step 5	Execute the Campaign
Step 6	Evaluate the Effectiveness of the Campaign
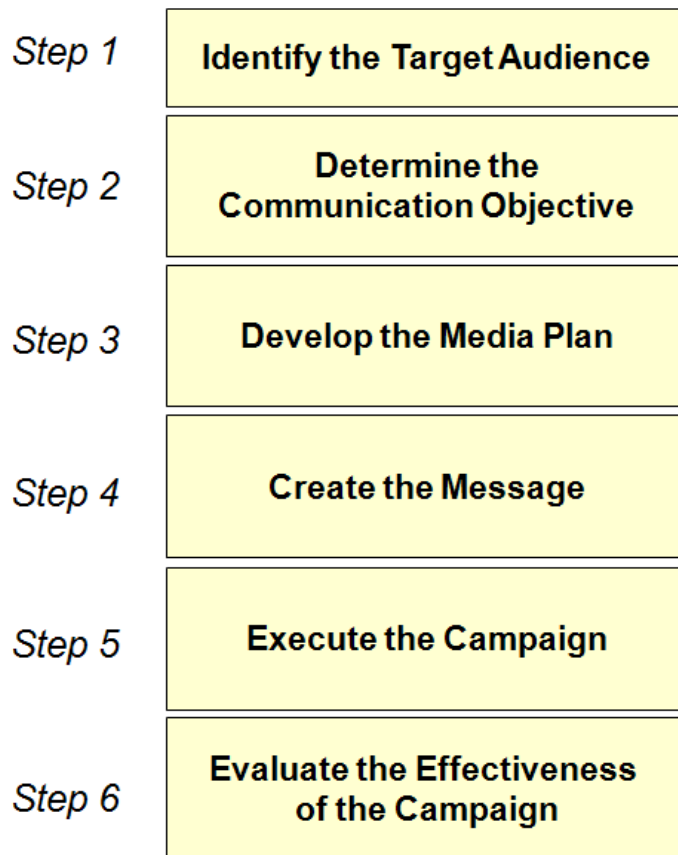
Steps in the marketing communication process

Characteristics of Interactive Marketing Communications

To best exploit the characteristics of digital media, it is important to understand the different communications characteristics of traditional and new media. There are eight key differences:

i. From Push to Pull

Traditional media such as print, TV and radio are push media, a one-way street where information is mainly unidirectional, from company to customer unless direct-response elements are built in. In contrast, the web is an example of pull media. This is its biggest strength and its biggest weakness. It is strength since pull means that prospects and customers only visit a web site when it enters their head to do so – when they have a defined need – they are proactive and self-selecting. But this is a weakness in that online pull means marketers have less control than in traditional communications where the message is pushed out to a defined audience. What are the e-marketing implications of the pull

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medium? First, we need to provide the physical stimuli to encourage visits to web sites. This may mean traditional ads, direct mail or physical reminders. Second, we need to ensure our site is optimized for search engines – it is registered and is ranked highly on relevant keyword searches. Third, e-mail is important – this is an online push medium, it should be a priority objective of web site design to capture customers' e-mail addresses in order that opt-in e-mail can be used to push relevant and timely messages to customers.

ii. From Monologue to Dialogue

Creating a dialogue through interactivity is the next important feature of the web and new media. Since the Internet is a digital medium and communications are mediated by software on the web server that hosts the web content, this provides the opportunity for two-way interaction with the customer. This is a distinguishing feature of the medium (Peters, 1998). For example, if a registered customer requests information, or orders a particular product, it will be possible for the supplier to contact them in future using e-mail with details of new offers related to their specific interest. Deighton (1996) proclaimed the interactive benefits of the Internet as a means of developing long-term relationships with customers. A web site, interactive digital TV and mobile phones all enable marketers to enter dialogue with customers. But digital dialogues have a less obvious benefit also – intelligence. Interactive tools for customer self-help can help collect intelligence – clickstream analysis recorded in web analytics can help us build up valuable pictures of customer preferences and help marketers 'sense and respond'.

iii. From One-to-Many to One-to-Some and One-to-One

Traditional push communications such as TV and print are one-to-many: from one company to many customers, often the same message to different segments and often poorly targeted (although media fragmentation means that reasonably accurate targeting is possible). With new media 'one-to-some' – reaching a niche or micro-segment becomes more practical – e-marketers can afford to tailor and target their message to different segments through providing different site content or e-mail for different audiences through mass customization. We can even move to one-to-one communications where personalized messages can be delivered.

iv. From One-to-Many to Many-to-Many Communications

New media also enable many-to-many communications. Hoffman and Novak (1996) noted that new media are many-to-many media. Here customers can interact with other customers via your web site or in independent communities. The success of online auctions

such as eBay also shows the power of many-to-many communications.

v. From 'Lean-Back' to 'Lean-Forward'

New media are also intense media – they are lean-forward media in which the web site usually has the visitor's undivided attention. This intensity means that the customer wants to be in control and wants to experience flow and responsiveness to their needs. First impressions are important. This contrasts with TV which is more lean-back – the TV may be on, but its audience is not necessarily watching it. An article in the Guardian (2003) entitled 'TV ads "a waste of money"' summarizes new research observing the reaction of consumers to ads. It supports those who argue that many consumers do not regularly watch TV ads. The study found people who watched television with family or friends were far more likely to talk to each other during the commercial breaks than to focus on the ads. Others spent the commercial break doing housework, reading or channel hopping.

vi. The Medium Changes the Nature of Standard Marketing Communications Tools such as Advertising

In addition to offering the opportunity for one-to-one marketing, the Internet can be, and still is, widely used for one-to-many advertising. On the Internet the overall message from the advertiser becomes less important, and typically it is detailed information the user is seeking. The web site itself can be considered as similar in function to an advertisement (since it can inform, persuade and remind customers about the offering, although it is not paid for in the same way as a traditional advertisement). Berthonet al. (1996) consider a web site as a mix between advertising and direct selling since it can also be used to engage the visitor in a dialogue. Constraints on advertising in traditional mass media such as paying for time or space become less important. Peters (1998) suggests that communication via the new media is differentiated from communication using traditional media in four different ways. First, communication style is changed, with immediate, or synchronous transfer of information through online customer service being possible. Asynchronous communication, where there is a time delay between sending and receiving information as through e-mail, also occurs. Second, social presence or the feeling that a communications exchange is sociable, warm, personal and active may be lower if a standard web page is delivered, but can be enhanced, perhaps by personalization.

Third, the consumer has more control of contact, and finally the user has control of content, through selection or through personalization facilities.

vii. Increase in Communications Intermediaries

If we consider advertising and PR, with traditional media this occurs through a potentially large number of media owners for TV, radio and print publications. In the Internet era there is a vastly increased range of media owners or publishers through which marketers can promote their services and specifically gain links to their web site. Traditional radio channels, newspapers and print titles have migrated online, but in addition there are a vast number of online-only publishers including horizontal portals such as search engines and vertical portals such as industry-specific sites. The online marketer needs to select the most appropriate of this plethora of sites which customers visit to drive traffic to their web site.

viii. Integration Remains Important

Although new media have distinct characteristics compared to traditional media, this does not mean we should necessarily concentrate our communications solely on new media. Rather we should combine and integrate new and traditional media according to their strengths. We can then achieve synergy – the sum is greater than its parts. Most of us still spend most of our time in the real world rather than the virtual world, so offline promotion of the proposition of a web site is important. It is also important to support mixed-mode buying. For example, a customer wanting to buy a computer may see a TV ad for a certain brand which raises awareness of the brand and then see a print ad that directs them across to the web site for further information. However, the customer does not want to buy online, preferring the phone, but the site allows for this by prompting with a phone number at the right time. Here all the different communications channels are mutually supporting each other. Similarly, inbound communications to a company need to be managed. Consider what happens if the customer needs support for an error with their system. They may start by using the onsite diagnostics but these do not solve the problem. They then ring customer support. This process will be much more effective if support staff can access the details of the problem as previously typed in by the customer to the diagnostics package.

E-Commerce Marketing Communication Techniques

Before an organization can acquire customers through the content on its site, it must, of course, develop marketing communications strategies to attract visitors to the web site. E-commerce managers constantly strive to deliver the most effective mix of communications to drive traffic to their e-commerce sites. The different techniques can be characterized as traditional offline marketing communications or rapidly evolving online marketing communications which are today referred to by those working in online marketing as digital media channels. From an e-commerce context, the objective of employing these techniques

is often to acquire new visitors or 'build traffic' using the techniques summarized in the figure below. The diversity of marketing communications that can be used to encourage site visitors is also highlighted.
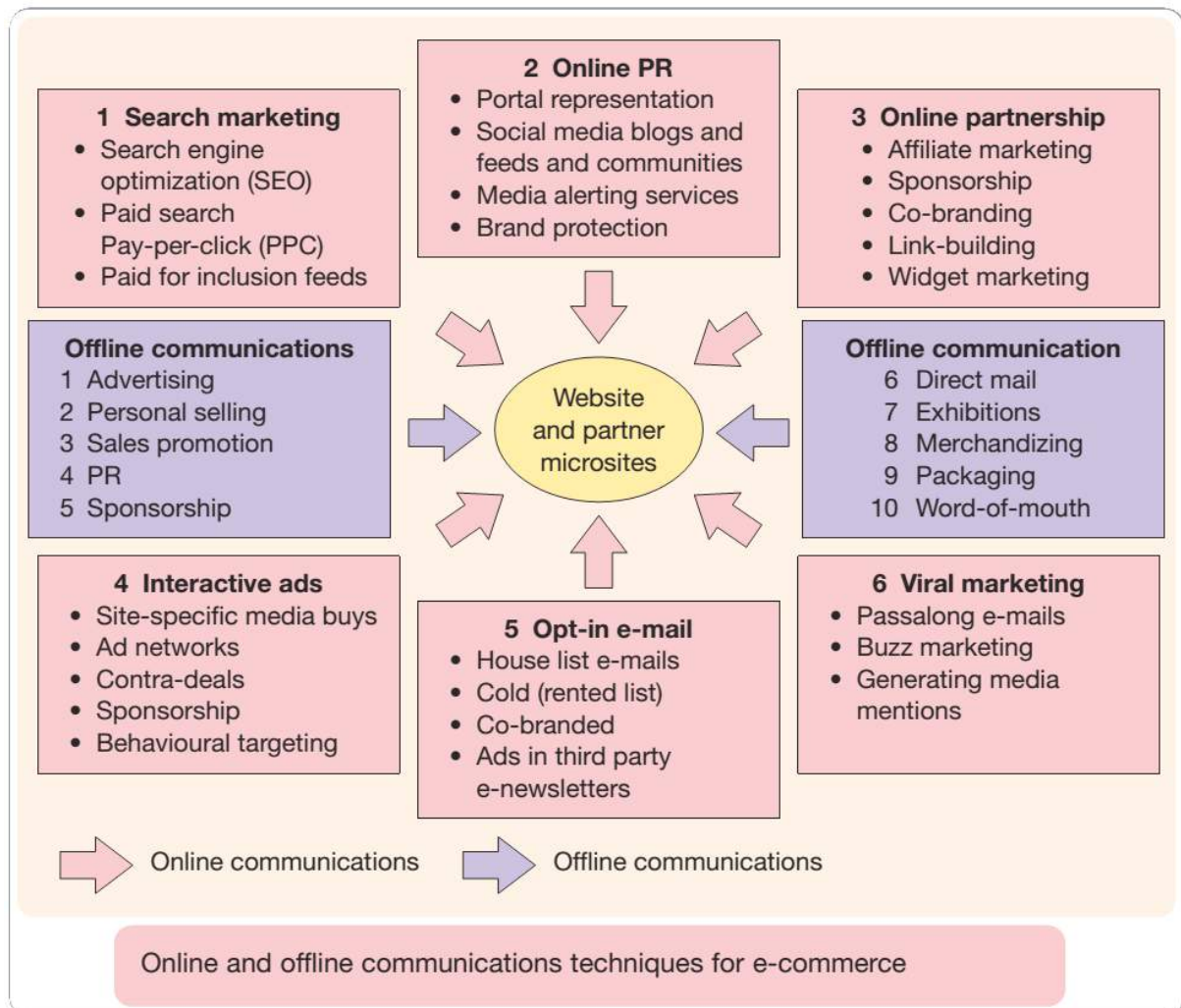
[*Source:* Adapted from Chaffey, 2009]

Online and offline communication techniques for marketers

Search Marketing

Search Engine Marketing (SEM)

Search engines and directories are the primary method of finding information about a company and its products. It follows that if an organization is not prominent in the search engines, then many potential sales could be lost since a company is dependent on the strength of its brand and offline communications to drive visitors to the web site.

Consequently, Chaffey and Smith (2008) stress the importance of timing for traffic building. Some e-marketers may consider traffic building to be a continuous process, but

others may view it as a specific campaign, perhaps to launch a site or a major enhancement. Some methods tend to work best continuously; others are short term. Short-term campaigns will be for a site launch or an event such as an online trade show.

Google's Search Technology Involves these Main Processes

Crawling

The purpose of the crawl is to identify relevant pages for indexing and assess whether they have changed. Crawling is performed by robots (bots), which are also known as spiders. These access web pages and retrieve a reference URL of the page for later analysis and indexing. Although the terms 'bot' and 'spider' give the impression of something physical visiting a site, the bots are simply software processes running on a search engine's server which request pages, follow the links contained on that page and so create a series of page references with associated URLs. This is a recursive process, so each link followed will find additional links which then need to be crawled.

Indexing

An index is created to enable the search engine to rapidly find the most relevant pages containing the query typed by the searcher. Rather than searching each page for a query phrase, a search engine 'inverts' the index to produce a lookup table of documents containing particular words. The index information consists of phases stored within a document and also other information characterizing a page such as the document's title, meta description, page rank, trust or authority, spam rating. For the keywords in the document additional attributes will be stored such as semantic markup (<h1>, <h2> headings denoted within HTML), occurrence in link anchor text, proximity, frequency or density and position in document.

Ranking or Scoring

The indexing process has produced a lookup of all the pages that contain particular words in a query, but they are not sorted in terms of relevance. Ranking of the document to assess the most relevant set of documents to return in the SERPs (search engine results pages) occurs in real time for the search query entered. First, relevant documents will be retrieved from a run-time version of the index at a particular data centre, and then a rank in the SERPs for each document will be computed based on many ranking factors of which we highlight the main ones in later sections.

Query Request and Results Serving

The familiar search engine interface accepts the searcher's query. The user's location is assessed through their IP address and the query is then passed to a relevant data centre for processing. Ranking then occurs in real time for a particular query to return a sorted list of relevant documents and these are then displayed on the search results page.

Google has stated that it uses more than 200 factors or signals within its search ranking algorithms. These include positive ranking factors which help boost position and negative factors or filters which are used to remove search engine spam from the index where SEO companies have used unethical approaches such as automatically creating links to mislead the Google algorithms.
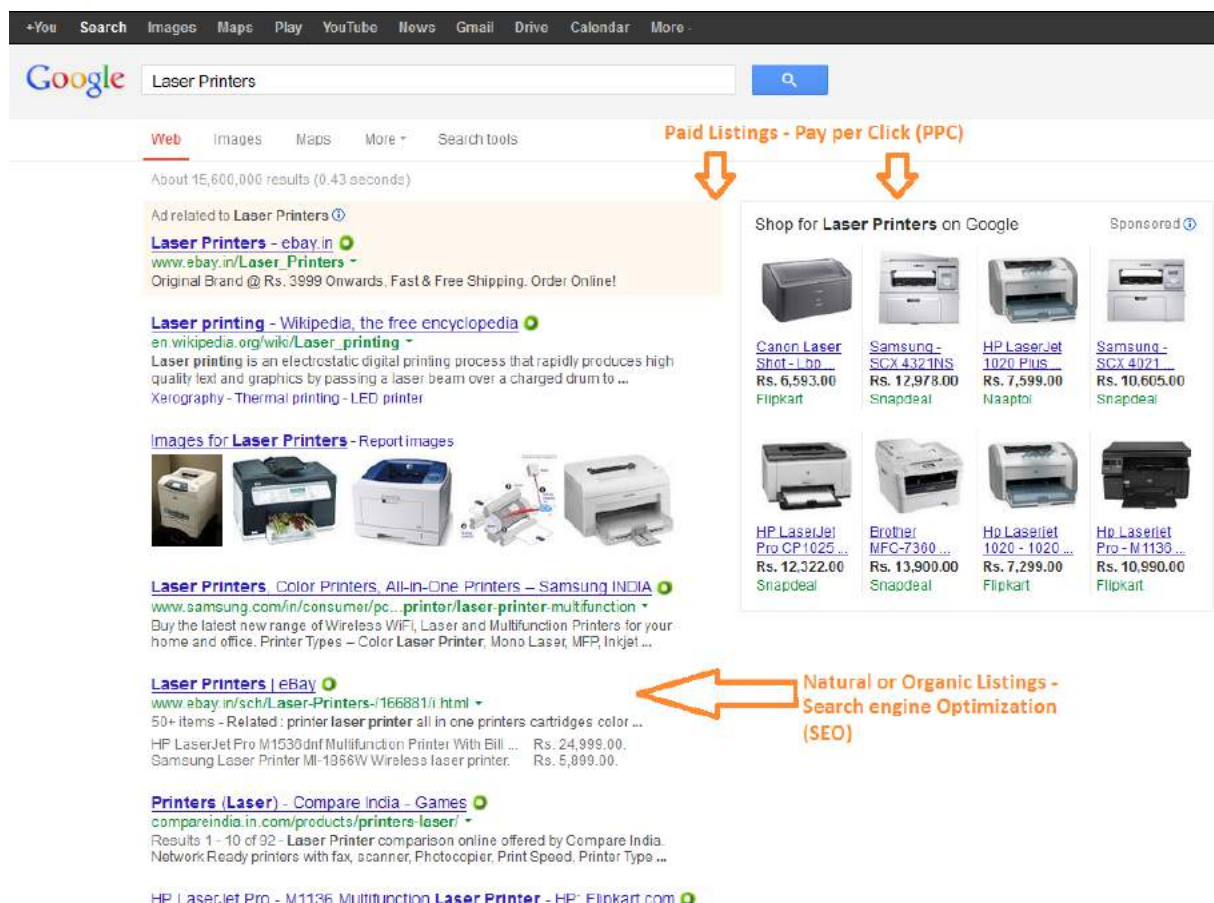
[*Source:* www.google.com]

search engine result page showing natural and paid search listings

Key Phrase Analysis

The starting point to successful search engine marketing is target the right key phrases. We use keyphrase' (short for 'keyword phrase') rather than 'keyword' since search engines such as Google attribute more relevance when there is a phrase match between the keywords that the user types and a phrase on a page. Companies should complete a 'gap analysis' which will identify keyphrases to target by showing for each phrase, the number of visitors they could potentially attract compared to the actual positions or number of visitors they are receiving. Key sources for identifying the keyphrases customers are likely to type when searching for products include your market knowledge, competitors' sites, keyphrases from visitors who arrive at the site (from web analytics), the internal site search tool and the keyphrase analysis tools.

Search-Engine Optimization (SEO)

It involves a structured approach used to increase the position of a company or its products in search-engine natural or organic results listings for selected key phrases. It also involves controlling index inclusion or ensuring that as many pages of a site as possible are included within the search engine. There may be technical difficulties with this with some content management or e-commerce systems which need to be corrected. Although each search engine has its own evolving algorithm with hundreds of weighting factors truly only known to the search engineers they employ, fortunately there are common factors that influence search engine rankings. These are::

Frequency of occurrence in body copy: The number of times the key phrase is repeated in the text of the web page is a key factor in determining the position for a key phrase. Copy can be written to increase the number of times a word or phrase is used (technically, its 'key phrase density') and ultimately boost position in the search engine. Note though, that search engines make checks that a phrase is not repeated too many times such as 'cheap hotels … cheap hotels … cheap hotels … cheap hotels … cheap hotels … cheap hotels … cheap hotels … cheap hotels …' or the keyword is hidden using the same colour text and background and will not list the page if this key phrase density is too high or it believes the page creator has tried to mislead the search engine ('search engine spamming'). Relevance is also increased by a gamut of legitimate 'tricks' such as including the key phrase in headings (<H1>, <H2>), linking anchor text in hyperlinks and using a higher density towards the start of the document.

Number of inbound links (page rank): The more links you have from good-quality sites, the better your ranking will be. Evaluation of inbound links or back links to determine

ranking is one of the key reasons Google became popular. Google uses an assessment called 'pagerank' to deliver relevant results since it counts each link from another site as a vote. However, not all votes are equal – Google gives greater weight to links from pages which themselves have high page rank and which have the same context or topical content as the page they link to. Weighting is also given where hyperlink anchor text or adjacent text contains text relevant to the keyphrase, i.e. the linking page must have context. Inclusion in directories such as Yahoo! or Business.com (for which a fee is payable) or the Open Directory (www.dmoz.org, which is currently free) is important since it can assist in boosting page rank. Another key aspect of linking is the architecture of internal links within the site. Keyphrases that occur within the hypertext of different forms of navigation are important to Google in indicating the context of a page.

Title HTML tag: The keywords in the title tag of a web page that appears at the top of a browser window are indicated in the HTML code by the <TITLE> keyword. This is significant in search engine listings since if a keyphrase appears in a title it is more likely to be listed high than if it is only in the body text of a page. It follows that each page on a site should have a specific title giving the name of a company and the product, service or offer featured on a page. Greater weighting is given to keyphrases at the left of the title tag and those with a higher keyphrase density. The Title HTML tag is also vital in search marketing since this is typically the text underlined within the search results page which forms a hyperlink through to your web site. If the Title tag appearing on the search results page is a relevant call-to-action that demonstrates relevance you will receive more clicks, which equals more visits (incidentally, Google will monitor click throughs to a site and will determine that your content is relevant too and boost position accordingly).

Meta-tags: Meta-tagsare part of the HTML source file, typed in by web page creators, which is read by the search engine spider or robot. They are effectively hidden from users, but are used by some search engines when robots or spiders compile their index. In the past, search engines assigned more relevance to a site containing keyphrases in its metatags than one that didn't. Search engine spamming of meta-tags resulted in this being an inaccurate method of assessing relevance and Google has reported that it assigns no relevance to meta-tags. However, other search engines such as 'Yahoo! Search' do assign some relevance to meta-tags, so it is best practice to incorporate these and to change them for each page with distinct content. There are two important meta-tags which are specified at the top of an ***HTML page using the <meta name="">HTML keyword***

(i) The 'keywords' meta-tag highlights the key topics covered on a web page. Example: meta name="keywords" content="E-business, E-commerce, E-marketing">

(ii) The 'description' meta-tag denotes the information which will be displayed in the search results page so is very important to describe what the web site offers to encourage searchers to click through to the site.

Alternative graphic text: A site that uses a lot of graphical material and/or plug-ins, is less likely to be listed highly. The only text on which the page will be indexed will be the <TITLE> keyword. To improve on this, graphical images can have hidden text associated with them that is not seen by the user (unless graphical images are turned off), but will be seen and indexed by the search engine. Again, due to search engine spamming this factor is assigned less relevance than previously (unless the image is also a link), but it is best practice to use this since it is also required by accessibility law (screen-readers used by the blind and visually impaired read out the text assigned through ALT tags).

Paid Search Marketing

Paid search marketing or paid listings are similar to conventional advertising; here a relevant text ad with a link to a company page is displayed when the user of a search engine types in a specific phrase. A series of text ads usually labelled as 'sponsored links' are displayed on the right and/or above and below the natural search engine listings.

Unlike conventional advertising, the advertiser doesn't pay when the ad is displayed, but only when the ad is clicked on which then leads to a visit to the advertiser's web site – hence this is often known as 'pay-perclick marketing'! The relative ranking of these 'paid performance placements' is typically based on the highest bid cost-per-click value for each keyphrase.

But it is not a simple case that the company which is prepared to pay the most per click gets top spot as many think. The search engines also take the relative clickthrough rates of the ads dependent on their position (lower positions naturally have lower clickthrough rates) into account when ranking the sponsored links, so ads which do not appear relevant, because fewer people are clicking on them, will drop down or may even disappear off the listing. The analysis of CTR to determine position is part of the quality score, a concept originally developed by Google, but now integrated as part of the Microsoft Live and Yahoo! search networks.

Google, Yahoo! and Microsoft Live also take the relative clickthrough rates of the ads into account when ranking the sponsored links, so ads which do not appear relevant, because fewer people are clicking on them, will drop down or may even disappear off the listing.

As well as paid search ads within the search engines, text ads are also displayed on third-party sites which form a 'content network' such as Google Adsense (http://adsense.google.com)or Content Match on Yahoo! Search where 'contextual ads' are displayed automatically according to the type of content. These are typically paid for on a cost-per-click (CPC) basis but ads can also be paid for on a CPM basis. The search networks and publishers share the fees. They account for around 30% of Google's revenue. They enable marketers to reach a wider audience on selectable third-party sites, but they need to decide how to use these to deliver different messages.

Online PR

Online PRor e-PR leverages the network effect of the Internet. Remember, Internet is a contraction of 'interconnected networks'! Mentions of a brand or site on other sites are powerful in shaping opinions and driving visitors to your site. The main element of online PR is maximizing favourable mentions of an organization, its brands, products or web sites on third-party web sites which are likely to be visited by its target audience.

Furthermore, as we noted in the topic on search engine optimization, the more links there are from other sites to your site, the higher your site will be ranked in the natural or organic listings of the search engines. Minimizing unfavourable mentions through online reputation management is also an aspect of online PR.Figure shows the different categories and activities of online PR.

Activities which can be considered to be online PR include the following.

Communicating with media (journalists) online: Communicating with media (journalists) online uses the Internet as a new conduit to disseminate press releases (SEO-optimized) through e-mail and on-site and on third-party sites. Options to consider for a company include: setting up a press-release area on the web site; creating e-mail alerts about news that journalists and other third parties can sign up to; submitting your news stories or releases to online news feeds.

Link building: It is a key activity for search engine optimization. It can be considered to be an element of online PR since it is about getting your brand visible on third-party sites. Link building needs to be a structured effort to achieve as many links into a web site as possible from referring web sites (these commonly include reciprocal links). We have also seen that your position in the search engine results pages will be higher if you have quality links into relevant content on your site (not necessarily the home page).

Blogs, podcasting and RSS: Weblogs or 'blogs' give an easy method of regularly publishing web pages which are best described as online journals, diaries or news or events listings. They may include feedback (trace back) comments from other sites or contributors to the site. Frequency can be hourly, daily, weekly or less frequently, but daily updates are typical.

Business blogs are created by people within the organization. They can be useful in showing the expertise of those within the organization, but need to be carefully controlled to avoid releasing damaging information. An example of a business blog used to showcase the expertise of its analysts is the Jupiter Research Analyst Weblogs, (http://weblogs.jupiterresearch.com). Technology companies such as Microsoft, Oracle and Sun Microsystems may have several hundreds of bloggers and have a policy to control them to make positive comments.

There are many free services which enable anyone to blog (for examplewww.blogger.com which was purchased by Google in 2003). Blogs were traditionally accessed through online tools (e.g.www.bloglines.com,www.blogpulse.com) or software readers(www.rssreader.com), but were incorporated into mainstream software in 2006. However, many companies still seem resistant to blogging because of the potential damage that can be caused.

Podcasts are related to blogs since they can potentially be generated by individuals or organizations to voice an opinion either as audio (typically MP3) or less commonly currently as video. They have been successfully used by media organizations such as the BBC which has used them for popular programmes such as film reviews or discussions and for live recording. A big challenge for achieving visibility for podcasts is that contents can only currently be recognized by tags and it is difficult to assess quality without listening to the start of a podcast. All the main search engines are working on techniques to make searching of voice and video content practical.

The human wish to socialize and share experiences is the real reason behind the popularity of Web 2.0 sites such as the social networks. So it is important for organizations to determine how their audiences use social networks and that the opportunities are to reach and interact with them. Dee et al. (2007) also note the importance of social networks in influencing perceptions about brands, products and suppliers. Their research shows large differences in gender and age on the types of products discussed, but recommendations on restaurants, computers, movies and vehicles being popular in all categories. While many Facebook Applications have been developed (www.facebook.com/apps/), the majority of well-known Apps were not created by brands. Companies can also set up brand pages

within Facebook, but these tend not to reach large numbers. Members of a community or social network will differ in the extent to which they are connected with others. The most influential network members will be highly connected and will discuss issues of interests with a wider range of contacts than those who are less connected It is generally believed by PR professionals seeking to influence marketplace perceptions that it is important to target the highly connected individuals since they are typically trusted individuals who other members of the community may turn to for advice. Although there is a clear wish to socialize online, site owners need to remember that it is not straightforward to engage an online audience as they move between different sites. Only a relatively small proportion will engage.

[*Source:* www.facebook.com/Starbucks]

Illustrative facebook page of a global marketer (Starbucks)

Really Simple Syndication (RSS) is an extension of blogging where blog, news or any type of content is received by subscribers using the systems mentioned above. It offers a method of receiving news that uses a different broadcast method to e-mail, so is not subject to the same conflicts with spam or spam filters. Many journalists now subscribe to RSS feeds to find sources. There are options such as Pheedo (www.pheedo.com) for companies to advertise in feeds.

Search marketing activities (SEO)
- Inbound link-building
- Content creation
- Blogs
- Feeds (RSS)
- Press releases
- Influencing media owners

Brand engagement activities
- Surveys and polls
- Audience research:
- Social media inc user-generated content
- Own blogs and communities
- Influencing media owners & blogger relations

Buzz-building activities
- Propagating campaign 'big idea'
- Web editorial contacts
- Viral marketing
- Press & social media releases
- Influencing media owners & blogger relations

Brand protection activities
- Social media monitoring and response:
- Influencing media owners & blogger relations
- Negative SEO
- PPC protection

Online PR

4. Defensive/Crisis

2. Engagement & Dialogue

3. Building Campaign Buzz

4. Defensive/Crisis

Online PR categories and activities

[*Source:* Adapted from Chaffey 2009]

Online Public Relations – categories and activities

Online Partnerships

There are three key types of online partnerships which need to be managed: link building (covered in the previous section, this can also be considered to be part of online PR), affiliate marketing and online sponsorship. All should involve a structured approach to managing links through to a site.

The important types of partner arrangement are as follows.

Affiliate marketing: has become very popular with e-retailers since many achieve over 20% of their online sales through affiliates (also known as 'aggregators' since they aggregate offers from different providers). The great thing about affiliate marketing for the e-retailer, is that they, the advertiser, do not pay until the product has been purchased or a lead generated. It is sometimes referred to as 'zero-risk advertising'.
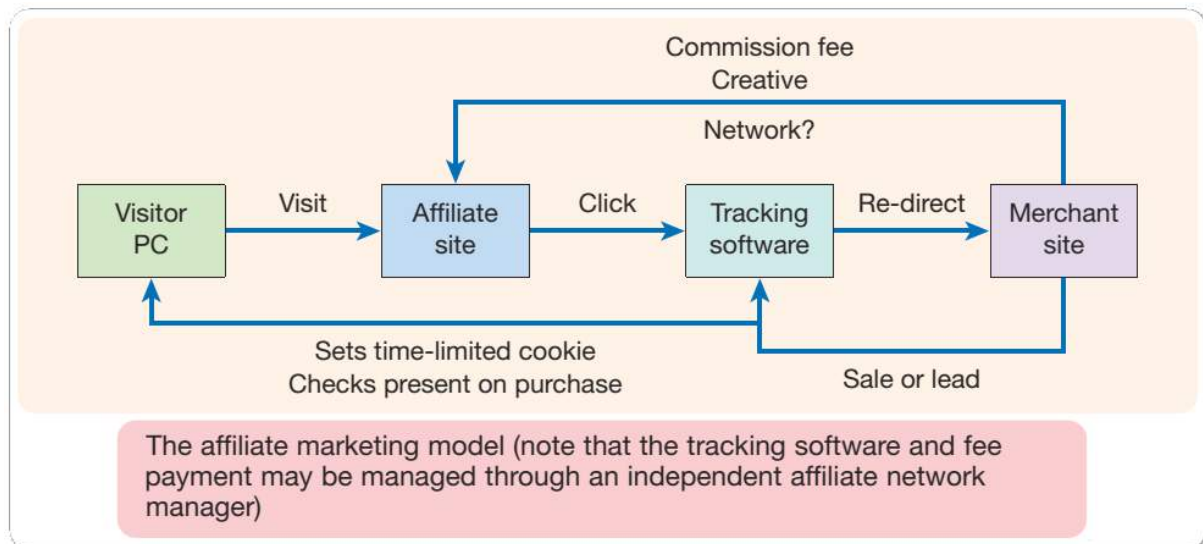
[*Source*: Adapted from Chaffey 2009]

How Affiliate Marketing works

Amazon was one of the earliest adopters of affiliate marketing and it now has hundreds of thousands of affiliates that drive visitors to Amazon through links in return for commission on products sold. Amazon.com launched its Associates Program in July 1996 and it is still going strong. To manage the process of finding affiliates, updating product information, tracking clicks and making payments, many companies use an affiliate network or affiliate manager such as Commission Junction (www.cj.com)or Trade Doubler(www.tradedoubler.com).

Online sponsorship: Online sponsorship is not straightforward. It's not just a case of mirroring existing 'realworld' sponsorship arrangements in the 'virtual world' although this is a valid option. There are many additional opportunities for sponsorship online which can be sought out, even if you don't have a big budget at your disposal. Ryan and Whiteman (2000) define online sponsorship as the linking of a brand with related content or context for the purpose of creating brand awareness and strengthening brand appeal in a form that is clearly distinguishable from a banner, button, or other standardized ad unit. For the advertiser, online sponsorship has the benefit that their name is associated with an online brand that the site visitor is already familiar with. Closely related is online 'co-branding' where there is an association between two brands. Paid-for sponsorship of another site, or

part of it, especially a portal for an extended period, is another way to develop permanent links. Co-branding is a lower-cost method of sponsorship and can exploit synergies between different companies.

[*Source:* https://affiliate-program.amazon.in/]

Affiliate Marketing program of Amazon.com, the world's largest online retailer

Interactive Advertising

Advertising on the web takes place when an advertiser pays to place advertising content on another web site. The process usually involves ad serving from a different server from that on which the page is hosted (ads can be served on destination sites in a similar way). Advertising is possible on a range of sites in order to drive traffic to an organization's destination site or alternatively a micro-site or nested ad-content on the media owner's site or on the destination site. The following figure highlights the types of online advertising and the technologies that power them.
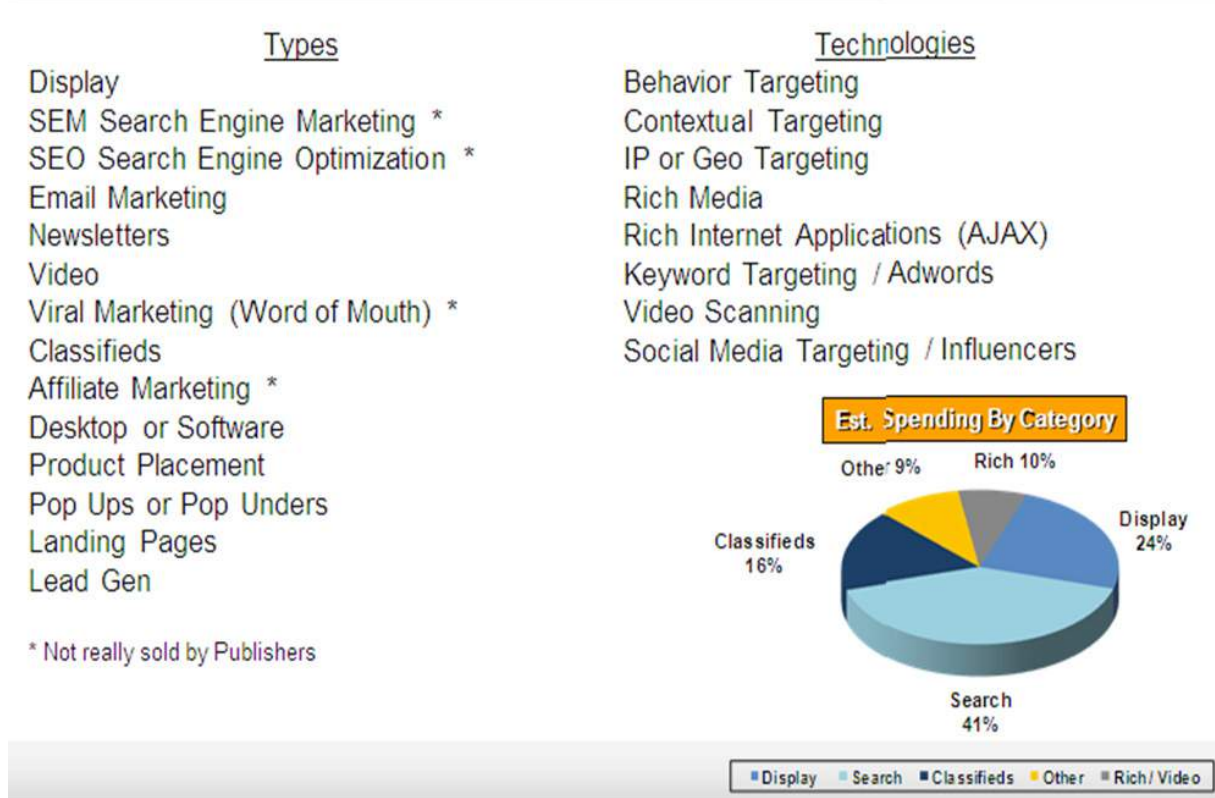
Types of online advertising and the technologies powering them

Robinsonet al. (2007) have noted that the two primary goals of online display advertising are, first, using display adverts as a form of marketing communication used to raise brand awareness and, second, as a direct response medium focused on generating a response. Cartellieriet al. (1997) identifies the following objectives:

➢ Delivering content: This is the typical case where a clickthrough on a banner advertisement leads through to a destination site giving more detailed information on an offer. This is where a direct response is sought.

➢ Enabling transaction: If a clickthrough leads through to a merchant such as a travel site or an online bookstore this may lead directly to a sale. A direct response is also sought here. Shaping attitudes. An advertisement that is consistent with a company brand can help build brand awareness. Building awareness is a key aspect of online advertising. The linkage between advertising and search has been investigated by Graham and Havlena (2007) who studied the role of advertising in generating word-of-mouth discussion online. They found 'strong evidence that advertising does stimulate increased visitation to the websites of advertised brands – an indicator of consumer interest and involvement with a brand'.

- Soliciting response: An advertisement may be intended to identify new leads or as a start for two-way communication. In these cases an interactive advertisement may encourage a user to type in an e-mail address or other information.

- Encouraging retention: The advertisement may be placed as a reminder about the company and its service and may link through to on-site sales promotions such as a prize draw.

Online ads can be targeted through placing ads:

- On a particular type of site (or part of site) which has a specific visitor profile or type of content. So a bike manufacturer can place ads on the home page of snapdeal. com to appeal to a young male audience. A financial services provider can place an ad in the money section of the site to target those interested in these products. To reach large mass-market audiences, place an ad on a large portal home page such as Yahoo which has millions of visitors each day (sometimes known as a 'road-block' or 'takeover' if they take all ad inventory).

- To target a registered user's profile, a business software provider could advertise on the FT.com to target registrants' profiles such as finance directors or IT managers.

- At a particular time of day or week.

- Behavioural ad targeting is all about relevance – dynamically serving relevant content, messaging or an ad which matches the interests of a site visitor according to inferences about their characteristics. These inferences are made by anonymously tracking the different types of pages visited by a site user during a single visit to a site or across multiple sessions. Other aspects of the environment used by the visitor can also be determined, such as their location, browser and operating system. For example, FT.com, using software from Revenue Science, can identify users in eight segments: Business Education, Institutional Investor, Information Technology, Luxury and Consumer, Management, Personal Finance, Travel and Private Equity. First, the ad serving system detects whether the visitor is in the target audience (media optimization), then creative optimization occurs to serve the best ad for the viewer type.

Research has shown that message association and awareness building are much higher for flash-based ads, rich-media ads and larger-format rectangles (multipurpose units, MPUs) and skyscrapers. View the rich-media ads at www.eyeblaster.com or www. tangozebra.comand you will agree that they definitely can't be ignored. Other online ad terms you will hear include 'interstitials' (intermediate adverts before another page appears); the

more common 'overlays' which appear above content; and of course pop-up windows that are now less widely used because of their intrusion. Online advertisers face a constant battle with users who deploy pop-up blockers or less commonly ad-blocking software, but they will persist in using rich-media formats where they generate the largest response. Robinsonet al. (2007) conducted research on the factors which increased click-through response to banner ads. The main variables they (and previous studies they reference) include:

- Banner size
- Message length
- Promotional incentive
- Animation
- Action phrase (commonly referred to as a call-to-action)
- Company brand/logo

Email Marketing

When devising plans for e-mail marketing communications, marketers need to plan for:

- Outbound e-mail marketing, where e-mail campaigns are used as a form of direct marketing to encourage trial and purchases and as part of a CRM dialogue;

- Inbound e-mail marketing, where e-mails from customers such as support enquiries are managed. These are often managed today in conjunction with chat and co-browsing sessions.

Despite the increase in spam such that the vast majority of e-mails are spam or viruses (most estimates exceed 80%), e-mail can still drive good response levels. This is particularly the case with in-house lists, so e-mail communications to customers through e-newsletters or periodic e-mail blasts are today a vital communications technique for companies.

An illustrative sample of e-mail marketing

The key measures for e-mail marketing are:

➢ Delivery rate (this excludes e-mail 'bounces') – e-mails will bounce if the e-mail address is no longer valid or a spam filter blocks the e-mail. So, online marketers check their 'deliverability' to make sure their messages are not identified as 'false positives' by spam prevention software. Web-based e-mail providers such as Hotmail and Yahoo! Mail have introduced standard authentication techniques known as Sender ID and Domain Keys which make sure the e-mail broadcaster is who they say they are and doesn't spoof their address as many spammers do.

➢ Open rate– this is measured for HTML messages through downloaded images. It is an indication of how many customers open an e-mail, but is not accurate since some users have preview panes in their e-mail readers which load the message even if it is deleted without reading and some e-mail readers such as Outlook Express now block images by default (this has resulted in a decline in open rates through time).

➢ Clickthrough rate– this is the number of people who click through on the e-mail of those delivered (strictly unique clicks rather than total clicks). You can see that response rates are quite high at around 10%.

For acquiring new visitors and customers to a site, there are three main options for e-mail marketing. From the point of view of the recipient, these are:

• Cold e-mail campaign - In this case, the recipient receives an opt-in e-mail from an organization that has rented an e-mail list from a consumer e-mail list provider such as Experian (www.experian.com), Claritas (www.claritas.com) or IPT Limited (www.myoffers.co.uk) or a business e-mail list provider such as Mardev (www.mardev.com), Corpdata (www.corpdata.com) or trade publishers and event providers such as VNU. Although they have agreed to receive offers by e-mail, the e-mail is effectively cold.

➢ Co-branded e-mail - Here, the recipient receives an e-mail with an offer from a company they have a reasonably strong affinity with. For example, the same credit card company could partner with a mobile service provider such as Airtel and send out the offer to their customer (who has opted in to receive e-mails from third parties). Although this can be considered a form of cold e-mail, it is warmer since there is a stronger relationship with one of the brands and the subject line and creative will refer to both brands. Co-branded e-mails tend to be more responsive than cold e-mails to rented lists since the relationship exists and fewer offers tend to be given.

➢ Third-party e-newsletter - In this visitor acquisition option, a company publicizes itself in a third-party e-newsletter. This could be in the form of an ad, sponsorship or PR (editorial) which links through to a destination site. These placements may be set up as part of an interactive advertising ad buy since many e-newsletters also have permanent versions on the web site. Since e-newsletter recipients tend to engage with them by scanning the headlines or reading them if they have time, e-newsletter placements can be relatively cost-effective.

Viral Marketing

Viral marketing harnesses the network effect of the Internet and can be effective in reaching a large number of people rapidly in the same way as a natural virus or a computer virus. It is effectively an online form of word-of-mouth communications. Although the best known examples of viral activity are of compromising pictures or jokes being passed around offices worldwide, viral marketing is increasingly being used for commercial purposes.

Smith and Chaffey (2005) say ideally viral marketing is a clever idea, a game, a shocking idea, or a highly informative idea which makes compulsive viewing. It can be a video clip, TV ad, cartoon, funny picture, poem, song, political message, or news item. It is so amazing, it makes people want to pass it on. This is a challenge for commercial companies since to be successful, it will need to challenge convention and this may not fit well with the brand. To make a viral campaign effective, Justin Kirby of viral marketing specialists DMC (www. dmc.co.uk)suggests that three things are needed (Kirby, 2003):

➢ Creative material - the 'viral agent' -This includes the creative message or offer and how it is spread (text, image, video).

➢ Seeding - Identifying web sites, blogs or people to send e-mail to start the virus spreading.

➢ Tracking - To monitor the effect, to assess the return from the cost of developing the viral agent and seeding.

With the widespread adoption of high-speed broadband in many countries, rich media experiences are increasingly used to engage customers with the hope they will have a 'viral effect', i.e. they will be discussed online or offline and more people will become aware of or interact with the brand campaign.

Benefits of Online Advertising

➢ Cost effective: Online advertising is pay-for-performance advertising

➢ Targeted: A marketer can easily reach a specific reader based on geography, areas of interest and context of the content

➢ Search: The internet is predominantly used for information; people are looking for answers about their problems, a particular type of product or solution

➢ Reach: A marketer can reach a much wider, worldwide audience online

➢ Measurable: Evidence of Return on Investment (RoI) for all advertising activities can be measured

➢ Act now: Consumers can immediately click on a link to access more information, make a direct purchase or register for newsletters or services.

Costs and Benefits of Online Communications

The following figure compares the different online promotion techniques.

Promotion technique	Main strengths	Main weaknesses
1a Search engine optimization (SEO)	Highly targeted, relatively low cost of PPC. High traffic volumes if effective. Considered credible by searchers	Intense competition, may compromise look of site. Complexity of changes to ranking algorithm
1b Pay-per-click (PPC) marketing	Highly targeted with controlled cost of acquisition. Extend reach through content network	Relatively costly in competitive sectors and low volume compared with SEO
1c Trusted feed	Update readily to reflect changes in product lines and prices	Relatively costly, mainly relevant for e-retailers
2 Online PR	Relatively low cost and good targeting. Can assist with SEO through creation of backlinks	Identifying online influencers and setting up partnerships can be time-consuming. Need to monitor comments on third-party sites
3a Affiliate marketing	Payment is by results (e.g. 10% of sale or leads goes to referring site)	Costs of payments to affiliate networks for set-up and management fees Changes to ranking algorithm may affect volume from affiliates
3b Online sponsorship	Most effective if low-cost, long-term co-branding arrangement with synergistic site	May increase awareness, but does not necessarily lead directly to sales
4 Interactive advertising	Main intention to achieve visit, i.e. direct response model. But also role in branding through media multiplier effect	Response rates have declined historically because of banner blindness
5 E-mail marketing	Push medium – can't be ignored in user's inbox. Can be used for direct response link to web site. Integrates as a response mechanism with direct mail	Requires opt-in for effectiveness. Better for customer retention than for acquisition? Inbox cut-through – message diluted amongst other e-mails. Limits on deliverability
6 Viral and word-of-mouth marketing	With effective viral agent possible to reach a large number at relatively low cost. Influencers in social networks significant	Difficult to create powerful viral concepts and control targeting. Risks damaging brand since unsolicited messages may be received
Traditional offline advertising (TV, print, etc.)	Larger reach than most online techniques. Greater creativity possible, leading to greater impact	Targeting arguably less easy than online. Typically high cost of acquisition

Summary of the strengths and weaknesses of different communications channels for promoting an online presence

[*Source:* Adapted from Chaffey, 2009]

Strengths and weaknesses of different online marketing communication channels

Questions for Discussion

1. How do you think the Internet-based sources of information influence the consumer behavior?
2. What are the steps in marketing communication process and how they apply to online marketing?

3. Explain the following types of online advertising:

    a. Behavioural targeting

    b. Email marketing

    c. Search engine advertising

4. What is affiliate marketing? What is its significance to an online retailer?

5. Discuss the strengths and weaknesses of different online marketing communication channels.

6. What are the benefits offered by online advertising to a marketer?

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