CHAPTER - ONE

CONCEPTUAL FRAMEWORK
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Introduction

Ever since the time immemorial Food, Shelter, Health and Education have been the mainstay of human society. Other hopes and aspirations have been built after ensuring due fulfillment of these basic needs. Healthcare, thus, has immense value for human happiness. Consequently when World Health Organization (WHO) looked for a just objective for its existence, *Health for all by the year 2000* was inevitable, natural and just slogan they adapted. It is WHO and all national Governments that have sought to provide effective medicines at affordable prices for every one in their sacred affirmed mission. Availability of medicines, therefore, is a high priority task at all levels of governance.

Private players have been encouraged to manufacture and market pharmaceutical products because of the natural advantage of efficiency, efficacy and economy that private sectors offer. Government keeps a close watch on availability and affordability of medicines and encourages pharmaceutical companies to find, produce and distribute drugs. Such an approach has given birth to a pharmaceutical industry that is powerful, rich and sophisticated. It is expected that it should act and behave in a more responsible manner than other industries. It has needed to maintain trustworthiness of highest order. High expectations from the society, however, make it vulnerable. It is in fact the proverbial glass house. Thus changes, including opportunities, alarm it. It takes recourse to prompt measured and cautious responses even when others rush in to embrace fresh opportunities. They are unadventurous in their outlook and approach.

Information Technology has heralded a new era of vision and greatly enhanced capabilities. It has shaped new dreams. It has also forced a paradigm shift in the way we think, act and expect. How does pharmaceutical Industry respond to this new factor? What will it lose if it responds slowly? What does it risk if it rushes to it? How much time will it
take to put up a matured response? Is the learning graph curve too difficult? Will it change the marketing practices dramatically as we have seen with sectors such as banking, software and books? What threats does it pose? How can it be misused and abused by the unethical players? It is important to find answer to these questions. The research work has been undertaken to understand the response of Indian pharmaceutical industries. It envisages to comprehend the difficulties they face to metamorphose IT from foe to a friend. It endeavors to analyze the trends of use of IT for marketing pharmaceutical products. It aspires to grasp the causes of successful and failed strategies attempted so far. It aims to formulate clear guidelines for a smooth, enriching and purposeful integration of Information Technology with Pharmaceutical marketing practices.

To make the study perceptible to scholars with non-pharmaceutical background also it is assumed that a preliminary introduction of information Technology, Marketing and Pharmaceutical Products needs to be deliberated. Hence the introduction hereafter unfolds accordingly.
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SECTION - ONE

INFORMATION TECHNOLOGY
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Information Technology abbreviated as IT, is a broad term covering all aspects of managing and processing information. IT professionals design, develop, support and manage computer software, hardware, and networks, such as the Internet. The applications of these technologies are all around us. In fact, IT is a part of our life in ways we are not even aware of. Computer software used to write a term paper, computer generated animation in a blockbuster movie, networks and programs that let you order books over the Internet, and satellites and systems that enable NASA to conduct remote space exploration are all developed by creative and dedicated IT professionals.

Information technology (IT) is an equipment or interconnected system or subsystem of equipment used to acquire, store, manage, display, or transmit information. The term information technology includes computers, software, websites, and computer equipment such as monitors and printers.

The growth of IT has been tremendous over a short span of time. Nowadays modern devices big or small are incorporating some sort of computer in them. But IT has come to mean a lot. IT has changed the societies in different geographical areas economically, socially and also culturally.

There is a major change in the perception about IT. Initially IT was thought to be an infrastructure in itself but now IT is being considered as a tool to aid infrastructure development. This way domain of IT is getting expanded.
IT has entered into almost every corner in our life. Some applications of IT are as follows:

Smart homes are becoming reality now a days. A house that wakes you up in time, gives you a list of appointments for the day and gives you the directions to get there, is a smart home. This list of jobs performed by a smart home can grow. These automated houses which can even control environment are becoming very popular.

Smart Car which helps the driver in finding out the best route to a destination is also a reality now. This car equipped with intelligence can even alert the driver for efficient driving.

E-governance is a new concept. The government can provide e-devices to the population, considerably shortening the time to get things done and improving overall efficiency in governance. For example, Tax returning is a tedious process which is also time consuming. Due to this fact many individuals keep away themselves from paying tax to the government, but e-governance has improved the situation and it has become possible to pay the taxes through internet. This has encouraged citizens to pay the taxes.

In an airport, moving through immigration is almost a walk now a days, electronically tagged ID cards, showing residence status. No passport stamped, no forms filled. All the required data comes via the network on the immigration officers computer. Singapore international airport is an example.

Paperless office management expected to be a reality very soon. This is going to reduce even corruption in different offices which is one unfortunate fact in many countries throughout the world.

Pervasive computing is going to be the future of the human society. Users can link all types of computing devices with people and places via the internet. In this concept, people are mobile, appliances are fixed and everything has a webpage. All appliances would be capable of retrieving the information for use of the person. Hewlett Packard has taken initiatives in this regard. Intelligence in different devices has also been incorporated.

Grid computing, digital camera, home theatre, video-on-demand, mobile phones, wireless LAN etc. are some of important applications of IT.
IT has revolutionized the human gravity, activity and commerce worldover. It has brought multiple benefits with human reach like nothing had done ever before. It has also given an endless array of opportunities to the youth of today.

Definition and Background

IT is a collective term for various technologies involved in processing, storage and distribution of information. They include computing, telecommunications, microelectronics etc., IT has enabled speed up in workplace as well as helped decision makers considering a big volume of data when making decisions.

Prof. L. M. Prasad defines formally information technology as “Information technology consists of Hardware, Software, Database Management, Telecommunications and other information processing technologies used in computer based information systems.”

To understand the entire spectrum of IT, one should have exposure to the following areas of studies:

I. The techniques of data acquisition, storage and database management in various application sectors;

II. Transmissionary distribution of data from one location to a distant site through computer networks;

III. Techniques of processing of multimedia information, since some of the data to be transmitted are of multimedia nature like image, video, animation etc.;

IV. Compression of multimedia data, which is terribly voluminous, specially speech compression;

V. Various decision support systems and expert systems (to interpret data) and background of the development of these systems;

VI. Analysis and interpretation of all kinds of information and to extract valuable hidden information from huge amount of data i.e. soft computing techniques. Knowledge about soft computing techniques like Genetic Algorithm, Neural Network etc.;
VII. Concepts of graph theory or web graph as the whole internet or any network is basically a graph.

VIII. Security of computer networks as well as a computing systems;

IX. Knowledge about different application areas of IT like Geographical Information Systems, Remote sensing, Health Care, Telemedicine etc.;

X. E-commerce and its security aspects as well as knowledge about different types of cyber crimes and

XI. Knowledge about design and deployment of information system

Functions of Information Technology

Prof. L. M. Prasad determines that in the context of information system, information technology performs a number of functions which are as follows:

1. **Data Capture**: The first function of information technology is to capture and convert it in a form which can be stored or transmitted. The capturing of data on documents or by direct entry is necessary for other activities in information systems. For data capturing, key boards, bar codes, scanners, visual display unit, video camera, mouse and other input devices are used.

2. **Data Storage**: Through information technology, data are stored in storage media for later retrieval. Computer system translates all the data and instruction into binary form for storage purpose. For data storage, various memory devices such as magnetic tape, floppy disc, hard compact disc read only memory (CD-ROM), digital video disk (DVD), and flash memory are used. Data can be stored in sequential or random form and can be indexed also.

3. **Data Transmission**: Through information technology, data can be transmitted from one place to another place or from one computer to another computer. For this purpose, various devices like modem, cables etc are used. For transmitting data, various types of networks, such as local area network (LAN), wide area network (WAN), value
added network (VAN), wireless broadcast network, Internet, intranet and extranet are used.

4. **Data Processing**: Data processing is the conversion of data into meaningful information. The processing is done in a series of operations which convert input (data) into output (information). Data processing function is performed by central processing unit (CPU).

5. **Data Manipulation**: Information Technology manipulates data and creates new information from the existing information. This is done by summarizing, re-arranging, reforming, or various types of calculations. This is achieved using various softwares available.

6. **Data Retrieval**: Data retrieval is the process of finding out the needed information which may be used by a user. Data retrieval is performed by magnetic tape, floppy disc, hard disc, CD-ROM, flash memory etc.

7. **Data Display**: Data display involves presenting of information to the user in the form which he likes. Display can be in the form of a text, graphic audio and video. For this purpose, different types of printers, such as dot-matrix, inkjet, laser etc. can be used. Besides display may be through computer screen and speakers also.

**Impact of Information Technology on Organizations**

Information Technology affects an organization but various researchers have differing opinion on how this process takes place. Some researchers base their work on economics, while others take a behavioural approach. Thus two types of theories – economic and behavioural – have emerged to explain the impact of information technology on organization. Both these types of theories explain this phenomenon differently.

**Impact of Organization on Information Technology**

Organization-information technology relationship is a two-way traffic. In one way, information technology has impact on organization; in another way organization also has impact on information technology through the process of deciding the adoption of a particular technology. The organization designs and operates its information systems with the help of information technology.
While deciding the adoption of a particular information technology, the organization takes into account the following issues:

1. Decisions about the role of information technology
2. Performance parameters of information technology
3. Decisions about information technology packages

**Role of Information Technology**

Information technology has affected every walk of human life. Since an organization is a collection of people to achieve certain objectives through their collective efforts, it cannot remain aloof from the impact of information technology developments. In fact, most of the forward-looking organizations use information technology as a source of developing competitive advantage because through information technology, the organizations can perform many functions in lesser time and at lesser cost.

1. **Organizational Efficiency and Effectiveness:** It is possible to use information technology for achieving organizational efficiency and effectiveness. Organizational efficiency refers to the cost/benefit rate incurred in the pursuit of organizational objectives while organizational effectiveness is the degree to which these objectives are achieved.

2. **Organizational Transformation:** Information technology may be used for organizational transformation. Transformation is the process of changing an object in another form. Thus, organizational transformation refers to bring fundamental change in the organization. Such a change may be in the form of nature of business, organizational objectives, and operational processes.

3. **Strategy Formation:** Information technology can be used in strategy formation. Strategy is a way in which an organization, reacting to its environment, deploys its principal resources and marshals its main efforts in pursuit of its objectives. In making strategic decisions, strategists try to create a unique and valued position involving different set of activities with the result that a strategically positioned
organization performs different activities than those from its rivals or performs similar activities in different ways.

4. **Strategic Alliance Formation**: Information technology helps in forming strategic alliance among two or more organizations. Strategic alliance is a form of combining the efforts of two or more partners joins hands together for achieving certain specified objectives generally for certain specified period.

As a whole, IT deals with information. The volume of releveant information around us is huge. Rather we can say we live in a world which is submerged in an ocean of information which are being gathered from numerous activities taking place all over the world. Acquiring the information, processing, accessing and interpreting it are the key issues dealt with technology.

**Information**

Dr. Janardan Jha in MITE's Management Information System defines information as the data which is organized and presented so that the decision maker may take the necessary action. Information requirements of decision makers can be classified into three types:

1. **Environmental Information**: This includes four types of information related to
   
   I. Government Policies
   II. Economic Trends
   III. Technological Environment
   IV. Factors of Production

2. **Competitive Information**: This includes three types of information related to
   
   I. Industry Demand
   II. Firm Demand
   III. Competition
a) Past Performance
b) Present Activity
c) Future Plans

3. **Internal Information**: This includes four types of information related to

   I. Sales forecasts
   II. Financial Plan
   III. Supply Factors
   IV. Policies

**Characteristics Features of Information**

Information has following characteristic features

1) Relevance
2) Availability
3) Timeliness
4) Objectivity
5) Sensitivity
6) Comparability
7) Completeness

The quality of an information is measured in terms of:

1) Accuracy
2) Form
3) Relevance

**Management Information System (MIS)**

Dr. Janardan Jha in MITE’s Management Information System defines MIS as computer-based system that provides managers with the tools for organizing, evaluating and efficiently running their departments. In order to provide past, present and prediction information, an MIS can include software that helps in decision making, data resources such as databases.
the hardware resources of a system, decision support systems, people management and project management applications, and any computerized processes that enable the department to run efficiently.

It can be defined as a system that:

1. Provides information to support managerial functions like planning, organizing, directing, controlling;
2. Collects information in a systematic and a routine manner which is in accordance with a well defined set of rules and
3. Includes files, hardware, software and operations research models of processing, storing, retrieving and transmitting information to the users.

**Objectives of MIS**

The objectives of Management Information System are as follows:

1. To facilitate the decision-making process by furnishing information in the proper time frame;
2. To provide requisite information at each level of management to carry out their functions;
3. To help in highlighting the critical factors to the closely monitored functioning of organizations;
4. To support decision-making in both structured and unstructured problem environments and
5. To provide a system of people, computers, procedures, interactive query facilities, and documents for collecting, storing, retrieving and transmitting information to users.

**Characteristics of MIS**

MIS has four major characteristics. They are as follows

1. It is Management oriented
2. It is management directed
3. It leads to integration of information of all information.
4. Follows common data flows
Types of Information Systems

Information systems are classified differently by different experts. However, there are four major information systems which are in common use. A brief description of each of these follows.

1. Knowledge-based Systems

Knowledge-based systems include artificial intelligence, expert systems, neural network, robotics etc.

2. Expert Systems

An Expert System (ES) is a computer application that guides the performance of ill structured tasks, which usually requires experience and expertise. Using an ES, a non-expert can achieve performance, which is comparable to an expert's performance in that particular domain.

An expert system is very similar to a decision support system, that is: both are intended to provide a high level of problem solving support to their users. But they differ in two major ways:

I. A DSS consists of routines that reflect as to how a manager believes a problem should be solved, as well as the managers' style and capabilities. An expert system on the other hand offers an opportunity to make decisions that exceed the managers' capabilities.

II. Ability of ES to explain its line of reasoning in reaching a particular solution. Very often the explanation of how a solution was reached is more valuable than the solution itself.

Components of Experts System include; User interface, Knowledge base, Inference Engine and Development Engine

3. Decision Support Systems

The term, DSS refers to a class of systems, which supports the process of decision making. The emphasis is on support rather than automation of decisions. DSS allows the decision maker to retrieve data and test alternative solutions during the process of problem solving.
DSS has following Characteristics:

1) It helps the decision maker in decision-making process;
2) It is designed to solve semi-structured and unstructured problems;
3) It supports decision makers at all levels, but is most effective at the tactical and strategic levels;
4) It makes general-purpose models, simulation capabilities and other analytical tools available to the decision maker;
5) It is an interactive, user-friendly system that can be used by the decision maker with little or no assistance from MIS professionals;
6) It can be readily adapted to meet the information requirements for any decision environment;
7) It provides the mechanisms to enable a rapid response to decision-makers request for information;
8) It has the capability to interface with the corporate database;
9) It is not executed in accordance with pre-established production schedule;
10) It is flexible enough to accommodate a variety of management styles and
11) It facilitates communication between levels of decision-making.

Types of DSS:

Decision Support System can be classified into following five types

1) Status Enquiry System
2) Data Analysis Systems
3) Information Analysis Systems
4) Accounting Systems
5) Model Based Systems
4. Database Management System

A database is a collection of logically related data that are organized in such a way so as to facilitate easy accessing and processing of data. Databases contain data, not information. By itself databases are meaningless and worthless, but through proper design and use of the databases, it can be an essential tool for producing information for making management decisions.

DBMS has three components namely

1) Data Dictionary System

2) Data definition Language

3) Data Manipulation Language.

Basic Technological Terms used in Information Technology

In the following paragraphs the researcher briefly outlines some of the important terms used the Information Technology. As available on the Website Softweb 2001, the terms and their description follow:

1. Internet

The internet is made up of millions of computers linked together around the world in such a way that information can be sent from any computer to any other 24 hours a day. These computers can be in homes, schools, universities, government departments, or business houses small and large. These computers can be single personal computers or workstations on a school or a company network. The Internet is often described as a network of network because all the smaller networks of organizations are linked together into the one giant network called the Internet. All computers are pretty much equal once connected to the internet, the only difference will be the speed of the connection which is dependent on Internet Service Provider and modem.

2. Internet & World Wide Web

Sometimes people use the words Internet and World Wide Web (WWW) synonymously but they are different. The WWW is a component of the Internet that presents information in a graphical interface. We can think of
the WWW as the illustrated version of the Internet. It began in the late 1980's when physicist Dr. Berners-Lee wrote a small computer program for his own personal use. This program allowed pages, within his computer, to be linked together using keywords. It soon became possible to link documents in different computers, as long as they were connected to the Internet. The document formatting language used to link documents is called HTML (Hypertext Markup Language).

The Web remained primarily text based until 1992. Two events occurred that year that forever changed the way the Web looked. Marc Andreesen developed a new computer program called the NCSA Mosaic, which is the first Web browser.

3. TCP/IP

TCP/IP is a communications protocol used to transfer digital data around the Internet. TCP and IP were developed by a Department of Defence (DOD) research project to connect different networks designed by different vendors into a network of networks the Internet. TCP/IP is often referred to as the internet protocol. As with all communications protocols, TCP/IP is composed of layers:

IP is responsible for moving packet of data from node to node. IP forwards each packet based on a four byte destination address (the IP number). The Internet authorities assign ranges of numbers to different organizations. The organizations assign groups of their numbers to departments. IP operates on gateway machines that move data from department to organization to region and then around the world.

TCP is responsible for verifying the correct delivery of data from client to server. Data can be lost in the intermediate network. TCP adds support to detect errors or lost data and to trigger retransmission until the data is correctly and completely received.

4. Sockets

A socket is a name given to the package of subroutines that provide access to TCP/IP on most systems.
5. Internet Chat

Chatting is one of the most popular activities on the Internet and involves people from all walks of life and just about all ages to coming together in areas where they can join in on in a variety of topics that they are interested in with people all around the world. Traditionally chat is text based but can also involve audio and video.

6. Video Conferencing

Video conferencing involves the visual communication of parties around the world. You can use Video conferencing to link up with specific parties or you can join Video* conferencing communities that operate in the same way Internet Chat does.

7. Newsgroups

Newsgroups (also called Usenet), work something like SOFWeb's electronic discussion lists, but rather than the discussions being hosted on SOFWeb, they are held on your Internet Service Provider's server. Most newsgroups are open to anyone to read or post to, and unlike e-mail discussion lists, or SOFWeb's discussion lists, one does not need to register to use them. In order to read them the user will need newsreader software, such as the one provided with Netscape Navigator. To be able to access the newsgroups the user will need to ask ISP for the correct information.

8. Discussion Groups

Discussion groups are like electronic bulletin boards, people can leave messages, ask questions, or share ideas, and others can respond to them. The advantage of these is that one does not need his own e-mail address, just access to the Web. There are a large number of discussions on SOFWeb that cover a large number of topics and areas.

9. Intranet

An Intranet is a network based on the Internet TCP/IP open standard. An intranet belongs to an organization, and is designed to be accessible only by the organization's members, employees, or others with authorization. An intranet's Web site looks and act just like other Web sites, but has a firewall
surrounding it to fend off unauthorized users. Intranets are used to share information. Secure intranets are much less expensive to build and manage than private, proprietary-standard networks.

The surprising speed by which intranets has grown among corporate users demonstrates the strength of the Internet networking. Several surveys contend that corporate intranet expenditure far out-paces the level of spending on consumer-oriented Web businesses (Web stores).

The compatibility of corporate intranets with the Internet will be a significant factor in the digital economy. In a sense, producer and seller information is readily accessible by outsiders, making it easy to manage and disseminate information to consumers.

10. Extranet

Extranet refers to a group of websites, belonging to independent entities that are combined together in order to share information. This is in contrast to an intranet, which is a private site that is only accessible for employees of an entity. Extranets are used in the supply chains to allow for more effective communications along the supply chain. They are replacing proprietary standard networks that are considerably more expensive to establish, and therefore were only used by large organizations.

Contemporary Applications of Information Technology

Professor L.M. Prasad & Usha Prasad elaborate the application of information technology in the present day business world. In the following pages the researcher rewrites the contemporary applications of information technology as describe by them. Information technology (IT) is playing crucial role in contemporary society. It has transformed the whole world into a global village. In fact, we are living in a global village (village taken in a wider sense and not in the sense of village in relation to city; it may be called as global information society) with a global economy which is increasingly dependent on the creative management and distribution of information. These applications are in the following areas:

1. Electronic mail.
2. Electronic commerce:
   I. Electronic product/service trading
   II. Electronic share trading
   III. Electronic banking
   IV. Electronic governance
   V. Electronic data interchange

3. On-line information services.


**Electronic Mail**

Electronic mail (e-mail) is a fast and efficient method to exchange messages between two or more persons. E-mail can be defined as the exchange of messages through a computer network. Messages can be entered via the keyboard or can be taken from files stored on a disk. In general, e-mail takes the form of a text with little formatting, though more sophisticated e-mail software packages can allow users to send messages that contain different typefaces, graphics, and other elements that enhance the quality of presentation of the messages.

**Architecture of E-mail**

Architecture of e-mail defines the subsystems of e-mail and explains its organization. There are normally two subsystems in e-mail. Namely user agents and message transfer agents. Common terms used in e-mails are explained as hereunder:

1. **Composition:** Composition refers to the process of creating messages and answers. Although any text editor can be used for the body of the message, the e-mail system itself can provide assistance with addressing and the numerous header fields attached to each message.

2. **Transfer:** Transfer refers to moving messages from the sender to the receiver. This requires establishing the connection to the destination or some intermediate machine, outputting the message, and releasing the connection.
3. **Reporting:** Reporting involves communicating the sender of the message about what happened to the message — has it been delivered, rejected, or lost. Thus, reporting is a kind of feedback about the state of the message.

4. **Displaying:** In displaying, the incoming message is displayed so that the receiver can read the message. Sometimes, conversion is required or a special viewer must be invoked, particularly when the message is in the form of a postscript file.

5. **Disposition:** Disposition is the final step and is concerned with what the receiver does with the message after receiving it. There can be several alternatives for this: throwing the message without reading, throwing it after reading, saving it for further reading, forwarding it to another person, or processing it in other ways, depending on the situation.

**Advantages of E-mail**

Use of e-mail offers following advantages:

1. **Speed:** The main advantage of e-mail is that messages can be transmitted very quickly. Practically, there is almost no time gap between transmitting a message and its receipt through Internet.

2. **Auditing:** Even the simple e-mail system provides a number of features that allow users to audit their message. It allows users to format copy of the message, giving date and time of transmission of the messages, and giving a receipt whether the particular message has been received at the destination.

3. **Multimedia:** Multimedia combines various media of communication, such as text and graphics. The combination of such media in a message makes it more understandable and impressive.

4. **Multiple Copies:** E-mail facilitates to communicate with many persons simultaneously. When a particular message is to be sent to numerous persons, it is not necessary to send the message to each person individually, but mailing list containing the e-mail addresses of all such persons is used for this purpose.
5. **Data Sharing:** E-mail messages can be used to transmit data files to other persons. All types of data including word processor files, spreadsheets, and database files can be sent through this way.

6. **Flexibility:** E-mail system provides flexibility in the sense that hardware and software being used for e-mail can be used for other purposes too.

7. **Lower Cost:** E-mail has lower cost as compared to similar speedy communication devices like telephone. Hundreds of messages can be sent and received at the cost of a brief telephone call.

### Problems with E-mail

User of e-mail faces problems while using it. Common problems faced while using e-mail are:

1. **Security Problem:** Messages sent through e-mail are not completely secure because the messages sent through e-mail seldom take the most direct route. Rather, these messages pass through a number of places before reaching to the final destinations.

2. **Technical Problem:** Sending or receiving messages through e-mail requires some technical knowledge about e-mail hardware and software. Therefore, novice users cannot send or receive messages through e-mail.

3. **Spamming Problem:** Spamming is the act of sending unwanted messages like advertisements etc. to e-mail users. Such mails are often called junk mails.

4. **Investment in Hardware and Software:** Use of e-mail is possible only with compatible e-mail hardware and software. Investment in these devices is a costly affair.

### Electronic Commerce

Electronic commerce (e-commerce) has emerged as an important application of information technology in the contemporary society. This involves performing commercial operations electronically. In a usual commercial operation, buyers and sellers come in contact with each other
either physically or through other means of communication and rest of the buying/ selling procedure is performed in physical sense.

Commerce refers to all the forms of transactions related to commercial activities, including both organisations and individuals, that are based upon the processing and transmission of digitized data, including text, sound, and visual images.

Applications of E-commerce

E-commerce has following four types of applications:

1. **Business to Business**: Business to business, commonly known as B2B, involves electronic transactions for business activity between two or more business organisations.

2. **Business to Consumer**: Business to consumer, commonly known as B2C, involves bringing business and consumers closer to each other and creating a unique marketplace where products and services can be bought and sold.

3. **Business to Government**: Business to government, known as B2G, involves dealing with government agencies like forex clearances, customs, excise duties electronically.

4. **Consumer to Administration**: Consumer to administration, known as C2A, involves providing relevant information to people by government administrative agencies

Forms of E-Commerce

The following forms of e-commerce have become quite popular:

1. **Electronic Product/Service Trading**

   In a restricted sense, e-commerce includes only buying/selling of products and services. Taking this view, we have used the term e-commerce in this section to denote trading of products and services electronically. A brief explanation of terms used is electronic products/service trading follows

   a) **Seller**: Seller is a person/organisation which offers products/services to some other party which is willing to buy these. Products may be of any
type though at present only some standardised products are available through e-commerce.

b) **Seller Website:** For operating e-commerce, the seller must design a website provides information to customers and accepts order from them. The information contained in website is about products/services being offered, their price, mode of shipment, mode of payment, and other relevant terms and conditions.

c) **Customer:** Customer is a person/organisation which makes use of e-commerce for buying products/services. After receiving the information from various websites, a customer analyses it to arrive at a decision from which seller he would buy.

d) **Shipment:** Product/service shipment may either take physical form or electronic form. In physical form which is used for shipment of a moveable physical object, the seller delivers the products through a mode of transport mutually agreed between seller and customer.

e) **Payment:** The most practised mode of payment in e-commerce is credit card. Payment through a credit card involves a number of intermediaries — 'seller's bank, customer's bank, card issuer and its bank.

**Benefits of Electronic Product / Service Trading**

Use of Electronic Product/Service Trading offers following benefits

a) **Wide Market Area:** E-commerce creates a wide market area because of lack of physical limitations. In fact, through e-commerce, a seller can reach the whole population of the world.

b) **Ease of Operation:** E-commerce provides easy operation of selling/buying. This helps both sellers and customers. Since transaction is done on-line, placing of an order can be completed within seconds.

c) **Lower Transaction Costs:** E-commerce lowers transaction costs as it saves costs of paper work—drafting and typing order, sending order through postal mail, etc. From the seller's side, costs are saved by eliminating paper work.
d) **Lower Inventory Requirement:** Since e-commerce centralizes distribution channel and eliminates many intermediaries in the distribution process, volume of finished product inventory required is reduced considerably.

e) **Shopping from Home/Workplace:** E-commerce provides facility to customers to shop from their home or workplace. This is possible because e-commerce does not require physical contact between sellers and customers.

f) **Increased Seller-customer Interaction:** E-commerce allows sellers and customers to interact more freely.

**Problems with Electronic Product/Service Trading**

While using Electronic Product/Service Trading user faces following problems:

a) **Technological Problem:** E-commerce requires lot of enabling technologies if support different operations starting from order placing to payment.

b) **Lack of Verification of Product Quality:** There are many products whose quality can be assessed by physical inspection and functional demonstration and not just through electronic display.

c) **Legal Problem:** E-commerce does not have support of legal framework as yet.

2. **Electronic Share Trading**

Share trading is a quite old practice but electronic share trading is comparatively a new practice. In India, electronic share trading was introduced by National Stock Exchange in 1994. Besides the shares, debentures and bonds are also traded though their volume is very thin. In a stock exchange, shares of only those companies are traded which are listed in the concerned stock exchange. A physical share trading involves the following activities:

a) Choosing a broker by an investor to buy/sell shares on his behalf.
b) Placing order to buy/sell shares of a particular company either by prescribing a price limit or at prevailing market price.

c) Executing order by the broker in the share trading hall (commonly known as ring); issuing contract note to the investor.

d) Settlement of all transactions weekly or bi-weekly by the concerned stock exchange.

e) Taking deliveries of share certificates along with filled-in transfer forms from brokers.

f) Collecting payments from buying brokers.

g) Giving deliveries to buying brokers and making payment to selling brokers.

h) Settlement of accounts of investors by brokers.

3. **Benefits of Electronic Share Trading**

There are several benefits of electronic share trading which are as follows:

a) **Wide Area Coverage:** Through electronic share trading, wide area can be covered. In fact NSE has been able to provide share trading terminals in smaller cities.

b) **Speedy Transaction and Settlement:** Electronic share trading has facilitated speedy transactions and their settlement. With the result, an Investor who sells his shares can receive payment within a week.

c) **Reduced Transaction Costs:** Electronic share trading has reduced transaction costs considerably. Instead of talking to a broker located in a city having a stock exchange, the investor can call a broker or sub-broker located in his own city.

d) **Transparent Transactions:** Electronic share trading has brought transparency in transactions which have resulted into better investor-broker relationship. In the present era, transparency is a critical problem as the investors wants to verify the rates at which transaction is done actually.
e) **Lower Paper Work:** Electronic share trading has reduced paper work almost to nil both at a broker's end as well as at an investor's end. At broker's end, lot of paper work was involved in physical trading era, such as preparing contract notes manually, keeping records of various transactions—client-wide as well as company-wise and preparing details of shares to be delivered to the stock exchange.

f) **Elimination of Bad deliveries:** A bad delivery is one which does not have the required information filled in the transfer forms attached with share certificates. A transfer form must have the same signature of an investor which has been in the record of the company concerned.

4. **Electronic Banking**

Electronic banking involves providing banking services to customers electronically. These banking services are primarily classified into two broad categories.

a) **On-line Banking:** On-line banking means a customer can withdraw amount from his account without writing a cheque or any other means of withdrawal involving paper work. Earlier, customers had to conduct their banking transactions within the restricted time frame of banking.

b) **Electronic Funds Transfer:** Electronic funds transfer (EFT) involves transmission of financing transactions (debit or credit) between banks, and other organisations, and banks and customers.

5. **Electronic Governance**

Electronic governance (e-governance) involves enhancing relationships between government to government, government to citizens, government to private sector and non-government organizations and vice-versa.

6. **Electronic Data Interchange**

Electronic data interchange (EDI) is the inter-company computer-to-computer communication of data in a machine-readable, structured format. This communication enables the data to be transmitted and received. Typically, an EDI is an information system that links a company with which it
has some kind of transaction relationships, such as customers, suppliers, banks, etc

Requirements of Electronic Data Interchange

Electronic Data Interchange has following requirements

a) **Inter-company Communication Capability:** Since EDI is a mechanism of inter-company computer-to-computer communication, in order to be effective, it requires that both the parties—sender and receiver—have a modem that enables their computers to communicate through telephone lines.

b) **EDI Translator Software:** EDI requires translator software to convert incoming and outgoing messages into a form comprehensible to other companies. EDI translator can be placed either on mainframe or microcomputer. Though microcomputer configuration is the least expensive, it is very slow as compared to mainframe configuration.

c) **Application Link Software:** Application link software functions differently "at two sides—sending side and receiving side. At the sending side, the major task is to determine the data requirements of the EDI standard and collection of data to satisfy those requirements.

d) **Standardisation:** Standardisation in EDI is required so that all the participating organisations use formats which are mutually compatible, so that data are exchanged without any problem.

On-line Information Services

Our contemporary society has become information society in which people try to have as much information as possible while sitting at home. This has become possible because of the provision of on-line information services. These on-line Information services may provide information of any kind. On line information services are provided through websites (Webs). There are three ways in which information can be found on websites. They are

a) **Searching:** In searching, the user knows exactly what information he needs and can search it on the Web. Consider an analogy of searching a book from a library.
b) **Browsing**: Browsing is the process of skimming an information resource on the Internet, such as Usenet, gopher space or Web. Browsing is required when the user is not fully aware about his information needs but he has only an idea of what he wants.

c) **Surfing**: Surfing is a kind of browsing but in surfing, the user does not look for specific information. He goes on surfing to find out whether any information is available which may be relevant to him.

**Search Engine**

To find out information on the Internet, the user needs to use a search engine. A search engine is a software that enables the user to search for Internet resources. Such an engine is accessed through Internet browser software. Search engines can be classified into:

a) **Subject Directories**: Search engines that are subject directories of information resources classify subjects according to broad categories and multiple levels of subcategories.

b) **Web Databases**: Web databases are built by software that travels over the Web to look for the subjects and information that can be downloaded into a database automatically.

**Multimedia**

Multimedia is a form of communication that combines two or more types of media together, such as text, graphics, sound, full motion video, still video, or animation into a computer-based application.

Multimedia systems combine the elements of today's microcomputers with two additional elements—audio (sound) and video (picture). For multimedia applications, specially configured systems are required. Software required for multimedia systems includes painting and drawing tools, computer-aided design tools, Image editing tools, optical character recognition device, sound editing programs, and digital video movies.
Multimedia Applications

Multimedia applications will be the foundation of new consumer products and services, such as electronic books and newspapers, electronic class room presentation technologies, full motion videoconferencing, imaging, graphics design tools, voice mail, video mail etc.. In business, multimedia have following applications:

a) **Better Information Presentation for Decision Making:** Multimedia presents Information in such a way that it becomes easily understandable and usable for managers to make decisions. Instead of presenting Information in the form of complex and lengthy tables along with associated text, It can be presented in the form of analytical graphs.

b) **Computer-aided Design:** Multimedia helps in creating computer-aided design (CAD) which is used for new product/machine development. In CAD, software is used to create architectural drawings, product designs, landscaping plans, and engineering drawings.

c) **Advertising and Sales Promotion:** Multimedia helps in executing advertising and sales promotion in a much better and effective way. Advertising is a non-personal presentation and promotion of products and services. Sales promotion consists of incentive tools designed to stimulate quicker purchase of a product or service.

d) **After Sales Service:** Multimedia helps in providing after sales service more quickly and effectively. There are many products which require after sales service, such as plant, machinery, etc. When vendors supply such products to customers, they own the responsibility of providing after sales service.

e) **Employee Training:** Multimedia has become almost necessary in employee training in the present world. With the rapid technological change, employees need training on continuous basis in order to avoid their skills being obsolete.
f) **Project Collaboration**: Multimedia helps in entering project collaboration. Project collaboration has become an effective tool for developing competitive advantage. In the present complex business environment, in many cases, a single organization is not able to handle a complex project on its own because of its limited competence. In order to overcome this limitation, the organization can join hands with another organization having complementary competence necessary for project execution.

The basic realism about IT has been comprehended as:

* A collection of data is not necessarily information
* A collection of information is not necessarily knowledge
* A collection of knowledge is not necessarily wisdom
* A collection of wisdom is not necessarily truth

Eric Hoffer (1902-1983)
CHAPTER - ONE

CONCEPTUAL FRAMEWORK

SECTION - TWO

MARKETING
CHAPTER - ONE

CONCEPTUAL FRAMEWORK

SECTION - TWO

MARKETING

In this section the researcher provides an outline description of management and marketing as one of the functional areas of management, marketing concepts, marketing mix and promotion mix.

Management

Prof. L.M. Prasad says that one of the most important human activities is managing. Management is the integrating force in all organised activity. Whenever, two or more people work together to attain a common objective, they have to co-ordinate their activity. They also have to organise and utilize their resources in such a way as to optimise the results. Thus, management is not unique to business organisation but common to all kinds of social organisation. Management is most vital for the successful performance of all kinds of organised social activities.

The emergence of management in our times may be regarded as a significant development as the advancement of modern technology.

Management Functions and Functional Areas of Management

Management functions and organisational functions are different. According to Prof. L.M. Prasad, management process suggests that all the managers in the organisation perform certain functions to get the things done by others. The list of management function varies from author to author with member of functions ranging from three to eight. The management process comprises the following six fundamental function - planning, organising, staffing, directing, co-ordinating and controlling. One useful classification of managerial functions has been given by Luther Gulick who abbreviated them in the word POSDCORB. Budgeting is also not an independent management function but an integral part of planning and control function. However, most of the management thinkers believe that there are five non-
overlapping functions of management. A brief discussion is given about each function.

(1) **Planning** is the conscious determination of future course of action to achieve the desired results. This includes what one wants to achieve, when to achieve, and how to achieve.

(2) **Organising** is the process of dividing work into convenient tasks or duties, grouping of such duties in the form of positions, grouping of various positions, and delegating authority to each position so that the work is carried out as planned.

(3) **Staffing** involves managing the various positions created by the organising process. It includes preparing inventory of personnel available and identifying the gap between manpower required and available, identifying the sources from where people will be selected, selecting people, training and developing them, fixing financial compensation, appraising them periodically, etc.

(4) **Directing** includes communicating, motivating and leading the subordinates about their expected behaviour.

(5) **Controlling** involves identification of actual results, comparison of actual results with expected results as set by planning process, identification of deviation between the two, if any and taking of corrective action so that actual results match with expected results.

On the other hand, Organisational functions organisational functions are production, marketing, finance and personnel etc. Organisational functions differ from organisation to organisation depending upon their nature, while the functions of the managers are common to all. Thus, a manager may be put in production function, marketing or finance functions but he completes the activities of these functions through all the managerial functions. These organisational functions are called functional areas of management.

The number and types of functional areas of management are determined by the nature of the organisation and the types of classifications of various
activities. A more acceptable and practical classification includes four broad functional areas - Production, Marketing, Finance and Human Resources. These areas have their own organisation, policies, procedures, and sub activities. A brief discussion is given about each functional area.

(1) **Production**: This area is normally kept under the control of a production manager who is responsible for the performance of entire related activities. This area may further be classified into major sub areas like, Purchasing, Materials Management, Research and Development etc..

(2) **Finance**: This area deals with the record-keeping of various transactions and management of financial resources. It may be further classified into sub-areas like, Financial Accounting, Management Accounting, Costing, Investment Management, Taxation etc.

(3) **Human Resources**: This aspect deals with the management of human beings of the organisation. It includes following areas like Recruitment and Selection, Training and Development, Wage and Salary Administration, Industrial Relations etc.

(4) **Marketing**: This area involves the distribution of product to the buyer. This requires a number of steps and can be divided into following sub areas, like. Product, price, place(distribution) and promotion.

The classification of the above functional areas does not necessarily support that an organisation divisionalised on the functional basis will have all these departments. This, however, is determined by the specific need of the organisation. Kotler has illustrated the Position of marketing vis-à-vis other functional areas is shown in the Diagram-1.

(a) Marketing as an equal function  
(b) Marketing a more important function  
(c) Marketing a major function
According to Philip Kotler marketing is the organization function charged with defining customer targets and the best way to satisfy their needs and wants competitively and profitably. Because consumers and business buyers face an abundance of suppliers seeking to satisfy their every need, companies and not-for-profit organizations cannot survive today by simply doing a good job. They must do an excellent job if they are to remain in the increasingly competitive global marketplace.

Many studies have demonstrated that the key to profitable performance is knowing and satisfying target customers with competitively superior offers. This process takes place today in an increasingly global, technical, and competitive environment.

Marketing has its origins in the fact that humans have needs and wants. Needs and wants create a state of discomfort in people, relieved through acquiring products to satisfy these needs and wants. Because many products can satisfy a given need, product choice is guided by the concepts of value, cost, and satisfaction. These products are obtainable in several ways: self-production, coercion, begging, and exchange. Most modern societies work on the principle of exchange, which means that people
specialize in producing particular products and trade them for the other things they need. They engage in transactions and relationship building.

A market is a group of people who share a similar need. Marketing encompasses those activities that represent working with markets and attempting to actualize potential exchanges.

Marketing management is the conscious effort to achieve desired exchange outcomes with target markets. The marketer’s basic skill lies in influencing the level, timing, and composition of demand for a product, service, organization, place, person, idea or some form of information.

Interest in marketing is intensifying as more organizations in the business sector, the nonprofit sector, and the global sector recognize how marketing contributes to improved performance in the marketplace. The result is that marketers are re-evaluating various marketing concepts and tools that focus on relationships, databases, communications, and channels of distribution, as well as marketing outside and inside the organization.

Philip Kotler says, marketing is typically seen as the task of creating, promoting and delivering goods and services to consumers and business. Marketers are skilled in stimulating demand for a company’s products. Marketers are responsible for demand management. Marketing managers seek to influence the level, timing and composition of demand to meet the organisations objectives. Eight different states of demand are negative demand, no-demand, latent demand, declining demand, irregular demand, full demand, over full demand and unwholesome demand.

Market

Philip Kotler defines market as consisting of all the potential customers sharing a particular need or want, who might be willing and able to engage in exchange to satisfy that need or want. Thus, a market is a group of buyers and sellers interested in negotiating the avenues of purchase or sale of goods or services. There are three concepts of market. One, the place concept, holds that a market is a convenient meeting place for buyers and sellers together in order to conduct buying and selling activities. Two, The area concept, holds that market is an area where exchange takes place and
three. The demand concept holds that market represents total customer demand.

Marketing Defined

The American Marketing Association offers the following definition "Marketing management is the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods, services to create exchanging that satisfy individual and organisational goods."

Institute of Marketing, England defines "Marketing management is the creative management function which promotes trade and employment by assessing consumer needs and initiating research development to meet them. It co-ordinates the resources of production and distribution of goods and services, determine and directs the nature and feels of the total efforts required to sell profitably by maximum production to the ultimate user."

Thereby, the marketing management is the functional area of business management which has to do with the broad problems of consumer's satisfaction. According to the modern concept of marketing, the marketing is one which start with an interpretation of consumers needs and designs, both qualitatively and quantitatively, follows through with all the business activities involved in the flow of goods and services necessary to aid the customer in getting the expected utility from the products he has purchased.

Simple Marketing System

Simple Marketing System can be illustrated as shown in Diagram-2 given below:

Diagram 2: Simple Marketing System

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Industry (a collection of sellers) --> Goods Services --> Market (a collection of buyers) --> Communication --> Money - Information
Core Marketing Concepts

Marketing can be further understood by defining its core concepts. We shall mainly depend on the explanation given by Philip Kotler.

1. **Target Markets and Segmentation**
   a) Every product or service contains features that a marketer must translate into benefits for a target market.
   b) The consumer perceives these benefits to be available in a product and directly impacts the perceived ability to meet the consumer need(s) or want(s).

2. **Marketers and Prospects**
   a) A marketer is someone actively seeking one or more prospects for an exchange of values.
   b) A prospect has been identified as willing and ability to engage in the exchange.

3. **Needs, Wants, and Demands**
   a) To need is to be in a state of felt deprivation of some basic satisfaction.
   b) Wants are desires for specific satisfiers of needs.
   c) Demands are wants for specific products that are backed by an ability and willingness to buy them.

4. **Product or Offering**
   a) A product is anything offered for sale that satisfies a need or want.
   b) Marketers are involved in marketing 10 types of products, namely goods, services, experiences, events, persons, places, properties, organisations, information and ideas.
   c) The physical products, that is goods, are classified as manufactured goods, agricultural goods and natural raw materials. These can further be classified into consumer and industrial goods. Prof. M. T. Copeland classifies consumer goods on the basis of buying habits as convenience goods, shopping goods and specialty goods.
5. **Value, Satisfaction and Quality**
   a) Value is the consumer’s estimate of the product’s overall capacity to satisfy his or her needs.
   b) Value is a ratio of benefits, that is, what the customer gets to costs, that is, what he gives.
   
   \[
   \text{Value} = \frac{\text{Benefit}}{\text{Costs}} = \frac{\text{Functional benefits + Emotional benefits}}{\text{Monetary costs + Time Costs + Energy Costs + Psychic costs}}
   \]
   c) Satisfaction is the extent to which products’ perceived performance matches buyers’ expectations. If the products’ performance falls short of expectations the buyer is dissatisfied. If performance matches or exceeds expectations the buyer is satisfied or delighted.
   d) Quality is defined as the totality of features and characteristics of a product or services that bear or its ability to satisfy stated or implied needs. Quality may be of two types, namely, performance quality and conformance quality. Performance quality refers to the level at which a product performs its function. Whereas conformance quality refers to freedom from defects and the consistency with which a product delivers a specified level of performance.

6. **Exchange, Transactions and Transfer**
   a) Exchange means obtaining a desired product by offering something desirable in return. Five conditions must be satisfied:
      (1) There are at least two parties.
      (2) Each party has something that might be of value to the other party.
      (3) Each party is capable of communication and delivery.
      (4) Each party is free to accept or reject the offer.
      (5) Each party believes it is appropriate or desirable to deal with the other party.
   b) A transaction is the trade of values between two parties that is, we must be able to say A gave X to B and received Y in return. Transaction involves four conditions to be satisfied.
(1) At least two things of value
(2) Agreed upon conditions
(3) Time of agreement
(4) Place of agreement
c) A transfer is a situation when A gives X to B but does not receive anything tangible in return e.g., gift, subsidy, charitable contribution etc.

7. Relationships and Networks
a) Relationship marketing is the process of creating, marinating and enhancing strong, value-laden relationships with customers and other stakeholders.
b) Transaction marketing is a part of the larger idea of relationship marketing.
c) The ultimate outcome of relationship marketing is a unique company asset called a marketing network of mutually profitable business relationships.

8. Marketing Channels
a) To reach a target market, the marketer use three kinds of marketing channels viz. Communication channels, distribution channels, and trade channel or selling channels. Marketers clearly face a design problem in choosing
b) The marketer must decide the best mix of communication, distribution and selling channels for their offerings or products.

9. Supply Chain
a) The supply chain describes the long channel process that reaches from the raw materials and components to the final product/buyers
b) It is perceived as a value delivery system

10. Competition
a) Competition includes actual and potential rival offerings and substitutes
b) A broad view of competition assists the marketer to recognize the levels of competition based on substitutability: brand, industry, form, and generic
11. **Marketing Environment**

a) The marketing environment consists of the task environment and the broad environment.

b) The task environment includes the immediate action involved in producing, distributing, and promoting the offering.

c) The broad environment consists of six components, namely Demographic, Economic, Natural, Technological, Politico-legal and Socio-cultural environments.

**Company Orientations Towards the Market Place:**

There are five competing concepts under which organizations conduct their marketing activities.

1. **The Production Concept:** The production concept is one of the oldest concepts in business. The production concept holds that consumers will prefer products that are widely available and inexpensive.

2. **The Product Concept:** The product concept holds that consumers will favour that product that offers the most quality, performance, or innovative features.

3. **The Selling Concept:** The selling concept holds that consumers and businesses, if left alone, will ordinarily not buy enough of the organisation's products. The organisation must therefore, undertake an aggressive selling and promotion effort. This concept assumes that consumers typically show buying inertia or resistance and must be coaxed into buying. It also assumes that the company has a whole battery of effective selling and promotion tools to stimulate more buying.

4. **The Marketing Concept:** The marketing concept is a business philosophy that challenges the three-business orientation we have just discussed. The marketing concept holds that the key to achieving its organisational goals consists of the company being more effective than competitors in creating, delivering, and communicating customer value to its chosen target markets.
Theodore Levitt of Harvard drew a perceptive contrast between the selling and marketing concepts, which is summarised in Diagram-3.

Diagram 3: Comparison of selling and marketing concepts

5. The Societal Marketing Concept: The societal marketing concept holds that the organisation's task is to determine the needs, wants and interests of target markets and to deliver the desired satisfaction more effectively and efficiently than competitors in a way that preserves and enhances the consumer's and the society's well-being. The societal marketing concept calls upon marketers to build social and ethical considerations into their marketing practices.

Marketing Mix:

Marketing mix is the set of marketing tools that the firm uses to pursue its marketing objectives in the target market.
Mc-Carthy classified these tools into four broad groups that he called the four Ps of Marketing: Product, Price, Place and Promotion. Diagram 4 illustrates the components of marketing mix.

Four Ps and their Parameters

(1) Product: The product includes following parameters:

   a) Branding is a major issue in product strategy. A brand is a name, term, sign, symbol, design or a combination of them, intended to identify the goods or services of one seller or group of seller and to differentiate them from those of competitors.

   b) Packaging includes the activities of designing and producing the container for a product. Many marketers have called packaging a fifth P, along with price, product, place and promotion.

   c) Labelling The label may be a simple tag attached to the product or an elaborately designed graphic that is a part of the package. The label might carry only the brand name or a great deal of information. Even if the seller prefers a simple label, the law may require additional information.

(2) Price: Price is the money value of a product or service agreed upon in market transactions. We have a kind of price equation where:

   Money (price) = Bundle of Expectations or Satisfactions

   The bundle of expectations include physical products and other attributes like, delivery, installation, credit, retain privileges, discounts, after sales servicing and so on. Price is also one of the most flexible elements. It can be changed quickly, unlike product features and channel commitments. Prices are a key positioning factors and must be decided in relation to the target market.

   a) List pricing involves the company in dealing how to price its products to different customers in different locations and countries. Most companies will adjust their list price and give discounts and allowances for early payment.
(b) *Cash discount* is a price reduction to buyers who pay their bills promptly.

(c) *Quantity discount* is a price reduction to those who buy larger volumes.

(d) *Functional discount*, also called as *trade discount*, are offered by a manufactures to trade channel members.

(e) *Allowances* are extra payments designed to gain reseller participation is special programs.

(3) **Place or Channels:** Marketing channels are sets of interdependent organisations involved in the process of making a product or service available for use or consumption. Marketing channels indicate routes or pathways through which goods and services flow or move from production to consumers. The major actors are- Retailers, Brokers, Agents, Whole seller, Franchisees, Sole traders. Corporate Retail Organisations achieve economies of scale, greater purchasing power, wider brand recognition and better-trained employees. The major types of corporate retail organisations are - Corporate Chain Stores, Voluntary Chain, Consumer Cooperative, Franchise Organisation, Merchandising Conglomerate etc..

**Retailing:** is a trading activity related to the sale of goods or services to the ultimate consumer for personal and non-business use. Retail organisations exhibit great variety and new forms keep emerging. There are store retailers, non-store retailers and retail organisations. Consumers today can shop for goods and service in a wide variety of stores. Like Specialty Store, Department Store, Super Market, Convenience Store, Discount Store, Off Price Retailer Super Store, Catalogue Showroom etc..

**Wholesaling:** includes all the activities involved in selling goods or services to those who buy for resale or business use. Wholesaling excludes manufacturers and farmers because they are engaged primarily in production, and it excludes retailers. The major types of wholesalers are described below.
i. **Merchant Wholesalers:** They are called jobbers, distributors or mill supply houses and fall into two categories - full service wholesalers who carry stock, maintain a sales force offer credit, make deliveries, and provide management assistance and limited services wholesales who offer fewer services to suppliers and customers. Cash and carry wholesalers have a limited line of fast moving goods and sell to small retailers for cash.

ii. **Brokers and Agents:** do not take little to goods, and perform only a few functions. Main function is to facilitate buying and selling, for which they earn a commission of 2 to 6% of the selling price. They specialise product line-wise or customer-wise.

iii. **Miscellaneous Wholesalers:** A few specialised types of wholesaler's are found in certain sectors of the economy. They include agricultural assemblers.

**Emerging Forms of Distributions**

(1) **Market Logistics:** The process of getting goods to customers has traditionally been called physical distribution. Recently, physical distribution has been expanded into the broader concept of supply chain management. This view is that of market logistics. Market logistics involves planning, implementing, and controlling the physical flows of materials and final goods from points of origin to points of use to meet customer requirements at a profit.

(2) **Direct Marketing:** Direct marketing is an interactive marketing system that uses one or more advertising media to affect a measurable response and/or transaction at any location.

**Major Channels for Direct Marketing**

Direct marketers can use a number of channels for reaching prospects and customers.

(a) **Face-to-face Selling:** The original and oldest form of direct marketing is the field sales call. Today most industrial companies rely heavily on a professional sales force to locate prospects,
develop them into customers, and grow the business or they hire manufacturer’s representatives and agents to carry out the direct selling task.

(b) **Direct Mail**: Direct-mail marketing involves sending an offer, announcement, reminder, or other item to a person at a particular address through postal mail, fax mail, email or voice mail. Using highly selective mailing lists, direct marketers send out millions of mail pieces each year—letters, flyers, foldouts, etc. Direct mail is a popular medium because it permits target market selectivity, can be personalised, is flexible and allows early testing and response measurement.

(c) **Catalogue Marketing**: Catalogue marketing occurs when companies mail one or more product catalogs to selected addresses. They may send full-line merchandise catalogue, specialty consumer catalogue, and business catalogues, usually in print form but also sometimes as CDs, Videos, or on-line.

The success of a catalogue business depends on the company’s ability to manage its customer lists so carefully that there is little duplication or bad debts, to control its inventory carefully, to offer quality merchandise so that returns are low, and to project a distinctive image.

(d) **Telemarketing**: Telemarketing describes the use of telephone operators to attract new customers or to contact existing customers to ascertain satisfaction levels or to take orders.

(e) **Other Media for Direct Response Marketing**: Direct marketers use all the major media to make direct offers to potential buyers. Newspapers and magazines carry abundant print ads offering books, articles of clothing, appliances, vacations, and other goods and services that individuals can order by dialing toll-free numbers. Radio advertisements present offers to listeners 24 hours a day. Television is also used by direct marketers in three ways to
promote direct sales. Direct response advertising, At-home shopping channels, Video text and interactive.

(f) **Kiosk Marketing**: Some companies have designed - "customer-order-placing machines" called kiosk and placed them in stores, airports and other locations.

(4) **Promotion**: Promotion is the process of marketing communication to inform, persuade, remind and influence consumers or uses in favour of this product or services. The modern age is the age of severe competition. Therefore, manufacturers have to think of new and unfamiliar ways of communicating about their product to the customers. Promotion involves the creation and expansion of demand. After product development, it is introduced in the market and its demand is created through promotional activities. Promotion is just like the spark plug in the marketing-mix of a firm. Promotion is the process of marketing communication involving information, persuasion, and influence. Promotion has been defined as.

"Co-ordinated self initiated efforts to establish channels of information and persuasion, to facilitate or foster the sale of goods or services, or the acceptance of ideas or points of view." The promotion-mix of a firm includes five ingredients, viz. Advertising, publicity, and public relations, personal selling and all forms of sales promotion. All these efforts try to influence consumer's attitudes, beliefs, ways of living or life style, values and preference towards a company and its products and thereby influence his/her behaviour. All elements of promotion-mix have a defined role in all stages of the selling process. The main objective of promotional activities to influence the customer in such a way that he purchases the product of his own will and then patronises same brand in future too. Each promotional tool has its own unique characteristics and cost

(i) **Advertising**: Advertising is any paid form of non personal presentation and promotion of ideas, goods and services by an identified sponsor.
Sales Promotion: Sales promotion consists of a diverse collection of incentive tools, mostly short term, designed to stimulate quicker or greater purchase of particular products or services by consumers or the trade. Whereas, advertising offers a reason to buy, sales promotion offers an incentive to buy.

Several factors contribute to the rapid growth of sales promotion, particularly in consumer markets. The rapid growth of sales-promotion media has created a situation of promotion culture similar to advertising culture.

Tools of Sales Promotion are Classified as -

(a) Consumer Promotion Tools: The main consumer promotion tools are - Samples, coupons, cash refund offer. Price packs (cent off deals), Premiums (gifts), Prizes (contests, sweepstakes, games), Patronage Awards - values in cash or in other forms that are proportional to patronage of a certain vendor or group of vendors, Free Trials, product warranties, Tie in promotion, cross promotion, point of purchase (POP), displays and Demonstrations.

(b) Trade Promotion Tools: The growing power of large retailers has increased their ability to demand trade promotion at the expense of consumer promotion and advertising. Price-off (off invoice/off list), Allowance, free goods etc. are prominent trade promotion tools.

(c) Business and Sales Force Promotion Tools: These tools are used to gather business leads, impress and reward customers, and motivate the sales force to greater effort. Companies typically develop budgets for each business-promotion tool that remain fairly constant from year to year. The prominent business and sales promotion tools are - Trade shows and conventions, sales contests, speciality advertising. Speciality advertising consists of useful, low-cost items bearing the company’s name and address, and sometimes an
advertising message that sales people give to prospects and customers.

(iii) **Public Relations and Publicity:** A public is any group that has an actual or potential interest in or impact on a company's ability to achieve its objectives. Public Relation (PR) involves a variety of programmes designed to promote or protect a company's image or its individual products. The old name for PR was publicity, which was seen as the task of securing editorial space as opposed to paid space in print and broadcast media to promote or "hype" a product, services, idea, place, person or organisation. The main tools of PR are:

(a) **Publications:** Companies rely extensively on published materials to reach and influence their target market like annual reports, articles, brochure, etc.

(b) **Events:** Companies can draw attention to new products or other company activities by arranging special events like news conferences, seminars, outings, exhibits contests etc.

(c) **Speeches:** Increasingly, company executives must field questions from the media or give talks at trade associations of sales meetings. These appearances can build the company's image.

(d) **Public Service Activities:** Company can build goodwill by contributing money and time to good and common causes.

(e) **Identity Media:** In a society marked by sensory overload, companies compete for attention. They need a visual identity that the public immediately recognises.

(4) **Personal Selling:** Personal selling is an ancient art. It has spawned a large literature and many principles. Effective sales persons have more than instinct. They are trained in methods of analysis and customer management. Three major aspects of personal selling are: sales professionalism, negotiation, and relationship marketing.
Marketing of Services

Philip Kotler defines: Service as any activity or benefit that one party can offer to another that is essentially intangible and does not result in the ownership of anything. W.J. Stanton, states that, services are those separately identifiable, essentially intangible activities, which provide want satisfaction, and are not necessarily tied to the sale of a product or another service. To produce a service, may or may not, require the use of tangible goods. However, when such use is required, there is no transfer of title to these tangible goods. As in the case of a product, services also start from understanding the marketing dynamics of want satisfaction of the customers.

Services have a number of unique characteristics that make them so different from products.

1. Intangibility: Services are said to be intangible as they cannot be measured, felt, seen or tasted.

2. Inseparability: In most cases a service cannot be separated from the person or firm producing it. A service is provided by a person who possesses a particular skill.

3. Heterogeneity / Variability: Services are produced and consumed simultaneously. It is always unique, it only exists once and is never repeated this makes standardisation a very difficult task to achieve.

4. Perishability: Services cannot be stored and are perishable.

5. Ownership: When a service is bought or purchased, it does not involve the transfer of ownership as in case of products.

A service is purchased for the benefits it provides. From marketing viewpoint, the same concepts and techniques are applicable for both products and services.

Marketing-mix for Services

For marketing of products, the four elements of marketing mix are product, price, distribution and promotion, which are used in a specific combination to arrive at the marketing strategy. In case of services, there are three
additional elements. These elements are people, physical evidence, and process.

(a) People: People constitute an important dimension in the management of services in their role both as performers of services and as customers. People as performers of services are important because a customer sees a company through its employees. The employees represent the first line of contact with the customers. They must, therefore, be well informed and provide the kind of service that wins customer approval. Customers are important because they are a source of influencing other customers.

(b) Physical Evidence: Includes facilitating goods, surroundings, decor and comfort. There may be two kinds of physical evidences.

(i) Peripheral evidence is the actually possessed as a part of the purchase of service but by itself is of no value for example, Airline ticket.

(ii) Essential evidence are building, it size and design, interior layout, logo and other devices of organisation. They are not possessed by the customers in contrasts to the peripheral evidence.

(c) Process: is concerned with the functional aspects such as service, production, delivery, queuing systems and qualifying delivery.

The marketing of services requires an extended marketing mix comparing production, pricing, promotion and distribution as well as people, physical evidence and process. The marketer has to lay great stress on the last three elements of the marketing strategy and combine them with the first four to achieve a harmonious blend, which fulfils the customers wants-satisfaction.
CHAPTER - ONE
CONCEPTUAL FRAMEWORK
SECTION - THREE
PHARMACEUTICAL PRODUCTS
CHAPTER - ONE
CONCEPTUAL FRAMEWORK
SECTION - THREE

PHARMACEUTICAL PRODUCTS

This section is devoted to an overview of pharmaceutical concepts, pharmaceutical products and the framework for the Indian pharmaceutical industry.

Pharmaceutical Products

Pharmaceutical products are medicinally effective chemicals that are converted to dosage forms suitable for patients to imbibe. Pharmaceutical products consist of two main components.

1. Active Pharmaceutical Ingredient (API): API is the basic chemical form of pharmaceutical products. They are also called as bulk drugs. They are derived from four types of intermediates (raw materials), namely:
   I. Plant derivatives (herbal products)
   II. Animal derivatives (Insulin extracted from bovine pancreas)
   III. Synthetic Chemicals (Paracetamol)
   IV. Biogenetic Derivatives (Human Insulin)

2. Formulation: The final suitable dosage forms are known as formulations. i.e., a Tablet, Injection, Ointment, Capsules, Syrups, etc. in which a medicine is marketed and administered. With about 60,000 pharmaceutical formulations available in India compared to less than 4,000 in some developed countries, pharmaceutical marketing in India is a highly competitive business.

Generally, APIs are either produced by chemical synthesis or are of plant, animal, or biological origin.

Fletcher, K. and Hart, S. write that patents are critical aspects in the development and marketing of pharmaceutical products. A patent can be obtained for a new drug molecule, a new indication for an existing molecule,
or for a new drug delivery system of an existing product. The World Trade Organization (WTO) has decided to enforce a product patent life of 20 years in all countries. In other words, if drug development and FDA approval takes approximately 10 years from the first disclosure of the molecule, a pharmaceutical company gets only 10 years of exclusivity to market the formulation. The excessive cost of drug development forces drug prices to remain high while patents protect the drugs. In addition, not every project leads to a marketed product, so successfully marketed products must cover the costs incurred for the failed projects.

**Marketing of Pharmaceutical Products**

The basic marketing concepts in the pharmaceutical industry are similar to those of other industries. The idiosyncrasies of drug business however, requires a modified marketing approach.

Traditionally in marketing, a distinction is made between three types of industries: Consumer goods, industrial goods and services. Consumer goods marketing deals with products that move from the producer to the final consumer without any major transformation. The buyer of the product, unless there is a wholesaler or distributor, is also its customer.

Industrial marketing focuses on products that are investment goods that yield services; the buyer does not consume the product, instead the buyer uses the product as an input in a production process. Service marketing is different again, because it involves intangible products for which production and consumption occur simultaneously.

Philip Kotler emphasizes that the marketing principles of segmentation, positioning, competitive analysis, and marketing mix allocation apply for all three categories. The specific context of production-consumption for those three types of product categories, however, require adjustments to the basic marketing principles that give rise to three unusual marketing disciplines.

Pharmaceutical products include prescription or ethical and non-prescription or Over-the-counter (OTC) drugs. OTC products are somewhat similar to consumer goods and are therefore have not been considered in detail for this research work. Prescription products share characteristics in common
with industrial goods and some other characteristics with consumer goods. Corstjens, M. in his book *Marketing Strategy in the Pharmaceutical Industry* illustrates a comparison of consumer, industrial and pharmaceutical marketing which is shown in Table 1.

The similarities with industrial goods are due to involvement of many parties in the buying decision process. In the industrial good market a distinction is usually made between the following five parties in the buying decision process, namely, initiator, influencer, decider, purchaser and user. For prescription or ethical drugs the following different parties can be identified:

**Table 1: Comparison: Consumer, Industrial and Pharmaceutical Marketing**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Factor</th>
<th>Consumer Goods</th>
<th>Industrial Goods</th>
<th>Pharmaceutical Goods</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Customer</td>
<td>- Large Population</td>
<td>- Small Population</td>
<td>- Large Population</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Relatively simple decision making</td>
<td>- Complex buying</td>
<td>- Complex buying</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Consumer pays</td>
<td>- Buyer pays</td>
<td>- Consumer/Insurer / Government pays</td>
</tr>
<tr>
<td>02</td>
<td>Products</td>
<td>- Small transactions at relatively low unit</td>
<td>- Usually large unit value</td>
<td>- Small transactions for relatively high cost</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Purchase is not major</td>
<td>- Purchase is major</td>
<td>- Purchase is major</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Ethical dimensions are vital</td>
</tr>
<tr>
<td>03</td>
<td>Regulation*</td>
<td>- Relatively minor</td>
<td>- Relatively minor</td>
<td>- Very important</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Patents are not crucial</td>
<td>- Patents can be important</td>
<td>- Patents are crucial</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Government touches on all elements of marketing mix</td>
</tr>
<tr>
<td>04</td>
<td>Price</td>
<td>- Sensitive</td>
<td>- Highly Sensitive</td>
<td>- Inelastic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Highly Elastic</td>
<td>- Inelastic</td>
<td>- Inelastic</td>
</tr>
<tr>
<td>05</td>
<td>Research &amp;</td>
<td>Not crucial</td>
<td>Can be crucial but 70% of all successful new industrial goods come from customer suggestions</td>
<td>Is complex, risky and <em>sine qua non</em> for new products</td>
</tr>
<tr>
<td></td>
<td>Development</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Prescriber – Physician
2. Influencer – Hospitals, Nurses, Professors, Reimbursement Agencies, Government.
3. Consumer – Patient
4. Financer – Partly patient, partly government, and partly insurance organizations. Sometimes NGOs and managed health care organizations too finance.
Prescription drugs also have similarities with consumer goods – they are often aimed at relatively large population of consumers.

The main idiosyncrasies of the prescription drug industry are the Research and Development process, ethical dimension and government intervention in practically all the aspects of marketing mix.

1. Research and Development Process

Research and Development (R&D) activity is very expensive in drug industry. The R&D process is usually very long, taking on average, between 10-12 years to discover, develop and fully test a new drug. The process is also expensive: The cost of bringing a new drug through the necessary trials is estimated in $500-1000 million. The procedure is risky, with low probability of success for a new research project. The attrition rate, that is rate of discard of drugs due to severe or adverse side effects, of a new substance is extremely high. Most estimates suggest that only one compound out of every 5,000 examined reaches the market. The integration of this expensive, risky and time-consuming R&D activity with marketing dimension poses unique challenge to marketing pharmaceutical products.

A trial and error R&D approach leads logically to a technological, rather than a market-driven new product development process. Trial and Error research confronts marketing management with new products with certain product characteristics for which a target market has to be selected, rather than other way around.

2. The Ethical Dimension

The ethical dimension of its product puts the drug industry in a special category. Health and the products related to it are very sensitive issues for consumers, prescribers, influencers and financers. The risk involved in the use of pharmaceutical products has important marketing implications. Relatively low price sensitivity for the patient, exogenous restrictions on marketing activities, inertia in prescribers' behaviour to switch away from trusted brands, evidence of side effects and litigation problems of drug companies and the impact of new drugs on the overall health of society, all lead to rather specific marketing problems in the pharmaceutical industry.
3. Government Intervention

Government and third party influences are constraints that have to be integrated and eventually turned into an opportunity in the marketing of Pharmaceutical products.

An introduction to the elements of pharmaceutical marketing is as follows:

Product

a) Launching New Products

Companies that fail to develop new products are putting themselves at great risk. Their existing products are vulnerable to changing customer needs and tastes, new technologies, shortened product life cycles and increased domestic and foreign competition. However, in view of patents coming into force from 2005, majority of the pharmaceutical houses is busy in launching new products with greater intensity, which was seen never before.

New products are the backbone of any organization's success. They are the lifelines for profitability. They are the accelerating factor for making company's supremacy in the market. New products provide companies an important tool to have an edge over its competitors. Therefore, many progressive companies have been giving more emphasis to launching of new products.

A new product could be the one that is new to the world or new to the country. Till 31st December, 2004 several drugs that were invented all over the world and were launched in India quickly with the help of the then policy of process patents. Almost every molecule launched was the result of this policy. From 1st January, 2005 the policy is changed to product patents.

A new product is required to increase the sales and market shares, and to meet changing customer needs and preferences: The only thing that remains forever in a growing industry is 'change' and the pharmaceutical industry is no exception to it. The need for non sedative anti-allergic lead to the launch of Cetirizine brands and the preference of solid hematincs made companies like Franco-Indian Pharmaceuticals, Medley and Alkem launch Dexorang Capsules, R B Tone Caps and Hemfer Caps respectively.
b) Drug Compliance

Standberg (Standberg, L.R, 1984); Smith (Smith, D. 1989); a New York Times report (New York Times, 1998); Schering Report (Schering 2001) and a WHO report (WHO report, 2004) verify that adherence to therapies is a primary determinant of treatment success. Poor adherence attenuates optimum clinical benefits and therefore reduces the overall effectiveness of health systems. Medication non-compliance (non-adherence), the failure to take drugs or to take them on time in the dosages prescribed, is as dangerous and costly as many an illnesses. Studies have shown than non-compliance causes more deaths annually than perhaps even the major diseases. A rough estimate suggests that as many as 50% of drugs prescription are not taken correctly.

There are many reasons for medication non compliance. Some of the major reasons are:

I. Forgetting to take the drug
II. Not understanding or misinterpreting the instructions
III. Experiencing side effects (the treatment may be perceived as worse than the disorder)
IV. Denying the disorder (repressing the diagnosis or its significance
V. Not believing that the drug can help
VI. Mistakenly believing that the disorder has been sufficiently treated (for example, thinking an infection is over just because the fever disappears)
VII. Fearing adverse consequences from or dependence on the drug
VIII. Worrying about the expense
IX. Not caring (being apathetic) about getting better
X. Encountering obstacles (for example, having difficulty swallowing tablets/capsules, having problems opening bottles, considering treatment inconvenient, and being unable to obtain the drug)
Among the many reasons that *Schering Report* (2001) and *Merck Manual* (2004) mention for not complying with drug treatment, forgetfulness is the most common.

This non-compliance of drugs has been found to have appalling (severe) effects on the health of the patient like death, loss of quality of life. They also incur high costs due to the increased risk of hospitalization and additional healthcare interventions. Studies show that 20 to 25 percent of hospital and nursing home admissions are due to non-compliance of drugs.

**Pricing**

The Indian pharmaceutical environment is a mix of the controlled and free market, where prices are determined by competition and government controls. The government authorities regularly revise the prices of a number of molecules. Prices are controlled if the molecule is judged to be an essential drug and if there is inadequate competition.

The National Pharmaceutical Pricing Authority (NPPA) is in charge of price regulation that is laid out in the Drug Price Control Order of 1995 (DPCO). Direct controls are imposed on bulk drug prices, while the price of formulations is limited through the maximum allowable post-manufacturing expenses (MAPE) mechanism, which allows a 100% post-manufacturing mark-up for domestically produced drugs and 50% for imports. Maximum retail prices are set for a period of three years, although the NPPA can intervene at any time for reasons such as a significant fall in imported bulk prices that does not result in a decrease in finished product prices.

Prices can be raised by the NPPA to reflect increases in input costs, but this is the exception and cuts are both more frequent and more severe. For example, in a pricing exercise covering 62 formulations in early 2002, the prices of 45 products were lowered by between 5.7% and 90.2%, the prices of four products were raised by 6.7% to 16.6%, the prices of 12 drugs were fixed for the first time, and one product price was left unchanged.
a) Enterprise Resource Planning (ERP)

ERP refers to the techniques and concepts for the integrated management of business as a whole, from the viewpoint of the effective use of management resources to improve the efficiency of an enterprise. It serves an important function by integrating separate business functions like, materials management, product planning, sales, distribution, finance, accounting and others. Such a system enables improved business performance. Its distinct advantages are

1) Inventory Reduction;
2) Increased Business Agility;
3) Cycle Time Reduction and
4) Order fulfillment improvement.

b) Sales Operations

One of the avowed promises of marketing function at the beginning of its evolution was to make its selling function redundant. If marketing is perfect, customers will come to buy the product on their own, the company need not take it to them. Marketing so far has failed to fulfill this promise and probably it will remain unfulfilled in future. Selling function has become more important than yesterday. Selling is a crucial operation in pharmaceutical marketing also.

c) Market Segmentation

The traditional selling approach to market goods tended to look upon entire market as homogeneous in terms of needs, expectations and decision-making. This was true till monopoly or less competition kept the market essentially as sellers market. However intense competition of our times soon transformed the scenario into a buyers market. Now the selling approach was no longer effective. Marketing approach that evolved to fill the vacuum caused by the growing failure of selling approach is characterized by three broad stages as shown below.
1) Market Segmentation
   i) Identify bases for segmenting the market
   ii) Develop segment profiles

2) Market Targeting
   i) Develop measure of segment attractiveness
   ii) Select target segments

3) Market positioning
   i) Develop positioning for target segments
   ii) Develop a marketing mix for each segment

Promotion

Training and Development of Sales Persons

Training is defined as the set of intellectual, purposeful and skilled activities that is meant for the development of the individual and the organization as a whole. In other words, it is viewed as a process of learning concepts and enthusiastic actions to facilitate and improve confidence and performance of the trainee in his job. Pharmaceutical industry has been recognized as knowledge based industry and therefore training of its sales force is considered vital for effective marketing.

Detailing

Detailing is a unique aspect of Pharmaceutical selling and it is difficult to find its parallel in marketing of any other product. Pharmaceutical selling essentially employs missionary type of selling which implies that the salesman does not sell the product directly but induce sales through his activities like communicating or convincing the indirect customer who can initiate and influence the sale of product.

Thus, pharmaceutical manufacturers manufacture drugs and supply the same to the chemist shops (Pharmaceutical Retailers) through distribution intermediaries such as whole-sellers and carrying and forwarding agents. Patients buy medicines from such retail outlets as per the prescriptions
written by the physicians. Physician, therefore, is the kingpin in the entire process. Medical representatives of pharmaceutical companies visit physicians and hospitals regularly and appraise them of products, new as well as existing; benefits they provide to the patient and other information that physician would want to have regarding the drugs such as price, safety data, precautions, contra-indications etc. This communication is referred as detailing. If convinced of the merit of the brand being detailed, a physician begins to prescribe this medicine thus boosting its sale. This entire picture has been shown in Diagram 5.

Diagram 5: Schematic Representation of Marketing of Pharmaceutical Products

The relationship of physicians and medical representatives (MRs), therefore, plays a vital role in selling of medicines. Larger the pharmaceutical organization more MR does it employ and better trained its MR are for detailing their products.

Thus, the survival and growth of pharmaceutical firms depend on Research & Development and size of the sales force. For any organization to do well in today's highly competitive era, they must invest heavily in having a strong pipeline of new drug molecules and building a highly trained team of medical representatives.
Distribution of Samples

This is another unique and interesting feature of pharmaceutical marketing. Medical representatives while visiting physicians for detailing the product also distribute free samples. It is considered to be an important marketing tool and on an approximate estimate samples comprise 12-18% of market budget of any average pharmaceutical firm. The purpose of the samples is to encourage physicians to try out the brand and experience its benefits. Many physicians look forward to such gift samples as they allow them to treat financially challenged patients who cannot purchase medicines.

Customer Relations Management

Simply defined, Customer Relations Management (CRM) is the process of acquiring, retaining and growing profitable customers. It requires a clear focus on the service attributes that represent value to the customer and create loyalty.

In evolution process it came to existence after mass marketing had served its purpose. Mass marketing had evolved to extend economies of scale to the customers. But customers did not appreciate its "one size fits all" approach as each customer is unique and has unique aspirations and needs. CRM evolved to cater to the individual needs of customers. Information technology played a major role in evolving CRM by simply making it possible. Without the aid of IT tools CRM would have remained just a dream.

According to Philip Kotler, Customer Relationship Marketing holds that a major driver of company profitability is the aggregate value of the customer's base. CRM is particularly relevant for marketing pharmaceutical products detailed knowledge of and close relationship with physician can boost the sales.

Types of Drug Systems in India

B.K. Gupta and R.N. Gupta say that ancient civilization allowed India to develop various kinds of medical and pharmaceutical systems. In addition to the allopathic system, which is prevalent in the United States, Japan and
Europe, the following medical and pharmaceutical systems are also used by the Indian people.

1) **Ayurveda**: Ayurveda means "Science of Life." It encompasses fundamentals and philosophies about the world and life, diseases, and medicines. The knowledge of ayurveda is compiled in Charak Samhita and Sushruta Samhita. The curative treatment lies in drugs, diet, and general mode of life. Bhagwan Dhanwantari is believed to be the father of ayurveda.

2) **Siddha**: The Siddha System is one of the oldest Indian systems of medicine. Siddha means "Achievement." Siddhas were saintly figures who achieved healing through the practice of yoga. The siddha system does not look merely at a disease but takes into account a patient's age, sex, race, habits, environment, diet, physiological constitution etc.. Siddha medicines have been effective in curing some diseases, and further work is needed to truly understand why this system works.

3) **Unani**: The Unani System originated in Greece and prospered in India during the medieval period. It involves promotion of positive health and prevention of disease. The system is based on the humoral theory, i.e., the presence of blood, phlegm, yellow bile and black bile. A person's temperament is accordingly expressed as sanguine, phlegmatic, choleric or melancholic. Drugs derived from plant, metal, mineral, and animal origin are used in this system.

4) **Homeopathy**: Homeopathy flourished in Germany in the seventeenth and eighteenth centuries. In India, it is one of the commonly used methods to treat diseases. Physicians in the time of Hippocrates (400 BC) first observed that some substances produce symptoms of conditions that they were then used to treat. On the basis of this finding, a homeopathic medicinal agent, which can produce artificial symptoms in healthy human beings, can also cure a similar set of symptoms of natural diseases. It normally uses a single medicine, and the dosage is minimal, just enough to cure the disease.
5) **Yoga and Naturopathy**: Yoga and naturopathy are ways of life. In naturopathy, one applies simple laws of nature. It advocates proper attention to eating and living habits. It also involves hydrotherapy, mud packs, baths, massage etc.. Yoga consists of eight components: restraint, observance of austerity, physical postures, breathing exercises, restraining of the sense organs, contemplation, meditation, and samadhi.

**The Pharmaceutical Market in India**

**Historical Background**

A report named *Market Synopsis: India* of IMS Health says that in the early years following the independence MNCs were allowed, in India, to import drugs mainly low-priced generics and a few high-priced specialty items. When the Indian government increased pressure against the import of finished products, MNCs developed formulation units in India and exported only bulk drugs to that country. In the early 1960s, the Indian government encouraged the indigenous manufacture of bulk drugs. In the following decade, the Indian Patent Act prevented the grant of product patents for substances used in foods and pharmaceuticals. Only process patents were allowed for five years from the date of granting a patent or seven years from the date of filing the patent. Drug Price Control Order (DPCO) was introduced during the same period to prevent undue profiteering from essential medicines. MNCs were compelled to reduce their holdings to 40% in their Indian ventures. In the 1980s-1990s, domestic pharmaceutical companies flourished. As a result, the market share of MNCs fell to 35%, from 75% in 1971.

**Key Market Indicators**

The report *Market Synopsis: India* of IMS Health (2004) enlists the following indicators of the Indian pharmaceutical market

1. India’s economy will grow by around 5-6% per annum during the next five years, with growth rates gradually increasing. Growth will be based largely upon exports supported by government and consumer spending growth. *Economic growth will be insufficient to reduce unemployment significantly.*
2. The new National Health Policy, which was approved by Parliament in April 2002, aims to boost public health expenditure from 0.9% to 2.0% of GDP by 2010, with the focus on expanding access at the primary care level. The central government’s share of public health spending is set to rise from 15% to 25%, and total levels (public + private) of expenditure on health are predicted to rise from 5% to 6% of GDP by 2010.

3. The new Pharmaceutical Policy will halve the number of molecules under price control to around 30 (equivalent to 20-25% of the market’s value) and contains measures to encourage R&D. However, its implementation has been delayed by public interest litigation. Companies will continue to press for further relaxation, but a change from price control to price monitoring by the NPPA appears a long-term prospect.

4. Private health insurance is growing, but at a more modest rate than initially predicted; explosive growth appears unlikely in the medium term. There is considerable private investment in specialized hospitals, which is creating new markets for innovative drugs but is also resulting in the introduction of more sophisticated cost controls.

5. Formularies and rational drug programmes are slowly becoming more widespread, driven by pioneering states such as Delhi and aid from pan-national organizations such as the World Health Organization (WHO). The National Health Policy envisages a nationwide essential drugs formulary for the primary care sector. It will become increasingly important for companies to gain admittance to formularies, although this will put more pressure on prices.

6. The generous gifts given by companies to key prescribers are attracting attention and may prompt government action to curb abuses. The National Health Policy calls for prescribing guidelines to be developed.

7. High levels of discounting and bonuses remain commonplace as a means of driving pharmacy sales, but there is growing disenchantment
with this approach. Nonetheless, generic companies in particular will continue to use discounts and bonuses to win pharmacy custom.

8. Price competition in popular therapeutic categories continues to be intense and may become fiercer in the approach to 2006, as Indian companies launch as many products as possible before the introduction of product patents. The introduction of VAT will end the variations in drug price between states due to different local tax rates.

9. The passage of the second amendments to the Patents Act keeps India on course for a TRIPs-compliant Intellectual Property Rights regime in 2005, but product patents will only be introduced at the last possible moment. Data exclusivity will be a major issue, both nationally and internationally, over the next few years, with the Indian industry seeking to tone down the demands of the multinationals.

10. The overall level of quality standards will continue to improve gradually. WHO Good Manufacturing Practice (GMP) standards are scheduled to become mandatory in 2004, which will result in the closure of non-compliant plants. The great majority of importers met the December 2002 deadline for registering products and foreign manufacturing facilities, which should help reduce imports of substandard drugs.

11. The dismantling of regulatory barriers and the issuance of new Good Clinical Practice (GCP) guidelines will boost the level of clinical trial activity in India. In future, multinationals will be able to start clinical trials in India at the same time as Europe and the US.

12. The level of industry restructuring is increasing as 2005 approaches. Indian companies are investing in manufacturing, marketing and R&D, while multinationals are buying 100% control of subsidiaries. Exports are driving the performance of many leading Indian manufacturers, and the government will seek to protect exports as far as possible when considering intellectual property protection.

13. Pharmaceutical distribution will remain fragmented and complex in the near to medium term, resulting in high distribution costs. The system would benefit from consolidation and several players hope to take a
step in this direction. Consolidation will remain hampered by powerful trade associations, however, and foreign investment in the sector will remain restricted in the near term.

14. Pharmacy chains are growing. With the present 5 Lakh strong retail pharmacy and chemist sector, a number of pharmaceutical companies are starting to build chains and more entrants are expected. The sector will gradually become better regulated. Coverage of retail pharmacies is improving as more outlets are opening in second tier cities.

**Margin Structure**

The report *Market Synopsis: India* of IMS Health says that the government does not control distribution and retail margins, pharmaceutical manufacturers have only limited room for maneuver in the margins they set. Under an agreement with the All India Organization of Chemists and Druggists (AIOCD), set margins have been established for both products under price control and for decontrolled drugs. These margins, which remained unchanged in 2002, act as a guaranteed minimum, and the AIOCD is quick to counter any move to reduce them. Actual margins are often bigger than the rates given in the table 2, due to generous levels of discounts and bonuses. Approximate margin of profits, that stockists and retailers in Pharmaceutical trade are entitled to, have been shown in Table 2.

**Table 2: Approximate Margin of Profits**

<table>
<thead>
<tr>
<th>Category</th>
<th>Stockist</th>
<th>Retailers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controlled drugs</td>
<td>8%</td>
<td>16%</td>
</tr>
<tr>
<td>Decontrolled drugs</td>
<td>10%</td>
<td>20%</td>
</tr>
</tbody>
</table>

*Source: Market Synopsis: India of IMS Health (2004)*

**Indian Health Statistics**

India is the second largest populated country in the world, with a population of approximately 1 billion. The population is expected to grow to about 1.5 billion by 2050. Life expectancy at birth for males and females is 62.4 and
63.4 years, respectively, which is much lower than that of the Developed Countries. The total admission capacities for medical and pharmacy institutions of higher learning are 25000 and 26000 respectively. India has approximately 14,000 hospitals. The number of registered doctors and nurses is about 490,000 and 600,000, respectively.

Events Impacting Market Forecast

Pharmaceutical marketing is influenced by multiple variables. A summary of probable impact of some of the contemporary variables has been given in Table-3.

Table 3: Probable Impact of Events on Market Forecasts

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Event</th>
<th>Price</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Economic growth of 5-6% annually will continue to gradually raise standards of living and drive private consumption, impacting pharmaceutical sales positively.</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Demographic and epidemiological factors will drive drug usage. Rapid population growth will continue to drive demand.</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>03</td>
<td>Public sector investment in healthcare is set to increase substantially under the new National Health Policy, although the policy will take time to achieve results. In particular, the government aims to increase access to healthcare, through expansion of the primary care sector and central funding for essential drugs.</td>
<td>+</td>
<td>✓</td>
</tr>
<tr>
<td>04</td>
<td>Low income levels and inadequate healthcare infrastructure will continue to limit access to healthcare for a large majority of the population, especially in rural areas.</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>05</td>
<td>Patient out-of-pocket payments will remain the major source of healthcare funding. Price sensitivity will remain high and constrain both volume and price growth.</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>06</td>
<td>Healthcare insurance coverage remains very low and will grow only modestly in the short to medium term, although growth is expected to begin to accelerate in the longer term. Rather</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
than significantly broadening overall insurance coverage, this will mainly cover hospital treatment in the private hospital sector.

Continuing private sector investment in speciality hospitals will create new markets for innovative drugs.

Private investment will also begin to be directed towards primary and secondary care institutions, with the establishment of clinic and hospital chains planned by several companies.

Formularies and rational drug use programmes will grow in importance, with an essential drug formulary expected for primary care providers and prescribing guidelines for all doctors.

High levels of product launches will continue prior to the introduction of product patents expected in 2005. The proliferation of copy products will help volume growth, but fierce competition will drive prices down.

Aggressive marketing and promotion campaigns, in some cases making use of unethical prescribing inducements, will continue to drive prescribing growth.

Price competition in most of the free market will remain fierce.

The new Pharmaceutical Policy is expected to halve the proportion of the market under price control. However, the intense competition in the market will limit price increases.

Import duties are declining, with the lower costs being passed on to consumers in most cases.

The recent increase in launches of 'generic' generics will drive prices down.

The introduction of product patents in 2005 will mean higher prices for new products, without the threat of generic competition. However, drug prices will come under increased public scrutiny after the introduction of product patents.

Leading companies will continue to be able to charge higher prices for some products, reflecting quality and innovation.

Product approval times are gradually improving, enabling new products to reach the market more quickly.

Stricter GMP enforcement will increase costs and may drive some small companies out of business.

The Industry Structure

Globally the output of Indian pharmaceutical industry ranks fourth in terms of volume and thirteenth in terms of value. Indian pharmaceutical industry has over 23000 units; around 260 players constitute the organized sector, while 6000-8000 players exist in Small Scale Sector. The industry is highly fragmented with largest formulation player having market share less than 6%. The top ten players account for 36% of market share. Globally top ten players account for as much as 49% of pharmaceutical market. Market can be divided into bulk drugs segment and formulations. The industry produces about 60,000 finished medicines and approximately 400 bulk drugs, which are used in formulations. India is one of the top five producers of bulk drugs in the world.

Summary of Indian Pharmaceutical Market

Indian Pharmaceutical market is substantial. Its Important details for the year 2002 have been shown in Table 4.

Table 4: Summary of Indian Pharmaceutical Market

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Factor</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>02</td>
<td>03</td>
</tr>
<tr>
<td>1</td>
<td>Market Size</td>
<td>180362 million Rs.</td>
</tr>
<tr>
<td>2</td>
<td>As % of total healthcare</td>
<td>25.3%</td>
</tr>
<tr>
<td></td>
<td>expenditure</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>As % of GDP</td>
<td>1.3%</td>
</tr>
<tr>
<td>4</td>
<td>As % of World Market</td>
<td>1.6%</td>
</tr>
<tr>
<td>5</td>
<td>Growth Rate</td>
<td>7.2%</td>
</tr>
</tbody>
</table>


Pharmaceutical Sales Forecast at Actual Prices

Pharmaceutical market is growing steadily. Table 5 provides the sales forecast for the period 2002-07 at actual prices.
Table 5: Pharmaceutical Sales Forecast at Actual Prices

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Year</th>
<th>Rupees (million)</th>
<th>Annual % Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>02</td>
<td>03</td>
<td>04</td>
</tr>
<tr>
<td>1</td>
<td>2002</td>
<td>180362</td>
<td>+10.3%</td>
</tr>
<tr>
<td>2</td>
<td>2003</td>
<td>197857</td>
<td>+9.7%</td>
</tr>
<tr>
<td>3</td>
<td>2004</td>
<td>219177</td>
<td>+10.8%</td>
</tr>
<tr>
<td>4</td>
<td>2005</td>
<td>242889</td>
<td>+10.8%</td>
</tr>
<tr>
<td>5</td>
<td>2006</td>
<td>269956</td>
<td>+11.1%</td>
</tr>
<tr>
<td>6</td>
<td>2007</td>
<td>297760</td>
<td>+10.3%</td>
</tr>
</tbody>
</table>


Therapeutic Class Forecasts

The therapeutic class analysis, shown in Table 6 focuses on ten of the leading first level categories of the Anatomical Classification System (ATC 1), and is based on audited sales at ex-manufacturer price level. These ten classes accounted for 91.9% of the audited market in 2002 and their market share is forecast to be 92.2% by 2007.

Table 6: Therapeutic Class Forecasts (1997 to 2007) – Audited Sector

<table>
<thead>
<tr>
<th>S. No.</th>
<th>ATC Class</th>
<th>1997 (Rs million)</th>
<th>2002 (Rs million)</th>
<th>2007 (Rs million)</th>
<th>CAGR (±%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>% Share</td>
<td>% Share</td>
<td>% Share</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>02</td>
<td>03</td>
<td>04</td>
<td>05</td>
<td>06</td>
</tr>
<tr>
<td>1</td>
<td>ATC A</td>
<td>26675.9</td>
<td>21.6%</td>
<td>42318.3</td>
<td>23.5%</td>
</tr>
<tr>
<td>2</td>
<td>ATC B</td>
<td>4226.9</td>
<td>3.4%</td>
<td>7892.1</td>
<td>4.4%</td>
</tr>
<tr>
<td>3</td>
<td>ATC C</td>
<td>7853.3</td>
<td>6.4%</td>
<td>15667.3</td>
<td>8.7%</td>
</tr>
<tr>
<td>4</td>
<td>ATC D</td>
<td>5698.5</td>
<td>4.6%</td>
<td>7683.6</td>
<td>4.2%</td>
</tr>
<tr>
<td>5</td>
<td>ATC G</td>
<td>3598.9</td>
<td>2.9%</td>
<td>6970.6</td>
<td>3.9%</td>
</tr>
<tr>
<td>6</td>
<td>ATC J</td>
<td>36346.4</td>
<td>29.5%</td>
<td>44032.6</td>
<td>24.4%</td>
</tr>
<tr>
<td>7</td>
<td>ATC L</td>
<td>317.5</td>
<td>0.3%</td>
<td>873.6</td>
<td>0.5%</td>
</tr>
<tr>
<td>8</td>
<td>ATC M</td>
<td>6580.7</td>
<td>5.3%</td>
<td>11638.9</td>
<td>6.4%</td>
</tr>
<tr>
<td>9</td>
<td>ATC N</td>
<td>8481.5</td>
<td>6.9%</td>
<td>11883</td>
<td>6.6%</td>
</tr>
<tr>
<td>10</td>
<td>ATC R</td>
<td>12683.9</td>
<td>10.3%</td>
<td>16676.3</td>
<td>9.3%</td>
</tr>
<tr>
<td>11</td>
<td>Others</td>
<td>10943.7</td>
<td>8.9%</td>
<td>14726.0</td>
<td>8.1%</td>
</tr>
<tr>
<td>12</td>
<td>Total</td>
<td>123407.2</td>
<td>100.0%</td>
<td>180362.3</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Note: 1. ATC A means - Alimentary Tract And Metabolism  
2. ATC B means Blood And Blood Forming Agents  
3. ATC C means Cardiovascular System  
4. ATC D means Dermatologicals  
5. ATC G means Genito-urinary System/Sex Hormones  
6. ATC J means Systemic Anti-lnfectives  
7. ATC L means Antineoplastic Agents/Immunomodulators  
8. ATC M means Musculoskeletal System  
9. ATC N means Central Nervous System  
10. ATC R means Respiratory System  

Major Therapeutic Segments  

Table 7 gives details of comparative size of major therapeutic segments. The growth of different segments varies considerably. Some are growing very fast whereas certain others are even de-growing. Current pattern of growth of certain important segments has been provided in Table 8.  

Table 7: Major Therapeutic Segments  

<table>
<thead>
<tr>
<th>S. N.</th>
<th>Major Therapeutic Segments</th>
<th>Market Size (Billion Rs.)</th>
<th>Market Share (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td></td>
<td>02</td>
<td>03</td>
</tr>
<tr>
<td>1</td>
<td>Antibiotics</td>
<td>23</td>
<td>15.7</td>
</tr>
<tr>
<td>2</td>
<td>Cardiac Therapy</td>
<td>10.2</td>
<td>6.9</td>
</tr>
<tr>
<td>3</td>
<td>CNS &amp; Psychiatric Therapy</td>
<td>9.6</td>
<td>6.5</td>
</tr>
<tr>
<td>4</td>
<td>Vitamins</td>
<td>8.9</td>
<td>6.1</td>
</tr>
<tr>
<td>5</td>
<td>NSAIDS &amp; Anti rheumatic</td>
<td>8.8</td>
<td>6.0</td>
</tr>
<tr>
<td>6</td>
<td>Respiratory Ailments</td>
<td>7.8</td>
<td>5.3</td>
</tr>
<tr>
<td>7</td>
<td>Antacids and Antiulcerants</td>
<td>6.2</td>
<td>4.3</td>
</tr>
<tr>
<td>8</td>
<td>Anti anemic</td>
<td>3.7</td>
<td>2.8</td>
</tr>
<tr>
<td>9</td>
<td>Anti diabetic</td>
<td>3.7</td>
<td>2.8</td>
</tr>
<tr>
<td>10</td>
<td>Anti TB</td>
<td>3.6</td>
<td>2.5</td>
</tr>
</tbody>
</table>


Growth of Major Therapeutic Segments  

Growth pattern of major therapeutic segments varies considerably. Table 8 depicts the growth of major therapeutic segments.
Table 8: Growth of Major Therapeutic Segments

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Therapeutic Segment</th>
<th>Market Growth Rate Feb: 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>02</td>
<td>03</td>
</tr>
<tr>
<td>1</td>
<td>Respiratory</td>
<td>5.6%</td>
</tr>
<tr>
<td>2</td>
<td>Anti-Infectives</td>
<td>-0.2%</td>
</tr>
<tr>
<td>3</td>
<td>Anti-Diabetics</td>
<td>20.3%</td>
</tr>
<tr>
<td>4</td>
<td>Cardio Vascular Segments</td>
<td>17.4%</td>
</tr>
<tr>
<td>5</td>
<td>CNS</td>
<td>13.4%</td>
</tr>
</tbody>
</table>


Thus in the present scenario, the growth of a domestic pharmaceutical company is critically dependent on its therapeutic presence. The old and mature categories like anti-infective, vitamins, analgesics are de-growing while, new lifestyle categories like Cardiovascular, Central Nervous System (CNS), Anti Diabetic are expanding at double-digit growth rates. Increased generic penetration, intense competition, fragmentation of the industry has negatively impacted the overall value growth of the domestic pharmaceutical market. In this scenario, to grow in the domestic market, pharmaceutical companies are constantly eyeing for innovation, introduction of new value added products, product life cycle management and enlarging their market reach.

**Major Players In The Pharmaceutical Industry In India**

I Gupta in *The Quest of Global Growth* says that two types of companies exist in the Indian pharmaceutical sector, namely, *companies of Indian origin (domestic)* and *foreign MNCs*. GlaxoSmithKline, Cipla, Dr. Reddy's Laboratories, and Ranbaxy are the top four companies in terms of gross sales. The top MNCs with a presence in India are GlaxoSmithKline, Hoechst (Aventis), Marion Roussel, Knoll Pharma, and Pfizer. More than 20,000 pharmaceutical units exist in India. Ranbaxy, the leading domestic company, reported sales of Rs. 1745.9 Crores ($356.3 million, assuming that $1.00 = Rs 49) during 2000. Glenmark Pharmaceuticals, Cadila Healthcare, Ajanta Pharma, and Elder Pharmaceuticals are among other upcoming companies.
The major players in Indian pharmaceutical industry, as in the year 2002, are shown in Table 9.

Table 9: Major Players in the Pharmaceutical Industry

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Company</th>
<th>Sales (Crore Rs.)</th>
<th>Total Assets (Crore Rs.)</th>
<th>Net Profit (Crore Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Ranbaxy Laboratories</td>
<td>2,162.4</td>
<td>2,522.0</td>
<td>252</td>
</tr>
<tr>
<td>02</td>
<td>Dr. Reddy's Lab</td>
<td>1,711.8</td>
<td>1,844.8</td>
<td>495.7</td>
</tr>
<tr>
<td>03</td>
<td>Cipla</td>
<td>1,458</td>
<td>1,413.8</td>
<td>235.1</td>
</tr>
<tr>
<td>04</td>
<td>Glaxo-smithkline</td>
<td>1,143</td>
<td>786.5</td>
<td>75.3</td>
</tr>
<tr>
<td>05</td>
<td>Aurobindo Pharma</td>
<td>1,038.5</td>
<td>889.6</td>
<td>68.5</td>
</tr>
<tr>
<td>06</td>
<td>Lupin</td>
<td>963.6</td>
<td>1,245.5</td>
<td>72.2</td>
</tr>
<tr>
<td>07</td>
<td>Nicolas Piramal India</td>
<td>955.3</td>
<td>882.4</td>
<td>48.2</td>
</tr>
<tr>
<td>08</td>
<td>Sun Pharmaceuticals</td>
<td>748.0</td>
<td>654.5</td>
<td>168.6</td>
</tr>
<tr>
<td>09</td>
<td>Wockhardt</td>
<td>649.4</td>
<td>522.0</td>
<td>102.2</td>
</tr>
<tr>
<td>10</td>
<td>Aventis Pharma</td>
<td>609.9</td>
<td>416.4</td>
<td>66.6</td>
</tr>
<tr>
<td>11</td>
<td>Cadila Healthcare</td>
<td>588.8</td>
<td>968.5</td>
<td>67.2</td>
</tr>
</tbody>
</table>

Source: Business World 3rd November 2003

Table 10: Top Pharmaceutical Products

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Product</th>
<th>Company</th>
<th>Sales Rupees (million)</th>
<th>% Growth in 2001/2002</th>
<th>% Share of ATC market</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Becosules</td>
<td>Pfizer</td>
<td>835.8</td>
<td>11.6%</td>
<td>2.0%</td>
</tr>
<tr>
<td>02</td>
<td>Zinetac</td>
<td>Glaxo Wellcome</td>
<td>649.5</td>
<td>17.1%</td>
<td>1.5%</td>
</tr>
<tr>
<td>03</td>
<td>Neurobion</td>
<td>Merck Limited</td>
<td>555.9</td>
<td>-18.8%</td>
<td>1.3%</td>
</tr>
<tr>
<td>04</td>
<td>Omez</td>
<td>Dr Reddy's Labs</td>
<td>483.5</td>
<td>3.9%</td>
<td>1.1%</td>
</tr>
<tr>
<td>05</td>
<td>Human Mixtgrd</td>
<td>Knoll Pharma</td>
<td>454.7</td>
<td>8.5%</td>
<td>1.1%</td>
</tr>
<tr>
<td>06</td>
<td>Dexorange</td>
<td>Franco Indian</td>
<td>534.1</td>
<td>-7.5%</td>
<td>6.9%</td>
</tr>
<tr>
<td>07</td>
<td>Hepatoglobe</td>
<td>Raptakos Brett</td>
<td>281.5</td>
<td>44.2%</td>
<td>3.6%</td>
</tr>
<tr>
<td>08</td>
<td>R B Tone</td>
<td>Medley Pharma</td>
<td>218.0</td>
<td>-24.4%</td>
<td>2.8%</td>
</tr>
<tr>
<td>09</td>
<td>Cleoxane</td>
<td>Aventis Pharma</td>
<td>210.6</td>
<td>9.3%</td>
<td>2.7%</td>
</tr>
<tr>
<td>10</td>
<td>Fraxiparine</td>
<td>Sanofi Torrent</td>
<td>184.1</td>
<td>26.6%</td>
<td>2.4%</td>
</tr>
<tr>
<td>11</td>
<td>Cardace</td>
<td>Aventis Pharma</td>
<td>442.3</td>
<td>50.2%</td>
<td>2.9%</td>
</tr>
<tr>
<td>12</td>
<td>Aten</td>
<td>Zydus Cadila</td>
<td>396.8</td>
<td>27.6%</td>
<td>2.6%</td>
</tr>
<tr>
<td>13</td>
<td>Envas</td>
<td>Cadila Pharma</td>
<td>321.8</td>
<td>14.3%</td>
<td>2.1%</td>
</tr>
<tr>
<td>14</td>
<td>Stamlo</td>
<td>Dr Reddy's Labs</td>
<td>282.5</td>
<td>14.7%</td>
<td>1.8%</td>
</tr>
<tr>
<td>15</td>
<td>Dilzem</td>
<td>Torrent Pharma</td>
<td>262.0</td>
<td>32.0%</td>
<td>1.7%</td>
</tr>
<tr>
<td>16</td>
<td>Betadine</td>
<td>Win Medicare</td>
<td>472.2</td>
<td>-5.8%</td>
<td>6.1%</td>
</tr>
<tr>
<td>17</td>
<td>Betnovate-N</td>
<td>Glaxo Wellcome</td>
<td>323.0</td>
<td>27.8%</td>
<td>4.2%</td>
</tr>
</tbody>
</table>

Top Pharmaceutical Products in India

Top Pharmaceutical Products in India has been shown in Table 10. Sale of pharmaceutical products vary from company to company. Sale of certain pharmaceutical products is exceptionally high. Becosule of Pfizer has crossed annual sales of Rs. 100 Crores mark in 2004-05. Table 10 gives the list of top products having highest sale in the year 2002.

Strengths and Weaknesses of Indian Pharmaceutical Industry

Indian Pharmaceutical Industries are well recognized in the world for the quantity as well as the quality of drugs. Its strength and weakness are given below.

1. **Strength**
   a) Well developed industry with strong manufacturing base
   b) Well established network of laboratories and R& D infrastructure
   c) Highly trained pool of scientists and professionals
   d) Strong marketing and distribution network
   e) Very strong reverse engineering skills
   f) Potential ground for clinical trials.
   g) Fast growing healthcare industry
   h) Cost competitiveness
   i) Rich Biodiversity
   j) Growing Biotechnology Industries
   k) Potentially huge market with growing middle class

2. **Weaknesses**
   a) Low per capita expenditure
   b) Health infrastructure remains under developed