c) **Chain of command:** The *chain of command* is an unbroken line of authority that extends from the top to lowest level and clarifies who reports to whom. It answers question for employees such as "To whom do I go if I have a problem?" and "To whom I am responsible?"

d) **Span of control:** How many employees can a manager efficiently and effectively direct? This question of span of control is important because to a large degree, it determines the number of levels and managers an organisation has. All things being equal, the wider or larger the span, the more efficient, is the organisation.

e) **Centralisation and Decentralisation:** The term centralisation refers to the degree to which decision-making is concentrated to a single point in the organisation. The concept includes only formal authority. Typically, if the top management makes all the key decisions, the organisation is termed as *centralised*. In contrast, if bulk of the decisions is allowed to be taken at the lower level, the organisation is termed as *decentralised*.

f) **Formalisation:** *Formalisation* refers to the degree to which jobs within the organisation are standardised. In case jobs are highly formalised, employees will have less freedom or discretion to carry out the jobs, but the jobs will have explicit methods and procedures to complete it.

Check Your Progress 1

1) State True or False.

(i) Indian Oil Corporation is an organisation of extraction type. True ☐ False ☐

(ii) Oil and Natural Gas Commission (ONGC) can be classified as manufacturing organisation. True ☐ False ☐

(iii) Organisation structure is an integral component of the organisation. True ☐ False ☐

(iv) The chain of command is a broken line of authority that extends from the top to lowest level and clarifies who reports to whom. True ☐ False ☐

(v) Formalisation refers to the degree to which jobs within the organisation are standardised. True ☐ False ☐

2) Answer the following:

(i) What are the types of organisations at macro level? What is the distinctive feature for each of these types?

……
……
……
……

(ii) What are the six key elements required for designing an organizational structure?

……
……
……
……

(iii) How 'Centralized Organisations' are different from 'Decentralized Organizations'? Give examples of each.

……
……
……
……

A Process oriented organisation has to be based on core processes. The core processes comprise of:

- End-to-end work, information and material flows.
- Extends across a business (and even beyond the business boundaries) and drives the achievement of fundamental performance objectives to an organisation's strategy.
- Usually not more than 4 to 10 in a typical organisation, which also depends on the business strategy of the organisation.

Typical major (Core) Business Process in an organisation are:

- **Order Acquisition Process** transforms a sales potential into a firm order in hand.
- **Order Fulfillment Process** transforms an order into delivered goods, a satisfied customer, and the paid bill.
- **Product Development Process** transforms a customer need and/or an advanced concept into a manufacturable design that satisfies the value proposition.
- **New Business Development Process** transforms technological and conceptual advancements into new businesses.
- **Customer Support Process** transforms customer concerns and needs into value-adding solutions.

Major processes are divided into sub-processes, which are then describable in terms of basic tasks or activities. Common Characteristics of Horizontally Structured Organisations are:

- Core processes group employees according to the sets and scope of multiple skills needed to meet performance objectives.
- Teams constitute the fundamental units of the organisation and are largely self-supervised.
- Process owners are responsible for leading and managing the entire core processes.
- The primary focus is external rather than internal, emphasizing the delivery.

A typical process based organisation structure is shown below in *Figure 5*.

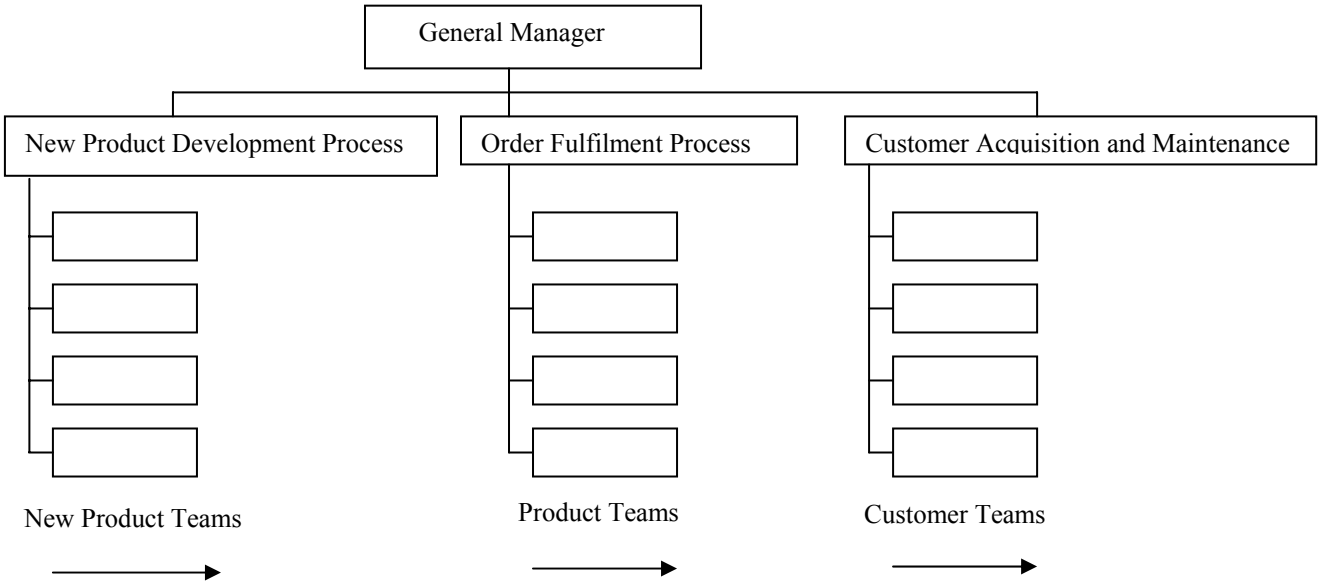

Figure 5: Process oriented organisation structure

Merits of an Process based Organisation Structure are:

- Eliminates the numerous handoffs that occur in functionally organised companies,
- Facilitates a tight alignment with what the customer wants,
- Highly compatible with the "lean paradigm",
- Fewer levels of hierarchy, reduced "overhead" effort,
- Facilitates agility, rapid re-configuration, as external environment changes,
- Performance measures and incentives/rewards can be tied more directly to tangible, measurable work progress,
- Enhances morale.

Vertical vs. Horizontal Organisations

Process-complete departments will have shorter cycle times for the jobs *only* if their managers have taken steps to reduce the cycle time by cultivating a collective sense of responsibility. Means for fostering collective responsibility are:

- Structure jobs with overlapping responsibilities,
- Arrange work areas so that people can see each other's work,
- Base incentives/rewards on group performance,
- Design procedures so that employees with different jobs are better able to collaborate.

Restructuring by process can lead to faster cycle times, greater customer satisfaction, and lower costs, but only if the organisation has a collaborative culture as stated above. But if companies are not willing to change their culture, they may be better off leaving functional departments intact.

Process oriented organisations are superior to *Functional organisations* for many situations, however, one size does not fit all in organisational focus. There are still many situations in which the classical vertical organisation is superior.

Check Your Progress 3

1) State True or False.

(i) Customer Support Process - transforms a sales potential into a firm order in hand. True ☐ False ☐

(ii) Product Development Process- transforms technological and conceptual advancements into new businesses. True ☐ False ☐

(iii) A Process oriented organisation has to be based on Core processes. True ☐ False ☐

(iv) Process based Organisation Structure facilitates a tight alignment with what the customer wants. True ☐ False ☐

(v) Process based Organisation Structure limits Enhancing of morale. True ☐ False ☐

2) Answer the following:

(i) What are the five most acceptable stages during organisational life cycle?

……

……

……

(ii) What are the shortcomings in the Function Oriented (Vertical) type of organisational structure?

……

……

……

1.8 SUMMARY

This completes the discussion regarding organisations overview, the fundamentals and types of organisations as well as diversities and similarities in various organisations. These concepts are essential to be understood and addressed for information system design.

With the increase in competition and globalisation each organisation desires to carry out more and more of its functionality with use of Information technology to enhance productivity. Therefore, students are advised to read supplementary material covering case studies.

1.9 SOLUTIONS/ANSWERS

Check Your Progress 1

1) (i) False, (ii) False, (iii) True, (iv) False, (v) True

2) (i) At Macro level organisations have three types as indicated below along with their distinct features:

- **Extraction organisations:** These organisations produce goods by extracting them from the earth.
- **Manufacturing organisations:** These organisations produce goods by conversion or by processing of one type of goods designated as raw materials into other type of goods designated as finished goods.
- **Service organisations** do not produce any tangible goods but produce services only. Services are intangible items having no shape or colour.

(ii) The six key elements required for designing an organisational structure are:

- Work Specialisation
- Departmentalisation
- Chain of command
- Span of control
- Centralisation and decentralisation
- Formalisation

Check Your Progress 2

1) (i) False, (ii) False, (iii) False, (iv)True, (v) True.

2) (i) Four common features of organisations are:

- Formal Structure,
- Principal of Division of labour,
- Standard Operating Procedures, and
- Decision Making Process.

And five unique characteristics of organisation are:

- Organisational Type,
- Environment,
- Size of the Organisation,

- Locations Involved, and
- Business Processes.

(ii) Three examples (names) of each of the following functional organizations are:

***Business*:** Reliance Infotech, Maruti Udyog Ltd., Bharat Petroleum.

***Bureaucracy*:** Government of Madhya Pradesh, Delhi Public School and Supreme Court of India.

***Charity*:** Ford Foundation, Rajiv Foundation and Gandhi Memorial trust.

Mutual Cooperation: Unit Trust of India, Indian Farmers Fertilizers Corporation (IFFCO), and Industrial Cooperative Bank.

***International Cooperation*:** United Nations, World Health Organisation, and World Trade Organisation.

Check Your Progress 3

1) (i) False, (ii) False, (iii) True, (iv) True (v) False

2) (i) The most acceptable five stages during organisational life cycle are:

(a) Startup / Birth
(b) Growth.
(c) Decline. When in decline, an organisation will either undergo,
(d) Renewal or
(e) Death / bankruptcy.

(ii) The shortcomings in the Function Oriented (Vertical) type of organisational structure are:

- Internal focus on functional goals rather than outward-looking concentration on winning customers and delivering value;
- Loss of important information as transactions travel up and down the multiple levels and across the functional departments;
- Fragmentation of performance objectives brought about by a multitude of distinct and fragmented goals;
- Added expense involved in coordinating the overly fragmented work and departments;
- Stifling of creativity and initiative of workers at lower levels;
- Slow responsiveness to changes in the external environment and to customer issues;
- Loss of sight of the totality of the business processes.

1.10 FURTHER READINGS/REFERENCES

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UNIT 2 MANAGEMENT FUNCTIONS AND BUSINESS PROCESSES

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2.0 INTRODUCTION

For successful and efficient operation of an organisation appropriate management is required is a well known fact. In the previous unit, you have learnt about organisations, their functions, structure and objectives and also learnt the commonalities of the organisations as well as how diverse requirements for their management can be there. In this unit, we will discuss how this requirement is met by understanding management functions, their hierarchical requirements and the business functionality requirements.

In this unit, we will also discuss how information system requirements can be worked out to assist and help the management in discharging their various roles for successful operation of the organisation.

2.1 OBJECTIVES

After going through this unit, you should be able to:

- understand the management functions at various levels of the management;
- define the business processes;
- work out the information system requirements of an organisation, and
- will become familiar with the latest tools and methods for working out the information system requirements.

2.2 MANAGEMENT FUNCTIONS AND LEVELS

"*Management*" (from Old French *ménagement* “the art of conducting, directing”, from Latin *manu agere* “to lead by the hand”) characterises the process of leading and directing all or part of an organisation, often a business, through the deployment and manipulation of resources (human, financial, material, intellectual or intangible). Early

twentieth-century management writer Mary Parker Follett defined management as "the art of getting things done through people."

One can also think of management functionally, as the action of measuring a quantity on a regular basis and of adjusting some initial plan, and as the actions taken to reach one's intended goal. This applies even in situations where planning does not take place. From this perspective, there are five management functions: Planning, Organising, Leading, Coordinating, and Controlling.

Management

Management is also called "Business Administration", and schools that teach management are usually called "Business Schools". The term "management" may also be used to describe the slate of managers of an organisation, for example, of a corporation. A governing body is a term used to describe a group formed to manage an organisation, such as a sports league.

In for-profit work, the primary function of management is to satisfy a range of stakeholders. This typically involves making a profit (for the shareholders), creating valued products at a reasonable cost (for customers), and providing rewarding employment opportunities (for employees). In nonprofit work it is also important to keep the faith of donors. In most models of management, shareholders vote for the board of directors, and that board then hires senior management. Some organisations are experimenting with other methods (such as employee voting models) of selecting or reviewing managers/senior managers but this is very rare.

In the public sector of countries constituted as representative democracies, politicians are elected to public office. They hire many managers and administrators, and in some countries like the United States, a great many people lose jobs when a new President comes into office. 2500 people serve "at the pleasure of the President" including all the top US government executives.

Public, private and voluntary sectors place different demands on managers, but all must retain the faith of those who select them (if they wish to retain their jobs), retain the faith of those people that fund the organisation, and retain the faith of those who work for the organisation. If they fail to convince employees that they are better off staying than leaving, the organisation will be forced into a downward spiral of hiring, training, firing, and recruiting.

Management also has a responsibility to innovate and improve the functioning of the organisation.

In all but the smallest organisations, achieving these objectives involves a division of management and labour. People specialise in a limited range of functions so as to more quickly gain competence and expertise. Even in employee managed workplaces such as a Wobbly Shop, where managers are elected, or where latitude of action is sharply restricted by collective bargaining or unions, managers still take on roughly the same functions and job descriptions as in a more traditional command hierarchy.

As has been said above management has been defined by various scholars, among them widely accepted definition by Koontz is '*Management is the art of getting things done through and with the people in formally organised groups*.'

Management Functions

The five basic *Functions*, which a manager has to perform as per classical model of management, which has been accepted since 1920's and is still popular, by early authors like Henry Fayol are:

- Planning,
- Organising,
- Coordinating,
- Directing, and
- Controlling.

To get an insight into Management let us understand these functions one by one.

Planning

Planning is a process of forecasting the future in advance. From where we are it leads to where we want to be. Planning requires rigorous analysis of input, output and costs. Let us suppose we want to establish a new factory or in a factory a new product. Planning for this will require collection of basic information such as expected sales, production capacity required, types of machinery, capital, foreign exchange requirement, organisation structure required to handle various jobs etc. Since planning is to chart the future course of action, it should answer the following questions and may be a few more:

- What to do?
- When to do?
- Who is to do?
- How is it to be done?
- Where is to be done?
- Why is to be done?

In an organisation for facilitating this planning process, goals are set, objectives are defined, policies, rules and procedures are laid down, programs are worked out, and budgets, strategies, and schedules are finalised.

Organising

Organising it the process of identifying the entire job, dividing the job into convenient subjects / tasks, allocating sub-jobs to persons or group of persons and delegating authority to each so that the job is carried out as planned.

Coordinating

Coordination is the process of putting the right person or group of persons at the right job. This function involves activities like defining the requirements with regard to the people for the job to be done, selecting suitable persons, training and developing them so that they can perform the desired job(s).

Directing

Henri Fayol has identified the function of Directing with command. However, modern management experts are of the view that directing includes:

- Communication,
- Motivation, and

- Leadership.

Directing is important because in order to achieve pre-determined goals and objectives people manning the organisation have to be guided, motivated and led by the manager.

Controlling

Controlling is the Function to ensure that things are going, as they should be. Actual performance must be compared with previously set goals. If there are any significant deviations, management must take the corrective steps to bring the things on track. Thus controlling is the process that involves:

- Fixing standards for measuring work performance,
- Measurement of actual performance,
- Comparing actual with standards and finding out deviations, if any, and
- Taking corrective actions.

To perform these functions management has to take a variety of decisions. In other words, *decision-making* is a fundamental pre-requisite for each of the processes talked above. As per Peter Drucker 'Whatever a manager does, he does it through decision making'. Thus decision-making is the Essence of Management.

To further understand functioning of a business organisation, let us briefly discuss the Levels of Management.

Levels of Management

Managers are organisational members who are responsible for the work performance of other organisational members. Managers have formal authority to use organisational resources and to make decisions. In organisations, there are typically three levels of management: top-level, middle-level, and first-level or operational level as shown in *Figure 1*. These three main levels of managers form a hierarchy, in which they are ranked in order of importance. In most organisations, the number of managers at each level is such that the hierarchy resembles a pyramid, with many more first-level managers, fewer middle managers, and the fewest managers at the top level. Each of these management levels is described below in terms of their possible job titles and their primary responsibilities and the paths taken to hold these positions. Additionally, there are differences across the management levels as to what types of management tasks each does and the roles that they take in their jobs. Finally, there are a number of changes that are occurring in many organisations that are changing the management hierarchies in them, such as the increasing use of teams, the prevalence of outsourcing, and the flattening of organisational structures.

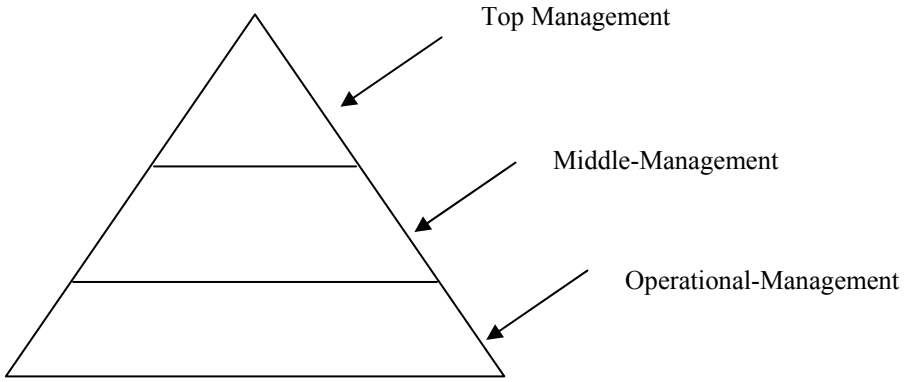

Figure 1: Basic levels of management

Top-Level Managers

Top-level managers, or top managers, are also called senior management or executives. These individuals are at the top one or two levels in an organisation, and hold titles such as: Chief Executive Officer (CEO), Chief Financial Officer (CFO), Chief Operational Officer (COO), Chief Information Officer (CIO), Chairperson of the Board, President, Vice president, Corporate head.

Often, a set of these managers will constitute the top management team, which is composed of the CEO, the COO, and other department heads. Top-level managers make decisions affecting the entirety of the firm. Top managers do not direct the day-to-day activities of the firm; rather, they set goals for the organisation and direct the company to achieve them. Top managers are ultimately responsible for the performance of the organisation, and often, these managers have very visible jobs.

Top managers in most organisations have a great deal of managerial experience and have moved up through the ranks of management within the company or in another firm. An exception to this is a top manager who is also an entrepreneur; such an individual may start a small company and manage it until it grows enough to support several levels of management. Many top managers possess an advanced degree, such as a Masters in Business Administration, but such a degree is not required.

Some CEOs are hired in from other top management positions in other companies. Conversely, they may be promoted from within and groomed for top management with management development activities, coaching, and mentoring. They may be tagged for promotion through succession planning, which identifies high potential managers.

Middle-Level Managers

Middle-level managers, or middle managers, are those in the levels below top managers. Middle managers' job titles include: General Manager, Plant manager, Regional manager, and Divisional Manager.

Middle-level managers are responsible for carrying out the goals set by top management. They do so by setting goals for their departments and other business units. Middle managers can motivate and assist first-line managers to achieve business objectives. Middle managers may also communicate upward, by offering suggestions and feedback to top managers. Because middle managers are more involved in the day-to-day workings of a company, they may provide valuable information to top managers to help improve the organisation's bottom line.

Jobs in middle management vary widely in terms of responsibility and salary. Depending on the size of the company and the number of middle-level managers in the firm, middle managers may supervise only a small group of employees, or they may manage very large groups, such as an entire business location. Middle managers may be employees who were promoted from first-level manager positions within the organisation, or they may have been hired from outside the firm. Some middle managers may have aspirations to hold positions in top management in the future.

First-Level / Operational Level Managers

First-level managers are also called first-line managers or supervisors. These managers have job titles such as: Office manager, Shift Supervisor, Department Manager, Foreperson, Crew Leader, Store Manager.

First-line managers are responsible for the daily management of line workers — the employees who actually produce the product or offer the service. There are first-line

managers in every work unit in the organisation. Although first-level managers typically do not set goals for the organisation, they have a very strong influence on the company. These are the managers that most employees interact with on a daily basis, and if the managers perform poorly, employees may also perform poorly, may lack motivation, or may leave the company.

In the past, most first-line managers were employees who were promoted from line positions (such as production or clerical jobs). Rarely did these employees have formal education beyond the high school level. However, many first-line managers are now graduates of a trade school, or have a two-year associates or a four-year bachelor's degree from college.

Knowledge Workers

Number of organisations in today's environment; also have another level for Knowledge Workers. Primarily, the knowledge workers are above the operational managers in the organisations. These workers deal more with Research and Development jobs and also with analysing data for Knowledge Extraction.

The interaction amongst the three levels of the management can be summarized as per Jerome Kanter (1996). The Top Management, which is also known as Strategic level, establishes the policies, plans and objectives of the company as well as general budget framework of the company under which the various departments will operate. These Factors passed down to middle management, where these are translated into specific revenue, cost and profit goals. These are reviewed, analysed and modified in accordance with the overall plan and policies, until agreement is reached. Middle management then issues the specific schedules and measurement yardsticks to the operating management. The latter level has the job of producing, and / or selling of the goods and services required to meet the revenue and profit goals, which in turn will enable the company to reach its overall plans and objectives. This interaction has been shown in the following *Figure 2*.

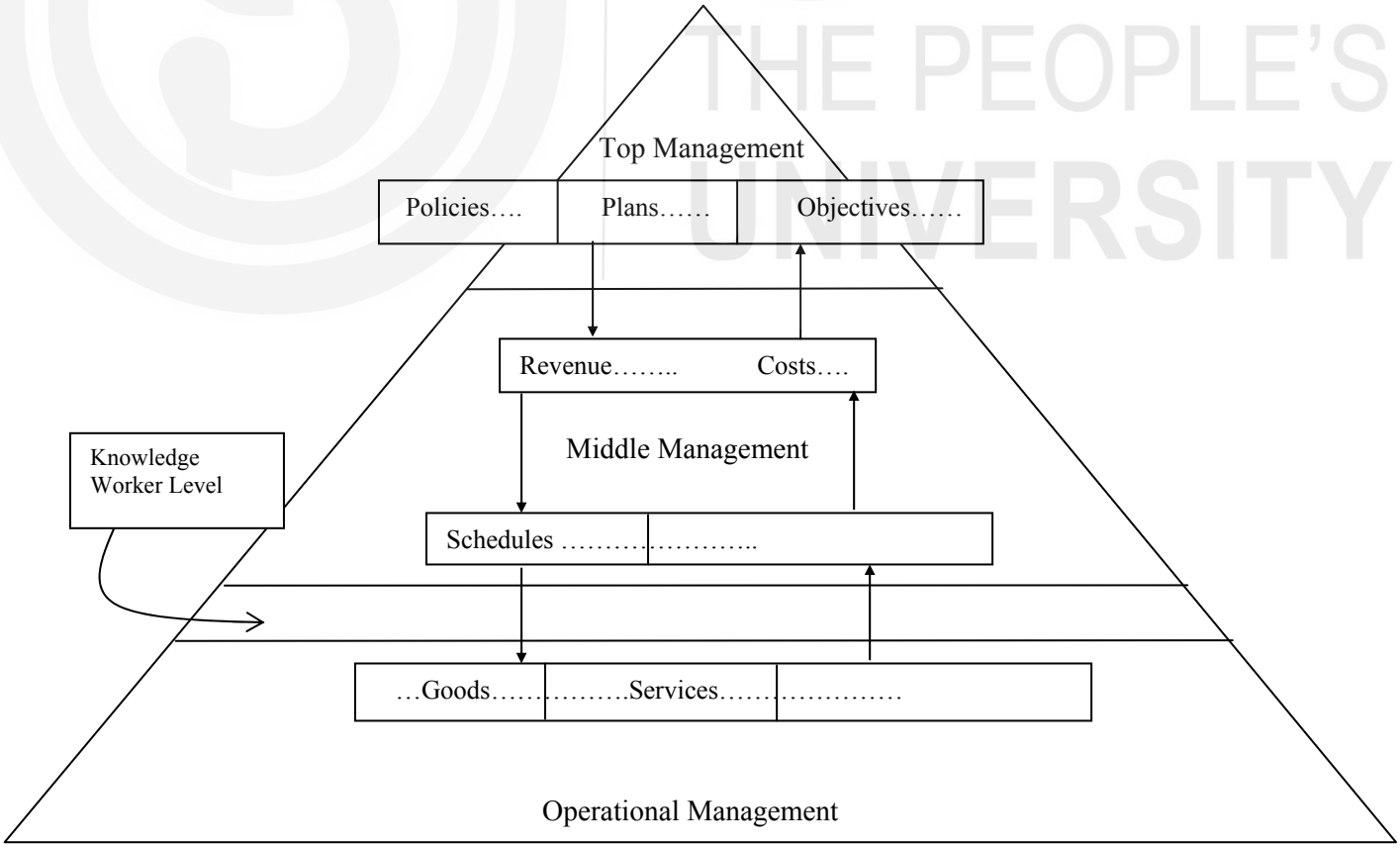

Figure 2: Management roles at various levels

2.3 BUSINESS FUNCTIONS AND PROCESSES

Business Functions

Business activities are grouped around functions such as production, finance and personnel, etc. resulting in department or an area of the business organisation. Each of these functional areas is interdependent and is part of the organisational system. A typical set of functions in a manufacturing organisation includes

1) Sales and marketing,
2) Manufacturing and production,
3) Finance and accounts,
4) Human Resource, and
5) Materials Management

Information Technology now is an integral part of all business functions. Some of the main activities for each functional area have been shown in the *Figure 3*.

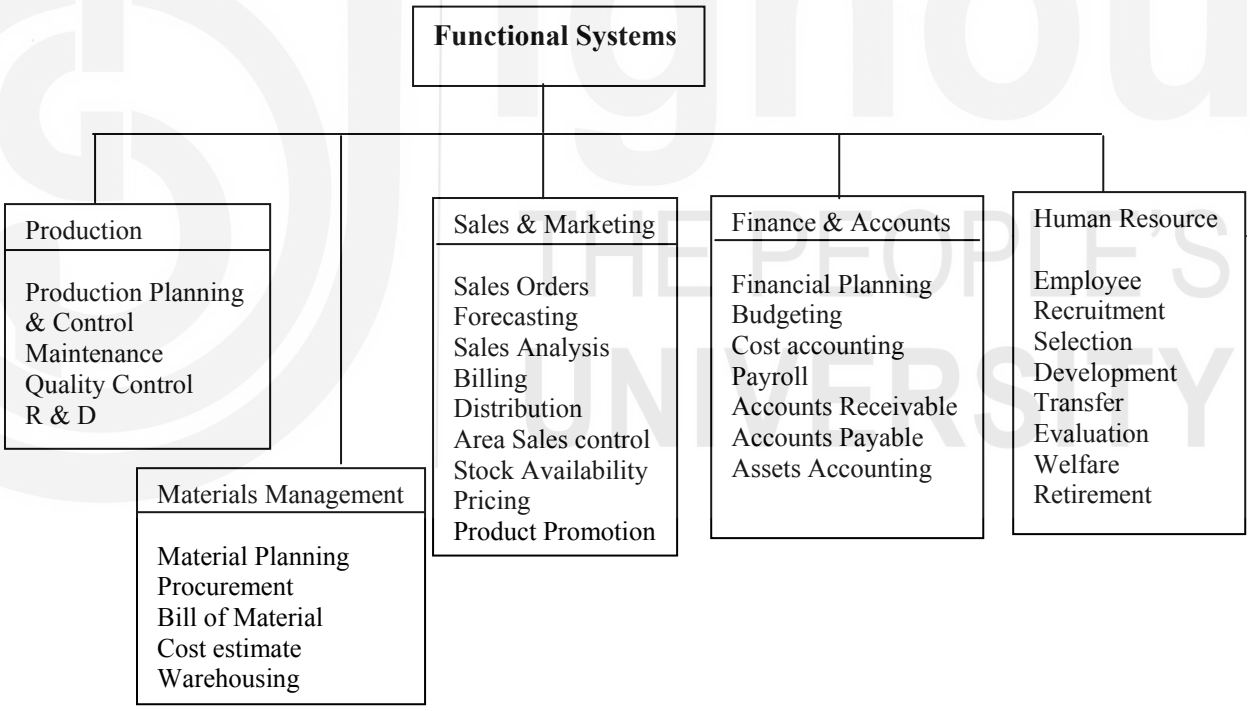

Figure 3: Main Activities of Functional Areas

2.3.1 Sales and Marketing

The sales and marketing function is responsible for selling the organisation's product or service. Marketing is concerned with identifying the customers for the firm's products or services, determining what they need or want, planning and developing products and services to meet their needs, and advertising and promoting these products and services. Sales is concerned with contacting customers, selling the products and services, taking orders, and following up on sales. Sales and marketing information systems are required to support these activities:

Table 1: Examples of Sales and Marketing Information Systems

System	Description	Organisational Level
Order processing	Enter, process, and track orders	Operational
Market analysis	Identify customers and markets using data on demographics, markets, consumer behavior, and trends	Knowledge
Pricing analysis	Determine prices for products and services	Management
Sales trend forecasting	Prepare 5-year sales forecasts Strategic	Strategic

Information systems are used in sales and marketing function in a number of ways as shown in *Table 1* above. At the strategic level, sales and marketing systems monitor trends affecting new products and sales opportunities, support planning for new products and services, and monitor the performance of competitors. At the management level, sales and marketing systems support market research, advertising and promotional campaigns, and pricing decisions. They analyze sales performance and the performance of the sales staff. Knowledge-level sales and marketing systems support marketing analysis workstations. At the operational level, sales and marketing systems assist in locating and contacting prospective customers, tracking sales, processing orders, and providing customer service support.

Figure 4 shows the output of a typical sales information system at the management level. The system consolidates data about each item sold (such as the product code, product description, and price) for further management analysis. Company managers examine these sales data to monitor sales activity and buying trends. The Window on Management describes some typical sales and marketing systems that might be found in a small business.

PRODUCT CODE	PRODUCT DESCRIPTION	SALES REGION	ACTUAL SALES	PLANNED	ACTUAL VS PLANNED
4469	Carpet Cleaner	Northeast	4.066.700	4.800.000	0.85
		South	3.778.112	3.750.000	1.01
		Midwest	4.867.001	4.600.000	1.06
		West	4.003.440	4.400.000	0.91
	TOTAL		16,715,253	17.550.000	0.95
5674	Room Freshener	Northeast	3.676.700	3.900.000	0.94
		South	5.608.112	4.700.000	1.19
		Midwest	4.711.001	4.200.000	1.12
		West	4.563.440	4.900.000	0.93
			18.559.253	17.700.000	1.05

Figure 4: Sales information system

The concept of marketing has undergone a sea change and today the traditional concept of marketing does not hold true. Whereas traditional practices of marketing start with production and consider marketing to be of use in selling and promotion to attain sales at a profit, modern marketing focuses its attention on customers / buyers. It gets profit through the creation of the buyer's satisfaction and further seeks to achieve it through an integrated, corporate wide set of marketing activities. These two views have been shown in *Figure 5*.

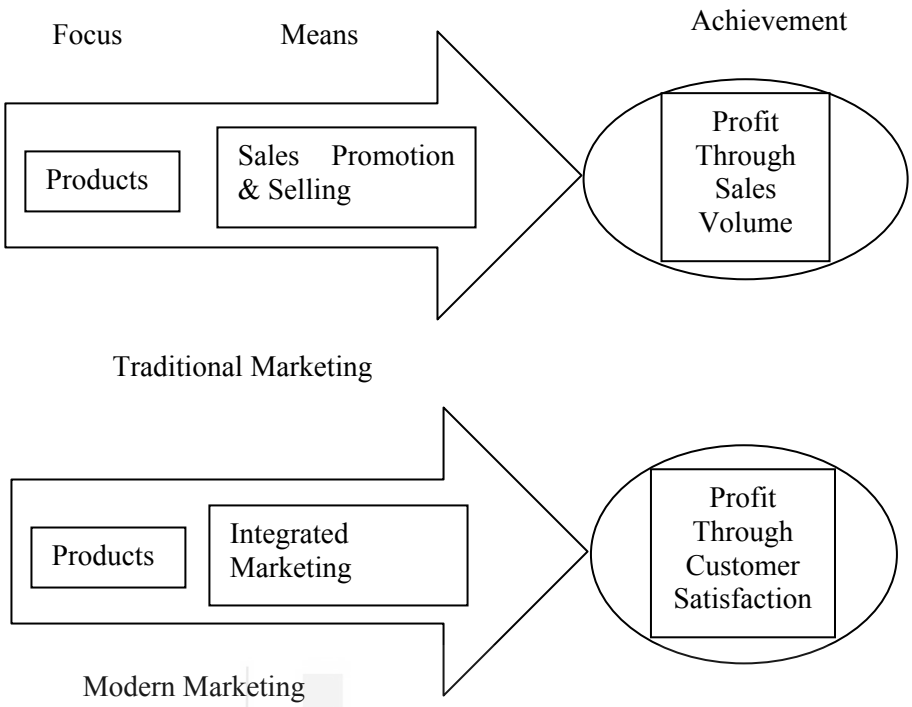

Figure 5: Traditional vs. modem marketing

Modern marketing does not remain confined to activities like advertising, selling and distribution but it also involves interaction of several other business activities with the objective of satisfying customers' needs and aspirations. The marketing activities start with exploring and understanding customers' need even before the product is produced, so that the product is designed keeping customers needs in mind. In case of traditional marketing, the product is produced and the product is pushed to the market with aggressive selling and promotional efforts.

Some of the important functions covered in the modern marketing processes as are:

Identification of the potential market: The potential market and customers are located with the target questions like:

- Where are the potential buyers located?
- When do they buy?
- How much they buy?
- How frequently they buy?
- What are the preferences of the customer for the intended product?

Identification of purchase motivation factors: Assessment is made regarding social, economic and psychological factors influencing purchases by the potential customers.

The distribution and transportation factors: are reviewed to optimization cost by integrating movement and warehousing.

Product design adjustment factors: Based on the preferred products in the market, product design is reviewed.

Communication factors: Advertising, personal selling, sales promotion, publicity and packaging are reviewed to enable most optimum communication to the customer.

Transaction functions: Order booking, invoicing, billing, credit realisation etc. are reviewed to make them more customer friendly.

Post-transaction factors: After sales service is given due attention to ensure repeated purchases by the customers.

The marketing information system, which can provide assistance / support to correct decision is very important for success of all above factors.

2.3.2 Manufacturing and Production

The manufacturing and production function is responsible for actually producing the firm's goods and services. Manufacturing and production systems deal with the planning, development, and maintenance of production facilities; the establishment of production goals; the acquisition, storage, and availability of production materials; and the scheduling of equipment, facilities, materials, and labour required to produce the finished products. Manufacturing and production information systems support these activities.

Table 2 shows some typical manufacturing and production information systems arranged by organisational level. Strategic-level manufacturing systems deal with the firm long-term manufacturing goals, such as where to locate new plants or whether to invest in new manufacturing technology. At the management level, manufacturing and production systems analyse and monitor manufacturing and production costs and resources. Knowledge manufacturing and production systems create and distribute design knowledge or expertise to drive the production process, and operational manufacturing and production systems deal with the status of production tasks.

Table 2: Examples of Manufacturing and Production Information Systems

System	Description	Organisational Level
Machine control	Control the actions of machines and equipment	Operational
Computer-aided design (CAD)	Design new products using the computer	Knowledge
Production planning	Decide when and how many products should be produced	Management
Facilities location	Decide where to locate new production facilities	Strategic

Quality Control, Environmental Control and Safety are the other factors, which are required to be controlled as part of present day Production Functions. More and more organisations are going in for International Standards (ISO 9000 for Quality, ISO14000 for Environment). These standards require control of raw material, equipment maintenance and performance in an integrated manner, which is possible only through good information system and analysis.

2.3.3 Finance and Accounts

The finance function is responsible for managing the firm's financial assets, such as cash, stocks, bonds, and other investments, in order to maximize the return on these financial assets. The finance function is also in charge of managing the capitalisation of the firm (finding new financial assets in stocks, bonds, or other forms of debt). In order to determine whether the firm is getting the best return on its investments, the finance function must obtain a considerable amount of information from sources external to the firm.

The accounting function is responsible for maintaining and managing the firm's financial records — receipts, disbursements, depreciation, payroll — to account for the flow of funds in a firm. Finance and accounting share related problems — how to keep track of a firm's financial assets and fund flows. They provide answers to questions such as: What is the current inventory of financial assets? What records exist for disbursements, receipts, payroll, and other fund flows?

Table 3: Examples of Finance and Accounting Information Systems

System	Description	Organisational Level
Accounts receivable	Track money owed the firm	Operational
Portfolio analysis	Design the firm's portfolio of investments	Knowledge
Budgeting	Prepare short-term budgets	Management
Profit planning	Plan long-term profits	Strategic

Table 3 shows some of the typical finance and accounting information systems found in large organisations. Strategic-level systems for the finance and accounting function establish long-term investment goals for the firm and provide long-range forecasts of the firm's financial performance. At the management level, information systems help managers oversee and control the firm's financial resources. Knowledge systems support finance and accounting by providing analytical tools and workstations for designing the right mix of investments to maximize returns for the firm. Operational systems in finance and accounting track the flow of funds in the firm through transactions such as paychecks, payments to vendors, securities reports, and receipts.

2.3.4 Human Resource

The human resources function is responsible for attracting, developing, and maintaining the firm's workforce. Human resources information systems support activities such as identifying potential employees, maintaining complete records on existing employees, and creating programs to develop employees' talents and skills.

Strategic-level human resources systems identify the support requirements (skills, educational level, types of positions, number of positions, and cost) for meeting the firm's long-term business plans. At the management level, human resources systems help managers monitor and analyse the recruitment, allocation, and compensation of employees. Knowledge systems for human resources support analysis activities related to job design, training, and the modelling of employee career paths and reporting relationships. Human resources operational systems track the recruitment and placement of the firm's employees (see *Table 4*).

Figure 6 illustrates a typical human resources record keeping. It maintains basic employee data, such as the employee's name, age, sex, marital status, address, educational background, salary, job title, date of hire, and date of Training. The system can produce a variety of reports, such as lists of newly hired employees, Areas in which employees have been trained etc. employees are classified by job type or educational level, or job performance evaluations. Such systems are typically designed to provide data that can satisfy income tax, Provident fund and other statutory requirements and record keeping requirements for Equal Employment Opportunity (EEO) and other purposes.

Table 4: Examples of Human Resources Information Systems

System	Description	Organisational Level
Staffing, Training and development	Track recruitment, employee training, skills, and performance appraisals	Operational
Career plan	Design career paths for employees	Knowledge
Compensation analysis	Monitor the range and distribution of employee wages, salaries, and benefits	Management
Human resources planning	Plan the long-term labour force needs of the organisation and succession planning	Strategic

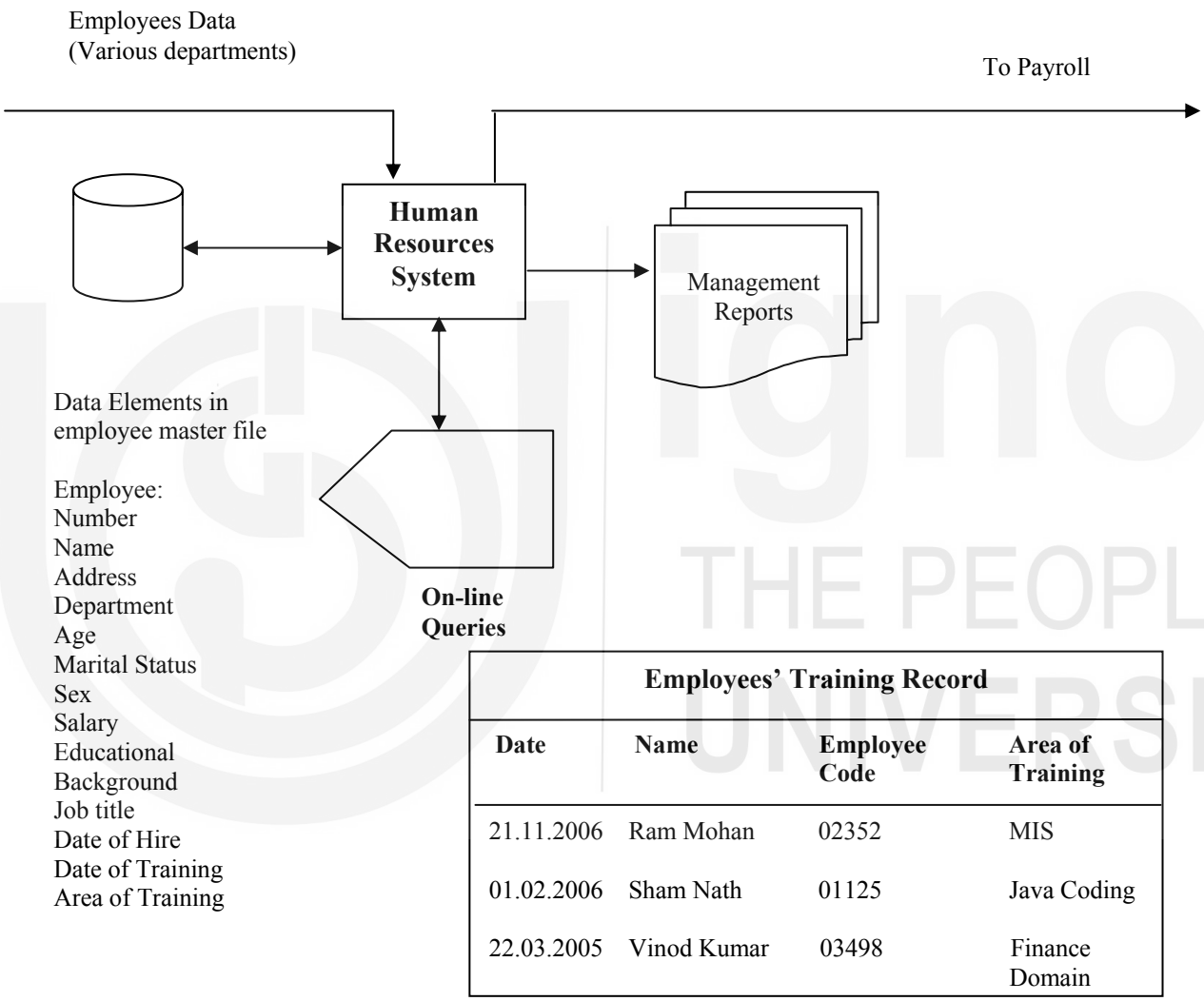

Figure 6: An employee record keeping system. This System Maintains Data on the Firm's Employees to Support the Human Resources Function

2.3.5 Materials Management

The materials management function is responsible for procurement of raw materials and other items like plant and equipment and spare parts etc. For typical manufacturing companies about 50-70 % of the total cost is on account of materials. Therefore, for continued successful operation of any organisation in the competitive environment, good materials management and information system is very important. Information system is required because materials management is more dependent on flow of information. Strategic level system for materials management identifies long

term sourcing of raw materials and other supplies. The management system provides for the selection of the vendors meeting the quality and cost requirements. Knowledge system provides the trends on supplies. The operation system keeps track of the supplies with the vendors as shown in *Table 5*.

Table 5: Examples of Materials Management Information Systems

System	Description	Organisational Level
Inventory system	Track receipt of materials with the vendors and stock position in store.	Operational
Trends	Design vendor evaluation and Inventory control system.	Knowledge
Vendors selection	Monitor the vendors performance and Inventory control for cost optimisation.	Management
Long term sourcing of materials	Plan long-term sources for raw materials, plant and equipment. Procurement policy review.	Strategic

Inventory system is essential for most of the manufacturing and production systems. As illustrated in *Figure 7*, data about each item in inventory, such as the number of units depleted because of a shipment or purchase or the number of units replenished by reordering or returns, are either scanned or keyed into the system. The inventory master file contains basic data about each item, including the unique identification code for each item, the description of the item, the number of units on hand, the number of units on order, and the reorder point (the number of units in inventory that triggers a decision to reorder to prevent a stock out). Companies can estimate the number of items to reorder or they can use a formula for calculating the least expensive quantity to reorder called the *economic order quantity*. The system produces reports such as the number of each item available in inventory, the number of units of each item to reorder, or items in inventory that must be replenished.

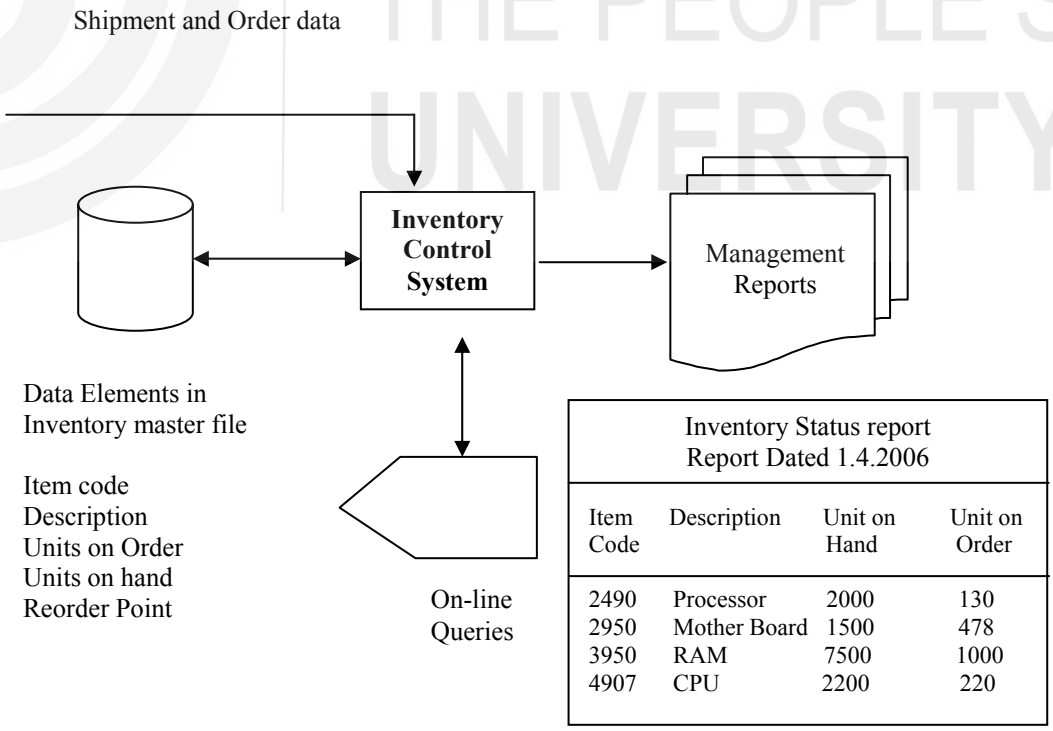

Figure 7: Overview of an inventory system. This System Provides Information about the Number of Items Available in Inventory to Support Manufacturing and Production Activities

Business Processes

A *Business Process* is best defined as any function within an organisation that enables the organisation to successfully deliver its products and services. A simple analogy would be to look at an organisation as a wheel and the individual Business Processes are the spokes to the wheel. Having just one or two spokes loose can make a wheel out-of-balance. The longer a wheel runs out of balance the more damaging the effect to the organisation. When the wheel on a cart becomes so unstable that its primary function fails, you would simply replace the wheel. Obviously, an organisation cannot simply replace itself... but your customer can and will replace the wheel (you the Supplier) if you fail to perform to the customers' needs and expectations. Obviously, this is a very simplistic and extreme analogy about the operation of an organisation. But, when you step back and look at the products and services you purchase yourself, it actually becomes a little more understandable. You wouldn't maintain a business relationship with a supplier if the suppliers' own internal Business Processes prevented the supplier from performing its best. You would probably go to another supplier.

A *Business processes* can be defined as a unique manner in which work is organised, coordinated, and focused to produce a valuable product or service. On the one hand, business processes are concrete workflows of material, information, and knowledge–sets of activities. On the other hand, business processes represent unique ways in which organisations coordinate work, information, and knowledge, and the ways in which management chooses to coordinate work. *Table 6* describes typical business processes for each of the functional areas.

Table 6: Functional Area and Business Processes

Sl. No.	Functional Area	Typical Business Process
1	Sales / Marketing	Identifying customers Familiarising customers with the product Selling the product
2	Manufacturing / Production	Assembling the product Quality checking Making bills of materials.
3	Finance / Accounts	Paying creditors Managing cash Creating financial statements
4	Human Resource	Hiring employees Working out compensation plan Employee performance evaluation.
5	Other types-Materials	Issuing tender enquiries Awarding purchase orders Carrying out inventory control

Although each of the major business functions has its own set of business processes, many other business processes are cross-functional, transcending the boundaries between sales, marketing, manufacturing, and research and development. These cross-functional processes cut across the traditional organisational structure, grouping employees from different functional specialties to complete a piece of work. For example, the order fulfilment process at many companies requires cooperation among the sales function (receiving the order, entering the order), the accounting function (credit checking and billing for the order), and the manufacturing function (assembling and shipping the order) as shown in *Figure 8*.

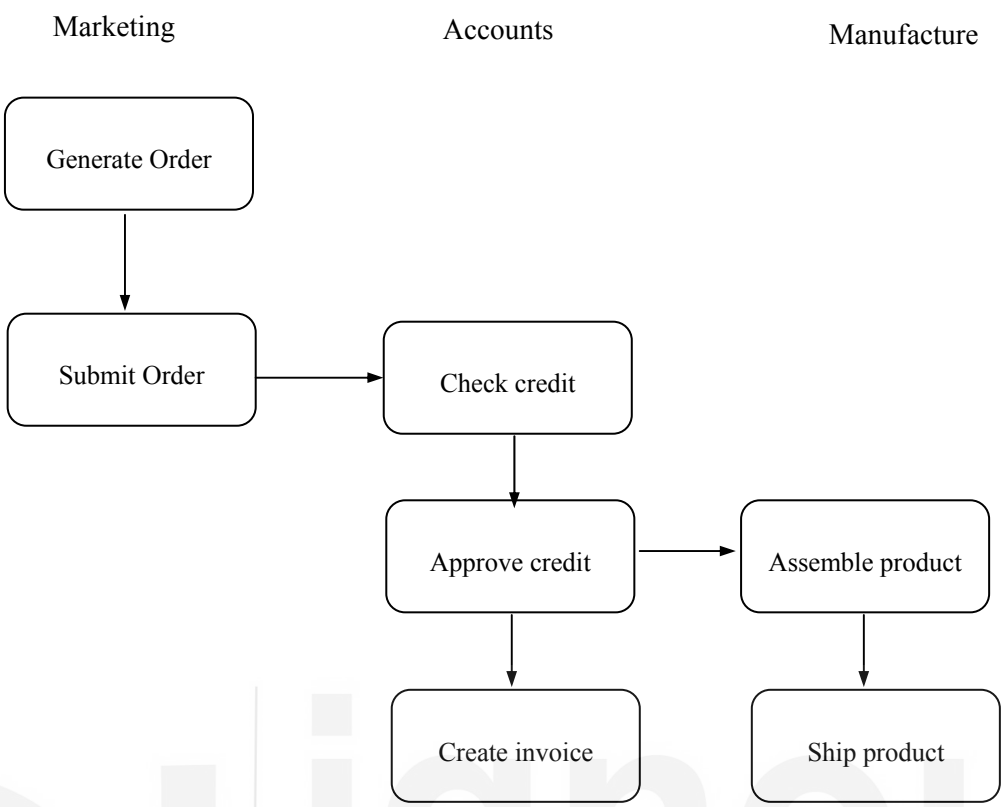

Figure 8: Cross functional business process

Organisational structure throughout the many diverse industries varies, but for the most part, all organisations perform similar Business Processes. Whether you are from a large or small corporation, government agency, or a non-profit association, to a large extent, you share common Business Processes with other industries. The Business Process of Human Resources for one industry can be very similar to another. In fact, the Human Resource Business Processes may even be a Critical Success Factor for some of the industries.

Today ready-made solutions for Common Business Processes are available, which require little bit of customisation for using in variety of organisations. Some of business processes for which such packages are available are given in the *Table 7*.

Table 7: Common Business Processes

Activity based costing	Employee - benefits	Inventory management	Project management
Accounting	Employee - communication	Internship	Public relations
Acquisitions	Employee - compensation	ISO	Purchasing
Assembly	Employee - development	Knowledge management	Quality
Asset management	Employee – evaluation	Leadership	Quality assurance
Balanced scorecard	Employee - incentive programs	Logistics	Quality improvement
Benchmarking	Employee – recognition	Loss management	Records management
Billing budget	Employee- recruiting	Maintenance management	Recycling
Calibration	Employee - retention / turnover	Manufacturing	Reengineering
Call centres	Employee - satisfaction	Marketing	Refurbishing

Charity	Employee - suggestions	Material management	Regulations
Complaint handling	Employee - training	Mentoring	Repair
Configuration management	Engineering	Mergers	Reliability
Contracting	Environment	Operations	Research & development
Cost controls	External communications	Order fulfilment	Restoration
Cost measuring	Facility management	Order processing	Risk management
Creativity	Failure analysis	Outsourcing	Sales
Credit management	Failure measuring	Payroll	Security
Customer - requirements	Failure monitoring	Performance improvement	Self directed teams
Customer - satisfaction	Finance	Performance measurement	Service
Customer – service	Fleet management	Planning	Service delivery
Customer - training	Franchising	Policy	Stewardship
Debt collection	Freight	Process improvement	Staffing
Delivery	Health & safety	Process management	Strategic planning
Direct mail	Help desks	Procurement	Supplier management
Disaster recovery	Human resources	Product delivery	Telecommuting
Distribution	Information management	Product design	Testing
Document control	Information systems & technology	Product development	Vendor relations
Donating	Innovation	Product management	Volunteering
Emergency preparation	Inspection	Waste management	Warehousing
Employee - attendance	Internal communications	Workforce diversity	Warranty

Check Your Progress 1

1) Answer the following:

i) Which are the basic functions of the management and what are the levels of the management? At what level of the management following are decided?

a) Selling of the products to the specific customers.
b) What markets or businesses the company should be in at present?
c) What should be the overall production plan?

ii) What are the significant differences between conventional marketing and modern marketing?

iii) What are business processes? Identify a business process for each functional area.

2) Mark the correct answer.

a) Deciding where to locate new production facilities is an example of a manufacturing and production information system operating at the:

i) operational level. ☐
ii) management level. ☐
iii) knowledge level. ☐
iv) strategic level. ☐

b) Preparing short-term budgets is an example of a finance and accounting information system operating at the:

i) operational level. ☐
ii) management level. ☐
iii) knowledge level. ☐
iv) strategic level. ☐

c) Tracking employee training, skills, and performance appraisals is an example of a human resource information system operating at the:

i) operational level. ☐
ii) management level. ☐
iii) knowledge level. ☐
iv) strategic level. ☐

d) Assembling a product, identifying customers and hiring employees are:

i) transactions. ☐
ii) phases. ☐
iii) business processes. ☐
iv) business functions. ☐

2.4 INFORMATION SYSTEMS REQUIREMENTS

At the turn of the nineteenth century industrial revolution took place. This Industrial Age focused on the role of the *Management*. At present with the rapid development of the Information Technology, a new industrial revolution is in the making, similar to the one that took place at the turn of the nineteenth century. The world is advancing from the *Industrial Age* to the knowledge age. The new challenge to the management which surrounds us requires profound change; profound change in the way we consider the organisations; may be those are part of the Government or civil administration or business enterprise, the way we develop our businesses, the way we manage, and the structures within which we manage.

Productivity and efficiency of business to reduce cost of products and services, and to use technology to continually innovate is nothing new except that the competition is much more fierce than ever before. Globalisation of the marketplace, and means of accessing the same, through national and global information superhighways have given a new dimension to the concept of information. Information and knowledge are critical to mange change, which is the salient feature of the Information Age. Businesses do not have sufficient time to consolidate as there are continuous changes to be handled due to changes in technology, raw materials, customer needs, legislation, rule and regulations.

Information Age is thus knowledge-based. This challenge of providing rapid changing information and thus knowledge base requires a system. As we see thus this Information Age requires focus on *Management* and the *Information Systems,* therefore, we will focus on how the information system needs of the management can be fulfilled.

Information

Information is a necessary and vital input for the Management. Any Management decision-making has to be based on information. Information need to be TRUE. Making use of its acronym we may say information must be Timely, Reliable, Useful, and Explicit.

Timely: It should reach the recipient *in time* and *up-to-date*. For effective decision making information must reach the decision maker at the right time so that he can take the desired action. The delayed information at times can even lead to loss of purpose itself or in substantial loss.

Reliable: Any information can be reliable only if it is *factual, accurate* and *complete.*

Useful: *Relevance* and *adequacy* of the information for the need for which it is required makes it useful to purpose.

Explicit: Quality information is said to be explicit if it does not require further analysis by the recipient for decision-making.

In other words information can be defined as processed data.

Figure 9: Information processed data

System

In our everyday life, the word 'system' is used quite often. We talk about an educational system, computer system, organisational system, political system, solar system, railway system etc. On analysis we will find we use the word system to mean a collection of elements integrated to achieve a common definable goal. For illustration, a business organisation can be considered as a system, in which the parts (departments, sections and units etc.) are joined together for a common goal. An information system can be a set of collection of elements starting from collection of data, its processing and presentation for achieving a defined or set goal.

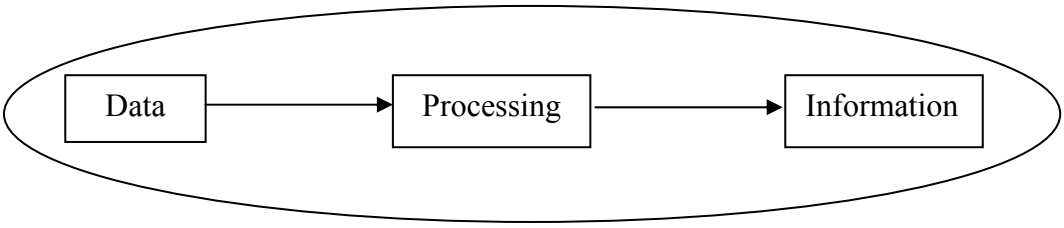

Figure 10: Information system

In business, information systems support business processes and operations, decision-making, and competitive strategies.