- Bharat Sanchar Nigam Limited (BSNL)
- Bharat Petroleum Corporation Limited (BPCL)
- Hindustan Petroleum Corporation Limited (HPCL)
- Gas Authority of India Limited (GAIL)
- Mangalore Refineries and Petrochemicals Limited (MRPL)

HINDUSTAN ANTIBIOTICS LIMITED (HAL)

HAL is the first public sector undertaking in the Drugs & Pharmaceutical Sector. HAL was setup in cooperation with the WHO and UNICEF with the social objective of providing affordable drugs through out India. The plant was commissioned in 1955-56. The undertaking with its plant at Pimpri, Pune is engaged in the manufacture of bulk drugs, mainly Penicillins, Streptomycin and a number of formulations. HAL has also four joint sector undertakings of which three units have been promoted in collaboration with the respective State Governments and one with a private sector company. These are:

1. Maharashtra Antibiotics & Pharmaceuticals Limited (MAPL)
2. Karnataka Antibiotics & Pharmaceuticals Limited (KAPL)
3. Manipur State Drugs & Pharmaceuticals Limited (MSDPL)
4. Hindustan MAX-GB, Pimpri,Pune (HM-GB)

INDIAN DRUGS AND PHARMACEUTICALS LIMITED

IDPL is the largest Central Pharma Public Sector Undertaking in India with plants at Rishikesh, Gurgaon, Chennai, Hyderabad and Muzaffarpur. The IDPL was incorporated in 1961 with main objectives of creating self-sufficiency in respect of essential life saving medicines, to free the country from dependence on imports and to provide medicines to the millions at affordable prices and not to make millions from the medicines. IDPL was basically conceived and established as a part of Healthcare Infrastructure and has played a pioneering infra-structural role in the growth of Indian Drug Industry base.

IDPL played a major role in the strategic National Health Programmes like Family Welfare Programme & Population Control (Mala-D & Mala-N) anti-malarials (Chloroquine) and prevention of dehydration (ORS) by providing quality medicines. During the country's calamity of outbreak of Plague in 1994, IDPL was the only company which played the sheet anchor role in supplying Tetracycline for the entire Nation. Similarly, company had made uninterrupted supply of Chloroquine to combat.

The definition given by E.S.Buffa is simple, clear and exhaustive. It explains the following important aspects of production management.

(a) It is a decision-making managerial function;

(b) The decisions are made regarding the production processes required for converting the raw materials into finished products, and

(c) The production or output should be according to specifications, in the specified quantities, as per the schedule and at minimum cost.

A production system takes inputs and converts them into outputs. The conversion process is the predominant activity of a production system. The primary concern of an operations manager is the activities of the conversion process. Operations Management concerns itself with the conversion of inputs into outputs, using physical resources, so as to provide the desired utility (utilities) of form, place, possession or state or a combination thereof – to the customer while meeting the other organizational objectives of effectiveness, efficiency and adaptability. It distinguishes itself from the other functions such as personnel, marketing etc. by its primary concern for "conversion by using physical resources."

Production and Operations

These days therefore both manufacturing and service organizations fall into the scope of production management. Thus production management which was formerly considered as manufacturing management only, now after inclusion of services into its scope, is broadly known as operations management. Many non-manufacturing organizations providing services like hospitals, banks, transportation, farming, warehousing etc. are now covered by operations management.

Operations in the services organizations have some unique features, different from those which has manufacturing base. These are:

(1) Non-inventorial output of service, since generally no stock is produced.

(2) Variable demand.

(3) Labour-intensive operations mostly.

(4) Location of service is dictated by the location of the users.

Operations managers are responsible for producing the supply of goods or services in organizations. Operations managers make decisions regarding the operations function and the transformation systems used. Operations management is the study of decision making in the operations function.

GOALS OF PRODUCTION MANAGEMENT

Production involves the things which are essential for the manufacture of products. The objective of Production Management is to produce the desired product or specified product by specified methods so that the optimal utilization of available resources is met

Manufacturing, the company's products should have a specification closer to the customer needs than those made by any competitor, they should reach the customer error free, get delivered in a lead time faster than any other competitor, and should always be delivered at the promised due dates.

Products and service organisation are similar to each other in many ways. Manufacturing organizations not only produce goods but also provide after sales service, warranty service etc. Similarly, service organizations produce products e.g., insurance companies talk of designing new insurance schemes. Both manufacturing and service involve a transformation process in their production process, which converts various inputs into desired output, i.e., goods and services.

A modern operations manager has to focus on performance, cost minimization, delivery reliability and product quality in order to focus on customer satisfaction. Today's manufacturing operations face the daunting challenge of producing higher and higher volumes with increasing product mix, while simultaneously improving throughput, quality, compliance, and overall efficiency. Complex plans, schedules, processes, procedures and work instructions must all be executed while compliance with standards and customer requirements is demonstrated. The overall complexity of manufacturing operations management information is further increased by frequent changeovers, and the reduced proportion of manufacturing time spent in steady state operations.

2.9 NEW PRODUCT DEVELOPMENT PROCESS

In business and engineering, new product development (NPD) is the term used to describe the complete process of bringing a new product or service to market. There are two parallel paths involved in the NPD process: one involves the idea generation, product design, and detail engineering; the other involves market research and marketing analysis. Companies typically see new product development as the first stage in generating and commercializing new products within the overall strategic process of product life cycle management used to maintain or grow their market share.

The NPD process focuses on how a development project is to be structured, managed, controlled and organised. The *design process* can be viewed in the context of the NPD process as the sequence of design activities and decisions to progress from idea to detailed solution. The design process is essentially iterative and involves the definition of the problem, gathering and codification of relevant information, a divergent search for solutions, convergence on the preferred solution and detailed implementation and optimisation. It has a narrower scope than the NPD process and is not concerned with management and control issues. For practical purposes, most organisations make no distinction between the NPD process and the design process.

c) Gaining acceptance of the change by the workers involved and their representatives

d) Restrain the workers to operate the new methods

e) Maintaining close contact with the progress of the job until satisfied that it is running as intended.

Step 6: Maintain: To be maintained, a method must first be defined clearly. Ensure that the new installed method is functioning well in its specified form. Proper control procedures are to be used to ensure that operators are not slipping back into old methods, or introducing elements not allowed for unless there is a valid reason. There should be periodic checks and verification at regular intervals to see that the new method is practised to achieve the desired objectives.

3.3 CONCEPT OF QUALITY

Introduction

Nowadays, we are all victims of quality failures daily, such as late trains and aero planes, leaking car-door seals and prematurely expiring light bulbs. The consumer is invariably the loser as the real costs of a quality failure may be much more than the value of the defective good or service. Customers are becoming increasingly intolerant of poor service, late deliveries, unreliable goods, shoddy workmanship and the like. They are exerting control over the suppliers by preferring to buy from alternative sources. For example, the US customers for automobiles showed sharp preference for Japanese cars in the US Automobile market. The reputation of Japanese car manufacturers for the reliability and 'value for money' for their cars posed a serious threat to their western competitors.

Evolution of Quality Management

In the early 1900s, F.W. Taylor, the 'Father of Scientific Management', emphasized on quality by including product inspection and gauging in his list of fundamental areas of manufacturing management. G.S. Radford's contributions were notions of involving quality consideration early in the product design stage and linking together high quality, increased productivity and lower costs. In 1924, W.Shewhart introduced statistical control charts to monitor production. Around 1930, H.F.Dodge and H.G.Romig introduced tables for acceptance sampling. World War II caused a dramatic increase in emphasis on quality control. Soon after, US Universities started training engineers in the use of statistical sampling techniques and professional quality organizations such as American Society for Quality Control started emerging in the US. During the 1950s, the quality movement evolved into quality assurance. W.Edward Deming introduced Statistical Quality control (SQC) methods to Japanese manufacturers to help them to rebuild their manufacturing base and to enable them to compete in the world markets.