

# Production/Operations Management

By: Nirman Kaur

This reference book can be useful for  
BBA, MBA, B.Com, BMS, M.Com, BCA, MCA  
and many more courses for Various Universities



**NEERAJ**  
**PUBLICATIONS**  
**[www.neerajbooks.com](http://www.neerajbooks.com)**

Published by:



## **NEERAJ PUBLICATIONS**

*(Publishers of Educational Books)*

Sales Office : 1507, 1st Floor,

Nai Sarak, Delhi-110 006

E-mail: [info@neerajbooks.com](mailto:info@neerajbooks.com)

Website: [www.neerajbooks.com](http://www.neerajbooks.com)

**© Reserved with the Publishers only.**

Typesetting by: Competent Computers

### Terms & Conditions for Buying E-Book

- The User must Read & Accept the Terms and Conditions (T&C) carefully before clicking on the accept option for Buying the Online Soft Copy of E-books. Under this Particular Facility you may buy only the Online Soft Copy of E-books, no Hard Copy or Printed Copy shall be provided under this facility.
- These E-Books are valid for 365 days online reading only (From the Date of Purchase) and no kind of Downloading, Printing, Copying, etc. are allowed in this facility as these products are just for Online Reading in your Mobile / Tablet / Computers.
- All the online soft copy E-books given in this website shall contain a diffused watermark on nearly every page to protect the material from being pirated / copy / misused, etc.
- This is a Chargeable Facility / Provision to Buy the Online Soft Copy of E-books available online through our Website Which a Subscriber / Buyer may Read Online on his or her Mobile / Tablet / Computer. The E-books content and their answer given in these Soft Copy provides you just the approximate pattern of the actual Answer. However, the actual Content / Study Material / Assignments / Question Papers might somewhat vary in its contents, distribution of marks and their level of difficulty.
- These E-Books are prepared by the author for the help, guidance and reference of the student to get an idea of how he/she can study easily in a short time duration. Content matter & Sample answers given in this E-Book may be Seen as the Guide/Reference Material only. Neither the publisher nor the author or seller will be responsible for any damage or loss due to any mistake, error or discrepancy as we do not claim the Accuracy of these solution / Answers. Any Omission or Error is highly regretted though every care has been taken while preparing these E-Books. Any mistake, error or discrepancy noted may be brought to the publishers notice which shall be taken care of in the next edition. Please consult your Teacher/Tutor or refer to the prescribed & recommended study material of the university / board / institute / Govt. of India Publication or notification if you have any doubts or confusions before you appear in the exam or Prepare your Assignments before submitting to the University/Board/Institute.
- Publisher / Study Badshah / shall remain the custodian of the Contents right / Copy Right of the Content of these reference E-books given / being offered at the website [www.studybadshah.com](http://www.studybadshah.com).
- The User agrees Not to reproduce, duplicate, copy, sell, resell or exploit for any commercial purposes, any portion of these Services / Facilities, use of the Service / Facility, or access to the Service / Facility.
- The Price of these E-books may be Revised / Changed without any Prior Notice.
- The time duration of providing this online reading facility of 365 days may be alter or change by [studybadshah.com](http://studybadshah.com) without any Prior Notice.
- The Right to accept the order or reject the order of any E-books made by any customer is reserved with [www.studybadshah.com](http://www.studybadshah.com) only.
- All material prewritten or custom written is intended for the sole purpose of research and exemplary purposes only. We encourage you to use our material as a research and study aid only. Plagiarism is a crime, and we condone such behaviour. Please use our material responsibly.
- In any Dispute What so ever Maximum Anyone can Claim is the Cost of a particular E-book which he had paid to Study Badshah company / website.
- If In case any Reader/Student has paid for any E-Book and is unable to Access the same at our Website for Online Reading Due to any Technical Error/ Web Admin Issue / Server Blockage at our Website [www.studybadshah.com](http://www.studybadshah.com) then He will be send a New Link for that Particular E-Book to Access the same and if Still the Issue is Not Resolved Because of Technical Error/ Web Admin Issue / Server Blockage at our website then His Amount for that Particular Purchase will be refunded by our website via PayTM.
- All the Terms, Matters & Disputes are Subjected to "Delhi" Jurisdiction Only.

# CONTENTS

<b>S.No.</b>	<b>Page</b>
1. Production and Operations Management: An Overview .....	1
2. Production System: Issues and Environment .....	8
3. Total Quality Management (TQM) .....	18
4. Need and Importance of Forecasting .....	34
5. Qualitative Methods of Forecasting .....	43
6. Quantitative Methods of Forecasting .....	58
7. Capacity Planning .....	72
8. Facilities Planning .....	78
9. Work Systems Design .....	86
10. Management Information for Production System .....	94
11. Aggregate Production Planning .....	110
12. Just-In-Time (JIT) .....	117
13. Scheduling and Sequencing .....	132
14. Issues in Materials Management .....	144
15. Independent Demand Inventory Systems .....	156
16. Dependent Demand Inventory Systems .....	166
17. Total Productive Maintenance (TPM) .....	177
18. Advanced Manufacturing Systems .....	188
19. Computer in Operations Management .....	197

# **Sample Preview of The Chapter**

*Published by:*



**NEERAJ  
PUBLICATIONS**

[www.neerajbooks.com](http://www.neerajbooks.com)

---

# PRODUCTION AND OPERATIONS MANAGEMENT

---

*ISSUES IN PRODUCTION AND OPERATIONS MANAGEMENT*

## Production and Operations Management: An Overview



### INTRODUCTION

In today's technological era companies are competing in a very difficult environment as compared to few years ago. To survive, organizations have to focus on quality, competition, efficiency and customer relationships. This focus has placed the production and operations management in the main attention of any business. Every business is managed through three main functions: finance, marketing and operations. The production and operations management is a management function that plans, organizes, coordinates and controls the resources required to produce goods and services. The main role of operations management is to transform a set of input resources into the finished goods or services.

### CHAPTER AT A GLANCE

#### SCOPE AND SIGNIFICANCE

Generally, the term production refers to factories, machinery and equipments. But the field production management has expanded in scope to cover management of non-manufacturing activities like banking, hotel management, transportation, education etc. Due to this scope it is termed as production and operations management or simply operations management. Production and operations management

deals with design, operation and improvement of the systems that deliver a firm's products and services. Operations management focuses on managing the processes to produce and distribute products and services. It is related to all the activities like managing purchases, inventory control, quality control, storage, logistics and evaluation.

#### SYSTEMATIC VIEW OF OPERATIONS

There has been a great turn around in the development of operations management. The manufacturing facilities of producing concrete goods had been eliminated from the customer. This influences the customers unfavourably. The main focus of operations management is to converting raw materials into finished goods and services and delivering it to customers. It delivers the outcomes that are specified within the organization's overall strategy. The input resources primarily enhance value to raw materials and provide outputs to the customer. The conversion process gives importance to raw materials by transforming its shape, size or weight and transformation process results in form, location or time.

#### FACTORS OF PRODUCTION

In economics, there are four factors of production; namely land, labour, capital and entrepreneurship. Each factor plays a unique role in the production of goods.

2 / NEERAJ : PRODUCTION AND OPERATIONS MANAGEMENT

The industrial managers are engaged in effective and efficient utilization of various resources like men, money, machines, materials, methods, management, measurement, message and energy. Except men and money, rest all the resources are knowledge-based and technology-oriented.

**PRODUCTIVE USE OF RESOURCES**

Most people are “green” to the extent that they feel resources should be used wisely. Unfortunately, it is at that point that things become subjective. My definition of wise use of resources may differ from yours. It can depend on differences in our time preference (over what period of time); it can relate to our differing prioritization of wants (want vs. need); and it can depend on our perceived opportunity cost (what do we each give up) compounded by externalities (do we bear all the cost and/or receive all the benefits).

This piece in *The Economist* was interesting because, while it discussed the use of resources that many of us would feel are unproductive, it pointed out that there are benefits to (re)using the resources, as well as costs. I think it offers a good conversation starter or caper when discussing resource use and the constraints people face when applying resources to wants

**ENVIRONMENTAL CONCERNS OF OPERATIONS**

UNHCR recognizes three main phases of assistance to refugees – “emergency”, “care and maintenance” and “durable solutions” – each of which requires specific attention. Environmental pressures too will differ between these stages, as well as from one situation to another. At each stage, however, consideration should be given to the basic principles outlined in UNHCR’s Environmental Guidelines.

**Emergency in the Making**

UNHCR and other relief organizations must be able to respond to emergencies whenever and wherever they arise. Sometimes these events may be predicted, for example, following increased political tensions in a particular country. Even then, however, no one can foresee what the response of people will be to these problems – the number of people involved, the direction in which they might flee for safety, or what the resulting impact on local settlements and the environment is likely to be.

The emergency phase is the most critical period for UNHCR operations and its field staff must be prepared for any eventuality. It is also probably the most critical time for environmental impacts, since the needs of homeless people must be given priority. Actions taken during this time to minimise impacts on the environment will have great importance for later phases of operations, and may have considerable bearing on the welfare of affected people.

Some environmental damage is unavoidable during the emergency phase, particularly where large numbers of people are involved. Roads may need to be constructed to reach inaccessible sites. Camp sites and shelters must be established to safely house and accommodate swelling numbers of refugees. Particular features which must be taken into account whenever refugees are gathered together include the availability of safe drinking water, avoiding areas of endemic disease, and areas at risk from flooding or landslides.

This, however, is also the time when maximum effort must be made to keep refugees away from ecologically sensitive sites such as national parks, World Heritage Sites (which can be of cultural and/or environmental importance), fragile ecological zones such as water catchment areas, and sites of local cultural and religious importance.

By confining the impact of refugees to a restricted area and protecting the environment to the greatest extent possible during emergency situations, UNHCR and other organizations will be better positioned to control and minimise the potentially damaging impacts of large gatherings of people on the environment.

Measures taken need not be complex or expensive. Painting marks on trees that refugees might cut is a simple way of demonstrating which trees they may cut and those which should remain standing. As long as refugees are clearly told which is which, and with limited controls, this can be an effective means of environmental protection and can avoid costly rehabilitation in later stages.

**SOCIAL CONCERNS OF OPERATIONS**

Operations management is increasing rapidly globally. New technologies have been provided a large number of products and services which are being available at reasonable prices. Due to which, the normal life of people has become more comfortable and enjoyable. This development has given rise to industrialization. Due to industrialization the agricultural related industries are reducing and moving increasingly to urbanization.

**OPERATIONS MANAGEMENT IS MULTIDISCIPLINARY**

Operations management is a multi-disciplinary field that focuses on managing all aspects of an organization’s operations. “The typical organization consists of the integration of many different functions,” wrote Howard J. Weiss and Mark E. Gershon in *Production and Operations Management*. “The two most obvious functions are to provide the product or service and to sell the product or service. Operations management focuses on the function of providing the product or service. It is concerned with the planning and controlling of all activities necessary for the provision of the firm’s

product or service.” Aspects of operations management, then, include products or services to emphasize; facility size and location with respect to customers and suppliers; marketing strategies to attract clients/ customers; techniques and equipment to use to make the goods or to provide the services; work force management and training; and measurements of quality assurance. Operations managers apply ideas and technologies to increase productivity and reduce costs, improve flexibility to meet rapidly changing customer needs, enhance product quality, and improve customer service.

**WHITHER OPERATIONS MANAGER IN INDIA**

While there is an urgent requirement to make over operations management by recruiting and positioning multilevel fresher, but eventually it is not encouraging. There is affluence of technical specialties or graduates. Most of the operation facilities are located away from the residential area. Due to which the working hours, commuting time and distances are longer. Thus the operations managers are much in demand but there is a higher premium on distinct and separate factors. This causes an urgent need to change in favour of qualified engineers with professional degree. The operations manager’s role is an internally focused role which is primarily concerned with maintaining day-to-day public and administrative functions of the organizations. He is a very visible, powerful and highly respected position. An operations manager must be a qualified engineer with MBA degree or a postgraduate qualification in management. In the current global scenario there are two models available – Japanese model and USA model. Japanese model have innovated various management

systems that support in all functional areas. The USA model strengthens the marketing-oriented approach.

**SELF-ASSESSMENT QUESTIONS**

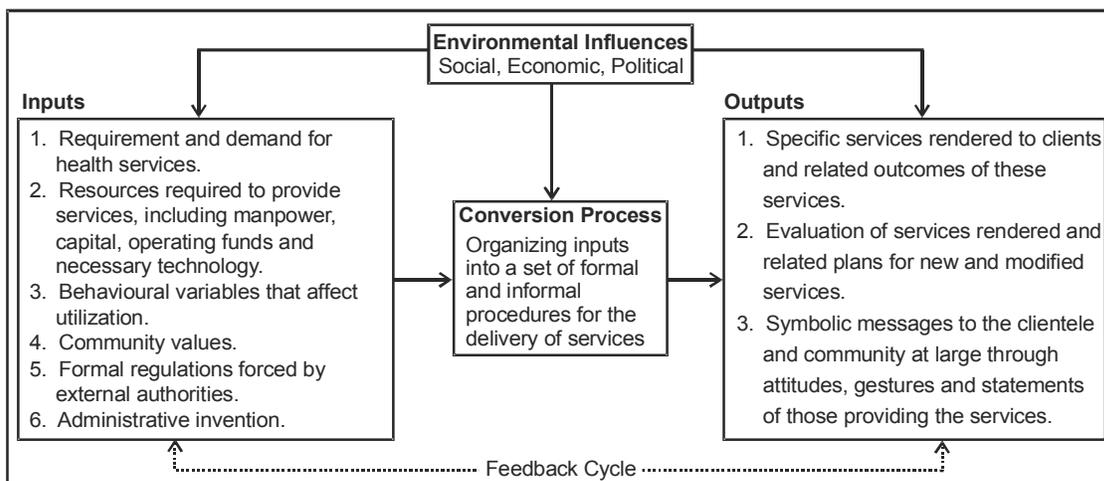
**Q. 1. Why have we changed the name from production to operations management?**

**Ans.** Over the year’s operations and production management has been recognized as an important factor in a country’s economic growth. The traditional view of manufacturing management began in 18th century. Adam Smith recommended breaking of jobs down into subtasks and recognizes workers to specialized tasks in which they become highly skilled and efficient. In the early twentieth century F.W. Taylor implanted this theory and developed scientific management. Since then, various techniques were developed prevailing the traditional view.

Production management becomes the more acceptable term. As F.W. Taylor’s works become more widely known, managers developed techniques that focused on economic efficiency in manufacturing. At the same time, psychologists, socialists and other social scientists began to study people and human behaviour in the working environment. This emerges two distinct changes. One of them was reflected in the new name operations management. It was a move in the service and manufacturing sectors of the economy. The change from production to operations emphasized the broadening of field to service organizations. The second change was the prominence on the combination of production and manufacturing rather than just analysis in management practices.

**Q. 2. Take any service organization and draw up a schematic of its overall process of inputs and outputs.**

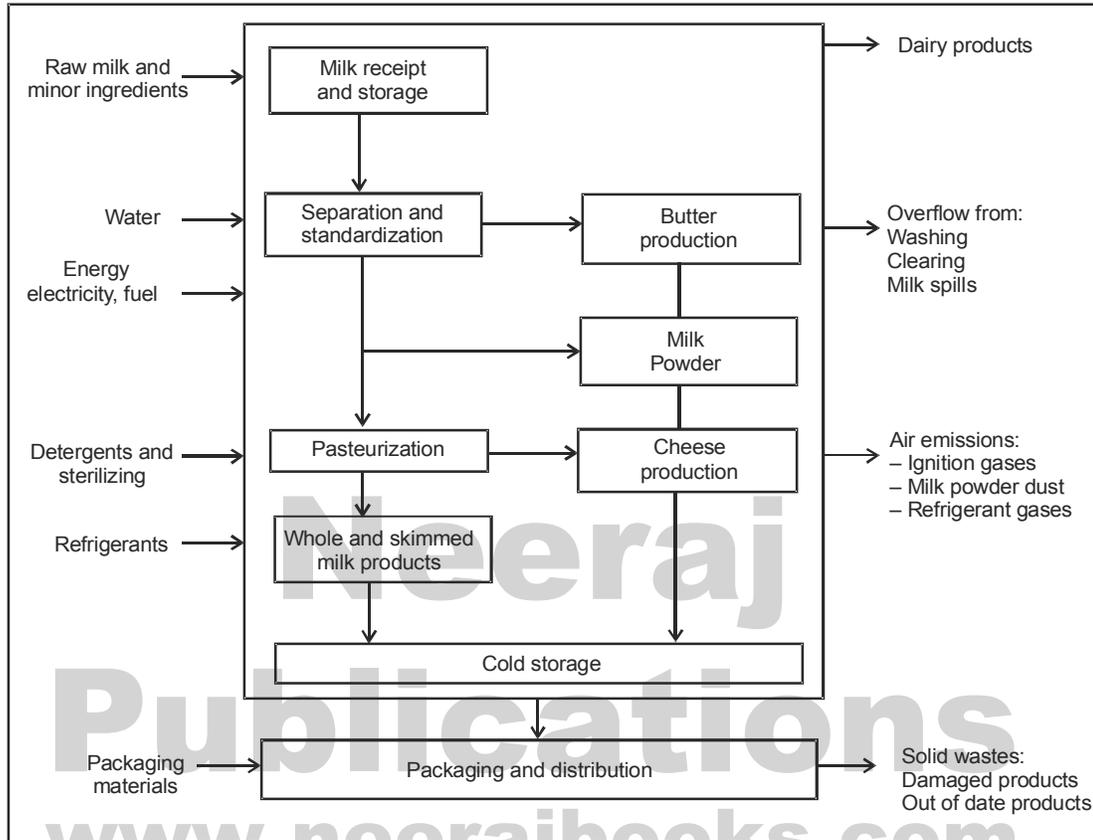
**Ans.** Following is a schematic view of a healthcare organization’s overall process of inputs and outputs:



4 / NEERAJ : PRODUCTION AND OPERATIONS MANAGEMENT

**Q. 3. Take a typical agriculture, poultry or dairy farm, draw up their schematics of the overall process. What are the common features?**

**Ans.** Following is a schematic view of the overall process of a dairy farm. It includes resource inputs and waste outputs:



**Schematic View of an Agricultural System**

