Chapter 1 – Introduction to Operations Management

After completing this chapter, you should be able to:

1. Define the term *operations management*.
2. Identify the three major functional areas of organizations and describe how they interrelate.
3. Identify similarities and differences between production and service operations.
4. Describe the operations function and the nature of the operations manager's job.
5. Summarize the two major aspects of process management.
6. Explain the key aspects of operations management decision making.
7. Briefly describe the historical evolution of operations management.
8. Characterize current trends in business that impact operations management.

Chapter 2 - Competitiveness, Strategy, and Productivity

After completing this chapter, you should be able to:

1. List the three primary ways that business organizations compete.
2. Explain five reasons for the poor competitiveness of some companies.
3. Define the term *strategy* and explain why strategy is important.
4. Discuss and compare organization strategy and operations strategy, and explain why it is important to link the two.
5. Describe and give examples of *time-based* strategies.
6. Define the term *productivity* and explain why it is important to organizations and to countries.
7. Provide some of the reasons for poor productivity and some ways of improving it.

Chapter 3 - Forecasting:

1. List the elements of a good forecast.
2. Outline the steps in the forecasting process.
3. Evaluate at least three qualitative forecasting techniques and the advantages and disadvantages of each.
4. Compare and contrast qualitative and quantitative approaches to forecasting.
5. Describe averaging techniques, trend and seasonal techniques, and regression analysis, and solve typical problems.
6. Explain three measures of forecast accuracy.
7. Compare two ways of evaluating and controlling forecasts.
8. Assess the major factors and trade-offs to consider when choosing a forecasting technique.

Chapter 4 – Product and Service Design:

1. Explain the *strategic* importance of product and service design.
2. Identify some key reasons for design or redesign.

3. Recognize the key questions of product and service design.
4. List some of the main sources of design ideas.
5. Discuss the importance of legal, ethical, and sustainability considerations in product and service design.
6. Explain the purpose and goal of life cycle assessment.
7. Explain the phrase "the 3 Rs."
8. Briefly describe the phases in product design and development.
9. Name several key issues in manufacturing design.
10. Recognize several key issues in service design.
11. Name the phases in service design.
12. List the characteristics of well-designed service systems.
13. Assess some of the challenges of service design.

Chapter 5 - Strategic Capacity Planning for Products and Services:

1. Summarize the importance of capacity planning.
2. Discuss ways of defining and measuring capacity.
3. Describe the determinants of effective capacity.
4. Discuss the major considerations related to developing capacity alternatives.
5. Briefly describe approaches that are useful for evaluating capacity alternatives.

Chapter 6 - Process Selection and Facility Layout:

1. Explain the strategic importance of process selection.
2. Describe the influence that process selection has on an organization.
3. Compare the basic processing types.
4. Explain the need for management of technology.
5. List some reasons for redesign of layouts.
6. Describe the basic layout types, and the main advantages and disadvantages of each.

Chapter 7- Work Design and Measurement:

1. Explain the importance of work design.
2. Compare and contrast the two basic approaches to job design.
3. Discuss the advantages and disadvantages of specialization.
4. Explain the term *knowledge-based pay.*
5. Explain the purpose of methods analysis and describe how methods studies are performed.
6. Compare four commonly used techniques for motion study.
7. Discuss the impact of working conditions on job design.
8. Define a standard time.
9. Describe and compare time study methods and perform calculations.
10. Describe work sampling and perform calculations.
11. Compare stopwatch time study and work sampling.
12. Contrast time and output pay systems.

Chapter 8 - Location Planning and Analysis:

1. Identify some of the main reasons organizations need to make location decisions.
2. Explain why location decisions are important.
3. Discuss the options that are available for location decisions.
4. Give examples of the major factors that affect location decisions.
5. Outline the decision process for making these kinds of decisions.

Chapter 9 – Management of Quality:

1. Define the term *quality* as it relates to products and as it relates to services.
2. Explain why quality is important and the consequences of poor quality.
3. Identify the determinants of quality.
4. Distinguish the costs associated with quality.
5. Compare the quality awards.
6. Discuss the philosophies of quality gurus.
7. Describe TQM.
8. Give an overview of process improvement.
9. Describe and use various quality tools.

Chapter 10 – Quality Control:

1. List and briefly explain the elements of the control process.
2. Explain how control charts are used to monitor a process, and the concepts that underlie their use.

Chapter 11 - Aggregate Planning and Master Scheduling:

1. Explain what aggregate planning is and how it is useful.
2. Identify the variables decision makers have to work with in aggregate planning and some of the possible strategies they can use.
3. Describe some of the graphical and quantitative techniques planners use.
4. Describe the master scheduling process and explain its importance.

Chapter 12 – MRP and ERP:

1. Describe the conditions under which MRP is most appropriate.
2. Describe the inputs, outputs, and nature of MRP processing.
3. Explain how requirements in a master production schedule are translated into material requirements for lower-level items.
4. Discuss the benefits and requirements of MRP.
5. Explain how an MRP system is useful in capacity requirements planning.
6. Outline the potential benefits and some of the difficulties users have encountered with MRP.
7. Describe MRP II and its benefits.
8. Describe ERP, what it provides, and its hidden costs.

Chapter 13 – Inventory Management:

1. Define the term *inventory,* list the major reasons for holding inventories, and list the main requirements for effective inventory management.
2. Discuss the nature and importance of service inventories.
3. Explain periodic and perpetual review systems.
4. Explain the objectives of inventory management.
5. Describe the A-B-C approach and explain how it is useful.
6. Describe the basic EOQ model and its assumptions.
7. Describe reorder point models.
8. Describe situations in which the singleperiod model would be appropriate.

Chapter 14 – JIT and Lean Operations:

1. Explain what is meant by the term *lean operations system*.
2. List each of the goals of a lean system and explain its importance.
3. List and briefly describe the building blocks of lean.
4. Identify the benefits of a lean system.
5. Outline the considerations important in converting a traditional mode of operations to a lean system.
6. Point out some of the obstacles that might be encountered when converting to a lean system.
7. Describe value stream mapping.

Chapter 15 – Supply Chain Management

1. Discuss the key issues of supply chain management.
2. Name the recent trends in supply chain management.
3. Summarize the motivations and risks of outsourcing as a strategy.
4. State some of the complexities that are involved with global supply chains.
5. List some of the strategic, tactical, and operational responsibilities of supply chain management.
6. Give examples of some advantages of e-business.
7. Explain the importance of supplier partnerships.
8. List the requirements of an effective supply chain.
9. Name some of the challenges in creating an effective supply chain.

Chapter 16 - Scheduling

1. Explain what scheduling involves and the importance of good scheduling.
2. Describe scheduling needs in high-volume and intermediate-volume systems.
3. Describe scheduling needs in job shops.
4. Use and interpret Gantt charts, and use the assignment method for loading.
5. Give examples of commonly used priority rules.
6. Summarize some of the unique problems encountered in service systems, and describe some of the approaches used for scheduling service systems.

Chapter 17 – Project Management:

1. Discuss the behavioral aspects of projects in terms of project personnel and the project manager.
2. Explain the nature and importance of a work breakdown structure in project management.
3. Give a general description of PERT/CPM techniques.
4. Construct simple network diagrams.
5. List the kinds of information that a PERT or CPM analysis can provide.
6. Describe activity "crashing" and solve typical problems.

Chapter 18 – Management of Waiting Lines

After completing this chapter, you should be familiar with waiting line terminology, be able to solve typical problems using the models presented in this chapter, and answer these questions:

1. Describe what imbalance does the existence of a waiting line reveal?
2. Explain what causes waiting lines to form, and why is it impossible to eliminate them completely?
3. Describe what metrics are used to help managers analyze waiting lines?
4. Explain what are some psychological approaches to managing waiting lines, and why might a manager want to use them?
5. Explain what very important lesson does the constant service time model provide for managers?