Today, the dynamism of the industries, intense competition and awareness of consumers has obligated the organizations to be lean to leaner and agile than the past decades. The emergence of disruptive manufacturing, knocking off the Internet of things (IOT) and availability of crowdfunding reflects the face of operations management, an ever-changing cost-effective, quality focus, value-additive ongoing process. To sustain in the future and maintain its competitive stance, the organization should rely on an effective operational process that integrates the other functional areas, which augmented the capacity to excel in the market. The environment around the organizations is becoming more complex than before because of the dynamic turning of the environmental, social and technological profile, scaled up in the internalization of business, inherent scarcity of critical inputs and cost of natural resources.

Productive activities are the basic economic system of a nation. It transforms all the resources into higher – valued goods and services. This is called production and operations management that acts as one of the core functions of an organization. It deals with processes and resources to meet customer demand and preferences.

The book entitled “Operations Management Text and Case” is intended for postgraduate and undergraduate courses with different titles such as Production Management, Production and Operations Management, Production and Planning Control, Quality Management System, Material and Maintenance Management System and other similar titles. This text is also appropriate for an elective and common course that fulfills any national and international accredited requirements for coverage of various production and operational issues.

The objective of the book Operations Management is to enlighten the students and academicians about the evolution and essence of operations management in an organization. It makes them familiar with various important concepts related to operations management, such as operations strategy, quality function deployment, software product development, process and work measurement, waste elimination and location planning, business process reengineering, the theory of constraints, MRP in services, quality management, total productive maintenance, lean services, supply chain disruptions and behavioral operations management.
This book focuses on 15 different areas of operations management with 17 chapters. The areas of strategic planning deal with the topics of operations strategy, new product development, capacity and location planning, layout planning, production planning and material requirement planning. The implementation phase deals with topics such as forecasting, inventory management, operations improvement, project management and supply chain management. In the controlling phase, the various topics covered such as work measurement, process analysis and quality management system. Apart from these chapters, the book contains one supplementary section such as a glossary that includes some important terms and its note, which are not in key terms of chapters. The various subject matters are copiously demonstrated through many original figures, tables and exhibits. Each chapter starts with the structure of the subject, the way to be portrayed and the learning objectives to be achieved. The chapter is shut off by a summary, key terms, conceptual and examination questions and case studies followed by referees to facilitate further reading.

In the first chapter on introduction to operations management, the author introduces the concept of operations management, revised the evolution of operations, differentiated between goods and services, discussed various functions of operations management and its issues, explained possible decisions in operations and set to existing priorities for operations management. Chapter 2 outlooked on relevance and formulation of operations strategy with different strategic decisions such as product portfolio, process design, supply chain, the impact of technology, IOT and blockchain, etc.

Chapter 3 takes up the concept of new product development, stating its various stages, such as opportunity identification to full-fledged launching of product in the market. In addition to this, the author-incorporated factors influencing product design and tools used in product development processes, such as management account tools and quality function deployment method. Quality function deployment (QFD) is an overall concept that delivers means of translating customer requirements into the technical requirements for each stage of product development and production (i.e. marketing strategies, planning, product design and engineering, prototype evaluation, production process development, production and sales) (Sullivan, 1986). It also seeks to explore product development in services and particular software development. Every entity has a certain capacity in multiple directions. It is also for the production establishment, which refers to the maximum load that an operating unit can handle, as explained in chapter 4. Besides this, the author estimated labor and machines and other factors of production at the aggregate level as well as means for augmenting the same. Again, the writer elucidated on issues, planning methods, alternatives and factors that impacted the location of the plant.

The next chapter, titled “Methods Study, Motion and Work Measurement,” goes through optimal utilization of human and other resources with an evaluation of human work, determining the best possible ways of doing a job and establishing a standard time of work. It also looks into the elimination of wastefulness from ill-directed and inefficient motions by studying specific work with a qualified worker. Chapter 6 deals with the review and estimation of the process, to improve efficiency, reduce risk and waste and control cost. Here, the basic concepts such as business process reengineering and layout planning are discussed in great detail. Sub-concepts such as assembly to order and layout planning are the duos newly considered by the author.

In chapter 7, the author tried to explain service operations management along with its types. It also explained the role of waiting lines in services, the design of a service operations system and steps in the development of a service operations strategy. This chapter also addresses the issues of sustainable service operations and service quality. Forecasting plays an important role in the operations of an organization that helps in planning and building blocks of effective operations. The lack of effective and inaccurate forecasting has failed an organization. Hence, in chapter 8, the basics and techniques of forecasting are put through. At the end of this chapter, it is covered the basics of error analysis in forecasting.
Chapter 9 explores the concept of inventory management with the types of inventories. It provides different costs associated with inventories. One of the important questions that may arise with this concept is how much to order for a specific inventory position so that it will be viable for all stakes. For this, it is important to be concerned about, how to order cost and carrying cost to be minimized with every order of inventory called economic order quantity (EOQ). A clear-cut derivation with many examples is incorporated.

It is pertinent for an organization to assess its capacity needs in advance to match the demand. This enabled us to devise an optimal production plan for effectively utilization the organization's resources to meet uncertainty. This is named aggregate planning and discussed in chapter 10. It also explored techniques of aggregate planning with scheduling, loading and sequencing. At the end of the chapter, the theory of constraint is explained. It is a concept of managing the constraints involved in the business operations to maximize throughput.

Chapter 11 explores the concept of a material requirement planning system with its structure. It also discussed the effect of lead time on MRP, which exposes requirements for material at an aggregate level using the bill of materials data, inventory data and the master production schedule. Furthermore, the topic explained lot-sizing techniques, MRP II and closed-loop MRP with how MRP is used in services at the end.

Quality is a vital aspect for both the producer and customer that captures the attention of customers and it distinguishes the product from its competitors. Poor quality cannot only bring heavy losses in terms of revenue and damaged reputation, but also lead to loss of lives explained in chapter 12. As part of the effort for it, the author also discusses the process of developing a quality management system and its various tools used for measuring the quality of products, services and processes. This chapter also looks into process control, control charts, acceptance sampling and sampling plans. Further, two crucial parts of quality tools, such as total quality management (TQM) and six sigma, are briefly outlined. In the last part, quality audits, quality awards and functions of the ISO 9000 series of quality management are explained.

Chapter 13 sets up the concept of maintenance productivity and performance and its various tools. The basic objective of maintenance is to prevent the breakdown of any equipment which used to cause production delays. Failure is part of every activity. It has many ways that assets can fail in many ways, which are called failure modes. Thus, failure mode and effect analysis is a structured approach to discover and evaluate potential failures in a system, product and process. When proper maintenance is incorporated, it delivers maximum returns with minimum break down. Hence, plant and equipment perform their intended functions for a long very time called equipment reliability. At the end part of the chapter, the author explained total productive maintenance for the achievement of perfect production.

In this ever-changing global environment, a business organization needs to be competitive. Therefore, trying to find better ways of operation means changing from the traditional rigid ways of operating to flexible systems called operations improvement, as explained in Chapter 14. This improvement process is covered through the concept of lean manufacturing with its principles and tools. It also sets up the implementation of lean systems and how lean services are different from lean manufacturing. Further, in the latter part of the chapter, Just-in-Time and Kanban systems of improving operations are discussed.

Chapter 15 takes up the theme of project management and its tools and techniques such as CPM and PERT. It certainly seeks to explore the quantitative techniques of project management, such as transportation mode, transshipment model and linear programming. Chapter 16 explores the concept of supply chain management along with supply chain strategies and supply chain design. It is a set of approaches that integrates all the entities of the supply chain so that resources are procured and products produced and distributed for
customer satisfaction. Then, it outlines the role of information technology in the supply chain through sustainable supply chain and supply chain integration. This chapter also talks about e-procurement, distribution, transportation activities, product life cycle and customer relationship management. At the end of the chapter, the main disruptions in the supply chain are briefed.

Operations management deals with the transformation process in manufacturing and services that create value for the customers. In conventional operations, management fails to consider the people who are the backbone of operations management. When operations consider human behavior and the issues relating to the customer, it is known as behavioral operations management. The success of operations management depends heavily on the understanding of human behavior explained in chapter 17. It takes up the concept of the bullwhip effect and risk management. This chapter also explained simulation and its types. In the last part of the topic, behavioral operations, individual decision-making biases and social preferences are explained.

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Reference

Further reading