

# Operations Management (C11OE)

## Syllabus

### AIM

The Operations Management course aims to provide students with a critical understanding of the scope and strategic importance of operations management and the role of operations managers; and an appreciation of the interaction of operations with the organisation, employees and customers. You will gain a critical understanding of the nature and importance of operations management, not only in your own but in other organisations competing in the global environment.

### SYNOPSIS

In this course, you will be studying how operations deliver goods and services. Essentially the course concentrates on how operations are designed, how they are directed, controlled and improved by operations managers. The core activity of any organisation is its operations. This course takes a detailed look at the decisions managers need to make about operations, the concepts and the performance objectives that underpin these decisions, and the impact that they have. The course provides conceptual, analytical and practical insights into the effective management of operations in all organisations. The course enables you to critically evaluate key concepts and principles of operations management and also the contribution of strategy. When we look at product design, we will look at service design and improvement initiatives. You will be able to critically assess these as part of your learning outcomes and critically understand operations management techniques through tasks, discussion and examination. You also will be able to understand the scope of interorganisational cooperation and consider the notion of trade-offs in terms of operations performance objectives. You will look at quality management frameworks and distinguish the differences between them.

### LEARNING OUTCOMES

On completion of this course students will be able to:

- understand the linkages between process and operations design, business strategy and globalisation.

- understand the different elements of operations and how to analyse an operational environment in terms of these elements.
- appreciate the tools and techniques applicable in the context of operations in global dynamic organisations.
- understand the challenges facing the operations manager to exploit innovative practices (e.g. lean, new technologies and the growing social agendas, such as CSR).

### **SUPPORTING TEXTBOOK**

Slack, N., Brandon-Jones, A. (2018) Essentials of Operations Management, 2nd Edition, London, Pearson.

### **COURSE STRUCTURE**

The course is broken down into 8 learning modules as follows.

#### **Module 1: Understanding operations management and strategy**

This module is a larger unit as it introduces you to key concepts and terminology to support your studies of operations management.

At the end of this module, you will:

- be able to define operations management and underpinning concepts;
- be familiar with operations terminology;
- understand the concept of the 4Vs;
- be able to apply the five operations objectives internally and externally; and
- understand the contribution made by operations to organisational performance.

Topics covered are as follows.

- The concept of operations management
- The input-process-output model
- Operations strategy and contribution
- The five performance objectives
- The 4Vs and their influence on process management

## **Module 2: Process design, type, layout and mapping**

In this module, you will study how operational processes are designed. You will see how the overall layout of transforming resources impacts on the flow of transformed resources as they move through the operation. You'll discover the various types of process and the different ways to arrange resources within those processes. You will also look at how people's job design and the use of technology can improve the effectiveness of processes. You'll examine activities within processes and look at how they can be analysed to improve performance.

At the end of this module, you will be able to:

- recognise the importance of process design in operations management;
- differentiate between the different types of processes and the impact of volume/variety dimensions;
- identify common process layouts and evaluate when they can be used and the associated challenges;
- evaluate if process tasks and capacity are configured appropriately and if process variability recognised;
- apply process mapping.

Topics covered are as follows.

- Process design
- Processes and volume/variety dimensions
- Manufacturing and service process types
- Process layouts
- Job design
- Process mapping

## **Module 3: Product and service innovation**

The aim of this module is to help you understand how operations managers are increasingly expected to take a more active role in the design of processes as well as supporting the design of products and services and bringing them to life through the operations capabilities. You'll discover, through your study of this module, that innovation is about generating new ideas.

At the end of this module, you will be able to:

- understand the issues involved in defining product and service innovation;
- recognise the different types of innovation;
- understand the nature and extent of innovation; and
- critically assess and explain key current issues in our understanding of innovation.

Topics covered are as follows.

- Definitions and types of innovation
- Innovation as a process
- Beyond product and service innovation
- The significance of product and process innovation and service innovation

#### **Module 4: Capacity and demand management**

The aim of this module is to enable you to recognise the reasons for the existence of operations management, which is to produce products and services that the marketplace wants. There are, however, limitations within operations as to how these can be supplied. One of these limits is processing capacity: what can the organisation provide in any given period? This is usually expressed in the units of time or volume. The operations function has to balance demand with its ability to supply in a timely manner. In this module you'll gain an appreciation of what is involved in capacity management.

At the end of this module, you will:

- be able to critically appreciate the importance of capacity management;
- be able to recognise short-, medium- and long-term capacity management;
- be able to critically evaluate strategies for coping with demand and capacity mismatches; and
- understand volume implications of capacity management

Topics covered are as follows.

- The objectives of capacity management
- Medium- and long-term capacity management
- Reconciling capacity and demand
- Short- and long-term outlooks affecting volume

## **Module 5: Inventory management**

The aim of this module is to explore what inventory is, why it is needed and how to control it. You'll cover two key decisions: the volume decision (how much to order) and the timing decision (when to order).

At the end of this module, you will be able to:

- recognise the importance of inventory and inventory management;
- understand how organisations monitor inventory performance;
- select and apply appropriate inventory control models to improve inventory performance;
- understand strategies for managing stock replenishment; and
- critically evaluate strategies for inventory control.

Topics covered are as follows.

- Inventory control
- Understanding the impact of order quantity on inventory turns
- The periodic review approach
- Cycle safety stocks

## **Module 6: Quality methodologies**

The aim of this module is to focus on quality management and improvement philosophies. The improvement philosophies covered link to the idea of 'continuous improvement' in so far as operations performance 'will always benefit from continuous improvement (Slack and Brandon-Jones, 2018: 347). Lean is recognised as an improvement philosophy with its origins in Toyota. Researchers coined the term 'lean' as part of a global study on the automotive industry. This study focused not only on operational capabilities but also those across the supply network. The concept of quality management, through a focus on operations improvement, will be discussed in this module.

At the end of this module, you will be able to:

- recognise the role of quality in operations management;
- apply the gap model to your own organisation;
- critically evaluate quality costs and their impact on an organisation;
- understand quality methodologies;
- clearly define lean and its underpinning concepts;
- explain what is meant by muda, mura and muri;

- recognise the role of people in lean ('involvement of everyone'); and
- appreciate the role of lean tools in eliminating waste.

Topics covered are as follows.

- The importance of quality
- The gap model and expectation-perception gaps
- Total Quality Management (TQM) and quality costs
- Six Sigma
- Lean
- Causes of waste: muda, mura and muri
- Involvement of everyone for successful improvement
- Lean tools
- Lean improvements across different sectors

### **Module 7: Sustainable operations**

The aim of this module is to consider sustainability from an operations management perspective. That encompasses the design, inputs and outputs of a process and how resources are consumed. The increasing focus on sustainability means that operations managers have to include this into the design and management of operations more widely. Legislation may be driving this, with clear targets to meet, but operations may also extend consideration of this on a more voluntary basis.

At the end of this module, you will be able to:

- evaluate the impact of the triple bottom line (TBL);
- recognise the role of operations in supporting sustainability;
- understand the role of process design in supporting sustainable operations; and
- critically evaluate sustainability practices.

Topics covered are as follows

- The triple bottom line (TBL)
- The 3Ps in operations management
- Process design for environmental sustainability
- Sustainability at Finisterre

## **Module 8: Technology in operations management**

The aim of this module is to examine the technologies used to support the management and control of operations. Technology in operations has evolved due to the need for planning, monitoring and controlling the operation. The use of technology provides visibility in how materials are being used and if products/services are being produced as expected, allowing managers to have control over their processes. We can chart the growing application of technology from the development of material requirements planning (MRP) in the 1970s, which supported the planning and control of materials and production activities, through enterprise resource planning (ERP) in the 1990s. In the 2000s, technology developed into cloud-based applications. Today, with Wi-Fi enabled systems, the technology evident in operations includes automated systems that are sensor-controlled by Wi-Fi and robotics, which are considered to be part of Industry 4.0, also known as the Fourth Industrial Revolution. This module will also discuss how Industry 4.0 is expected to support or even transform the management of operations.

At the end of this module, you will be able to:

- recognise the role of technology in operations;
- understand the role of enterprise resource planning (ERP) systems;
- critically appreciate new technologies and their expected roles in operations; and
- critically evaluate challenges in technology adoption.

Topics covered are as follows

- Technology in operations management
- ERP systems
- Industry 4.0 in operations
- Challenges in technology adoption

### **ASSESSMENT**

The assessment for this course is a three-hour exam, which will bring all your learning from the course together. The exam is geared towards you showing how you can apply the theories, concepts, and the models that we've discussed in this course. What we really want you to show is that you can interpret what happens in the real world and that you can make sense of it. You will be provided with plenty of support and guidance to help you before the examination. The examination assessment enables you to

demonstrate what you have learnt from this course. You will draw upon examples to show what happens in a real organisation and how things work in a real-life situation.

During the examination, you will be required to choose any three questions from the four questions available. Each question will carry equal marks and will be marked out of 100. Your overall mark will be calculated by taking an average of the three marks awarded on your paper.

Each question should be answered in no more than 1,500 words, so 4,500 words for your full exam submission.