Unit 26: Principles of Operations Management

Unit code	**A/618/5078**
Unit type	**Core**
Unit level	**5**
Credit value	**15**

Introduction

Operations management is everywhere, in every organisation, in every service experienced and in every product consumed. Operations management is the administration of business practices to create the highest level of efficiency possible in an organisation. It is concerned with converting materials and labour into goods and services as efficiently as possible to maximise profits.

The aim of this unit is to introduce students to the role of operations in an organisation, how the nature of operations management has evolved and how it contributes to sustained competitive advantage. Students will understand the key concepts of operations management in an organisational and environmental context, and how this links to supply chain management, products and processes, organisational efficiency and effectiveness, and the achievement of tactical and strategic objectives. A variety of operations management techniques and frameworks will be explored, including continuous improvement, total quality management, benchmarking and risk analysis.

By the end of this unit students will have an appreciation of the dimensions of operations management and its central role for organisations across a wide range of sectors. Students will also have the knowledge and skills required to progress to higher levels of study or employment in positions in operations, logistics and supply.

Learning Outcomes

By the end of this unit students will be able to:

LO1 Analyse the effectiveness of operations management in contributing to organisational objectives across a wide range of organisations and sectors

LO2 Apply a range of techniques and analysis frameworks used by operations managers to support decision-making and address problems

LO3 Apply the concept of continuous quality improvement in an operational context

LO4 Conduct a strategic risk analysis (SRA) on the operations functions of an organisation.

Essential Content

LO1 Analyse the effectiveness of operations management in contributing to organisational objectives across a wide range of organisations and sectors

Operations management in context:

Evolution of operations management, from craft to mass production to mass customisation to agile and lean.

The role and function of operations management in an organisation and across the value chain e.g. planning, organising, negotiating, coordinating and controlling resources.

The strategic, tactical and operational perspectives of operations management and its contribution to achieving organisational objectives e.g. impact on costs, quality, revenue, profit and customer satisfaction.

Scope of operations management in manufacturing vs service sectors, profit and not-for-profit, small and medium-sized enterprises (SMEs) and large organisations.

The transformational process model as a cyclic process: transformed resources – materials, information, customers; transforming resources e.g. staff, facilities; macro-operation (overall transformation) and micro-operations within the macro-operation (manufacture, transport, supply, service); boundaries to the operations system (suppliers, customers, external environment).

Dimensions of operations processes e.g. volume, variety, variation, visibility.

Design and management of supply chain networks:

Operations and supply chain management interdependencies.

The impact of operations management on global sourcing and criteria for selecting appropriate suppliers on basis of efficiency, effectiveness, networks and just-in-time (JIT) capabilities.

Benefits and risks of deploying technology to drive efficient, effective, sustainable and profitable operations.

The impact of internet-based technologies and the use of database information systems to manage expenditures on goods and services.

Embedding sustainable procurement practices in supply chain management; considering the environmental and human impact of the journey through the supply chain, from raw materials sourcing to production, storage, delivery and every transportation link in between.

Ethical considerations in the supply chain e.g. complying with standards, raising awareness of sustainability and ethical practices.

LO2 **Apply a range of techniques and analysis frameworks used by operations managers to support decision-making and address problems**

Measures of operations performance:

Triple bottom line (TBL/3BL) and sustainability and strategic impact, including achieving objectives of revenue, risk, efficiency and innovation.

Business planning tools and techniques e.g. PERT (programme evaluation and review technique), linear programming, forecasting, capacity planning, contingency planning.

Techniques and frameworks:

Control systems and their link to the operational function.

Different types of control system, including capacity planning and control, inventory planning and control, and supply chain planning and control.

Building a culture of continuous improvement and total quality improvement.

Fail fast philosophy to support decision-making; testing and incremental development, pivoting and cutting losses to reduce costs and minimise risk.

Business process re-engineering (BPR) to radically redesign core business processes to achieve productivity and quality improvements.

Cost–benefit analysis for justification of operational decisions, systems or projects.

Valuable, rare, inimitable, organised (VRIO) framework analysis identifying the source of competitive advantage for the organisation.

Benefits of benchmarking for improving organisational performance e.g. cost position, gaining strategic advantage and increase organisational learning.

Contingency planning:

Purpose of contingency planning and stages in contingency planning, including the use of benchmarking:

- the process(es) – the development of actions and activities to safely continue a task or activity within resources
- accessing resources for an emergency recovery e.g. money, a building, materials, people, equipment
- discussion relating to the lessons learned.

The impact of technology on decision-making and operations management:

Application of technologies to drive performance e.g. cloud computing, mobile telecommunications, remote working, convergence of technology platforms.

Technologies for customisation of design products and services e.g. computer-aided design (CAD).

Use of technologies for the interpretation of data and information to inform evidence-based decision-making e.g. dashboards, performance metrics.

Use of software and cloud-based systems e.g. enterprise resource planning (ERP) systems, supply chain management (SCM), new product development (NPD), customer relationship management (CRM).

LO3 Apply the concept of continuous quality improvement in an operational context

Role of total quality management in operations management:

Quality and continuous improvement as a philosophy (kaizen) and approach.

Differences between total quality and Quality Assurance.

Pioneers of total quality management such as Deming (plan–do–check–act) and Juran e.g. quality planning–quality control–quality improvement.

Continuous quality improvement in practice:

Product quality and process quality improvement in relation to compliance with requirements, specifications and customer expectations compared with process efficiency.

Monitoring improvement, diagnosing quality problems and reducing errors using statistical process control.

Reasons for variations in product quality process quality

The Taguchi loss function, poka-yoke and the six sigma approach to quality improvement.

Lean approaches for systematic waste minimisation, work standardisation and flow, including just-in-time (JIT), 5S and kanban.

Quality improvement as a cross-organisational activity and not simply as an independent function.

Role of information technologies and software in supporting continuous quality improvement.

LO4 **Conduct a strategic risk analysis (SRA) on the operations functions of an organisation**

Risk analysis and management:

Conducting a risk analysis at the operational, tactical and strategic level e.g. organisational culture, human resource management (HRM), business activities.

Exploring risk analysis options e.g. avoid, reduce, transfer, accept.

The use of risk management standards and benchmarks.

A strategic risk analysis as a systematic and continual process for assessing the most significant operational risks facing the organisation and planning contingency.

Managing uncertainties and potential threats:

Extending the use of PESTLE (political, economic, sociological, technological, legal, environmental) and SWOT (strengths, weaknesses, opportunities, threats) analysis to develop contingency plans and strategies to mitigate negative consequences.

Mitigating risk from increasing frequency of non-economic risks e.g. natural disasters, geopolitical uncertainty and global pandemics.

Use of risk identification and mapping to support risk assessment and the prioritisation of responses.

Stakeholder analysis and expectations:

The relationship between stakeholders and risk, particularly investors, suppliers and customers.

The importance of effective negotiation skills with suppliers and factors to consider in mitigating risk, delivery time, payment conditions, aftercare and maintenance terms and quality standards.

The importance of alignment between partners in the supply chain and internal integration of business functions.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Analyse the effectiveness of operations management in contributing to organisational objectives across a wide range of organisations and sectors		
P1 Analyse the role and effectiveness of operations management across a range of sectors to meet different organisational objectives. **P2** Discuss the contribution of effective supply chains to the organisation.	**M1** Critically analyse the relationship between effective operations management and the achievement of tactical and strategic business objectives.	**D1** Justify the impact of effective operations management and the use of operational techniques on achieving objectives in complex and dynamic trading environments, making valid recommendations and solutions.
LO2 Apply a range of techniques and analysis frameworks used by operations managers to support decision-making and address problems		
P3 Devise solutions to given operations management problems using a range of techniques and analysis frameworks. **P4** Appraise the use of technologies for effective operational performance.	**M2** Evaluate different techniques and analysis frameworks used by operations managers to solve problems and achieve high operational performance.	**D2** Critically evaluate, giving evidence-based recommendations, different techniques and frameworks used by operations managers to solve complex problems and drive organisational performance.
LO3 Apply the concept of continuous quality improvement in an operational context		
P5 Evaluate a range of approaches to continuous quality improvement. **P6** Prepare a continuous improvement plan based on operational activities in an organisation.	**M3** Critique a range of total quality management approaches and techniques within the continuous improvement plan to achieve organisational objectives.	**D3** Produce a continuous quality improvement plan, underpinned by theoretical concepts, that justifies approaches and solutions, with reference to costs, benefits and sustainable performance.

Pass	Merit	Distinction
LO4 Conduct a strategic risk analysis (SRA) on the operations functions of an organisation		
P7 Discuss the role and importance of SRA for an organisation. **P8** Undertake an SRA for an organisation using risk identification and mapping.	**M4** Assess a range of contingency plans and strategies available to the organisation as it seeks to manage organisational and stakeholder risk.	**D4** Critically evaluate the significance of SRA for organisations operating in diverse and complex environments.

Recommended Resources

Textbooks

Cole, G. and Kelly, P. (2020) *Management Theory and Practice*. 9th Ed. Andover, Hants: Cengage Learning EMEA.

Grant, D.B., Trautrims, A. and Wong, C.Y. (2022) *Sustainable Logistics and Supply Chain Management: Principles and Practices for Sustainable Operations and Management*. 3rd Ed. London: Kogan Page.

Jacobs, F.R. and Chase, R.B. (2023) *Operations and Supply Chain Management.* 17th Ed. Maidenhead: McGraw Hill Education.

Reid, R.D. and Sanders, N.R. (2019) *Operations Management: An Integrated Approach*. 7th Ed. Hoboken, NJ: Wiley.

Slack, N., Burgess, N. and Brandon-Jones, A. (2022) *Operations Management.* 10th Ed. Harlow: Pearson.

Websites

www.ascm.org	Association for Supply Chain Management (General reference)
www.cips.org	Chartered Institute of Procurement and Supply (General reference)
www.ismworld.org	Institute for Supply Management (General reference)
www.scdigest.com	Supply Chain Digest "Resources/Education" (General reference)

Links

This unit links to the following related units:

Unit 15: Operational Planning and Management

Unit 36: Procurement and Supply Chain Management

Unit 44: Business Information Technology Systems