

Understanding operations management



Understanding operations management



OpenLearn | Free learning from
The Open University

About this free course

This free course provides a sample of postgraduate study in business management:

<http://www.open.ac.uk/postgraduate/qualifications/f61>.

This version of the content may include video, images and interactive content that may not be optimised for your device.

You can experience this free course as it was originally designed on OpenLearn, the home of free learning from The Open University -

www.open.edu/openlearn/money-management/management/leadership-and-management/understanding-operations-management/content-section-0

There you'll also be able to track your progress via your activity record, which you can use to demonstrate your learning.

Copyright © 2016 The Open University

Intellectual property

Unless otherwise stated, this resource is released under the terms of the Creative Commons Licence v4.0 http://creativecommons.org/licenses/by-nc-sa/4.0/deed.en_GB. Within that The Open University interprets this licence in the following way:

www.open.edu/openlearn/about-openlearn/frequently-asked-questions-on-openlearn. Copyright and rights falling outside the terms of the Creative Commons Licence are retained or controlled by The Open University. Please read the full text before using any of the content.

We believe the primary barrier to accessing high-quality educational experiences is cost, which is why we aim to publish as much free content as possible under an open licence. If it proves difficult to release content under our preferred Creative Commons licence (e.g. because we can't afford or gain the clearances or find suitable alternatives), we will still release the materials for free under a personal end-user licence.

This is because the learning experience will always be the same high quality offering and that should always be seen as positive – even if at times the licensing is different to Creative Commons.

When using the content you must attribute us (The Open University) (the OU) and any identified author in accordance with the terms of the Creative Commons Licence.

The Acknowledgements section is used to list, amongst other things, third party (Proprietary), licensed content which is not subject to Creative Commons licensing. Proprietary content must be used (retained) intact and in context to the content at all times.

The Acknowledgements section is also used to bring to your attention any other Special Restrictions which may apply to the content. For example there may be times when the Creative Commons Non-Commercial Sharealike licence does not apply to any of the content even if owned by us (The Open University). In these instances, unless stated otherwise, the content may be used for personal and non-commercial use.

We have also identified as Proprietary other material included in the content which is not subject to Creative Commons Licence. These are OU logos, trading names and may extend to certain photographic and video images and sound recordings and any other material as may be brought to your attention.

Unauthorised use of any of the content may constitute a breach of the terms and conditions and/or intellectual property laws.

We reserve the right to alter, amend or bring to an end any terms and conditions provided here without notice.

All rights falling outside the terms of the Creative Commons licence are retained or controlled by The Open University.

Head of Intellectual Property, The Open University

Contents

Introduction	5
Learning Outcomes	6
1 Understanding operations management	7
2 Operations, operations management and operations managers	8
2.1 Operations, operations management and operations managers	8
2.2 The historical development of operations management	9
2.3 The role of the operations manager	10
3 The transformation model	13
3.1 The transformation model	13
3.2 Inputs	13
3.3 Outputs	14
3.4 Transformation processes	15
3.5 Feedback	17
4 The boundary of the operations system	18
4.1 The boundary of the operations system	18
4.2 A process perspective on organisations	19
Conclusion	24
Keep on learning	25
References	25
Acknowledgements	26

Introduction

This free course, *Understanding operations management*, is designed to provide you with a basic framework for understanding operations management and its organisational and managerial context. It begins with a brief history of the changing nature of operations in a manufacturing context, but emphasises that the operations function is significant in all types of organisation, whether they produce goods or provide services, and whether they are in the private, public or voluntary sectors.

This course presents a process model of operations that describes inputs being transformed into outputs within the boundary of an operations system. It also discusses the role of operations managers, in particular the importance of focusing on suppliers and customers who are outside this boundary, as well as on other aspects of the operations system's external environment.

This OpenLearn course provides a sample of postgraduate study in [business management](#).

Tell us what you think! We'd love to hear from you to help us improve our free learning offering through OpenLearn by filling out this short [survey](#).

Learning Outcomes

After studying this course, you should be able to:

- define 'operations' and 'operations management'
- identify the roles and responsibilities of operations managers in different organisational contexts
- apply the 'transformation model' to identify the inputs, transformation processes and outputs of an organisation
- identify operational and administrative processes
- describe the boundaries of an operations system, and recognise its interfaces with other functional areas within the organisation and with its external environment.

1 Understanding operations management

Consider the ingredients of your breakfast this morning. Unless you live on a farm and produced them yourself, they passed through a number of different processing steps between the farmer and your table and were handled by several different organisations. Similarly, your morning newspaper was created and delivered to you through the interactions of a number of different organisations.

Every day, you use a multitude of physical objects and a variety of services. Most of the physical objects have been manufactured and most of the services have been provided by people in organisations. Just as fish are said to be unaware of the water that surrounds them, most of us give little thought to the organisational processes that produce these goods and services for our use. The study of operations deals with how the goods and services that you buy and consume every day are produced.

2 Operations, operations management and operations managers

2.1 Operations, operations management and operations managers

Every organisation has an operations function, whether or not it is called 'operations'. The goal or purpose of most organisations involves the production of goods and/or services. To do this, they have to procure resources, convert them into outputs and distribute them to their intended users. The term operations embraces all the activities required to create and deliver an organisation's goods or services to its customers or clients.

Within large and complex organisations operations is usually a major functional area, with people specifically designated to take responsibility for managing all or part of the organisation's operations processes. It is an important functional area because it plays a crucial role in determining how well an organisation satisfies its customers. In the case of private-sector companies, the mission of the operations function is usually expressed in terms of profits, growth and competitiveness; in public and voluntary organisations, it is often expressed in terms of providing value for money.

Operations management is concerned with the design, management, and improvement of the systems that create the organisation's goods or services. The majority of most organisations' financial and human resources are invested in the activities involved in making products or delivering services. Operations management is therefore critical to organisational success.

Activity 1

For each of the following businesses, identify the main output of the operation:

- Brewery
- Publisher
- Hotel
- Insurance company
- Your organisation

Discussion

You probably found it quite easy to identify the main output of a brewery as beer, and of a publisher as books or newspapers. However, the others are a bit trickier: a satisfied customer (hotel) and a customer bearing less financial risk (insurance company). Operations management deals with producing not only physical goods, but also satisfied customers.

An understanding of the principles of operations management is important for all managers, because they provide a systematic way of looking at an organisation's

processes. The need to manage manufacturing and service operations efficiently and effectively has led to a considerable increase in interest in operations management in recent years. However, the concept of operations is not new.

2.2 The historical development of operations management

Operations in some form has been around as long as human endeavour itself but, in manufacturing at least, it has changed dramatically over time, and there are three major phases - craft manufacturing, mass production and the modern period. Let's look at each of these briefly in turn.

2.2.1 Craft manufacturing

Craft manufacturing describes the process by which skilled craftspeople produce goods in low volume, with a high degree of variety, to meet the requirements of their individual customers. Over the centuries, skills have been transmitted from masters to apprentices and journeymen, and controlled by guilds. Craftspeople usually worked at home or in small workshops. Such a system worked well for small-scale local production, with low levels of competition. Some industries, such as furniture manufacture and clockmaking, still include a significant proportion of craft working.

2.2.2 Mass production

In many industries, craft manufacturing began to be replaced by mass production in the 19th century. Mass production involves producing goods in high volume with low variety – the opposite of craft manufacturing. Customers are expected to buy what is supplied, rather than goods made to their own specifications. Producers concentrated on keeping costs, and hence prices, down by minimising the variety of both components and products and setting up large production runs. They developed aggressive advertising and employed sales forces to market their products.

An important innovation in operations that made mass production possible was the system of standardised and interchangeable parts known as the 'American system of manufacture' (Hounshell, 1984), which developed in the United States and spread to the United Kingdom and other countries. Instead of being produced for a specific machine or piece of equipment, parts were made to a standard design that could be used in different models. This greatly reduced the amount of work required in cutting, filing and fitting individual parts, and meant that people or companies could specialise in particular parts of the production process.

A second innovation was the development by Frederick Taylor (1911) of the system of 'scientific management', which sought to redesign jobs using similar principles to those used in designing machines. Taylor argued that the role of management was to analyse jobs in order to find the 'one best way' of performing any task or sequence of tasks, rather than allowing workers to determine how to perform their jobs. By breaking down activities into tasks that were sequential, logical and easy to understand, each worker would have narrowly defined and repetitious tasks to perform, at high speed and therefore with low costs (Kanigel, 1999).

A third innovation was the development of the moving assembly line by Henry Ford. Instead of workers bringing all the parts and tools to a fixed location where one car was put together at a time, the assembly line brought the cars to the workers. Ford thus extended the ideas of scientific management, with the assembly line controlling the pace of production. This completed the development of a system through which large volumes of standardised products could be assembled by unskilled workers at constantly decreasing costs – the apogee of mass production.

2.2.3 The modern period

Mass production worked well as long as high volumes of mass-produced goods could be produced and sold in predictable and slowly changing markets. However, during the 1970s, markets became highly fragmented, product life cycles reduced dramatically and consumers had far greater choice than ever before.

An unforeseen challenge to Western manufacturers emerged from Japan. New Japanese production techniques, such as total quality management (TQM), just-in-time (JIT) and employee involvement were emulated elsewhere in the developed world, with mixed results.

More recently, the mass production paradigm has been replaced, but there is as yet no single approach to managing operations that has become similarly dominant. The different approaches for managing operations that are currently popular include:

- *Flexible specialisation* (Piore and Sabel, 1984) in which firms (especially small firms) focus on separate parts of the value-adding process and collaborate within networks to produce whole products. Such an approach requires highly developed networks, effective processes for collaboration and the development of long-term relationships between firms.
- *Lean production* (Womack et al., 1990) which developed from the highly successful Toyota Production System. It focuses on the elimination of all forms of waste from a production system. A focus on driving inventory levels down also exposes inefficiencies, reduces costs and cuts lead times.
- *Mass customisation* (Pine et al., 1993) which seeks to combine high volume, as in mass production, with adapting products to meet the requirements of individual customers. Mass customisation is becoming increasingly feasible with the advent of new technology and automated processes.
- *Agile manufacturing* (Kidd, 1994) which emphasises the need for an organisation to be able to switch frequently from one market-driven objective to another. Again, agile manufacturing has only become feasible on a large scale with the advent of enabling technology.

In various ways, these approaches all seek to combine the high volume and low cost associated with mass production with the product customisation, high levels of innovation and high levels of quality associated with craft production.

2.3 The role of the operations manager

Some people (especially those professionally involved in operations management!) argue that operations management involves everything an organisation does. In this sense, every manager is an operations manager, since all managers are responsible for

contributing to the activities required to create and deliver an organisation's goods or services. However, others argue that this definition is too wide, and that the operations function is about producing the right amount of a good or service, at the right time, of the right quality and at the right cost to meet customer requirements.

Activity 2

What do you think a typical operations manager does? Take a minute or so to consider.

Discussion

A stereotypical example of an operations manager would be a plant manager in charge of a factory, such as an automobile assembly plant. But other managers who work in the factory – quality managers, production and inventory control managers, and line supervisors – can also be considered to be working in operations management. In service industries, managers in hotels, restaurants, banks and stores are operations managers. In the not-for-profit sector, the manager of a nursing home or day centre for older people is an operations manager, as is the manager of a local government tax-collection office and the manager of a charity shop staffed entirely by volunteers.

So operations managers are responsible for managing activities that are part of the production of goods and services. Their direct responsibilities include managing both the operations process, embracing design, planning, control, performance improvement, and operations strategy. Their indirect responsibilities include interacting with those managers in other functional areas within the organisation whose roles have an impact on operations. Such areas include marketing, finance, accounting, personnel and engineering.

Operations managers' responsibilities include:

- *Human resource management* – the people employed by an organisation either work directly to create a good or service or provide support to those who do. People and the way they are managed are a key resource of all organisations.
- *Asset management* – an organisation's buildings, facilities, equipment and stock are directly involved in or support the operations function.
- *Cost management* – most of the costs of producing goods or services are directly related to the costs of acquiring resources, transforming them or delivering them to customers. For many organisations in the private sector, driving down costs through efficient operations management gives them a critical competitive edge. For organisations in the not-for-profit sector, the ability to manage costs is no less important.

Decision making is a central role of all operations managers. Decisions need to be made in:

- designing the operations system
- managing the operations system
- improving the operations system.

The five main kinds of decision in each of these relate to:

1. the processes by which goods and services are produced
2. the quality of goods or services
3. the quantity of goods or services (the capacity of operations)
4. the stock of materials (inventory) needed to produce goods or services
5. the management of human resources.

Activity 3

Use the matrix below to analyse your role as an operations manager. In as many of the cells in the matrix as you can, jot down an example of a decision you have made in the last month.

	A Designing the operations system	B Managing the operations system	C Improving the operations system
1 Processes			
2 Quality			
3 Capacity			
4 Inventory			
5 Human resources			

Discussion

You will almost certainly have left some of the cells in the matrix blank. For example, you may not have been involved (at least in the last month) in designing the operations system, so you may not have made any decisions that belong to the cells in Column A, though you will almost certainly have found some examples to put in Column B and perhaps in Column C also. Similarly, if your area of work does not involve any stocks of materials, you will not have found any for cells in Row 4 (Inventory). However, it is likely that you will have been able to identify decisions you have made that fall in at least a third of the cells of this matrix. If so, you are fulfilling many of the roles of an operations manager.

3 The transformation model

3.1 The transformation model

The discussion above has highlighted the role of operations in creating and delivering the goods and services produced by an organisation for its customers. This section introduces the transformation model for analysing operations. This is shown in [Figure 1](#), which represents the three components of operations: inputs, transformation processes and outputs. Operations management involves the systematic direction and control of the processes that transform resources (inputs) into finished goods or services for customers or clients (outputs). This basic transformation model applies equally in manufacturing and service organisations and in both the private and not-for-profit sectors.

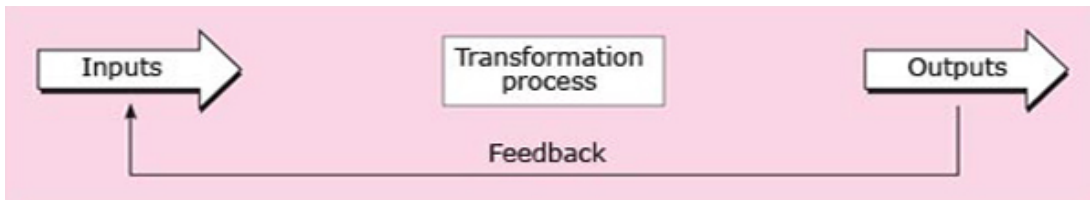


Figure 1 The transformation model

Let's look at each of the components of [Figure 1](#) in a little more detail.

3.2 Inputs

Some inputs are used up in the process of creating goods or services; others play a part in the creation process but are not used up. To distinguish between these, input resources are usually classified as:

- transformed resources – those that are transformed in some way by the operation to produce the goods or services that are its outputs
- transforming resources – those that are used to perform the transformation process.

Inputs include different types of both transformed and transforming resources.

Three types of resource that may be transformed in operations are:

- materials – the physical inputs to the process
- information that is being processed or used in the process
- customers – the people who are transformed in some way.

Many people think of operations as being mainly about the transformation of materials or components into finished products, as when limestone and sand are transformed into glass or an automobile is assembled from its various parts. But all organisations that produce goods or services transform resources: many are concerned mainly with the transformation of information (for example, consultancy firms or accountants) or the transformation of customers (for example, hairdressing or hospitals).

Galloway (1998) defines operations as all the activities concerned with the transformation of materials, information or customers.

The two types of transforming resource are:

- staff – the people involved directly in the transformation process or supporting it
- facilities – land, buildings, machines and equipment.

The staff involved in the transformation process may include both people who are directly employed by the organisation and those contracted to supply services to it. They are sometimes described as 'labour'. The facilities of an organisation – including buildings, machinery and equipment – are sometimes referred to as 'capital'. Operations vary greatly in the mix of labour and capital that make up their inputs. Highly automated operations depend largely on capital; others rely mainly on labour.

Activity 4

Identify the principal inputs (both transformed and transforming resources) used by each of the following organisations, and their principal outputs.

Organisation	Inputs	Outputs
Restaurant		
University		
Doctor's surgery		
Nuclear fuel reprocessing plant		

Discussion

The transformed resources of a restaurant include food and drink, and its transforming resources include equipment such as cookers, refrigerators, tables and chairs, and the chefs and waiters. In a university, the transformed resources include students and knowledge and the transforming resources include lecturers, tutors and support staff, as well as classrooms, books and instructional materials.

3.3 Outputs

The principal outputs of a doctor's surgery are cured patients; the outputs of a nuclear reprocessing plant include reprocessed fuel and nuclear waste. Many transformation processes produce both goods and services. For example, a restaurant provides a service, but also produces goods such as food and drinks.

Transformation processes may result in some undesirable outputs (such as nuclear waste in the example above) as well as the goods and services they are designed to deliver. An important aspect of operations management in some organisations is minimising the environmental impact of waste over the entire life cycle of their products, up to the point of final disposal. Protecting the health and safety of employees and of the local community is thus also the responsibility of operations management. In addition, the operations function

may be responsible for ethical behaviour in relation to the social impact of transformation processes, both locally and globally. For example, in the United States, manufacturers of sports footwear have come under fire for employing child labour and paying low wages to workers employed in their overseas factories.

3.4 Transformation processes

A transformation process is any activity or group of activities that takes one or more inputs, transforms and adds value to them, and provides outputs for customers or clients. Where the inputs are raw materials, it is relatively easy to identify the transformation involved, as when milk is transformed into cheese and butter. Where the inputs are information or people, the nature of the transformation may be less obvious. For example, a hospital transforms ill patients (the input) into healthy patients (the output).

Transformation processes include:

- changes in the physical characteristics of materials or customers
- changes in the location of materials, information or customers
- changes in the ownership of materials or information
- storage or accommodation of materials, information or customers
- changes in the purpose or form of information
- changes in the physiological or psychological state of customers.

Often all three types of input – materials, information and customers – are transformed by the same organisation. For example, withdrawing money from a bank account involves information about the customer's account, materials such as cheques and currency, and the customer. Treating a patient in hospital involves not only the 'customer's' state of health, but also any materials used in treatment and information about the patient.

One useful way of categorising different types of transformation is into:

- manufacture – the physical creation of products (for example cars)
- transport – the movement of materials or customers (for example a taxi service)
- supply – change in ownership of goods (for example in retailing)
- service – the treatment of customers or the storage of materials (for example hospital wards, warehouses).

Several different transformations are usually required to produce a good or service. The overall transformation can be described as the macro operation, and the more detailed transformations within this macro operation as micro operations. For example, the macro operation in a brewery is making beer ([Figure 2](#)). The micro operations include:

- milling the malted barley into grist
- mixing the grist with hot water to form wort
- cooling the wort and transferring it to the fermentation vessel
- adding yeast to the wort and fermenting the liquid into beer
- filtering the beer to remove the spent yeast
- decanting the beer into casks or bottles.

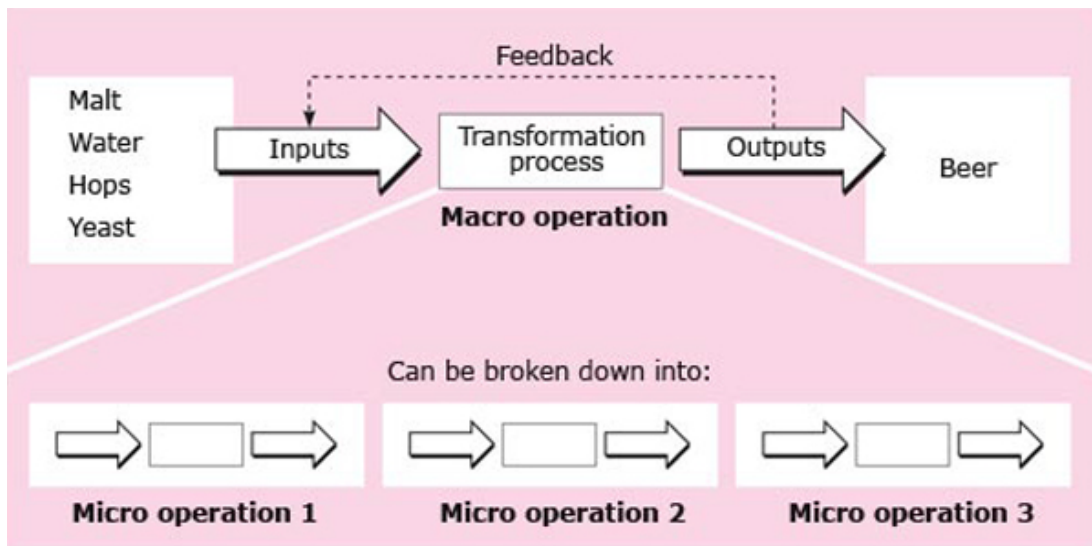


Figure 2 Macro and micro operations

Activity 5

Identify the principal resources (inputs), the type of transformation process and the principal outputs (goods or services) in each of the following operations.

	Inputs	Type of transformation	Outputs
Refining steel			
Assembling cars			
Delivering cars to dealers			
Repairing cars			
Designing cars			

Discussion

You may have identified various inputs such as materials, energy, machines, equipment, buildings and people. For example, the inputs used by a car assembly plant include components, equipment, buildings, labour and energy. You may also have included less tangible inputs to the transformation process, such as information and skills.

You might have noticed that, midway down the list, the activities changed from primarily the production of goods to the provision of services. In the case of car designing, the principal inputs are ideas and the outputs are materials used to communicate the finished idea, such as blueprints or computer models.

3.5 Feedback

A further component of the transformation model in Figure 1 is the feedback loop.

Feedback information is used to control the operations system, by adjusting the inputs and transformation processes that are used to achieve desired outputs. For example, a chef relies on a flow of information from the customer, through the waiter, about the quality of the food. Adverse feedback might lead the chef to change the inputs (for example by buying better quality potatoes) or the transformation process (for example by changing the recipe or the cooking method).

Feedback is essential for operations managers. It can come from both internal and external sources. Internal sources include testing, evaluation and continuously improving goods and services; external sources include those who supply products or services to end-customers as well as feedback from customers themselves.

4 The boundary of the operations system

4.1 The boundary of the operations system

The simple transformation model in Figure 1 provides a powerful tool for looking at operations in many different contexts. It helps us to analyse and design operations in many types of organisation at many levels.

This model can be developed by identifying the boundaries of the operations system through which an organisation's goods or services are provided to its customers or clients. [Figure 3](#), shows this boundary and added three components that are located outside it:

- suppliers
- customers
- the environment.

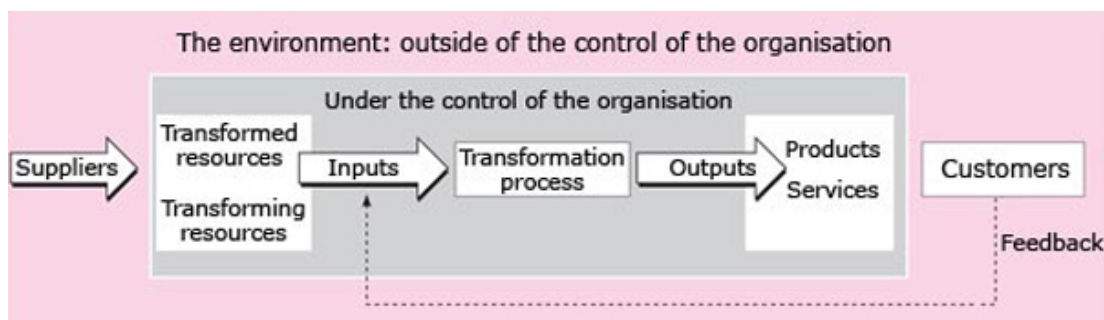


Figure 3 The operations boundary

Suppliers provide inputs to the operations system. They may supply raw materials (for example a quarrying company providing limestone to transform into glass), components (as in car assembly), finished products (for example a pharmaceutical company providing drugs to a hospital, or an office supplies company providing it with stationery) or services (as in the case of a law firm providing legal advice).

The *customers* (or clients) are the users of the outputs of the transformation process. The boundary drawn in [Figure 3](#) around the transforming process can be thought of as the boundary of the organisation, so that the whole organisation is viewed as an operations system, with its customers external to it. This may be an appropriate way of viewing a small organisation, whose outputs go directly to its external customers.

However, most macro operations are made up of a number of micro operations, or sub-systems. Only the outputs of the final micro operation go directly to a customer or client who is not part of the organisation that is carrying out the macro operation. The final user or client of the good or service is the organisation's external customer, and the users or clients of the outputs of the other micro operations internal customers. Most of the operations in a large organisation serve internal, rather than external customers. For example, if you are the manager of a human resources department, a printing unit or a building maintenance section within a large organisation, your customers are internal: they are other sub-systems within the larger organisation that are external to your operations system but internal to the organisation as a whole.

All operating systems are influenced by the organisation's *environment*. This environment includes both other functional areas within the organisation, each with its own policies, resources, forecasts, goals, assumptions and constraints, and the wider world outside the organisation – the legal, political, social and economic conditions within which it is operating. Changes in either the internal or the external environment may affect the operations function.

Traditionally, organisations have kept the operations function separate from both its customers and its suppliers, in order to protect it from environmental disturbances (Thompson, 1967). This can lead to a 'closed system' mentality, in which the operations function loses contact with external customers and suppliers, and focuses only on the transformation process that it controls. A closed system tends to limit flexibility and result in a loss of competitiveness. An 'open system' mentality, in which communication with customers and suppliers is encouraged, seeks to reduce the barriers between the operations function and its environment, in order to enhance the organisation's competitiveness.

An added complication is that, as organisations become more complex, it becomes increasingly difficult to draw neat boundaries around the operations function. Operations management must therefore focus its attention on key interfaces within the organisation, as well as on interfaces between the organisation and its external customers and suppliers. Most operations systems are part of a supply chain that involves materials, information and customers, and the distribution of finished goods or services to customers or clients. It is therefore the responsibility of the operations function to co-ordinate the flow of information that links these activities through the supply chain. Thus, while some operations managers are concerned only with the transformation process within a single organisational unit, such as a factory or service outlet, many are involved in managing operations across several organisational units or even across separate organisations.

4.2 A process perspective on organisations

The overall transformation process can be broken down into a series of micro-processes. Attention to processes within organisations can provide a powerful tool for understanding organisational performance. In the extract below, David Garvin discusses how attention to work processes can yield new insights for managers about the ways in which performance may be improved.

Activity 6

Read the extract below and make your own notes about the key points Garvin makes and their application to your own organisation.

The work process approach, which has roots in industrial engineering and work measurement, focuses on accomplishing tasks. It starts with a simple but powerful idea: organizations accomplish their work through linked chains of activities cutting across departments and functional groups. These chains are called processes and can be conveniently grouped into two categories: (1) processes that create, produce, and deliver products and services that customers want, and (2) processes that do not produce outputs that customers want, but that are still necessary for running the business. I call the first group 'operational processes' and the second group

'administrative processes'. New product development, manufacturing, and logistics and distribution are examples of operational processes, while strategic planning, budgeting, and performance measurement are examples of administrative processes.

Operational and administrative processes share several characteristics. Both involve sequences of linked, interdependent activities that together transform inputs into outputs. Both have beginnings and ends, with boundaries that can be denned with reasonable precision and minimal overlap. And both have customers, who may be internal or external to the organization. The primary differences between the two lie in the nature of their outputs. Typically, operational processes produce goods and services that external customers consume, while administrative processes generate information and plans that internal groups use. For this reason, the two are frequently considered independent, unrelated activities, even though they must usually be aligned and mutually supportive if the organization is to function effectively. Skilled supply chain management, for example, demands a seamless link between a company's forecasting and logistics processes, just as successful new product development rests on well-designed strategy formation and planning processes.

The work processes approach is probably most familiar to managers. It draws heavily on the principles of the quality movement and re-engineering. Both focus on the need to redesign processes to improve quality, cut costs, reduce cycle times, or otherwise enhance operating performance. Despite these shared goals, the two movements are strikingly similar on some points, but diverge on others.

The similarities begin with the belief that most existing work processes have grown unchecked, with little rationale or planning, and are therefore terribly inefficient. Hammer, for example, has observed: 'Why did we design inefficient processes? In a way, we didn't. Many of our procedures were not designed at all; they just happened The hodgepodge of special cases and quick fixes was passed from one generation of workers to the next.' The result, according to one empirical study of white-collar processes, is that value-added time (the time in which a product or service has value added to it, as opposed to waiting in a queue or being reworked to fix problems caused earlier) is typically less than 5 per cent of total processing time.

To eliminate inefficiencies, both movements suggest that work processes be redesigned. In fact, both implicitly equate process improvement with process management. They also suggest the use of similar tools, such as process mapping and data modelling, as well as common rules of thumb for identifying improvement opportunities. First, flow charts are developed to show all the steps in a process; the process is then made more efficient by eliminating multiple approvals and checkpoints, finding opportunities to reduce waiting time, smoothing the handoffs between departments, and grouping related tasks and responsibilities. At some point, 'process owners' with primary responsibility for leading the improvement effort are also deemed necessary. Their role is to ensure integration and overcome traditional functional loyalties; for this reason, relatively senior managers are usually assigned the task. The differences between the two movements lie in their views about the underlying nature and sources of process change.

The quality movement, for the most part, argues for incremental improvement. Existing work processes are assumed to have many desirable properties; the goal is to eliminate unnecessary steps and errors while preserving the basic structure of the process. Improvements are continuous and relatively small-scale. Re-engineering, by contrast, calls for radical change. Existing work processes are regarded as hopelessly outdated; they rely on work practices and a division of labor that take no account of modern information technology.

For example, the case management approach, in which 'individuals or small teams ... perform a series of tasks, such as the fulfillment of a customer order from beginning to end, often with the help of information systems that reach throughout the organization,' was not economically viable until the arrival of powerful, inexpensive computers and innovative software. For this reason, re-engineering focuses less on understanding the details of current work processes and more on 'inventing a future' based on fundamentally new processes.

Perhaps the most dramatic difference between the two approaches lies in the importance they attach to control and measurement. Quality experts, drawing on their experience with statistical process control in manufacturing, argue that well-managed work processes must be fully documented, with clearly defined control points. Managers can improve a process, they believe, only if they first measure it with accuracy and assure its stability. After improvement, continuous monitoring is required to maintain the gains and ensure that the process performs as planned. Re-engineering experts, on the other hand, are virtually silent about measurement and control. They draw on a different tradition, information technology, that emphasizes redesign rather than control.

Insights for Managers

The work processes perspective has led to a number of important insights for managers. It provides an especially useful framework for addressing a common organizational problem: fragmentation, or the lack of cross-functional integration. Many aspects of modern organizations make integration difficult, including complexity, highly differentiated sub-units and roles, poor informal relationships, size, and physical distance. Integration is often improved by the mere acknowledgment of work processes as viable units of analysis and targets of managerial action. Charting horizontal work flows, for example, or following an order through the fulfillment system, are convenient ways to remind employees that the activities of disparate departments and geographical units are interdependent, even if organization charts, with their vertical lines of authority, suggest otherwise.

In addition, the work processes perspective provides new targets for improvement. Rather than focusing on structures and roles, managers address the underlying processes. An obvious advantage is that they closely examine the real work of the organization. The results, however, have been mixed, and experts estimate that a high proportion of these programmes have failed to deliver the expected gains.

My analysis suggests several reasons for failure. Most improvement programmes have focused exclusively on process redesign; the ongoing operation and management of the reconfigured processes have usually been neglected. Yet even the best processes will not perform effectively without suitable oversight, co-ordination, and control, as well as occasional intervention. In addition, operational processes have usually been targeted for improvement, while their supporting administrative processes have been overlooked. Incompatibilities and inconsistencies have arisen when the information and plans needed for effective operation were not forthcoming. A few companies have used the work processes approach to redefine their strategy and organization. The most progressive have blended a horizontal process orientation with conventional vertical structures.

Source: Garvin, D. A. (1998), 'The processes of organization and management', Sloan Management Review, Cambridge; Summer, pp.35–37

Discussion

I hope you found that you could make sense of the article in terms of your own organisation. When I read the article I pulled out a number of points I felt were important. You may have identified others.

1. The distinction between operational and administrative processes.
2. Two different approaches to process improvement: the quality movement approach (incremental – focuses on measurement and control) and the re-engineering approach (radical – focuses on redesign).
3. The process perspective can encourage more effective cross-functional integration.
4. Attempts at process improvement are not always successful, in part because of insufficient attention to supporting management and control systems and to the supporting administrative processes.

Activity 7

Take some time to apply the transformation model to your own organisation. (If you work in a large or complex organisation, you may want to focus on some part of it.)

List the principal inputs (transformed and transforming resources), transformation processes and outputs. Put these together into a transformation model diagram. You may want to show the transformation process as a series of linked micro-processes, rather than a single process, depending on how complex the process is. Where are marketing, human resource management and financial control important in this process?

Draw a diagram like the one in Figure 3 to show the boundary of your operations system, identifying on it:

1. the main inputs, the type(s) of transformation process and the main outputs
2. the main sources of feedback
3. the suppliers and customers that are external to your system
4. the main environmental influences.

Conclusion

The aim of this course has been to give you an introductory overview of operations management. Operations is one of the central functions of all organisations. The first learning outcome was that you should be able to *'define "operations" and "operations management"'*. I took the view in this session that operations embraces all the activities required to create and deliver an organisation's goods or services to its customers or clients.

The second outcome was that you should be able to *'identify the roles and responsibilities of operations managers in different organisational contexts'*.

The third outcome was that you should be able to *'identify the operations management aspects of your own work'*. Some managers have a specific and central role in the management of operations such as a production manager in a factory or an operations manager in a hotel chain. However, as you may have discovered from Activity 3, most managers have at least some operations management aspect to their job.

The fourth outcome was that you should be able to *'apply the "transformation model" to identify the inputs, transformation processes and outputs of an organisation'*. The transformation model is a tool for analysing any type of organisation in terms of the inputs, transformation process and outputs involved in the operations function. Section 2 of this session described the transformation model and Activity 4 gave you the chance to apply it to a number of very different organisations.

The fifth outcome was that you should be able to *'identify the operational and administrative processes in your own organisation'*. David Garvin's article discussed the way in which a process perspective can enable managers to gain greater insight into the management of organisational performance. As you read the extract I hope you took notes on how this could be applied in your own organisation.

The final objective was that you should be able to *'describe the boundaries of an operations system and recognise its interfaces with other functional areas within the organisation and with its external environment'*. In Section 3, I extended the transformation model to include suppliers, customers and the external environment. I also drew an important distinction between the closed system mentality that keeps the operations function separated from suppliers and clients, and the open systems mentality where communication with customers and suppliers is encouraged.

Keep on learning



Study another free course

There are more than **800 courses on OpenLearn** for you to choose from on a range of subjects.

Find out more about all our [free courses](#).

Take your studies further

Find out more about studying with The Open University by [visiting our online prospectus](#).

If you are new to university study, you may be interested in our [Access Courses](#) or [Certificates](#).

What's new from OpenLearn?

[Sign up to our newsletter](#) or view a sample.

For reference, full URLs to pages listed above:

OpenLearn – www.open.edu/openlearn/free-courses

Visiting our online prospectus – www.open.ac.uk/courses

Access Courses – www.open.ac.uk/courses/do-it/access

Certificates – www.open.ac.uk/courses/certificates-he

Newsletter –
www.open.edu/openlearn/about-openlearn/subscribe-the-openlearn-newsletter

References

Galloway, L. (1998) *Principles of Operations Management*, ITP.

- Hounshell, D. (1984) *From the American System to Mass Production, 1800–1932: The Development of Manufacturing Technology in the United States*, Johns Hopkins University Press.
- Kanigel, R. (1999) *The One Best Way: Frederick Winslow Taylor and the Enigma of Efficiency*, Viking.
- Kidd, P. T. (1994) *Agile Manufacturing: Forging New Frontiers*, Addison-Wesley.
- Pine, B. J. II and Davis, S. (1993) *Mass Customization*, Harvard Business School Press.
- Piore, M. J. and Sabel, C. F. (1984) *The Second Industrial Divide: Prospects for Prosperity*, Basic Books.
- Taylor, F. W. (1911) *The Principles of Scientific Management (reprinted 1998)*, Dover Publications.
- Thompson, J. (1967) *Organizations in Action*, McGraw-Hill.
- Womack, J. P., Jones, D. T. and Roos, D. (1990) *The Machine that Changed the World: The Story of Lean Production*, Harper Perennial.

Acknowledgements

This free course includes adapted extracts from the course *Understanding operations management*. If you are interested in this subject and want to study formally with us, you may wish to explore other courses we offer in [Business & Management](#)

Except for third party materials and otherwise stated (see [terms and conditions](#)), this content is made available under a

[Creative Commons Attribution-NonCommercial-ShareAlike 4.0 Licence](#).

The material acknowledged below is Proprietary and used under licence (not subject to Creative Commons Licence). Grateful acknowledgement is made to the following sources for permission to reproduce material in this free course:

Course image [Jetstar Airways](#) in Flickr made available under [Creative Commons Attribution-ShareAlike 2.0 Licence](#).

Every effort has been made to contact copyright owners. If any have been inadvertently overlooked, the publishers will be pleased to make the necessary arrangements at the first opportunity.

Don't miss out

If reading this text has inspired you to learn more, you may be interested in joining the millions of people who discover our free learning resources and qualifications by visiting The Open University – www.open.edu/openlearn/free-courses.