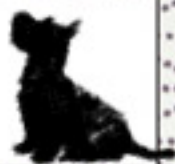


SAGE COURSE COMPANIONS

KNOWLEDGE AND SKILLS *for* SUCCESS



Operations Management

Andrew Greasley



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part one

introducing your companion



This SAGE Course Companion offers you an insider's guide into how to make the most of your undergraduate course, and extend your understanding of key concepts covered in the course. It will provide you with essential help in revising for your course exams, preparing and writing course assessment materials, and enhancing and progressing your knowledge and thinking skills in line with course requirements. It isn't intended to replace your textbooks or lectures – it is intended to save you time when you are revising for your exams or preparing coursework. Note that RE-vision implies that you looked at the subject the first time round!

The Companion will help you to anticipate exam questions, and gives guidelines on what your examiners will be looking for. It should be seen as a framework in which to organise the subject matter, and to extract the most important points from your textbooks, lecture notes, and other learning materials on your course.

This book should direct you to the key issues (and key thinkers) in the operations management field. Whichever textbook you are using, the basics are the basics: we have given some guidance on where topics are covered in specific books, but you should read the Companion in parallel with your textbook and identify where subjects are covered in more detail in both your text and in your course syllabus.

There is also a study and revision skills guide in Part Three which will help you to learn more efficiently. Learning is best accomplished by seeing the information from several different angles – which is why you attend lectures and tutorials, read the textbook, and read around the subject in general. This book will help you to bring together these different sources.

How to use this book

This book should be used as a supplement to your textbook and lecture notes. You may want to glance through it quickly, reading it in parallel with your course syllabus and textbook, and note where each topic is

covered in both the syllabus and this Companion. Ideally, you should have already bought this book before your course starts, so that you can get a quick overview of each topic before you go into the lecture – but if you didn't do this, all is not lost. The Companion will still be equally helpful as a revision guide, and as a way of directing you to the key thinkers and writers on operations management.

The next part of this section provides an introduction to the subject area of operations management and its relevance to people in organisations. The next section goes into the curriculum in more detail, taking each topic and providing you with the key elements. Again, this does not substitute for the deeper coverage you will have had in your lectures and texts, but it does provide a quick revision guide, or a 'primer' to use before lectures.

You can use this book either to give yourself a head start before you start studying operations management, in other words give yourself a preview course, or it can be used as a revision aid, or of course both. Each section contains within it the following features:

- Tips on handling the information in exams, or reminders of key issues: these will help you to anticipate exam questions, and to remember the main points to bring in when answering them.
- Examples: These are useful for putting the theory into a 'real-world' context, and can of course be used in exams to illustrate the points you make.
- Running themes: the areas that will always be of interest to an operations manager. You will find that these can almost always be brought into an exam question, and you will be expected to do so.
- Input from key thinkers in the field: this will be useful to quote in exams, as well as providing you with the main influences in the development of operations management.
- Sample exam questions with outline answers: these should help you be better prepared for the actual questions, even though they will (of course) be different.
- Taking it Further section: this is about taking your thinking a stage beyond simply laying out the current 'received wisdom'. The Taking it Further section introduces some criticality, often from 'sharp end' academic thinking, and will help you to take a broader conceptual view of the topic: on a practical level, this is the type of thinking that moves you from a pass to a first!

Part Three of this Companion is a study guide which will help you with getting more from your lectures, remembering more when you are sitting exams, and with writing essays.

At the back of the book you will find a glossary of the key terms that are used in the book and an index.

Introduction to operations management

Operations management is about the management of the processes that produce or deliver goods and services. Not every organisation will have a functional department called 'operations', but they will all undertake operations activities because every organisation produces goods and/or delivers services.

The operations manager will have responsibility for managing the resources involved in this process. Positions involved in operations have a variety of names, and may differ between the manufacturing and service sectors. Examples of job titles involved in manufacturing include logistics manager and industrial engineer. Examples in the service industry include operations control manager (scheduling flights for an airline), quality manager, hotel manager and retail manager.

People involved in operations participate in a wide variety of decision areas in an organisation, examples of which are given below:

- | | |
|-------------------------------------|---|
| • Service Operations Management | How do we ensure customers receive a prompt service? |
| • Operations Strategy | What strategy should be followed? |
| • Operations Performance Objectives | How do we measure the performance of our operations processes? |
| • Process Types | How do we configure the process which will deliver our service to customers? |
| • Layout Design | How do we organise the physical layout of our facilities and people? |
| • Long-term Capacity Planning | How do we ensure we have the correct amount of capacity available when needed? |
| • Facility Location | What should be the location of our operations facilities? |
| • Process Technologies | What role should technology have in the transformation of materials in the operations system? |
| • Designing Products and Services | What products and services should the organisation provide? |
| • Process Design | How do we design the service delivery process? |
| • Job Design | How do we motivate our employees? |

- | | |
|--------------------------------|---|
| • Planning and Control | How do we deploy our staff day-to-day? |
| • Capacity Management | How do we ensure that our service is reliably available to our customers? |
| • Inventory Management | How can we keep track of our inventory? |
| • Lean Operations and JIT | How do we implement lean operations? |
| • Enterprise Resource Planning | How do we organise the movement of goods across the supply chain? |
| • Supply Chain Management | What benefits could e-procurement bring to our operations? |
| • Project Management | How do we ensure our projects finish on time and within budget? |
| • Quality | How can we implement a TQM programme? |
| • Operations Improvement | How do we improve our operations performance over time? |

The scale, importance and hopefully the excitement of operations management are indicated by the range of these decision areas. You will find that most texts on the subject area of operations management are structured around these decision areas, as are the 'Core areas of the curriculum' chapters in this text.

Operations management did not emerge as a formal field until the 1950s and 1960s when textbooks specifically dealing with operations management were published. Major developments up to this point impacting on the field of operations management start with the Industrial Revolution of the eighteenth century. Before this time products were made individually by skilled craftspeople in their homes and so were relatively expensive to produce. The use of inventions such as the steam engine (by James Watt in England, 1764) and concepts such as the use of interchangeable parts (Eli Whitney, 1790) and the division of labour (described by Adam Smith, 1776) led to the move to volume production. Here mechanisation (provided by steam power) was combined with the use of low-skilled labour (people were given small, simple tasks using the concept of the division of labour) to produce standard parts in high volumes which could be assembled into products. These ideas were

refined by the use of scientific management, developed by Frederick W. Taylor, who incorporated elements such as time study. The invention of the moving assembly line (first used by the car manufacturer Henry Ford in 1913) led to the era of mass production at the start of the twentieth century. This represented a major breakthrough in the ability of production systems to offer goods to a large number of customers at a price they could afford.

An additional element in the make-up of operations management occurred during the Second World War, when a need to solve the complex problems of logistics and weapons-system design led to the development of the area of operations research. A number of the techniques developed then are still part of the operations management field today. As stated earlier, operations management as a discipline then began to emerge in the 1960s and has continued to develop since.

The 1970s saw the use of computers in Materials Requirements Planning (MRP) software for inventory control and scheduling. The 1980s saw the emergence of the just-in-time (JIT) philosophy from Japan which transformed the way businesses deliver goods and services. In response to the need to improve the quality of goods and services, the ideas of Total Quality Management (TQM) were widely adopted in the 1980s. The 1990s saw the emergence of such concepts as supply chain management and Business Process Reengineering (BPR). Most recently, the use of the internet to conduct transactions or e-commerce has changed the way operations management is performed.

The history of operations shows how the field has adapted and continues to change as it tries to respond to an ever greater range of challenges, from the needs of customers who require high quality low price goods delivered quickly to managing the impacts of global competition and addressing environmental concerns.

part two

core areas of the curriculum



The content of operations management is relatively stable, covering the main areas of design (for example process types), management (for example JIT operations) and improvement (for example Total Quality Management). Some of the themes that have become prominent in the area of operations and which may be incorporated into your assignment and examination work are outlined below:

1 The role of services in operations management: although historically associated with the manufacturing industry, there has been a shift in the theory and practice of operations management to incorporate service systems. This is partly due to the importance of the service industry which accounts for an increasing proportion of the output of industrialised economies. Section 2.1 specifically covers service operations management.

2 The strategic role of operations management: despite the term 'operations', operations management is not simply about the day-to-day (that is, operational) running of an organisation. Operations management does in fact have an important strategic role in ensuring that the management of an organisation's resources and processes moves that organisation closer to its long-term goals. Section 2.2 specifically covers operations strategy.

3 The role of technology in operations management: technology plays a key role in the transformation process which operations is responsible for. Process technology is used to help transform the three main categories of transformed resources which are materials, customers and information. Section 2.8 specifically covers operations technology.

As stated previously, you will find that the area of study in operations management is quite standardised across different textbooks and curricula. However, because of the wide-ranging nature of the area you will probably only cover a subset of the topics examined in this section. The main aspect of the approach to the subject which you

may find is that different academics will devise curricula with varying amounts of quantitative elements. Thus while there is a general move towards a qualitative approach adopted in textbooks, and in this revision guide, you may find you need to revise quantitative elements of the topic such as network analysis, inventory models and linear programming. A good way of getting a feel for the assessment is to try to obtain past assignments or exam papers. Make sure you check that the curricula and academic have not changed, however, or you could be in for a surprise!

Each section below gives a quick overview of the key issues in the topic with sample exam questions and outline answers. You will most likely need to expand on these outlines in your exam responses. Remember, if indicative marks are provided for exam questions then use them as a guide to the amount of time you spend on your answers.

2.1	
service operations management	

Although historically associated with the manufacturing industry, there has been a shift in the theory and practice of operations management to incorporate service systems. This is partly due to the importance of the service industry which accounts for an increasing proportion of the output of industrialised economies. There is some disagreement about what constitutes the service sector, but in the widest sense it can be seen as organisations that do not fall into what the economists call the ‘primary sector’ (farming, forestry and fishing) or ‘secondary sector’ (industries including manufacturing, mining and construction). The rise to prominence of the service sector in the economies of developed countries is due to an increase in what are termed ‘consumer services’ and ‘producer services’.

Consumer services are services aimed at the final consumers and these have risen in line with people’s increasing disposable income in developed countries. Once expenditure on essentials such as food and shelter have been accounted for, people will then spend on purchases such as travel, hotels, restaurants and other social and personal services.

Producer services are used in the production and delivery of goods and services and constitute firms providing services such as consultancy advice, legal advice, IT support, transportation and maintenance facilities. The rise of producer services indicates that although the share of manufacturing is declining, it still plays an important part in a nation's economy. This is because many of the producer services are actually in business to provide services to manufacturers. Also many of these services that are being provided were once undertaken by manufacturers themselves and were thus classified as part of the manufacturing sector!

Types of service operations

In order to assess the challenges for operations in managing services it is useful to determine the characteristics of different services. You will find that textbooks differ in how they categorise services. One classification is that services themselves can be classified by their tangibility, while the way they are delivered can be classified by their simultaneity.

Tangibility

This is the most commonly used distinction between goods and services. Goods are tangible, they are a physical thing you can touch. A service is intangible and can be seen as a process that is activated on demand. In reality, however, both goods and services have both tangible and intangible elements and can be placed on a continuum ranging from low to high intangibility.



If goods are tangible, they are a physical thing you can touch. A service is intangible and can be seen as a process that is activated on demand.

Simultaneity

Simultaneity relates to the characteristic that services are produced and consumed simultaneously. This means the service provider and

customer will interact during the service delivery process. The amount of interaction is termed the 'degree of customer contact'. In fact the customer is unlikely to be a passive receiver of the service, but will be involved to a greater or lesser extent in the actual delivery of the service itself. For instance, a supermarket requires the customer to choose and transport the goods around the store and queue at an appropriate check-out till. However, it should not be assumed that all employees in a service operation have to deal directly with a customer. For the supermarket, the checkout till is an example of high customer contact, but store personnel may not have to deal directly with the customer at all. This distinction in services is denoted by 'back office' tasks which add value to the inputs of the service operation (for example stocktaking) and 'front office' tasks which deal with the customer both as an input and output of the operation.



Simultaneity relates to the characteristic that services are produced and consumed at the same time.

The fact that services require simultaneity, and are produced and consumed simultaneously, implies another important characteristic of heterogeneity. This refers to the interaction of the customer, the service provider and the surroundings causing variability in the performance of the service. From the perspective of the service provider, humans by their nature are likely to vary their actions and sometimes make mistakes. Also individual customers will perceive the quality of the service differently and the context of the service encounter (for example the existence of queues or weather conditions) may also impact on the service. This variability in performance and perceptions may lead to difficulties in maintaining a consistent level of service quality.



Heterogeneity refers to the interaction of the customer, the service provider and the surroundings causing variability in the performance of the service.

Taking it **FURTHER**

Most operations systems produce a mixture of goods and services. Most goods have some supporting service element (for example a maintenance contract with a new washing machine), called a 'facilitating service', while many services will have supporting goods (for example a report provided by a management consultant), termed a 'facilitating good'.

“What are the implications of moving tasks between the front office and back office areas of a service operation?”

In order to answer this question you will need to provide a short definition of the terms 'front office' and 'back office'. For example you could say that 'back office' tasks add value to the inputs of the service operation (for example stocktaking) and 'front office' tasks deal with the customer both as an input and output of the operation. You could also note that different organisations will have a different balance between front and back office operations. In terms of moving tasks from back office to front office some traditional back office-focused organisations, such as manufacturers, are increasing the role of service experience and thus their front office operations. This is because they judge that the ability to differentiate on the service aspect of their offering may provide a longer-term source of competitive advantage than they can achieve by differentiating with the goods themselves. In terms of moving from front office to back office, some organisations are recognising that customer value is being added by the tangible aspect of the service package delivered by the back office operations. For example, budget airlines have eliminated many front-line service aspects of the flight experience and focus on the 'transportation of customer' process itself.

“Explain the term 'heterogeneity' as applied to the service operations.”

This question requires you to provide a definition of the term 'heterogeneity' and a discussion of its use in an operations context. You could define heterogeneity as the interaction of the customer, the service provider and the surroundings causing variability in the performance of the service. From the perspective of the

service provider humans by their nature are likely to vary their actions and sometimes make mistakes. Also individual customers will perceive the quality of the service differently and the context of the service encounter (for example the existence of queues or weather conditions) may also impact on the service. From an operations perspective you can say that this variability in performance and perceptions may lead to difficulties for the operations manager in maintaining a consistent level of service quality. Some services, termed 'mass services', which operate at high volume and low variety of outcome, attempt to reduce variability due to heterogeneity by standardising the service. This can be achieved by using such approaches as training staff to follow standard procedures and using equipment to support the service delivery process. This approach may not however be appropriate for professional services, which operate at low volume and high variety because here the customer requires high levels of contact with the service provider and a customised service.

Textbook guide

GREASLEY: Chapter 1.

HILL: Chapter 5.

SLACK, CHAMBERS AND JOHNSTON: Chapter 1.

2.2

operations strategy



Operations management includes all the activities that are required to create or deliver a product or service. Operations engages the majority of the people employed and assets deployed in most organisations. Thus the way operations is managed in the long-term, the operations strategy, is likely to be a vital element of an organisation's success.

Two generic approaches to operations strategy are the market-based and resource-based approaches. Using a market-based approach an organisation makes a decision regarding the markets and the customers

within those markets that it intends to target. Along with meeting customer needs within a market the position the organisation takes in that market will in part depend on the actions of its competitors. Thus the organisation's market position is one in which its performance enables it to attract customers to its products or services in a more successful manner than its competitors.

A resource-based view of operations strategy works from the inside-out of a firm, rather than the outside-in perspective of the market-based approach. Here an assessment of operations resources and processes leads to a view of operations capability.

Taking it **FURTHER**



It has been found that not all companies pursue strategy in accordance with a purely market-based approach and it has been noted that competitiveness is not just a matter of simply improving performance along specific competitive dimensions, but incorporates the development of capabilities that provide specific operating advantages. Thus the resource-based view of strategy is that operations takes a more active role in providing long-term competitive advantage.

Operations strategy formulation

Input from Key Thinkers – Terry Hill

One of the most popular approaches to operations strategy formulation is termed 'the Hill methodology' (developed by Terry Hill at London Business School). The emphasis within the Hill methodology is that strategic decisions cannot be made based on information regarding customer and marketing opportunities addressed solely from a marketing function's perspective, but the operations capability must also be taken into account. Hill proposes that the issue of the degree of 'fit' between the proposed marketing strategy and the operation's ability to support it is resolved at the business level in terms of meeting corporate (that is, strategic) objectives.