

Global and Southern African Perspectives

3rd Edition
**Operations
Management**

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Preface

Introduction

Operations management is important. It is concerned with creating the products and services upon which we all depend, and creating products and services is the very reason for any organisation's existence, whether that organisation be large or small, manufacturing or service, for profit or not for profit. Thankfully, most companies have now come to understand the importance of operations. This is because they have realised that effective operations management gives the potential to improve revenues and, at the same time, enables goods and services to be produced more efficiently. It is this combination of higher revenues and lower costs that is understandably important to any organisation. In South Africa particularly there is a new view of the crucial need for service delivery.

Operations management is also exciting. It is at the centre of so many of the changes affecting the business world: changes in customer preference, changes in supply networks brought about by internet-based technologies, changes in what we want to do at work, how we want to work, where we want to work, and so on. There has rarely been a time when operations management was more topical or more at the heart of business and cultural shifts.

Operations management is also challenging. Promoting the creativity that will allow organisations to respond to so many changes is becoming the prime task of operations managers. It is they who must find the solutions to technological and environmental challenges, the pressures to be socially responsible, the increasing globalisation of markets, and the difficult-to-define areas of knowledge management.

The aim of this book

This book aims to provide a clear, well structured and interesting treatment of operations management as it applies to a variety of businesses and organisations. The text provides both a logical path through the activities of operations management and an understanding of their strategic context. In this third southern African edition there are more regionally-appropriate case studies and more worked examples.

More specifically, this text aims to be:

- **strategic in its perspective** – it is unambiguous in treating the operations function as being central to competitiveness
- **conceptual** – in the way it explains the reasons why and how operations managers need to take decisions
- **comprehensive** – in its coverage of the significant ideas and issues relevant to most types of operation across all sectors
- **practical** – examines the issues and difficulties in making operations management decisions in practice: the operations in practice feature, short cases, case studies and examples all explore the approaches taken by operations managers in practice
- **international** – although this edition incorporates many more local examples to illustrate and emphasise the applicability of operations management concepts in this region, it still deliberately retains global examples from elsewhere in the world
- **balanced in its treatment** – the balance of economic activity between service and manufacturing operations and between the public and the private sectors are reflected, although there are far more service industry examples than manufacturing, which is a truer reflection of the changing economies in the southern African region.

Who should use this book?

This book is intended to provide an introduction to operations management for all students who wish to understand the nature and activities of operations management, including:

- undergraduates undertaking business studies, technical or joint degrees should find it sufficiently structured to provide an understandable route through the subject (no prior knowledge of the area is assumed)
- MBA students should find that its practical discussions of operations management activities enhance their own experience
- postgraduate students undertaking other specialist masters degrees should find that it provides them with a well grounded and, at times, critical approach to the subject
- practising managers in both public and private sector organisations, who are engaging in further education in the management or technical fields.

New for the third southern African edition

This edition is adapted from the seventh edition of Operations Management by Nigel Slack, Alistair Brandon-Jones and Robert Johnston. It therefore makes some significant improvements on our second southern African edition. There are a number of important developments in the field of operations management that are now included, bringing the text more up to date with best practices around the world. The overall structure of this edition remains the same and retains the highly effective learning sequence from strategy, through design, to improvement techniques.

Some of the other important changes for the third southern African edition are listed below:

- The book has been visually redesigned to emphasise key features.
- A greater emphasis has been placed on the idea of 'process management'. This helps to make the subject more relevant to all who manage, or will manage, processes in all functional areas of the organisation.
- Each chapter starts with an 'Operations in practice' feature that is used to introduce the topic and demonstrate its relevance to operations management.
- The worked examples have been extended to provide a better balance between qualitative and quantitative based techniques.
- The inclusion of more current cases from the southern African region, with appropriate questions and localised examples, brings this subject to life for students on the African continent.
- Many of the cases at the end of the chapter are new and provide an up-to-date selection of relevant operations issues.
- The problems and applications section at the end of chapters presents updated questions, both quantitative and qualitative in nature.

Guided tour of the book

Chapter 2 OPERATIONS PERFORMANCE

INTRODUCTION

Operations are judged by the way they perform. However, there are many ways of judging performance and there are many different individuals and groups doing the judging. So in this chapter we start by describing a very broad approach to measuring operations performance that uses the 'triple bottom line' to judge an operation's social, environmental and economic impact. We also introduce the related ideas of the operation's 'stakeholders', and how they judge performance, and corporate social responsibility (CSR), a topic that is treated in far more detail in Chapter 21). The chapter then looks at the more directly operations-related aspects of performance – quality, speed, dependability, flexibility, and cost. Finally we examine how performance objectives trade off against each other. On our general model of operations management the topics covered in this chapter are represented by the area marked on Figure 2.1.



FIGURE 2.1 This chapter covers the role and strategic objectives of operations management

KEY QUESTIONS

- What is planning and control?
- What is the difference between planning and control?
- How do supply and demand affect planning and control?
- What are the activities of planning and control?

Operations in practice 'You have to be super-organised to manage a workshop'

David Stihole has been a motor vehicle workshop manager for 15 years. He started work as a mechanic on the workshop floor when he was 19, but the workshop manager quickly noticed his gift for managing people.

David says, 'I was lucky. My boss saw that I had talent and helped me become a senior mechanic, and then promoted me to supervisor. Later, he helped me do some management courses. Without those qualifications, I could never do this job. He definitely taught me the importance of mentorship, which I'm now able to put into practice with my staff.'

So, what does David's job as a workshop manager entail? 'This is a service business and the customer is king. But, I have to look after my staff as well and of course I have to look after the business too, by staying within budget. I'm always looking for ways to work more efficiently and save money, without compromising the standard of work we do here. It's one big balancing act.'

As a workshop manager, David has to deal with both routine servicing and repairs on customers' vehicles. The routine services are generally not urgent and customers are happy to book these in advance. However, repairs as a result of accidents or breakdowns are unexpected and customers want these done as soon as possible. This makes scheduling of work quite complex and David sometimes feels there are not enough hours in a day. In addition, the company's pre-owned vehicles have to be checked and sometimes repaired before they can be sold.

'Fortunately the pre-owned checks are not quite as deadline-driven. We can generally fit these in the day whenever there's time', says David. 'But, there's always something unexpected to deal with and sick leave or public holidays can play havoc with our schedule!'

Annual leave can be factored into the schedule because it is booked in advance, but sick and family leave are more difficult to deal with. If one or more mechanics is off on any day, this puts a lot of pressure on the remaining staff. David has to ensure that they work as efficiently as possible, while maintaining a high standard. Public holidays just have to be factored into the overall schedule in advance. Staff training and regular meetings also have to be fitted into an already busy schedule.

'This falls under workshop capacity planning. We have 12 mechanics in the workshop. Some of them have been with us for years and I can rely on them to work quickly and deal with unexpected issues effectively. But, I also have a few trainee mechanics. Most of them can work independently when it comes to routine maintenance, but they sometimes need help if with more complex or new problems. Their work also needs to be checked, which takes extra time.

'The availability of spares also affects scheduling', says David. 'Most of the spare parts we use regularly are in stock in the Spares Department, but if we need something unusual, we have to order it. Sometimes we have to wait for a day or two before we can complete the repair. Then it's my job to make sure the customer knows about the delay. Communicating with customers is a major part of my job.'

'I also manage the drivers. We have two drivers on standby to pick up and drop off customers. They can get really busy if you think that on an average day we service at least 50 vehicles. It's especially busy in the morning, when we have a lot of people dropping their cars off and needing to get to work, which could be anywhere in a 30 km radius.

'Another part of my job is reporting. I have to prepare internal workshop reports for management. They want to know exactly what's happening in the workshop, whether it's the condition of the equipment we use here, our running expenses, or the number of vehicles we service in a day. I don't always alert the admin and paperwork, but it certainly helps me understand and do my job well.'

Safety is also important. Everyone who works in the workshop has to be aware of personal safety at all times. They also need to look after the vehicles in their care, or we'd quickly lose our good reputation. My job isn't easy, but I really enjoy the daily challenges and variety.'

Each chapter starts with an introductory explanation followed by a diagram that demonstrates the relevance of the topic to operations management.

Key questions are introduced in tandem with examples of *Operations in practice* that bring to life the operational issues faced by real businesses.

Worked example

In a typical 7-day period, the planning department programme a particular machine to work for 150 hours – its loading time. Changeovers and set-ups take an average of 10 hours and breakdown failures average 5 hours every 7 days. The time when the machine cannot work because it is waiting for material to be delivered from other parts of the process is 5 hours on average and during the period when the machine is running, it averages 90 per cent of its rated speed. Three per cent of the parts processed by the machine are subsequently found to be defective in some way.

maximum time available	= 7 × 24 hours	= 168 hours
loading time	= 150 hours	
availability losses	= 10 hours (set-ups) + 5 hrs (breakdowns)	
so, total operating time	= loading time – availability	= 150 hours – 15 hours
speed losses	= 5 hours (idling) + ((135 – 5) × 0.1) (10% of remaining time)	= 135 hours
so, net operating time	= total operating time – speed losses	= 135 – 18
		= 117 hours
Quality losses	= 117 (net operating time) × 0.03 (error rate)	= 3.51 hours
so, valuable operating time	= net operating time – quality losses	= 117 – 3.51
		= 113.49 hours
therefore, availability rate	= $q = \frac{\text{valuable operating time}}{\text{loading time}}$	= $\frac{113.49}{150}$
		= 75.6%
and performance rate	= $p = \frac{\text{net operating time}}{\text{total operating time}}$	= $\frac{117}{150}$
		= 78.0%
and quality rate	= $q = \frac{\text{valuable operating time}}{\text{net operating time}}$	= $\frac{113.49}{117}$
		= 97%
OEE = $p \times q \times q$		= 75.6%

SHORT CASE London Eye continues to draw visitors?

George Ferris's original Big Wheel premiered at the World's Columbian Exposition in Chicago in 1893. Since then, the Ferris wheel, as it became known, has been a popular showground, fair and exhibition attraction.

The London Eye, a millennial reinvention of the traditional Ferris wheel as an observation wheel was set up in 1999 and launched in 2000 on the banks of the River Thames. The London Eye is currently Europe's tallest cantilevered observation wheel at 135 metres, with a carrying capacity of 800. The wheel has a diameter of 120 metres and attracts millions of visitors per year. In August 2013, the London Eye welcomed its 50 millionth visitor when three generations of the Anderson family from the US and UK were treated to a special Champagne Experience in their own private capsule. Originally part-owned by British Airways and now sponsored by Coca-Cola, the London Eye has become part of London's skyline and a major tourist attraction for the city. There are 32 climate-controlled passenger capsules, each holding up to 25 people. The wheel rotates continuously at 'twice the speed of a tortoise sprinting' according to the website. The wheel is, however, stopped to allow disabled passengers longer access. A complete rotation takes

most recent (King III) in 2009. The aim of the committee and its reports has been to promote better corporate governance in South Africa, to assure and demonstrate to domestic and international stakeholders, including international investors, that South Africa is committed to best practice in corporate governance.

The issue of how CSR objectives can be included in operations management's activities is of increasing importance, both from an ethical and a commercial point of view. It is treated again at various points throughout this text (and the final chapter, Chapter 21, is devoted entirely to the topic).



Critical commentary

The dilemma with using this wide range of triple bottom line, stakeholders, or CSR to judge operations performance is that organisations, particularly commercial companies, have to cope with the conflicting pressures of maximising profitability on one hand, with the expectation that they will manage in the interests of (all or part of) society in general with accountability and transparency. Even if a business wants to reflect aspects of performance beyond its own immediate interests, how is it to do it? According to Michael Jensen of Harvard Business School, 'At the economy-wide or social level, the issue is this: *How do we want to determine what is better versus worse?*' He also holds that using stakeholder perspectives gives undue weight to narrow special interests who want to use the organisation's resources for their own ends. The stakeholder perspective gives them a spurious legitimacy which 'undermines the foundations of value-seeking behaviour'.

The five operations performance objectives

Triple bottom line, stakeholder and CSR objectives form the backdrop to operations decision making, but running operations at an operational day-to-day level requires a more tightly defined set of objectives. These are the five basic 'performance objectives' and they apply to all types of operation. Imagine that you are an operations manager in any kind of business – a hospital administrator, for example, or a production manager at a car plant. What kind of things are you likely to want to do in order to satisfy customers and contribute to competitiveness?

- **You would want to do things right** – that is, you would not want to make mistakes, and would want to satisfy your customers by providing error-free goods and services which are 'fit for their purpose'. This is giving a quality advantage.
- **You would want to do things fast** – minimising the time between a customer asking for goods or services and the customer receiving them in full, thus increasing the availability of your goods and services and giving a speed advantage.
- **You would want to do things on time** – so as to keep the delivery promises you have made. If the operation can do this, it is giving a dependability advantage.
- **You would want to be able to change what you do** – that is, being able to vary or adapt the operation's activities to cope with unexpected circumstances or to give customers individual treatment. Being able to change fast enough and fast enough to meet customer requirements gives a flexibility advantage.
- **You would want to do things cheaply** – that is, produce goods and services at a cost which enables them to be priced appropriately for the market while still allowing for a return to the organisation; or, in a not-for-profit organisation, giving good value to the taxpayers or whoever is funding the operation. When the organisation is managing to do this, it is giving a cost advantage.

Operations principle
Operations performance objectives can be grouped together as quality, speed, dependability, flexibility and cost.

The next part of this chapter examines these five performance objectives in more detail by looking at what they mean for four different operations: a general hospital, an automobile factory, a city bus company and a supermarket chain.

Operations management involves the use of both qualitative and quantitative techniques. *Worked examples* are used to demonstrate how these techniques can be used. Additionally, *Short cases* will help to consolidate your learning of major themes.

Not everyone agrees about the best approaches to operations management. To help provoke debate, *Critical commentaries* have been included to show a diversity of viewpoints. *QR codes* provide links to online resources, including video clips, readings and illustrative cases.

How to use this book

All academic textbooks in business management are, to some extent, simplifications of the messy reality which is actual organisational life. Any book has to separate topics that in reality are closely related, in order to study them. For example, technology choice impacts on job design which in turn impacts on quality control; yet we have treated these topics individually. The first hint therefore in using this book effectively is to look out for all the links between the individual topics.

Similarly with the sequence of topics, although the chapters follow a logical structure, they need not be studied in this order. Every chapter is, more or less, self-contained. Therefore study the chapters in whatever sequence is appropriate to your course or your individual interests. But because each part has an introductory chapter, those students who wish to start with a brief 'overview' of the subject may wish first to study Chapters 1, 4, 10 and 18 and the chapter summaries of selected chapters. The same applies to revision: study the introductory chapters and summary answers to key questions.

The book makes full use of the many practical examples and illustrations to be found in all operations. Many of these were provided by our contacts in companies, but many also come from journals, magazines and newspapers. So if you want to understand the importance of operations management in everyday business life, look for examples and illustrations of operations management decisions and activities in newspapers and magazines. There are also examples you can observe every day. Whenever you use a shop, eat a meal in a restaurant, download a book to read, or ride on public transport, consider the operations management issues of all the operations for which you are a customer.

The short case questions and problems and applications activities are there to provide an opportunity for you to think further about the ideas discussed in the chapters. These questions and activities can be used to test your understanding of the specific points and issues discussed in the chapter, so discuss them as a group, if you choose. If you cannot answer them, revisit the relevant parts of the chapter. The case study questions at the end of each chapter will require more thought. Use these to guide you through the logic of analysing the issue treated in the case. When you have done this individually, try to discuss your analysis with other course members. Most important of all, every time you analyse one of the case studies or examples in the book or in reality, start off your analysis with the two fundamental questions:

- How is this organisation trying to compete (or satisfy its strategic objectives if a not-for-profit organisation)?
- What can the operation do to help the organisation compete more effectively?

Distinctive features

- **Clear structure** – The structure of the book uses a model of operations management which distinguishes between design, planning and control, and improvement.
- **Illustrations-based** – Operations management is a practical subject and cannot be taught satisfactorily in a purely theoretical manner. Because of this we have used examples and case studies that explain some issues faced by real operations.
- **Worked examples** – Operations management is a subject that blends qualitative and quantitative perspectives, and worked examples are used to demonstrate how both types of technique can be used.
- **Critical commentaries** – Not everyone agrees about what is the best approach to the various topics and issues within operations management, therefore critical commentaries are provided that pose alternative views to the one being expressed in the main flow of the text.
- **Summary answers to key questions** – Each chapter is summarised in the form of a list of bullet points. These extract the essential points which answer the key questions posed at the beginning of each chapter.
- **Case studies** – Every chapter includes short cases and a concluding case study suitable for class discussion. The cases are usually short enough to serve as illustrations, but have sufficient content also to serve as the basis of case sessions.
- **Problems and applications** – Every chapter includes a set of, largely but not exclusively, quantitative problem type exercises. These can be used to apply your understanding of the concepts illustrated in the worked examples.
- **Selected further reading** – Every chapter ends with a short list of further reading which takes the topics covered in the chapter further, or treats some important related issues. The nature of each recommended title is explained.
- **Useful websites** – A short list of web addresses is included in each chapter for those who wish to take their studies further.

How to use the QR codes in this book

In this new edition of *Operations Management*, we have included QR codes in each chapter, enabling you to use your mobile phone to access instantly a wide variety of additional content, including articles, videos, etc.

If you do not have a smartphone or tablet, simply type in the mobi URL at the bottom of each QR code into the browser of your phone.

If you have a smartphone or tablet, simply scan the QR codes in the book. **Here's how...**

1. Download a QR code reader. You can download free readers from your smartphone's app store or use a built-in code reader if your device has one.
2. Scan the code using the QR code reader – it's like taking a photograph of the code.
3. View content online. You will automatically be redirected to exclusive online extras.
4. Access the mobi URL via your phone's browser, for example, use www.quickto.mobi/PEA-PUBLISHER.

Pearson says

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About the authors

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Robert Johnston was Professor of Operations Management at Warwick Business School and its Deputy Dean. The late Professor Johnston was the founding editor of the *International Journal of Service Industry Management* and he also served on the editorial board of the *Journal of Operations Management* and the *International Journal of Tourism and Hospitality Research*. He was the author of the market leading text, *Service Operations Management* (with Graham Clark), now in its fourth edition (2012), published by Financial Times Prentice Hall. Before moving to academia, Dr Johnston held several line management and senior management posts in a number of service organisations in both the public and private sectors. As a specialist in service operations, his research interests included service design, service recovery, performance measurement and service quality. He was the author or co-author of many books, as well as chapters in other texts, numerous papers and case studies.

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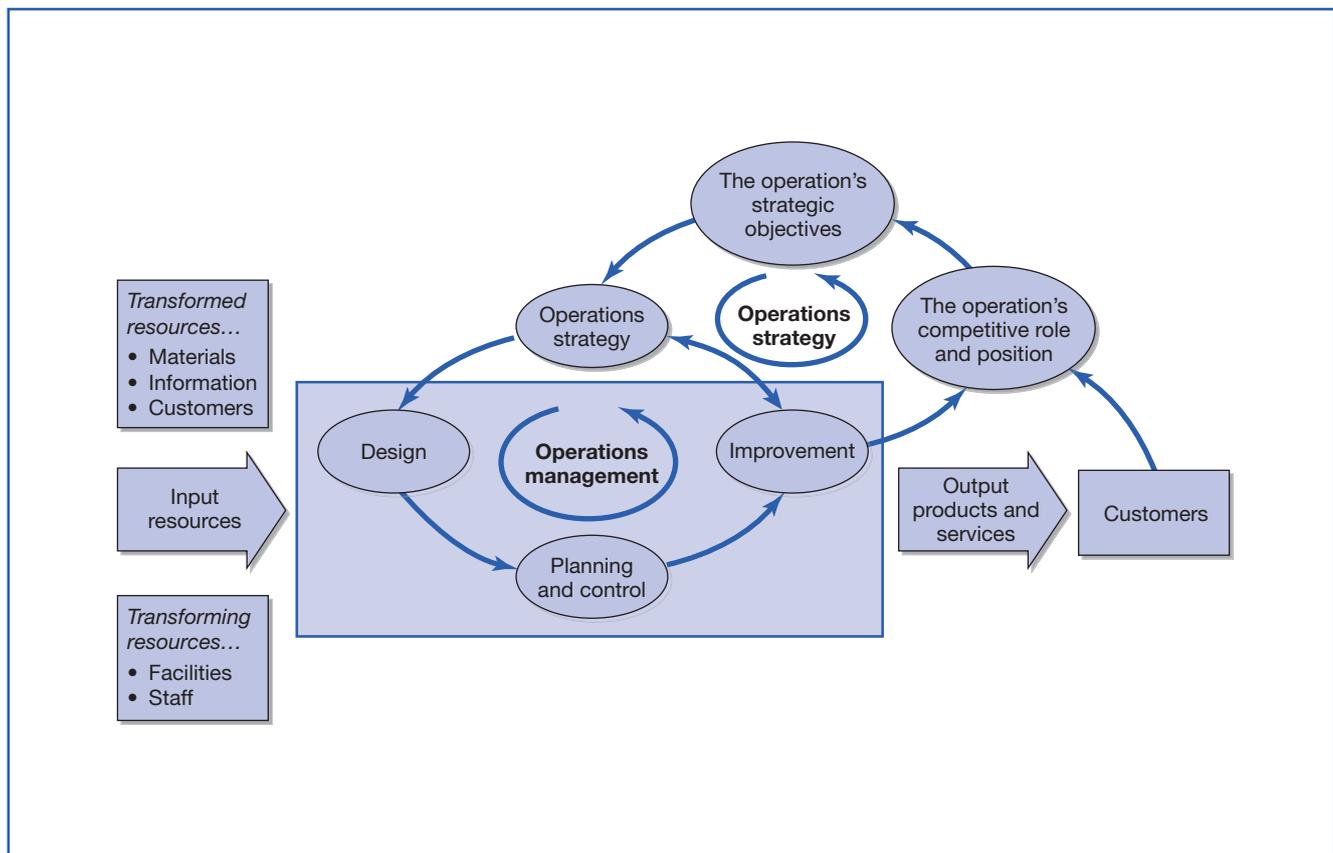
Part One

INTRODUCTION

Chapters

- 1 Operations management
- 2 Operations performance
- 3 Operations strategy

This part of the book introduces the idea of the operations function in different types of organisation. It identifies the common set of objectives to which operations managers aspire in order to serve their customers, and it explains how operations can have an important strategic role.



Chapter 1

OPERATIONS MANAGEMENT

INTRODUCTION

Operations management is about how organisations create and deliver services and products. Everything you wear, eat, sit on, use, read or knock about on the sports field comes to you courtesy of the operations managers who organised its creation and delivery. Every book you borrow from the library, every treatment you receive in hospital, every service you expect in the shops and every lecture you attend at university – all have been created by operations. While the people who supervised their creation and delivery may not always be called operations managers, that is what they really are. And that is what this book is concerned with – the tasks, issues and decisions of those operations managers who have made the services and products on which we all depend. This is an introductory chapter, so we will examine what we mean by ‘operations management’, how operations processes can be found everywhere, how they are all similar yet different, and what it is that operations managers do (see Figure 1.1).

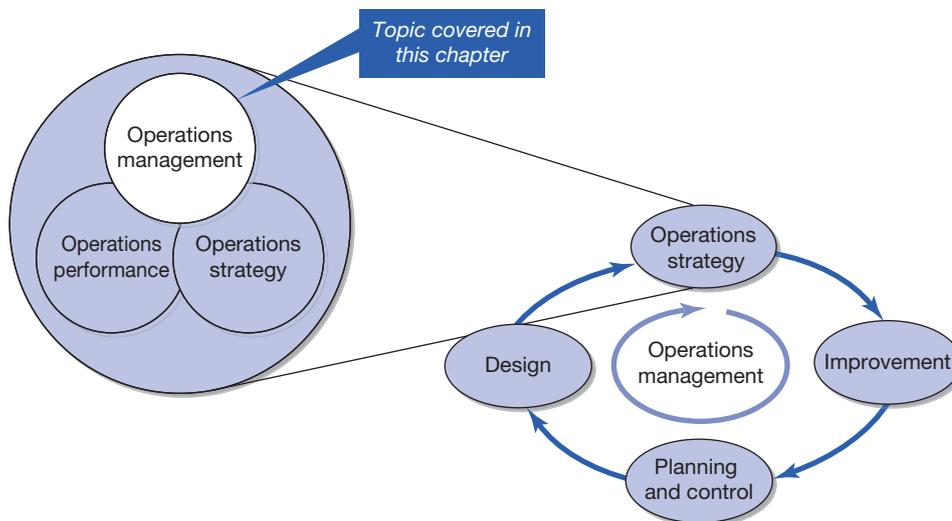


FIGURE 1.1 This chapter examines operations management

KEY QUESTIONS

- What is operations management?
- Why is operations management important in all types of organisation?
- What is the input–transformation–output process?
- What is the process hierarchy?
- How do operations processes have different characteristics?
- What do operations managers do?

Operations in practice Woolworths – driven by customer needs and wants¹

‘Woolies’ – hardly a name that conjures up the image of the retail giant, Woolworths! Yet it trips off the tongue of tens of thousands of consumers like a household word. Starting in South Africa, and extending throughout Africa and into the Middle East, the refrain trills: *‘I’m off to Woolies. Do you need anything?’*

What accounts for the success of Woolworths? How, from its humble beginnings when Max Sonneberg, the founder, opened the doors of the first store to the public in Cape Town in October 1931, it has managed grow into a retail giant with more than 400 stores, and an influence that stretches across the Indian Ocean to Australia, New Zealand and Singapore through Country Road, a subsidiary of Woolworths Holdings, its parent company?

The answer is simple: Woolies puts its customers first. This focus on its customers is what drives the Woolworths’ brand values: quality, innovation, value for money, integrity, service, energy and sustainability. In turn, and as a result, operationally, from customer service, to store design and product availability, Woolworths is geared towards satisfying its customers and fostering their long-term loyalty.

This approach, according to Ian Moir, the chief executive of Woolworths since November 2010, is what has sustained Woolworths during difficult economic times, ensuring that not only has its core customer base remained loyal, but that it has also managed to widen its customer base. As Moir says, *‘Everybody, no matter what LSM [Living Standards Measure, which divides the population into 10 income groups], wants value. And you want value in the right article. I might want to spend more on a suit with a great cut, but when I buy a t-shirt or essentials I want great value. Everybody expects value these days.’*

In order to deliver this quality, operations management at Woolworths is designed to ensure that business operations are efficient in terms of using as few resources as needed,

and effective in terms of meeting customer requirements. Understanding the importance of these twin imperatives, Moir keeps the entire company on its toes. He does this, in part, by visiting stores around the country on weekends to take their pulse, noting their appearance, how the personnel behave and who the customers – the Woolies heartbeat – are.

To deliver an efficient use of resources that satisfies customers’ needs and wants, Woolworths put in place its Good Business Journey strategy. This strategy is divided into a number of focal areas, such as minimising the environmental impact of all store operations, putting in place sustainable practices in product procurement and development, and paying attention to customers’ concerns about social, fair trade and health issues. In terms of minimising environmental impact, Woolworths’ green initiatives ensure that wherever possible, stores make use of natural light from skylights, energy-efficient lighting that automatically dims the stores’ lights in bright daylight conditions, and heating from recycled heat generated by fridges. In addition, Woolworths’ fridges use a natural gas instead of synthetic gases, which does not cause harm to the ozone layer, and makes a much lower contribution to global warming.

As far as sustainable practices in product procurement and development are concerned, some of Woolworths’ focus is on sustainable farming and fishing. For example, Woolworths subscribes to the Southern African Sustainable Seafood Initiative (SASSI), to ensure that they procure their seafood from fisheries that source seafood responsibly. Also, trained animal welfare specialists from Woolworths and external auditors inspect all its South African abattoirs and processing plants annually to ensure that they, and farms that supply them, are compliant with Woolworths’ product specifications and animal welfare Codes of Practice.



Consideration is given to customers' concerns about social, fair trade and health issues in a number of ways. For example, Woolworths addresses food security issues mainly through schools. It also contributes to reducing child vulnerability by supporting child safety (e.g. it opened its first Childsafe Centre in Africa in May 2014). Furthermore, as far as is possible, Woolworths sources products from Fairtrade (fairtrade.org.za) initiatives that ensure producers are paid fairly for the products they produce. Woolworths also provides customers with food that is safe and nutritious and has a particular emphasis on organic food. Through clear labelling, Woolworths keeps customers as well informed as possible about the food they are eating and how it impacts on their health. Another innovation in relation to customers' concerns about social, fair trade and health issues is the MYSCHOOL • MYVILLAGE • MYPLANET programme in which by swiping their cards at the checkouts, a percentage of their bill gets donated to schools, rural development and environmental organisations.

In terms of in-store operational management, Woolworths focuses on a number of core areas, which include:

- **Understanding customer needs:** This is primarily driven by Woolworths' World of Difference loyalty programme that gives Woolworths more information about what people are buying and when, and has increased Woolworths' understanding of what customers are looking for. Accessing customer needs has also resulted in a number of innovations. For example, Woolworths was the first South African retailer to introduce 'sell by' dates on food packaging. It was also the first South African retailer to offer pre-washed vegetables and machine-washable wool clothing to consumers.
- **Product availability:** This is achieved through efficient distribution systems and effective supply chain management that aims to ensure that customers always find the right product, at the right price, where and when they need it.
- **Process design:** The focus here is on arranging store layouts to provide a smooth, effective flow of customers while maximising their shopping experience, as well as what they purchase and how much they purchase. As an example of store layout, Woolworths stores position a range of flowers to purchase at their entrance. In a customer's mind, this enhances the image of the store and builds on the concept of 'fresh' – a key word in Woolworths branding. In addition, the layout of most stores places fresh and perishable food around the periphery, with packaged food in the centre. This forces customers to walk the aisles of packaged goods to get to the fresh and perishable items, which increases the likelihood of them purchasing items they had not planned to buy. The placement of food items on shelves also impacts on customer purchases. For example, by and large, top and bottom shelves are stocked with home brands and non-expensive food items. This is because they are not in the eyeline of customers, who

are thus less likely to purchase them. The expensive, popular and bestseller brands are always stacked on the middle shelves. Customers are automatically attracted to these items because they are placed at eye level. This increases the chance that customers will purchase these items. Magazines, chocolates, snacks and soft drinks are also displayed in the checkout areas. Because these miscellaneous food items surround customers while they are waiting in the checkout queue, they often purchase them even though they had not planned to.

- **In-store experience:** Because customers are the lifeblood of Woolworths' success, the stores constantly strive to enhance customers' in-store experience. Ways of achieving this include innovations such as locating dedicated butcheries and fish counters in some stores, operated by trained butchers and fishmongers, as well as in-store bakeries that offer artisanal breads and pastries. Other means of enhancing customers' in-store experience have seen the establishment of areas for beauty treatments, redesigning beauty displays to make testing and sampling easier and more effective, locating coffee and sushi bars, as well as tasting stations in stores, and providing unique destinations and brands, like Trenergy, Country Road, Witchery and Mimco, within selected stores.
- **Selling formats:** Woolworths has developed uniquely differentiated selling formats to satisfy customers' varying needs. These formats include full-line stores that stock the complete Woolworths range (food, clothes, homeware, etc.), those with only clothing and home products, and Woolworths Food stores that sell only grocery items. These formats are complemented by the Engen Food stops. They are open 24/7 and offer customers the convenience of quick-stop shopping for a limited Woolworths food and grocery range, while filling up with petrol. An additional selling format is the Woolworths online channel that offers customers the convenience of online shopping backed up by home deliveries.
- **Financial services:** In order to tie customers into the Woolworths' brand, Woolworths has several credit and debit cards that offer a variety of benefits. Among these are the Woolworths card (allows customers to buy on their Woolworths' account) and the Woolworths Visa card, which functions as a conventional credit card, but provides customers with rewards when used in Woolworths stores. Financial services has expanded to offer related insurance and other financial products to its customers.

Adherence to the key aspects of its operations management has enabled Woolworths – in its over-80-year history – to become firmly entrenched in the South African landscape: a rare achievement in the retailing world, which places the spotlight on the importance of an operations management system that always puts the customer first and that remains true to its own core values.

What is operations management?

Operations management is the activity of managing the resources that create and deliver services and products. The operations function is the part of the organisation that is responsible for this activity. Every organisation has an operations function because every organisation creates some type of services and/or products. However, not all types of organisation will necessarily call the operations function by this name. (Note in addition that we also use the shorter terms ‘the operation’ or ‘operations’ interchangeably with the ‘operations function’.) Operations managers are the people who have particular responsibility for managing some, or all, of the resources which comprise the operations function. Again in some organisations, the operations manager could be called by some other name. For example, he or she might be called the ‘fleet manager’ in a distribution company, the ‘administrative manager’ in a hospital, or the ‘store manager’ in a supermarket.

Operations principle

All organisations have ‘operations’ that produce some mix of services and products.

Operations in the organisation

The operations function is central to the organisation because it creates and delivers services and products, which is its reason for existing. The operations function is one of the three core functions of any organisation. These are:

- **marketing (which includes sales)** – keeps the market informed of the organisation’s services and products for the purpose of ensuring customer interest
- **service or product development** – generates new and/or adapted services and products for the purpose of ensuring customer interest in the future
- **operations** – produces and delivers services and products based on customer interest.

In addition, there are the support functions which enable the core functions to operate effectively. These include, for example, the accounting and finance function, the technical function, the human resources function, and the information systems function. Remember that different organisations will call their various functions by different names and will have a different set of support functions. Almost all organisations, however, will have the three core functions, because all organisations have a fundamental need to sell their products and services, meet customer requests for services and products, and come up with new services and products to satisfy customers in the future. Table 1.1 shows the activities of the three core functions for a sample of organisations.

In practice, there is not always a clear division between the three core functions or between core and support functions. This leads to some confusion over where the boundaries of the operations function should be drawn. In this book we use a relatively broad definition of operations. We treat much of the product/service development, technical and information systems activities and some of the human resource, marketing, and accounting and finance activities as coming within the sphere of operations management. We view the operations function as comprising all the activities necessary for the day-to-day fulfilment of customer requests. This includes sourcing services and products from suppliers and delivering services and products to customers.

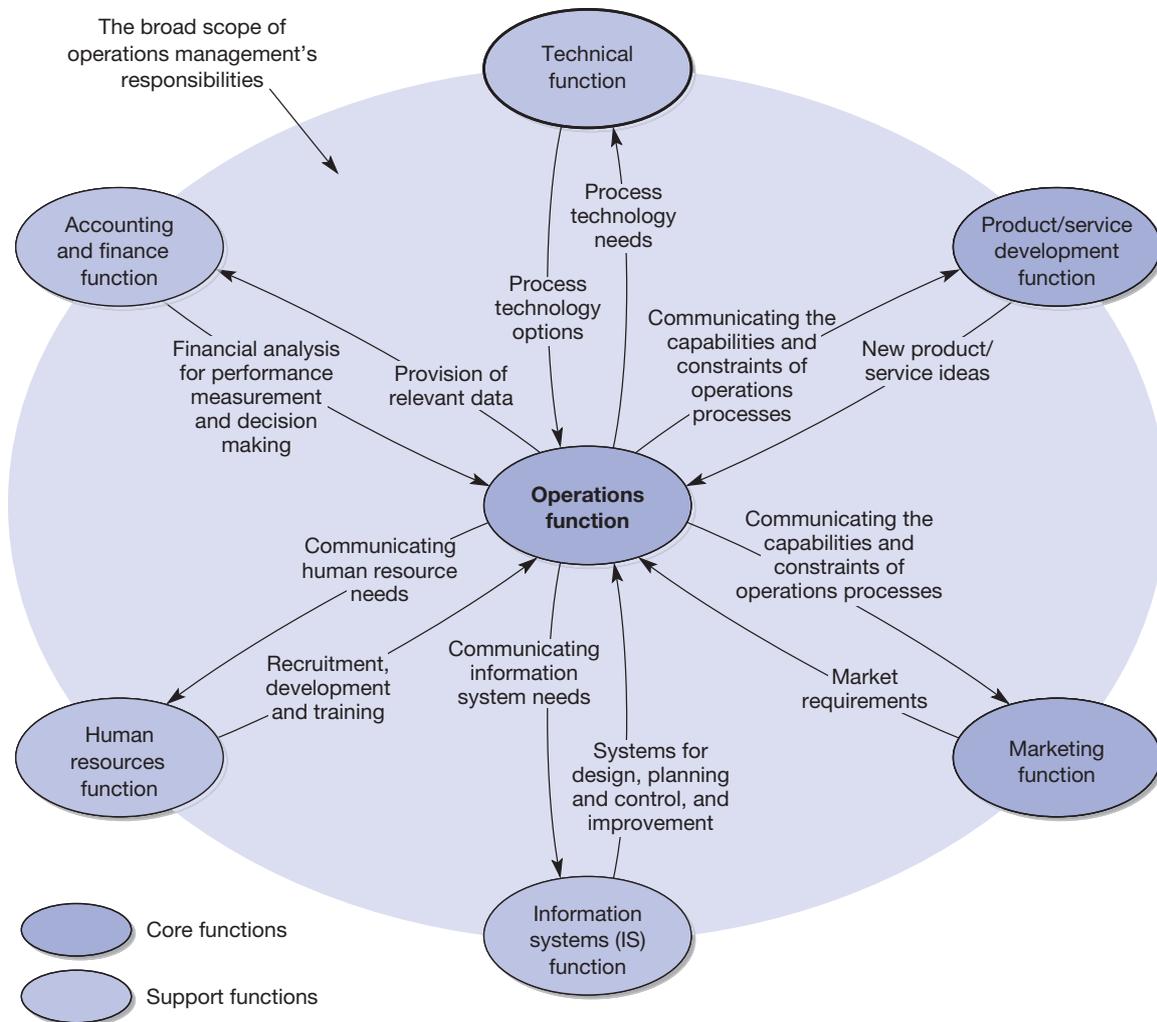
It is a fundamental of modern management that functional boundaries should not hinder efficient internal processes. Figure 1.2 illustrates some of the relationships between operations and other functions in terms of the flow of information between them. Although it is not comprehensive, it gives an idea of the nature of each relationship. However, note that the support functions have a different relationship with operations than the other core functions. Operations management’s responsibility to support functions is primarily to make sure that they understand operations’ needs and help them to satisfy these needs. The relationship with the other two core functions is more equal – less of ‘this is what we want’ and more ‘this is what we can do currently – how do we reconcile this with broader business needs?’

Operations principle

Operations managers need to co-operate with other functions to ensure effective organisational performance.

TABLE 1.1 The activities of core functions in some organisations

Core functional activities	Internet service provider (ISP)	Fast food chain	International aid charity	Furniture manufacturer
Operations	Maintain hardware, software and content Implement new links and services	Make burgers, etc. Serve customers Maintain equipment	Give service to the beneficiaries of the charity	Make components Assemble furniture
Marketing and sales	Promote services to users and get registrations Sell advertising space	Advertise on TV Devise promotional materials	Develop funding contracts Mail out appeals for donations	Advertise in magazines Determine pricing policy Sell to stores
Product/service development	Devise new services and commission new information content	Design hamburgers, pizzas, sushi, etc. Design decor for restaurants	Develop new appeals campaigns Design new assistance programmes	Design new furniture Co-ordinate with fashionable colours

**FIGURE 1.2** The relationship between the operations function and other core and support functions of the organisation

Operations management is important in all types of organisation

Operations principle

The economic sector of an operation is less important in determining how it should be managed than the organisation's intrinsic characteristics.

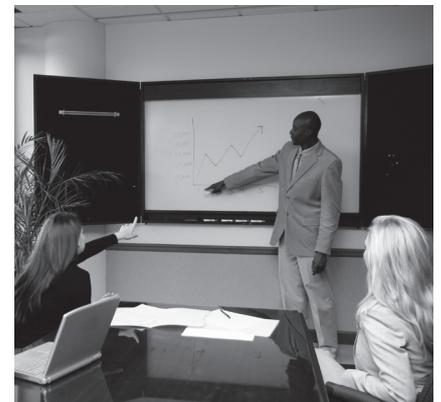
In some types of organisation it is relatively easy to visualise the operations function and what it does, even if we have never seen it. For example, most people have seen images of an automobile assembly. But what about an advertising agency? We know vaguely what they do – they create the advertisements that we see in magazines and on television – but what is their operations function? The clue lies in the word 'create'. Any business that creates something must use resources to do so, and so must have an operations activity. Also the automobile plant and the advertising agency do have one important element in common: both have a higher objective – to make a profit from creating and delivering their products or services. Yet not-for-profit organisations also use their resources to create and deliver services, not to make a profit, but to serve society in some way. Look at the following examples of what operations management does in five very different organisations, and some common themes emerge.



Automobile assembly factory – operations management uses machines to efficiently assemble products that satisfy current customer demands



Physician (general practitioner) – operations management uses knowledge to effectively diagnose conditions in order to treat real and perceived patient concerns



Management consultant – operations management uses people to effectively create the services that will address current and potential client needs



Disaster relief charity – operations management uses organisation's and partners' resources to speedily provide the supplies and services that relieve community suffering



Advertising agency – operations management uses staff's knowledge and experience to creatively present ideas that delight clients and address their real needs

Start with the statement from the 'easy to visualise' automobile plant. Its summary of what operations management does is ... *'Operations management uses machines to efficiently assemble products that satisfy current customer demands.'* The statements from the other organisations were similar, but used slightly different language. Operations management used not just machines but also ... *'organisation's and partners' resources*, and *'staff's knowledge and experience'*, to *'efficiently (or effectively, or creatively) assemble (or produce, change, sell, move, cure, shape, etc.) products (or services or ideas) that satisfy (or match or exceed or delight) customer (or client or citizens' or society's) demands (or needs or concerns or even dreams).'* So whatever terminology is used there is a common theme and a common purpose to how we can visualise the operations activity in any type of organisation, whether it is small or large, service or manufacturing, public or private, profit or not-for-profit. Operations management uses *'resources to appropriately create outputs that fulfil defined market requirements'* (see Figure 1.3). However, although the essential nature and purpose of operations management is the same in any type of organisation, there are some special issues to consider, particularly in smaller organisations and those whose purpose is to maximise something other than profit.

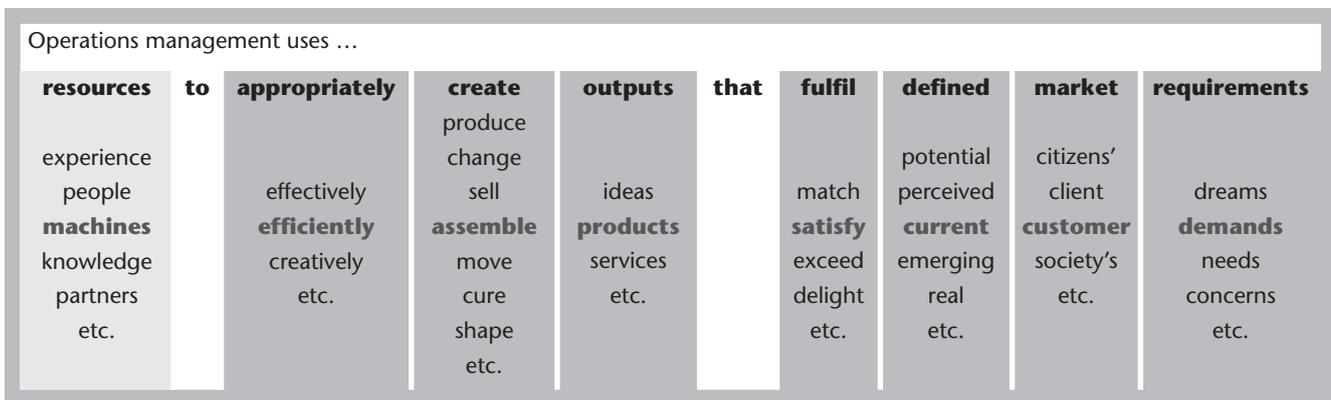


FIGURE 1.3 Operations management uses resources to appropriately create outputs that fulfil defined market requirements

Operations management in the smaller organisation

Operations management is just as important in small organisations as it is in large ones. Irrespective of their size, all companies need to create and deliver their services and products efficiently and effectively. However, in practice, managing operations in a small- or medium-sized organisation has its own set of problems. Large companies may have the resources to dedicate individuals to specialised tasks but smaller companies often cannot, so people may have to do different jobs as the need arises. Such an informal structure can allow the company to respond quickly as opportunities or problems present themselves. But decision making can also become confused as individuals' roles overlap. Small companies may have exactly the same operations management issues as large ones, but they can be more difficult to separate from the mass of other issues in the organisation. However, small operations can also have significant advantages; the short case on Thandifrika Jewels illustrates this.

Short case Thandifrika Jewels – design for success

'Entrepreneurs, especially creatives, have to give their all to make it. Great products alone won't ensure that a business thrives.' Thandi Ndlovu.

Thandi Ndlovu started her jewellery design company, Thandifrika Jewels, in 2011. Ndlovu (36 at the time of

writing), a South African entrepreneur from a rural town in Limpopo, did not know which career path to follow after matric. After school, Ndlovu moved to Johannesburg where she started working at a well-known jewellery store where she soon realised she has a passion for jewellery and an eye for design. After a few years working in retail,

Ndlovu pursued her dream of becoming a jewellery designer by enrolling for a programme in jewellery design and manufacture at the Tshwane University of Technology.

Ndlovu excelled in the programme and was selected for a programme for youth leadership and entrepreneurship run by a non-governmental organisation (NGO). This programme gave her the entrepreneurial skills and business savvy needed to start her own business. In 2011, she registered Thandifrika Jewels as a Closed Corporation (CC). Her ambition was to build a successful jewellery design business to create jobs, expand access to vocational education for youths through her business, and create unique African-inspired jewellery for the local market. However, she soon ran into problems. Ndlovu struggled to find financing to set up a design studio with the necessary materials and equipment. Nevertheless, Ndlovu's passion, ambition and perseverance paid off and she managed to secure financing to set up a small studio in an industrial area in Midrand. The business began to grow and Thandifrika Jewels became known for their unique African-inspired designs. In 2013 she won the Business Women's Association of South Africa's Regional Business Achiever Award in the social entrepreneur category. She also completed a prestigious internship programme in Sweden where she learned from some of the world's leading fine jewellery designers. Back in South Africa, her business, based in Johannesburg, was supplying jewellery to major jewellery retailers, as well as individual clients.

All the same, as the sole owner and business manager of Thandifrika Jewels, with only five employees who are involved with production, she faces operational challenges on four fronts: finance, marketing, human resources and distribution. These challenges threaten to jeopardise

Thandifrika Jewels' ability to ensure sustainable profit growth and develop the company into a premium African jewellery brand. Ndlovu therefore has to reflect on her operational requirements and find operational management strategies that remove the constraints that prevent sustainable growth. To this end, Ndlovu is looking at options to address the operational challenges she faces. She is examining the industry trends and is working at aligning her business more closely with these trends. She is also looking at ways to improve the exposure of her products by negotiating more prominent in-store placement of her products, incentivising distribution, taking a more prominent role in merchandising and exploring the possibility of online advertising and e-commerce. Some of the marketing strategies she is investigating include the use of social media, as well as the use of existing e-commerce sites for designers to leverage her exposure in the international jewellery market. Furthermore, she is developing medium- to long-term financial and human resource plans in order to ensure that she can meet the capital as well as the human resource needs to grow the business and to manage its various operational requirements.

Ndlovu is set on a path to succeed and grow from a small enterprise into a medium enterprise in the next few years, even expanding to export her jewellery. As she says, she sees her role as *'the ability to manage both the creative side of the design process, as well as the financial side of a growing business'*.

Questions

1. What is the overlap between operations, marketing and product/service development at Thandifrika Jewels?
2. How does the current small size of Thandifrika Jewels affect its ability to innovate and improve?

Operations management in not-for-profit organisations

Terms such as *competitive advantage*, *markets* and *business*, which are used in this book, are usually associated with companies in the for-profit sector. Yet operations management is also relevant to organisations whose purpose is not primarily to earn profits. Managing the operations in an animal welfare charity, hospital, research organisation or government department is essentially the same as in commercial organisations. Operations have to take the same decisions – how to create and deliver services and products, invest in technology, contract out some of their activities, devise performance measures, improve their operations performance, and so on. However, the strategic objectives of not-for-profit organisations may be more complex and involve a mixture of political, economic, social or environmental objectives. Because of this there may be a greater chance of operations decisions being made under conditions of conflicting objectives. So, for example, it is the operations staff in a children's welfare department who have to face the conflict between the cost of providing extra social workers and the risk of a child not receiving adequate protection. Nevertheless the vast majority of the topics covered in this book have relevance to all types of organisation, including non-profit, even if the context is different and some terms may have to be adapted.

Short case MSF operations provide medical help to people in danger²

Médecins Sans Frontières (MSF, also called Doctors Without Borders) is an independent humanitarian organisation providing medical aid where it is most needed, regardless of race, religion, politics or gender, and raising awareness of the plight of the people it helps in countries around the world. Its core work takes place in crisis situations – armed conflicts, epidemics, famines and natural disasters such as floods and earthquakes. Their teams deliver both medical aid (including consultations with a doctor, hospital care, nutritional care, vaccinations, surgery, obstetrics and psychological care) and material aid (including food, shelter, blankets, etc.). Each year, MSF sends around 3,000 doctors, nurses, logisticians, water-and-sanitation experts, administrators and other professionals to work alongside around 25,000 locally hired staff. It is one of the most admired and effective relief organisations in the world. But no amount of fine intentions can translate into effective action without superior operations management. To do this, MSF needs to be able to react to any crisis with fast response, efficient logistics systems, and efficient project management.

MSF makes every effort to respond quickly and efficiently to crises around the world. Their response procedures are continuously being developed to ensure that they reach those most in need as quickly as possible.

The process has five phases: proposal, assessment, initiation, running the project, and closing. The information that prompts a possible mission can come from governments, the international community, humanitarian organisations such as the United Nations, financial bodies such as the Humanitarian Aid Department of the European Commission (ECHO), or MSF teams already present in the region. Once the information has been checked and validated, MSF sends a team of medical and logistics experts to the crisis area to carry out a quick evaluation. The team assesses the situation, the number of people affected, and the current and future needs, and sends a proposal back to the MSF office. When the proposal is approved, MSF staff start the process of selecting personnel, organising materials and resources and securing project funds.

Initiating a project involves sending technical equipment and resources to the area. In large crises, planes fly in all the

necessary materials so that the work can begin immediately. Thanks to their pre-planned processes, specialised kits and the emergency stores, MSF can distribute material and equipment within 48 hours, ready for the response team to start work as soon as they arrive. Most MSF projects generally run for somewhere between 18 months and three and a half years.

Whether an emergency response or a long-term health-care project, the closing process is roughly similar. Once the critical medical needs have been met (which could be after weeks, months or years depending on the situation), MSF begins to close the project with a gradual withdrawal of staff and equipment. At this stage, the project closes or is passed on to an appropriate organisation. MSF will also close a project if risks in the area become too great to ensure staff safety.

Whether they are dealing with urgent emergencies, when material might need to be on a plane within 24 hours, or a long-running programme where a steady supply of equipment and drugs is vital, everything MSF does on the ground depends on an efficient logistics system. It is based on the principle that MSF staff should always have exactly the right materials for the job at hand. So MSF has developed and produced pre-packaged disaster kits ready for transport within hours, including a complete surgical theatre the size of a small conference table and an obstetrics kit the size of a two-drawer filing cabinet. There is an ongoing process of revising the kits every time a new drug or medical tool becomes available.

To make sure they are reacting as quickly as possible, MSF has four logistical centres based in Europe and East Africa, plus stores of emergency materials in Central America and East Asia. These purchase, test and store equipment so that aircraft can be loaded and flown into crisis areas within 24 hours. The pre-packaged disaster kits are custom-cleared within the logistics centres ready for flight.

But not all supplies are needed quickly. If it is not a dire emergency, MSF reduces its costs by shipping the majority of material and drugs by sea. Because of this, it is vital to monitor stock levels and anticipate future needs so that orders can be placed up to three months in advance of expected requirements.

The new operations agenda

The business environment has a significant impact on what is expected from operations management. In recent years there have been new pressures for which the operations function has needed to develop responses. Table 1.2 lists some of these business pressures and the operations responses to them. These operations responses form a major part of a *new agenda* for operations. Parts of this agenda are trends which have always existed but have accelerated, such as globalisation and increased cost pressures. Part of the agenda involves seeking ways to exploit new technologies, most notably the internet. Of course, the list in Table 1.2 is not comprehensive, nor is it universal. But very few operations functions will be unaffected by at least some of these concerns.

TABLE 1.2 Changes in the business environment are shaping a new operations agenda

The business environment is changing ...	Prompting operations responses ...
<p>For example ...</p> <ul style="list-style-type: none"> • Increased cost-based competition • Higher quality expectations • Demands for better service • More choice and variety • Rapidly developing technologies • Frequent new product/service introduction • Increased ethical sensitivity • Environmental impacts are more transparent • More legal regulation • Greater security awareness 	<p>For example ...</p> <ul style="list-style-type: none"> • Globalisation of operations networking • Information-based technologies • Co-creation of service • Internet-based integration of operations activities • Supply chain management • Customer relationship management • Flexible working patterns • Mass customisation • Fast time-to-market methods • Lean process design • Environmentally sensitive design • Supplier 'partnership' and development • Failure analysis • Business recovery planning



The input–transformation–output process

Operations principle
All processes have inputs of transforming and transformed resources that they use to create products and services.

All operations create and deliver services and products by changing *inputs* into *outputs* using an 'input–transformation–output' process. Figure 1.4 shows this general transformation process model. Put simply, operations are processes that take in a set of input resources which are used to transform something, or are transformed themselves, into outputs of services and products. And although all operations conform to this general input–transformation–output model, they differ in the nature of their specific inputs and outputs. For example, if you stand far enough away from a hospital or a car plant, they might look very similar, but move closer and clear differences do start to emerge. One is a service operation delivering 'services' that change the physiological or psychological condition of patients, the other is a manufacturing operation creating and delivering 'products'. What is inside each operation will also be different. The hospital contains diagnostic, care and therapeutic processes whereas the motor vehicle plant contains metal forming machinery and assembly processes. Perhaps the most important difference between the two operations, however, is the nature of their inputs. The hospital transforms the customers themselves. The patients form part of the input to, and the output from, the operation. The vehicle plant transforms steel, plastic, cloth, tyres and other materials into vehicles.

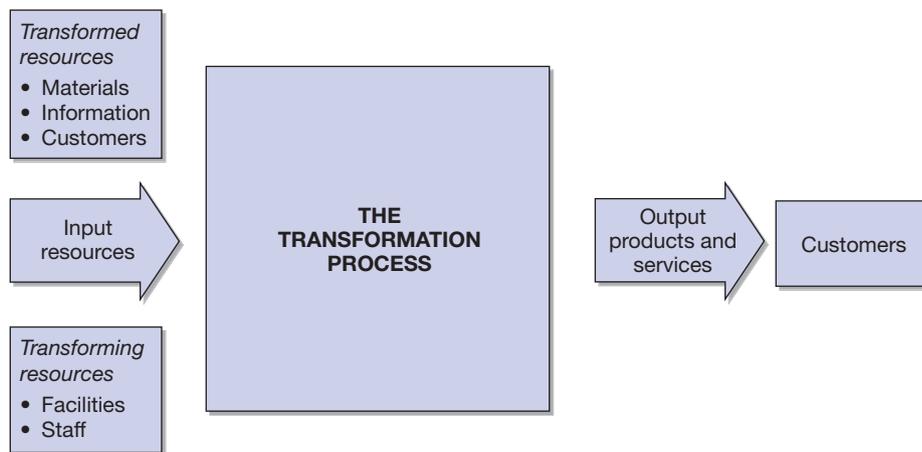


FIGURE 1.4 All operations are input–transformation–output processes

Operations principle
Transformed resource inputs to a process are materials, information or customers.

Inputs to the process

Transformed resources

One set of inputs to any operation's processes are transformed resources. These are the resources that are treated, transformed or converted in the process. They are usually a mixture of the following:

- **Materials** – Operations that process materials could do so to transform their *physical properties* (shape or composition, for example). Most manufacturing operations are like this. Other operations process materials to change their *location* (parcel delivery companies, for example). Some, like retail operations, do so to change the *possession* of the materials. Finally, some operations *store* materials, such as warehouses.
- **Information** – Operations that process information could do so to transform their *informational properties* (that is the purpose or form of the information); accountants do this. Some change the *possession* of the information, for example market research companies sell information. Some *store* the information, for example archives and libraries. Finally, some operations, such as telecommunication companies, change the *location* of the information.
- **Customers** – Operations that process customers might change their *physical properties* in a similar way to materials processors, for example, hairdressers or cosmetic surgeons. Some *store* (or more politely *accommodate*) customers, hotels, for example. Airlines, mass rapid transport systems and bus companies transform the *location* of their customers, while hospitals transform their *physiological state*. Some are concerned with transforming their *psychological state*, for example most entertainment services such as music, theatre, television, radio and theme parks. But customers are not always simple 'passive' items to be processed. They can also play a more active part in many operations and processes. For example, they create the atmosphere in a restaurant; they provide the stimulating environment in learning groups in education; they provide information at check-in desks, and so on. When customers play an active role, this is usually referred to as co-production (or co-creation for new services) because the customer plays a vital part in the provision of the product/service offering.

TABLE 1.3 Dominant transformed resource inputs of various operations

Predominantly processing inputs of materials	Predominantly processing inputs of information	Predominantly processing inputs of customers
All manufacturing operations	Accountants	Hairdressers
Mining companies	Bank headquarters	Hotels
Retail operations	Market research company	Hospitals
Warehouses	Financial analysts	Mass rapid transports
Postal services	News service	Theatres
Container shipping line	University research unit	Theme parks
Trucking companies	Telecoms company	Dentists

Transforming resources

The other set of inputs to any operations process are transforming resources. These are the resources which act upon the transformed resources. There are two types of transforming resources that form the 'building blocks' of all operations:

- **facilities** – the buildings, equipment, plant and process technology of the operation
- **staff** – the people who operate, maintain, plan and manage the operation. (Note that we use the term 'staff' to describe all the people in the operation, at any level.)

The exact nature of both facilities and staff will differ between operations. To a five-star hotel, its facilities consist mainly of 'low-tech' buildings, furniture and fittings. To a nuclear-powered aircraft carrier, its facilities are 'high-tech' nuclear generators, and sophisticated electronic equipment. Staff will also differ between operations. Most staff employed in a factory assembling domestic refrigerators may not need a very high level of technical skill. In contrast, most staff employed by an accounting company are, hopefully, highly skilled in their own particular 'technical' skill

Operations principle

All processes have transforming resources of facilities (equipment, technology, etc.) and people.

(accounting). Yet although skills vary, all staff can make a contribution. An assembly worker who consistently mis-assembles refrigerators will not satisfy customers and will increase costs just as surely as an accountant who cannot add up. The balance between facilities and staff also varies. A computer chip manufacturing company, such as Intel, will have significant investment in physical facilities. A single chip fabrication plant can cost in excess of US\$4 billion, so operations managers will spend a lot of their time managing their facilities. Conversely, a management consultancy firm depends largely on the quality of its staff. Here operations management is largely concerned with the development and deployment of consultant skills and knowledge.

Outputs from the process

Products and services are different. Products are usually tangible objects, whereas services are activities or processes. A car or a newspaper or a restaurant meal is a product, whereas a service is the activity of the customer using or consuming that product. Some services do not involve products. Consultancy advice or a haircut is a process (though some products may be supplied in support of the service, such as a report or a hair gel). Also, while most products can be stored, at least for a short time, service only happens when it is consumed or used. So accommodation in an hotel room, for example, will perish if it is not sold that night, and a restaurant table will remain empty unless someone uses it that evening.

Most operations produce both products and services

Some operations create and deliver just services and others just products, but most operations combine both elements. As demonstrated by the short cases and examples in this chapter, operations can be positioned in a spectrum from 'pure' products to 'pure' services. Crude oil producers are concerned almost exclusively with the product that comes from their oil wells. So are aluminium smelters, but they might also deliver some services such as technical advice. Services in these circumstances are called facilitating services. To an even greater extent, machine tool manufacturers deliver facilitating services such as technical advice and applications engineering. The services delivered by a restaurant are an essential part of what the customer is paying for. It is both a manufacturing operation which creates and delivers meals and a provider of service in the advice, ambience and service of the food. An information systems provider may create software 'products', but primarily it is providing a service to its customers, with facilitating products. Certainly, a management consultancy, although it produces reports and documents, would see itself primarily as a service provider.

Operations principle

Most operations produce a mixture of tangible products and intangible services.

Pure services solely create and deliver services – a psychotherapy clinic, for example. Of the short cases and examples in this chapter, Woolworths, Thandifrika Jewels and Spur all create and deliver products and services, but Woolworths' customers are probably more interested in the 'products' they collect from the store than any idea of 'service'. MSF produces intangible 'products' in close collaboration with its clients. The budget hotels and lodges are close to being pure services, although they both have some tangible elements such as food.

Operations principle

Whether an operation produces tangible products or intangible services is becoming increasingly irrelevant. In a sense all operations produce services for their customers.

Increasingly, the distinction between services and products is difficult to define and not particularly useful. Software is both a product (sold on a CD or DVD) and a service when sold over the internet (as a download) or used by the customer. A restaurant meal is both a product and also a service as it is delivered and consumed. Indeed we would argue that *all* operations are service providers which may create and deliver products as part of the offering to their customers. This is why operations management is important to all organisations. Whether they see themselves as manufacturers or service providers is very much a secondary issue.

Customers

Customers may be an input to many operations (see earlier) but they are also the reason for their existence. If there were no customers (whether business customers, users or consumers), there would be no operation. So it is critical that operations managers are aware of customer needs, both current and potential. This information will determine what the operation has to do and how it has to do it (the operation's strategic performance objectives), which in turn defines the service/product offering to be designed, created and delivered.

Short case Spur – memories are made of this³

Ask just about anyone in South Africa, just about anywhere in South Africa, what 'Spur' is, and the likelihood is they will reply something like, 'A place where you can eat lekka burgers and steaks.' Started in 1967 by its current chairman, Allan Ambor, as a single Spur Steak Ranch – the Golden Spur in Newlands, Cape Town – the Spur Corporation now has 315 restaurants in South Africa, as well as 35 spread across Africa, Australia and the UK, with more in the pipeline.

Although the Spur Corporation now comprises Spur Steak Ranches, Panarottis Pizza Pasta, John Dory's Fish Grill Sushi, The Hussar Grill and RocoMamas (all sit-down restaurants) and the fast food convenience chain, Captain DoRegos, it is the steak ranches that have almost become part of South Africa's culture. What accounts for Spur's phenomenal success?

According to Pierre van Tonder, who joined Spur in 1982 and who has been CEO since 2012, and has guided Spur through a considerable period of growth, Spur's success is built on the two prongs of its mission: to provide a 'taste for life' for their customers, and be a 'great place to work' for their employees. In terms of providing customers with a 'taste for life' Spur's winning recipe was that they started with a warm, relaxing family friendly environment and then added generous portions of great tasting food and a hearty helping of quality service.

To this end, Spur has over the years created its own unique friendly and lively atmosphere, which focuses on the family. As the Spur Corporations Annual Report (2011) puts it: 'Each Spur restaurant is designed to cater for the whole family, from comfortable, spacious seating for adults to designated children's activity areas. Parents can relax while enjoying a delicious meal, knowing that their children are in an environment where they can have fun in a safe area.'

However, as Van Tonder emphasises, Spur's success in being able to provide customers with a 'taste for life' is almost wholly dependent on the calibre of its staff and on the way the brand is perceived. For this reason, Spur makes continued investment in developing employees at both regional offices and in restaurants. The result is a range of benefits to the Spur brand, including improved food quality, customer service and employee engagement. In order to

ensure that all employees are living up to the standard of their training and the Spur brand's mission, regular operations management inspections are held that cover food quality, customer service and restaurant management.

In terms of the public's perception of the Spur brand, Spur Corporation goes to great lengths to provide customer satisfaction, which, in turn, fosters loyalty, while, at the same time, grows the Spur brands customer base. Examples of the strategies used include:

- a strong social awareness philosophy and a commitment to improve the quality of life of disadvantaged South Africans
- sponsoring sport and recreational events, such as Spur Soccer Masidlale, Junior Rugby Development, the Spur annual charity golf tournament, the Teddy Bear Clinic and Reach for a Dream events
- skills development external to the group and giving back to the communities
- establishing green policies to implement mechanisms to deal with waste management, sustainable energy, water management and biodiversity.

Other notable strategies employed in order to ensure customer satisfaction and to grow its customer base involve good advertising campaigns that reflect the values and aspirations of its target market, delivering effective regional marketing initiatives, as well as opening additional restaurants and revamping existing ones. A Spur's Family Card loyalty programme was also initiated. By June 2013, holders of the loyalty card accounted for 38.3% of all sales. They visited Spur Steak Ranches restaurants more frequently than non-card holders and spent 27.6% more per visit on average.

The Spur brand, using only the best-quality ingredients and its unique range of sauces, bastings and thus tastes, served to customers by friendly, efficient staff in warm, bustling, themed steak ranches with kids' play centres, certainly more than meets these givens. And, in doing so, lives up to one of its mission statements: 'Our business exists to provide fun, memorable experiences over great food for the young and old.'

The process hierarchy

So far we have discussed operations management, and the input–transformation–output model, at the level of 'the operation'. For example, we have described 'the web designer', 'the bank', 'the sandwich shop', 'the disaster relief operation', and so on. But look inside any of these operations and one will see that all operations consist of a collection of processes (though these processes may be called 'units' or 'departments') interconnecting with each other to form a network. Each process acts as a smaller version of the whole operation of which they form a part, and transformed resources flow in between them. In fact within any operation, the mechanisms that actually

transform inputs into outputs are these processes. A process is an arrangement of resources that create some mixture of service and products. They are the ‘building blocks’ of all operations, and they form an ‘internal network’ within an operation. Each process is, at the same time, an internal supplier and an internal customer for other processes. This ‘internal customer’ concept provides a model to analyse the internal activities of an operation. It is also a useful reminder that, by treating internal customers with the same degree of care as external customers, the effectiveness of the whole operation can be improved. Table 1.4 illustrates how a wide range of operations can be described in this way.

TABLE 1.4 Some operations described in terms of their processes

Operation	Some of the operation's inputs	Some of the operation's processes	Some of the operation's outputs
Airline	Aircraft Pilots and air crew Ground crew Passengers and freight	Check passengers in Board passengers Fly passengers and freight around the world Care for passengers	Transported passengers and freight
Department store	Products for sale Sales staff Information systems Customers	Source and store products Display products Give sales advice Sell products	Customers and products ‘assembled’ together
Police	Police officers Computer systems Information systems Public (law-abiding and criminals)	Crime prevention Crime detection Information gathering Detaining suspects	Lawful society, public with a feeling of security
Frozen food manufacturer	Fresh food Operators Processing technology Cold storage facilities	Source raw materials Prepare food Freeze food Pack and freeze food	Frozen food

Operations principle

A process perspective can be used at three levels: the level of the operation itself, the level of the supply network, and the level of individual processes.

Within each of these processes is another network of individual units of resource such as individual people and individual items of process technology (machines, computers, storage facilities, etc.). Again, transformed resources flow between each unit of transforming resource. So any business, or operation, is made up of a network of processes, and any process is made up of a network of resources. But also any business or operation can itself be viewed as part of a greater network of businesses or operations. It will have operations that supply it with the services and products it needs and, unless it deals directly with the end consumer, it will supply customers who themselves may go on to supply their own customers. Moreover, any operation could have several suppliers, several customers and may be in competition with other operations creating similar services or products to itself. This network of operations is called the supply network. In this way the input–transformation–output model can be used at a number of different ‘levels of analysis’. Here we have used the idea to analyse businesses at three levels, the process, the operation and the supply network. But one could define many different ‘levels of analysis’, moving upwards from small to larger processes, right up to the huge supply network that describes a whole industry.

This idea is called the hierarchy of operations and is illustrated for a business that makes television programmes and videos in Figure 1.5. It will have inputs of production, technical and administrative staff, cameras, lighting, sound and recording equipment, and so on. It transforms these into finished programmes, music videos, etc. At a more macro level, the business itself is part of a whole supply network, acquiring services from creative agencies, casting agencies, and studios, liaising with promotion agencies, and serving its broadcasting company customers. At a more micro level, within this overall operation there are many individual processes: workshops manufacturing the sets; marketing processes that liaise with potential customers; maintenance and repair processes that care for, modify and design technical equipment; production units that shoot the programmes and videos, and so on. Each of these individual processes can be represented as a network of yet smaller processes, or even individual units of resource. So, for example, the set manufacturing process could comprise of four smaller processes: one that designs the sets, one that constructs them, one that acquires the props, and one that finishes (assembles and paints) the set.

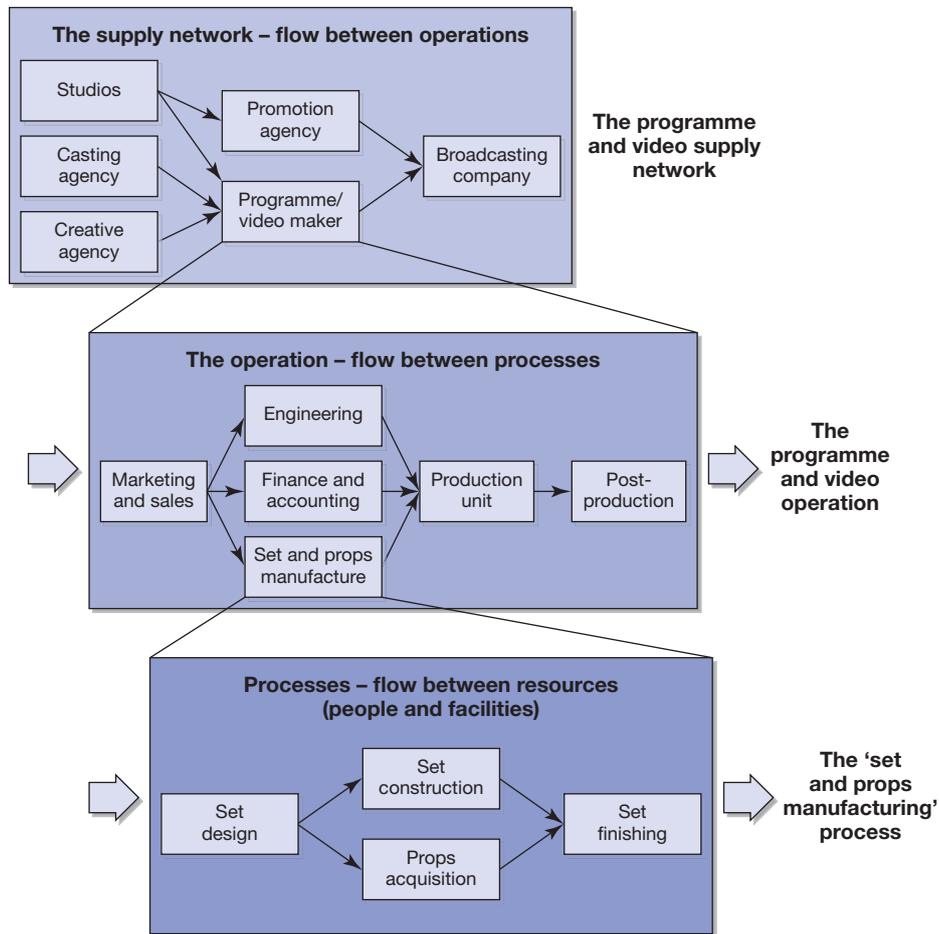


FIGURE 1.5 Operations and process management requires analysis at three levels: the supply network, the operation, and the process

Critical commentary

The idea of the internal network of processes is seen by some as being over-simplistic. In reality the relationship between groups and individuals is significantly more complex than that between commercial entities. We cannot treat internal customers and suppliers exactly as we do external customers and suppliers. External customers and suppliers usually operate in a free market. If an organisation believes that in the long run it can get a better deal by purchasing services and products from another supplier, it will do so. But internal customers and suppliers are not in a 'free market'. They cannot usually look outside either to purchase input resources or to sell their output services and products (although some organisations are moving this way). Rather than take the 'economic' perspective of external commercial relationships, it can be argued that models from organisational behaviour are more appropriate.

Operations management is relevant to all parts of the business

The example in Figure 1.5 demonstrates that it is not just the operations function that manages processes; all functions manage processes. For example, the marketing function will have processes that create demand forecasts, processes that create advertising campaigns and processes that create marketing plans. These processes in the other functions also need managing using similar principles to those within the operations function. Each function will have its 'technical' knowledge. In marketing, this is the expertise in designing and shaping marketing plans; in

Operations principle

All parts of the business manage processes so all parts of the business have an operations role and need to understand operations management principles.

finance, it is the technical knowledge of financial reporting. Yet each will also have a ‘process management’ role of producing plans, policies, reports and services. The implications of this are very important. Because all managers have some responsibility for managing processes, they are, to some extent, operations managers. They all should want to give good service to their (often internal) customers, and they all will want to do this efficiently. So, operations management is relevant for all functions, and all managers should have something to learn from the principles, concepts, approaches and techniques of operations management. It also means that we must distinguish between two meanings of ‘operations’:

- **‘operations’ as a function**, meaning the part of the organisation which creates and delivers services and products for the organisation’s external customers
- **‘operations’ as an activity**, meaning the management of the processes within any of the organisation’s functions.

Table 1.5 illustrates just some of the processes that are contained within some of the more common non-operations functions, the outputs from these processes and their ‘customers’.

TABLE 1.5 Some examples of processes in non-operations functions

Organisational function	Some of its processes	Outputs from its process	Customer(s) for its outputs
Marketing and sales	Planning process Forecasting process Order-taking process	Marketing plans Sales forecasts Confirmed orders	Senior management Sales staff, planners, operations Operations, finance
Finance and accounting	Budgeting process Capital approval processes Invoicing processes	Budgets Capital request evaluations Invoices	Everyone Senior management, requesters External customers
Human resources management	Payroll processes Recruitment processes Training processes	Salary statements New hires Trained employees	Employees All other processes All other processes
Information technology	Systems review process Help desk process System implementation project processes	System evaluation Advice Implemented working systems and aftercare	All other processes All other processes All other processes

Business processes

Operations principle

Processes are defined by how the organisation chooses to draw process boundaries.

Whenever a business attempts to satisfy its customers’ needs it will use many processes, both in its operations and its other functions. Each of these processes will contribute some part to fulfilling customer needs. For example, the television programme and video production company, described previously, creates and delivers two types of ‘product’. Both of these involve a slightly different mix of processes within the company. The company decides to reorganise its operations so that each product is created from start to finish by a dedicated process that contains all the elements necessary for its production, as in Figure 1.6. So customer needs for each product are entirely fulfilled from within what is called an ‘end-to-end’ business process. These often cut across conventional organisational boundaries. Reorganising (or ‘re-engineering’) process boundaries and organisational responsibilities around these business processes is the philosophy behind business process re-engineering (BPR) which is discussed further later (see Chapter 18).

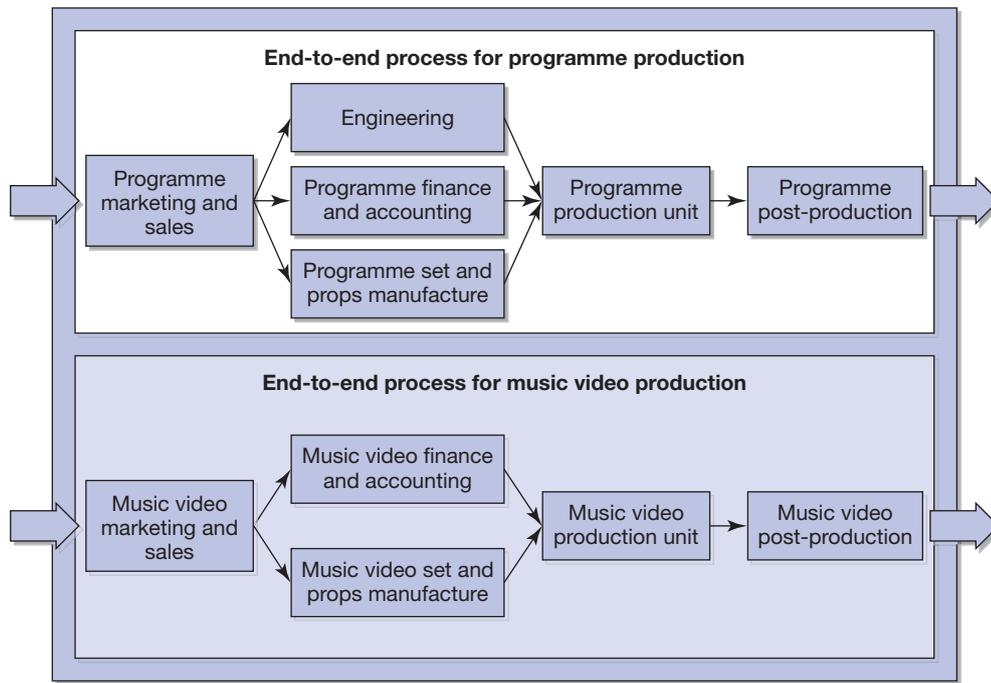


FIGURE 1.6 The television and video company divided into two 'end-to-end' business processes, one dedicated to creating programmes and the other dedicated to creating music videos

Operations processes have different characteristics

Although all operations processes are similar in that they all transform inputs, they do differ in a number of ways, four of which, known as the four Vs, are particularly important:

- the **volume** of their output
- the **variety** of their output
- the **variation** in the demand for their output
- the degree of **visibility** which customers have of the creation of their output.

The volume dimension

Let us take a familiar example. The epitome of high-volume hamburger production is McDonald's, which serves millions of burgers around the world every day. Volume has important implications for the way McDonald's operations are organised. The first thing you notice is the repeatability of the tasks people are doing and the systemisation of the work where standard procedures are set down specifying how each part of the job should be carried out. Also, because tasks are systematised and repeated, it is worthwhile developing specialised fryers and ovens. All this gives *low unit costs*. Now consider a small local cafeteria serving a few 'short order' dishes. The range of items on the menu may be similar to the larger operation, but the volume will be far lower, so the repetition will also be far lower and the number of staff will be lower (possibly only one person) and therefore individual staff are likely to perform a wider range of tasks. This may be more rewarding for the staff, but less open to systemisation. Also, it is less feasible to invest in specialised equipment. So the cost per burger served is likely to be higher (even if the price is comparable).

The variety dimension

A taxi company offers a relatively high-variety service. It is prepared to pick you up from almost anywhere and drop you off almost anywhere. To offer this variety it must be relatively *flexible*. Drivers must have a good knowledge of the area, and communication between the base and the taxis must be effective. However, the cost per kilometre travelled will be higher for a taxi than

for a less customised form of transport such as a bus service. Although both provide the same basic service (transportation), the taxi service has a higher variety of routes and times to offer its customers, while the bus service has a few well-defined routes, with a set schedule. If all goes to schedule, little, if any, flexibility is required from the bus operation. All is standardised and regular which results in relatively low costs compared with using a taxi for the same journey.

The variation dimension

Consider the demand pattern for a successful summer holiday resort hotel. Not surprisingly, more customers want to stay in summer vacation times than in the middle of winter. At the height of 'the season' the hotel could be full to its capacity. Off-season demand, however, could be a small fraction of its capacity. Such a marked variation in demand means that the operation must change its capacity in some way, for example by hiring extra staff for the summer. The hotel must try to predict the likely level of demand. If it gets this wrong, it could result in too much or too little capacity. Also, recruitment costs, overtime costs and under-utilisation of its rooms all have the effect of increasing the hotel's costs operation compared with a hotel of a similar standard with level demand. A hotel which has relatively level demand can plan its activities well in advance. Staff can be scheduled, food can be bought and rooms can be cleaned in a *routine* and *predictable* manner. This results in a high utilisation of resources and unit costs which are likely to be lower than those hotels with a high-variation demand pattern.

The visibility dimension

Visibility is a slightly more difficult dimension of operations to envisage. It means how much of the operation's activities its customers experience, or how much the operation is exposed to its customers. Generally, customer-processing operations are more exposed to their customers than material- or information-processing operations. But even customer-processing operations have some choice as to how visible they wish their operations to be.

For example, a retailer could operate as a high visibility 'bricks and mortar', or a lower visibility web-based operation. In the 'bricks and mortar', high visibility operation, customers will directly experience most of its 'value-adding' activities. Customers will have a relatively *short waiting tolerance*, and may walk out if not served in a reasonable time. Customers' perceptions, rather than objective criteria, will also be important. If they perceive that a member of the operation's staff is discourteous to them, they are likely to be dissatisfied (even if the staff member meant no discourtesy), so high-visibility operations require staff with good customer contact skills. Customers could also request services or products which clearly would not be sold in such a shop, but because the customers are actually in the operation they can ask what they like! This is called high received variety. This makes it difficult for high-visibility operations to achieve high productivity of resources, so they tend to be relatively high-cost operations.

Conversely, a web-based retailer, while not a pure low-contact operation, has far lower visibility. Behind its website, it can be more 'factory-like'. The *time lag* between the order being placed and the items ordered by the customer being retrieved and dispatched does not have to be minutes as in the shop, but can be hours or even days. This allows the tasks of finding the items, packing and dispatching them to be *standardised* by staff who need few customer contact skills. Also, there can be relatively *high staff utilisation*. The web-based organisation can also centralise its operation on one (physical) site, whereas the 'bricks and mortar' shop needs many shops close to centres of demand. Therefore, the low-visibility web-based operation will have lower costs than the shop.

Operations principle

The way in which processes need to be managed is influenced by volume, variety, variation and visibility.

Short case Travel accommodation at opposite ends of the spectrum

Budget hotels

Hotels are usually staff-intensive and have to cope with a range of customers, such as business and holiday travellers. As high-contact operations they therefore can be costly to run. So, how can hotels and hotel chains be successful yet remain affordable by avoiding the crippling costs of high customer contact and a demand for a variety of services?

Typically situated close to major roads and junctions, budget hotel chains offer ease of access to customers, thus limiting the cost of travel. In addition, some of these hotel chains manage to offer outstanding value by adopting principles that are not always associated with hotel operations – standardisation and the innovative use of technology in their design, construction and day-to-day operations. For example, budget hotel chains use state-of-the-art technology to prefabricate standardised units and then combine these according to the needs of individual sites. Therefore, all rooms have the same floor space and fittings, such as type and number of beds, storage areas, television sets, and so on. While the rooms are designed to be attractive, functional and comfortable, an important cost-limiting factor that results from their standardised design is that they are easy to clean and maintain.

Budget hotel chains also limit the amount of staff contact with customers by restricting reception hours to set times (such as from 05:30 to 10:00, and from 17:00 to 22:00). Outside these times, automated systems may sell rooms to credit card users, provide access to the hotel, dispense a security code for each room and even print a receipt. Technology is also utilised to maximum effect in the bathrooms in which showers and toilets are automatically cleaned after each use by means of nozzles that spray the room with a disinfectant solution and heating elements that dry it before it is used again. These hotel chains may simplify their operations even further by locating their premises near existing restaurants, and only providing continental, self-service breakfasts on site.

Although they cater for holiday and business travellers, budget hotel chains limit the variety of services they provide to all types of customers and in so doing minimise the costs associated with personalised services that vary according to the needs of sets of travellers.

Luxury lodges

South Africa's game lodges are ideally situated in remote areas, far from any cities and cell phone reception. With limited numbers of accommodation suites (such as tents or chalets) they guarantee quiet



and solitude. While the accommodation units are similar to one another, they are carefully crafted to provide luxury. Accommodation units in luxury lodges typically have extra-large king size beds, individual cooling and heating units, and expensive furnishings. Rare and/or high-cost building materials, such as teak decks, are used to craft luxurious indoor and outdoor accommodation that includes private decks and plunge pools with a view.

In addition, lodges offer customised daily activities for customers, such as game viewing and game drives, bird watching, guided walks, excursions to rock art sites, night walks and star gazing. Each of these activities is guided by a game ranger in either a luxury vehicle or on foot. Before embarking on any activity, guests are encouraged to share their special interests so that the game ranger can incorporate these into the experience being offered. During activities, the focus remains on guest comfort, and drinks are offered at sunset or coffee/tea at sunrise. Some lodges even provide full meals at remote locations in the bush.

To provide for further entertainment and comfort between activities, lodges often offer on-site luxury spa facilities or adventure experiences such as mountain biking. Meals at base camp are typically frequent, served by waiting staff, and offer the best of African lodge cuisine.

Questions

1. How have the respective types of accommodation optimised what their respective operating environments offer to deliver appropriate levels of service?
2. What are the main differences in the operations management challenges facing the two hotels?

Mixed high- and low-visibility processes

Some operations have both high- and low-visibility processes within the same operation. In an airport, for example, some activities are totally 'visible' to its customers, such as information desks answering people's queries. These staff operate in what is termed a front-office environment. Other parts of the airport have little, if any, customer 'visibility', such as the baggage handlers. These rarely seen staff perform the vital but low-contact tasks, in what is called the back-office part of the operation.

Operations principle

Operations and processes can (other things being equal) reduce their costs by increasing volume, reducing variety, reducing variation, and reducing visibility.

The implications of the four Vs of operations processes

All four dimensions have implications for the cost of creating and delivering services and products. Put simply, high volume, low variety, low variation and low customer contact all help to keep processing costs down. Conversely, low volume, high variety, high variation and high customer contact generally carry some kind of cost penalty for the operation. This is why the volume dimension is drawn with its 'low' end at the left, unlike the other dimensions, to keep all the 'low cost' implications on the right. To some extent the position of an operation in the four dimensions is determined by the demand of the market it is serving. However, most operations have some discretion in moving themselves on the dimensions. Figure 1.7 summarises the implications of such positioning.

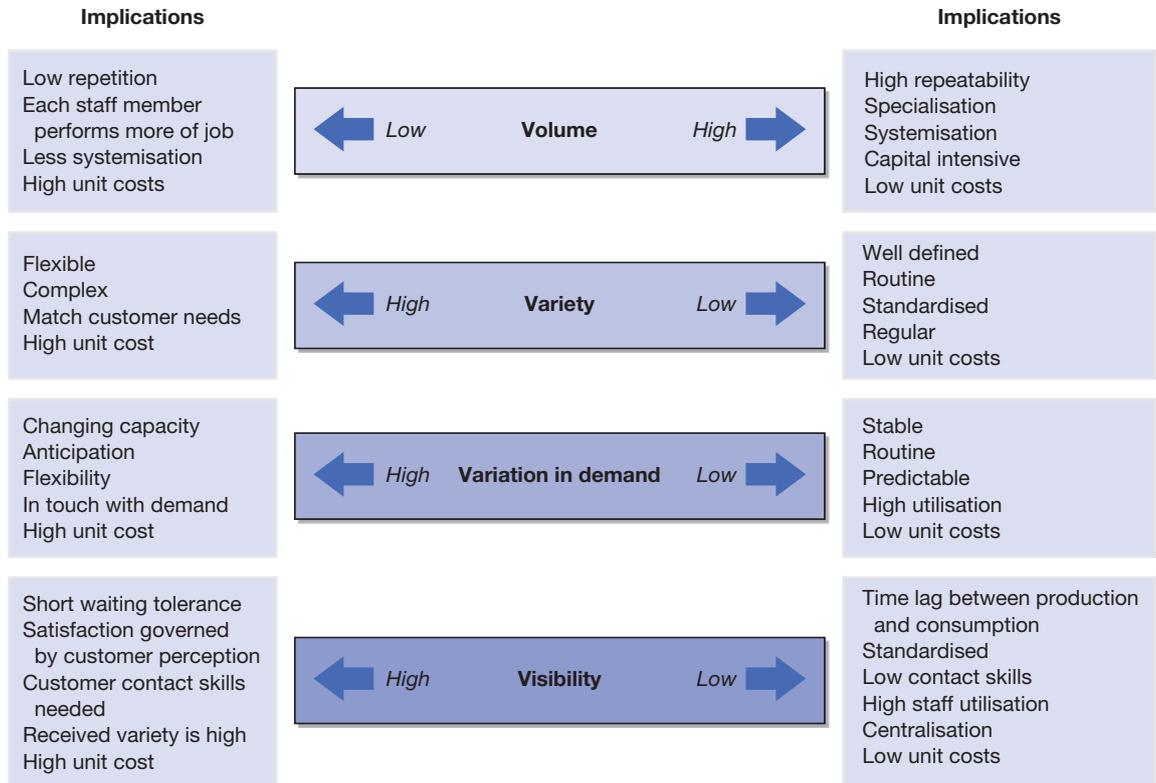


FIGURE 1.7 A typology of operations

Worked example

Volume, variety, variation and visibility (the four Vs) influence operational processes and must therefore be managed accordingly. This operations principles is illustrated by the short case on 'Travel accommodation at the opposite ends of the spectrum' which outlines the difference between the four Vs profile of budget hotels and luxury lodges as summarised in Figure 1.8. These differences underscore the importance of management and staff understanding the four Vs operations principle and the way in which it impacts on how an organisation is run. Both provide the same basic service as any other hotel. However, one is of a small, intimate nature with relatively few customers. Its variety of services is almost infinite in the sense that customers can make individual requests in terms of food and entertainment. Variation is high and customer contact, and therefore visibility, is also very high (in order to ascertain customers' requirements and provide for them). All of which is very different from the budget hotels, where volume is high (although not as high as in a large, city-centre hotel), variety of service is strictly limited, and business and holiday customers use the hotel at different times, which limits variation. Most notably, though, customer contact is kept to a minimum.

The luxury lodges have very high levels of service but provides them at a high cost (and therefore a high price). Conversely, budget hotels arrange their operations in such a way as to minimise their costs.

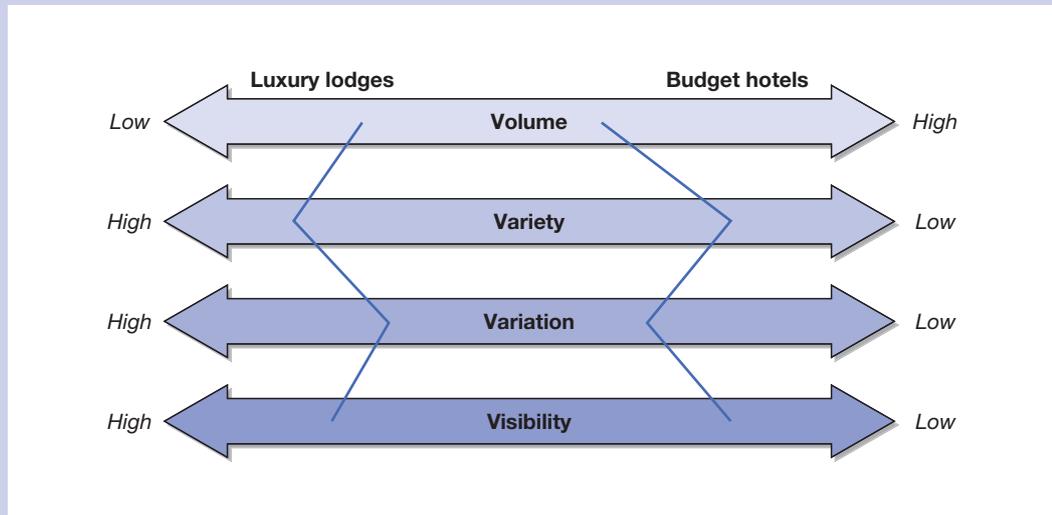


FIGURE 1.8 The four Vs profiles of two very different hotel operations

What do operations managers do?

The exact details of what operations managers do will, to some extent, depend on the way an organisation defines the boundaries of the function. Yet there are some general classes of activities that apply to all types of operation irrespective of whether they are service, manufacturing, private or public sector, and no matter how the operations function is defined. We classify operations management activities under four headings: direct, design, deliver and develop.

- **Directing the overall nature and strategy of the operation** – A general understanding of operations and processes and their strategic purpose and performance, together with an appreciation of how strategic purpose is translated into reality, is a prerequisite to the detailed design of operations and process. This is treated in Chapters 1 to 3.
- **Designing the operation's services, products and processes** – Design is the activity of determining the physical form, shape and composition of operations and processes together with the services and products that they create. This is treated in Chapters 4 to 9.
- **Planning and control process delivery** – After being designed, the delivery of services and products from suppliers and through the total operation to customers must be planned and controlled. This is treated in Chapters 10 to 17.
- **Developing process performance** – Increasingly it is recognised that operations managers, or indeed any process managers, cannot simply routinely deliver services and products in the same way that they always have done. They have a responsibility to develop the capabilities of their processes to improve process performance. This is treated in Chapters 18 to 21.

Operations principle
Operations management activities can be grouped into four broad categories: directing the overall strategy of the operation; designing the operation's products, services and processes; planning and controlling delivery; and developing performance.

The model of operations management

We can now combine two ideas to develop the model of operations and process management that will be used throughout this book. The first is the idea that *operations* and the *processes* that make up both the operations and other business functions are transformation systems that take in inputs and use process resources to transform them into outputs. The second idea is that the resources both in an organisation's operations as a whole and in its individual processes need to be managed in terms of how they are *directed*, how they are *designed*, how *delivery* is planned and controlled and how they are *developed* and improved. Figure 1.9 shows how these two ideas go together. This

book will use this model to examine the more important decisions that should be of interest to all managers of operations and processes.

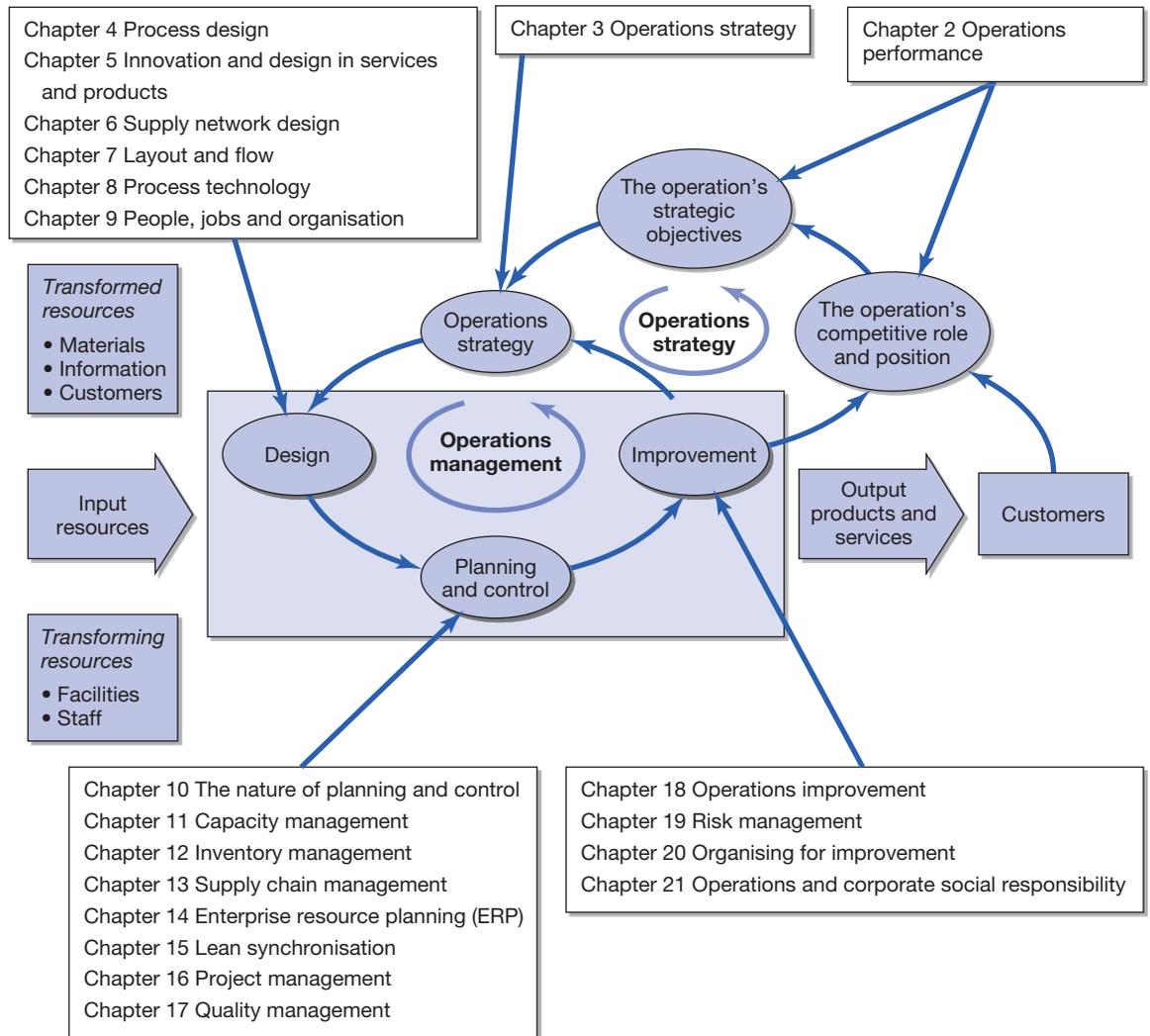


FIGURE 1.9 A general model of operations management

Critical commentary

The central idea in this introductory chapter is that all organisations have operations processes which create and deliver services and products and all these processes are essentially similar. However, some believe that by trying to characterise processes in this way (perhaps by calling them processes) one loses or distorts their nature, depersonalises or takes the humanity out of the way in which we think of the organisation. This point is often raised in not-for-profit organisations, especially by professional staff. For example, the head of one European medical association (a doctors' trade union) criticised hospital authorities for expecting a 'sausage factory service based on productivity targets'. No matter how similar they appear on paper, it is argued, a hospital can never be viewed in the same way as a factory. Even in commercial businesses, professionals, such as creative staff, often express discomfort at their expertise being described as a process.

Summary answers to key questions

What is operations management?

- Operations management is the activity of managing the resources which are devoted to the creation and delivery of services and products. It is one of the core functions of any business, although it may not be called operations management in some industries.
- Operations management is concerned with managing processes. And all processes have internal customers and suppliers. But all management functions also have processes. Therefore, operations management has relevance for all managers.

Why is operations management important in all types of organisation?

- Operations management uses the organisation's resources to create outputs that fulfil defined market requirements. This is *the* fundamental activity of any type of enterprise.
- Operations management is increasingly important because today's business environment requires new thinking from operations managers.

What is the input–transformation–output process?

- All operations can be modelled as input–transformation–output processes. They all have inputs of transforming resources, which are usually divided into 'facilities' and 'staff', and transformed resources, which are some mixture of materials, information and customers.
- Most operations create and deliver a combination of services and products, rather than being a pure service or product operation.

What is the process hierarchy?

- All operations are part of a larger supply network which, through the individual contributions of each operation, satisfies end customer requirements.
- All operations are made up of processes that form a network of internal customer–supplier relationships within the operation.
- End-to-end business processes that satisfy customer needs often cut across functionally based processes.

How do operations processes have different characteristics?

- Operations differ in terms of their volume of their outputs, the variety of outputs, the variation in demand for their outputs, and the degree of visibility they have.
- High volume, low variety, low variation and low customer visibility are usually associated with low cost.

What do operations managers do?

- Responsibilities can be classed in four categories: direct, design, deliver, and develop.
- Direct includes understanding relevant performance objectives and setting an operations strategy.
- Design includes the design of the operation and its processes and the design of its services and products.
- Delivery includes the planning and controlling of the activities of the operation.
- Develop includes the improvement of the operation over time.

Case study Digicape – synergy rules in ICT delivery⁴

In 1996 and 2001 two separate companies that shared a similar vision started up in South Africa. They were both passionate about Apple products and wanted South Africans to share in what they believed were the best computers in the world. These companies were Project 3 and Digicape. The former became one of the largest independent Apple Premium Resellers in South Africa with a focus on support, sales and knowledge transfer. The latter was itself the product of a merger that took place in 2001, when two small Apple resellers teamed up to widen their ability to reach an increased number of South Africans.

In 2010, the founders of these two companies, Alan Goldberg and Robin Olivier, got together to examine the particular strengths of each company, concluding that whereas Project 3 was stronger in the primary and secondary education sector, and had captured a large share of the audio and video market, Digicape dominated in the tertiary education, photographic and visual markets. This led Goldberg and Olivier to the realisation that by merging the strengths of the two companies they could create a dynamic synergy. Consequently, they announced their plans to merge and form a single, premium provider of Apple products to the South African market.

In making their plans known, Alan Goldberg, who was then director at Project 3 said, *'By pooling our resources we can ensure that all our customers get exactly what they need, with additional services readily on tap. We can offer a total package of market insight, basic to advanced training, excellent customer service and a depth of technical expertise through our Apple service centres.'*

The merger, however, was not an overnight affair, with integration taking place slowly. Robin Olivier, who then was the MD of the original Digicape, said that they would not hurry the merger process because they wanted to ensure that *'... no one – whether staff member, supplier or customer – is left behind in the process.'* He also said, *'We see the merger with Project 3 as ... a natural progression of the strategy [of the merger that first brought Digicape into being in 2001], but now, rather than just looking for scale, we are looking to benefit from the significant combined strengths of each business to create an unsurpassed Apple experience for our customers.'*

In terms of avoiding a sudden merger, Olivier assures, *'During the first phase of the merger the two companies will work together at a management level to find ways to play to the strengths of each business. So for instance, if you buy a product from the Digicape store you might be offered training at Project 3, while if you're searching for a product on the Project 3 website you may be pointed to Digicape's online store instead.'* As a result of the merger, which combined their areas of expertise and knowledge of market sectors, Digicape has made considerable additional inroads into the education sector, not only at school level, but at college and university level as well, where they provide complete systems and solutions for student laboratories and design centres.

According to Goldberg, who is responsible for the growth of the implementation and use of Apple technology in the education sector, these expanded inroads are a result of *'... helping educators think differently about the use of technology in and out of the classroom.'*

In addition, Digicape has expanded into the business world as well. As their marketing spokesperson says, *'We are your partner of choice for all your hardware, software and networking requirements. We operate as an extension to your business, driving your key objectives and ensuring maximum uptime for your business at all times. Let us supplement your existing technical solutions team or operate as a full outsource partner. Whatever your preference we have the expertise, solutions, support, products and software to maximise the return on all your IT investments.'*

If you are in multi-media, we'll do complete production solutions, from high-end Apple desktop and server hardware to video production consoles, storage subsystems, inter-networking and true colour output matching. We have video and production solutions experts in-house to provide systems architecture and technical know-how, along with specialised hardware devices ... [and] our drive to make technology and learning accessible to everyone has seen us partner with finance partners Capitec and Nedbank and mobile company Vodacom to offer you flexibility, affordability and a full-service solution.'

A recent example of Digicape's extension into the business world is the Digicape–Fuel collaboration, to deliver a first-for-Africa innovative training solution for Engen. This arose from a need that Engen identified back in 2011 for a training package that would empower their forecourt staff (petrol attendants) and improve their levels of service delivery at the same time. Digicape stepped up and provided a training solution that took into account the fact that Engen had over 17,000 forecourt attendants spread across the country, many of whom had low literacy levels. At the heart of this training solution was the Apple iPad. It was chosen because it provided the best all-round answer to the requirement and the real-life problem of securing expensive training terminals at service stations nationwide – some in remote areas. In addition, according to Robin Olivier, *'The tablet format was proposed because it allows for intuitive access to education through a touch screen interface, and is not intimidating for those who are not computer-literate.'* Subsequently, a total of 630 internet-connected devices were placed on custom-built, securely mounted stands in a kiosk-type assembly and readied for the first phase of the rollout. Following this, Fuel developed a first-of-its-kind app for iOS devices – Engen Learn – that offers work-related and life skills training, which included educating people about physical and financial health.

Digicape now also boasts an attractive and user-friendly online shop, as well as a range of other products and services, backed by flexible finance and leasing options to make it all affordable. Products and services include hardware (they

stock Apple and complementary third-party products) and software sales (they are the premier reseller of all software for Apple, Adobe and Microsoft for Apple packages), as well as Mobile Device Management, a Hosted Exchange, Technical consulting and Connectivity solutions.

Driven by the passion of two people, who are committed to delivering a service experience that reflects their respect for the Apple brand and to overcoming business challenges creatively, Digicape is an example of what entrepreneurs can achieve if they align their business model and practice with the four Vs: volume, variety, variation and visibility.

Questions

1. Identify the operations management challenges Project 3 and Digicape experienced when they decided to merge in 2010.
2. Draw a four Vs profile for Digicape's products and services.
3. In which areas of operation do you think Digicape could improve? Provide reasons and describe briefly the recommendations you would make.

Problems and applications

- 1 Read the short case on Spur (p. 14) and (a) identify the processes in a typical Spur (or Spur group) restaurant together with their inputs and outputs. (b) Spur also supply takeaway food. What are the implications for how it manages its processes within the restaurant? (c) What would be advantages and disadvantages if Spur introduced 'central kitchens' that made the food for a number of other takeaways in an area?
- 2 Compare and contrast Thandifrika Jewels and Spur in terms of the way that they need to manage their operations.
- 3 Visit a department store (other than Woolworths) and a restaurant or food takeaway (other than a Spur-owned restaurant). Observe how each shop operates, for example, where customers go, how staff interact with them, how big it is, how the shop has chosen to use its space, what variety of products it offers, and so on. Think about how these shops are similar to Woolworths and Spur, and how they differ.
- 4 Visit and observe three restaurants. Compare them in terms of the four Vs. Think about the impact of volume, variety, variation and visibility on the day-to-day management of each of the operations and consider how each operation attempts to cope with its volume, variety, variation and visibility.
- 5 (Advanced) Find a copy of a financial newspaper, magazine (*Business Day*, *Financial Times*, *Financial Mail*, *The Economist*, etc.) or business section in a newspaper and identify one company which is described in the paper that day. Using the list of issues identified in Table 1.2 (p. 11), what do you think would be the new operations agenda for this company?

Chapter notes

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- 1 Woolworths Holdings Limited, www.woolworthsholdings.co.za; www.woolworths.co.za; Ian Moir quoted in Shevel, A. (2014) Woolworths' little secret to big success, *bdlive*, Times Media, February 16, www.bdlive.co.za/business/retail/2014/02/16/woolworths-little-secret-to-big-success?
- 2 Medecins sans frontieres/Doctors without Borders, www.msf.org.uk; www.tesol-direct.com/tesol-direct-support-medecins-sans-frontieres/
- 3 Spur Corporation, www.spurcorporation.com; www.spur.co.za; Spur Corporation 2014 Integrated Report, www.spurcorporation.com/financials/ar/2014/downloads/spur_iar2014.pdf; Spur Corporation 2013 Integrated Report www.spurcorporation.com/wp-content/uploads/2014/07/spurcorp_ar_2013.pdf
- 4 www.digicape.co.za; Digicape (2014) Digicape and Fuel collaborate to deliver a first-for-Africa innovative training solution for Engen, March 25, *Bizcommunity.com*, www.bizcommunity.com/PressOffice/PressRelease.aspx?i=161173&ai=111242; Norman, C. on BandwidthBlog, IT-Online, <http://it-online.co.za/2010/03/24/digicape-project-3-join-forces-to-create-apple-powerhouse/>

Selected further reading

- Brandon-Jones, A. and Slack, N. (2008)** *Quantitative Analysis in Operations Management*, FT Prentice Hall, Harlow. A useful short book covering some of the more advanced quantitative aspects of operations management.
- Chase, R.B., Jacobs, F.R. and Aquilano, N.J. (2004)** *Operations Management for Competitive Advantage* (10th edn) McGraw-Hill/Irwin, Boston, MA. There are many good general textbooks on operations management. This is a good one, though written very much for an American audience.
- Jacobs, F.R. and Chase, R. (2012)** *Operations and Supply Management: The Core* (3rd edn) McGraw Hill/Irwin, Columbus, OH. This third edition focuses on the important 'core' concepts in the dynamic field of operations. Just as lava flows from the core of the earth, operations and supply chain management is the core of business. Material must flow through supply chain processes to create cash output and input. This new edition has an increased focus on supply chain analytics involving the analysis of data to better solve business problems.
- Chopra, S., Deshmukh, S., Van Mieghem, J., Zemel E. and Anupindi R. (2005)** *Managing Business Process Flows: Principles of Operations Management*, Prentice Hall, Upper Saddle River, NJ. Takes a 'process' view of operations. Mathematical but rewarding.
- Hall, J.M. and Johnson, M.E. (2009)** When should a process be art, not science?, *Harvard Business Review*, March. One of the few articles that looks at the boundaries of conventional process theory.
- Hammer, M. and Stanton, S. (1999)** How process enterprises really work, *Harvard Business Review*, Nov. Hammer is one of the gurus of process design. This paper is typical of his approach.
- Johnston, R., Clark, E. and Shulver, M. (2012)** *Service Operations Management* (4th edn), Pearson, Harlow. A great treatment of service operations from the same stable as this textbook.
- Slack, N. and Lewis, M.A. (Eds) (2005)** *The Blackwell Encyclopedic Dictionary of Operations Management* (2nd edn), Blackwell Business, Oxford. For those who like technical descriptions and definitions.

Useful websites

- <http://operationsroom.wordpress.com/> Stanford University's take on topical operations stories.
- www.iomnet.org.uk The Institute of Operations Management site. One of the main professional bodies for the subject.
- www.poms.org A US academic society for production and operations management. Academic, but some useful material, including a link to an encyclopedia of operations management terms.
- <http://sites.google.com/site/tomiportal/home> One of the longest-established portals for the subject. Useful for academics and students alike.
- www.ft.com Good for researching topics and companies.
- www.economist.com The *Economist's* site, well written and interesting stuff on business generally.
- www.journals.elsevier.com/journal-of-operations-management Journal of Operations Management publishes regular current articles of original empirical research that have an impact on OM theory and practice.