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MANAGING OPERATIONS

Bob Johnson

Managing Operations

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Series adviser's preface

This book is one of a series designed for people wanting to develop their capabilities as managers. You might think that there isn't anything very new in that. In one way you would be right. The fact that very many people want to learn to become better managers is not new, and for many years a wide range of approaches to such learning and development has been available. These have included courses leading to formal qualifications, organizationally-based management development programmes and a whole variety of self-study materials. A copious literature, extending from academic textbooks to sometimes idiosyncratic prescriptions from successful managers and consultants, has existed to aid – or perhaps confuse – the potential seeker after managerial truth and enlightenment.

So what is new about this series? In fact, a great deal – marking in some ways a revolution in our thinking both about the art of managing and also the process of developing managers.

Where did it all begin? Like most revolutions, although there may be a single, identifiable act that precipitated the uprising, the roots of discontent are many and long-established. The debate about the performance of British managers, the way managers are educated and trained, and the extent to which shortcomings in both these areas have contributed to our economic decline, has been running for several decades.

Until recently, this debate had been marked by periods of frenetic activity – stimulated by some report or enquiry and perhaps ending in some new initiatives or policy changes – followed by relatively long periods of comparative calm. But the underlying causes for concern persisted. Basically, the majority of managers in the UK appeared to have little or no training for their role, certainly far less than their counterparts in our major competitor nations. And there was concern about the nature, style and appropriateness of the management education and training that was available.

The catalyst for this latest revolution came in late 1986 and early 1987, when three major reports reopened the whole issue. The 1987 reports were *The Making of British Managers* by John Constable and Roger McCormick, carried out for the British Institute of Management and the CBI, and *The Making of*

Managers by Charles Handy, carried out for the (then) Manpower Services Commission, National Economic Development Office and British Institute of Management. The 1986 report, which often receives less recognition than it deserves as a key contribution to the recent changes, was *Management Training: context and process* by Iain Mangham and Mick Silver, carried out for the Economic and Social Research Council and the Department of Trade and Industry. This is not the place to review in detail what the reports said. Indeed, they and their consequences are discussed in several places in this series of books. But essentially they confirmed that:

- British managers were undertrained by comparison with their counterparts internationally.
- The majority of employers invested far too little in training and developing their managers.
- Many employers found it difficult to specify with any degree of detail just what it was that they required successful managers to be able to do.

The Constable/McCormick and Handy reports advanced various recommendations for addressing these problems, involving an expansion of management education and development, a reformed structure of qualifications and a commitment from employers to a code of practice for management development. While this analysis was not new, and had echoes of much that had been said in earlier debates, this time a few leading individuals determined that the response should be both radical and permanent. The response was coordinated by the newly-established Council for Management Education and Development (now the National Forum for Management Education and Development (NFMED)) under the energetic and visionary leadership of Bob (now Sir Bob) Reid, formerly of Shell UK and the British Railways Board.

Under the umbrella of NFMED a series of employer-led working parties tackled the problem of defining what it was that managers should be able to do, and how this differed for people at different levels in their organizations; how this satisfactory ability to perform might be verified; and how an appropriate structure of management qualifications could be put in place. This work drew upon the methods used to specify vocational standards in industry and commerce, and led to the development and introduction of competence-based management standards and qualifications. In this context, competence is defined as the ability to perform the activities within an occupation or function to the standards expected in employment.

It is this competence-based approach that is new in our thinking about the manager's capabilities. It is also what is new about this series of books, in that they are designed to support both this new structure of management standards, and of development activities based on it. The series was originally commissioned to support the Institute of Management's Certificate and

Diploma qualifications, which were one of the first to be based on the new standards. However, these books are equally appropriate to any university, college or indeed company course leading to a certificate in management or diploma in management studies.

The standards were specified through an extensive process of consultation with a large number of managers in organizations of many different types and sizes. They are therefore employment-based and employer-supported. And they fill the gap that Mangham and Silver identified – now we do have a language to describe what it is employers want their managers to be able to do – at least in part.

If you are engaged in any form of management development leading to a certificate or diploma qualification conforming to the national management standards, then you are probably already familiar with most of the key ideas on which the standards are based. To achieve their key purpose, which is defined as achieving the organization's objectives and continuously improving its performance, managers need to perform four key roles: managing operations, managing finance, managing people and managing information. Each of these key roles has a sub-structure of units and elements, each with associated performance and assessment criteria.

The reason for the qualification 'in part' is that organizations are different, and jobs within them are different. Thus the generic management standards probably do not cover all the management competences that you may need to possess in your job. There are almost certainly additional things, specific to your own situation in your own organization, that you need to be able to do. The standards are necessary, but almost certainly not sufficient. Only you, in discussion with your boss, will be able to decide what other capabilities you need to possess. But the standards are a place to start, a basis on which to build. Once you have demonstrated your proficiency against the standards, it will stand you in good stead as you progress through your organization, or change jobs.

So how do the new standards change the process by which you develop yourself as a manager? They change the process of development, or of gaining a management qualification, quite a lot. It is no longer a question of acquiring information and facts, perhaps by being 'taught' in some classroom environment, and then being tested to see what you can recall. It involves demonstrating, in a quite specific way, that you can do certain things to a particular standard of performance. And because of this, it puts a much greater onus on you to manage your own development, to decide how you can demonstrate any particular competence, what evidence you need to present, and how you can collect it. Of course, there will always be people to advise and guide you in this, if you need help.

But there is another dimension, and it is to this that this series of books is addressed. While the standards stress ability to perform, they do not ignore the traditional knowledge base that has been associated with management studies.

Rather, they set this in a different context. The standards are supported by 'underpinning knowledge and understanding', which has three components:

- Purpose and context, which is knowledge and understanding of the manager's objectives, and of the relevant organizational and environmental influences, opportunities and values.
- Principles and methods, which is knowledge and understanding of the theories, models, principles, methods and techniques that provide the basis of competent managerial performance.
- Data, which is knowledge and understanding of specific facts likely to be important to meeting the standards.

Possession of the relevant knowledge and understanding underpinning the standards is needed to support competent managerial performance as specified in the standards. It also has an important role in supporting the transferability of management capabilities. It helps to ensure that you have done more than learned 'the way we do things around here' in your own organization. It indicates a recognition of the wider things which underpin competence, and that you will be able to change jobs or organizations and still be able to perform effectively.

These books cover the knowledge and understanding underpinning the management standards, most specifically in the category of principles and methods. But their coverage is not limited to the minimum required by the standards, and extends in both depth and breadth in many areas. The authors have tried to approach these underlying principles and methods in a practical way. They use many short cases and examples which we hope will demonstrate how, in practice, the principles and methods, and knowledge of purpose and context plus data, support the ability to perform as required by the management standards. In particular we hope that this type of presentation will enable you to identify and learn from similar examples in your own managerial work.

You will already have noticed that one consequence of this new focus on the standards is that the traditional 'functional' packages of knowledge and theory do not appear. The standard textbook titles such as 'quantitative methods', 'production management', 'organizational behaviour', etc. disappear. Instead, principles and methods have been collected together in clusters that more closely match the key roles within the standards. You will also find a small degree of overlap in some of the volumes, because some principles and methods support several of the individual units within the standards. We hope you will find this useful reinforcement.

Having described the positive aspects of standards-based management development, it would be wrong to finish without a few cautionary remarks.

The developments described above may seem simple, logical and uncontroversial. It did not always seem that way in the years of work which led up to the introduction of the standards. To revert to the revolution analogy, the process has been marked by ideological conflict and battles over sovereignty and territory. It has sometimes been unclear which side various parties are on – and indeed how many sides there are! The revolution, if well advanced, is not at an end. Guerrilla warfare continues in parts of the territory.

Perhaps the best way of describing this is to say that, while competence-based standards are widely recognized as at least a major part of the answer to improving managerial performance, they are not the whole answer. There is still some debate about the way competences are defined, and whether those in the standards are the most appropriate on which to base assessment of managerial performance. There are other models of management competences than those in the standards.

There is also a danger in separating management performance into a set of discrete components. The whole is, and needs to be, more than the sum of the parts. Just like bowling an off-break in cricket, practising a golf swing or forehand drive in tennis, you have to combine all the separate movements into a smooth, flowing action. How you combine the competences, and build on them, will mark your own individual style as a manager.

We should also be careful not to see the standards as set in stone. They determine what today's managers need to be able to do. As the arena in which managers operate changes, then so will the standards. The lesson for all of us as managers is that we need to go on learning and developing, acquiring new skills or refining existing ones. Obtaining your certificate or diploma is like passing a mile post, not crossing the finishing line.

All the changes and developments of recent years have brought management qualifications, and the processes by which they are gained, much closer to your job as a manager. We hope these books support this process by providing bridges between your own experience and the underlying principles and methods which will help you to demonstrate your competence. Already, there is a lot of evidence that managers enjoy the challenge of demonstrating competence, and find immediate benefits in their jobs from the programmes based on these new-style qualifications. We hope you do too. Good luck in your career development.

Paul Jervis

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Introduction: what is operations management?

Definition

Operations management is not merely an alternative description for those functions which are otherwise known as production management or manufacturing management. Nevertheless, if you are employed in one of those functions you will find that many of the techniques used in operations management have a considerable contribution to make to them.

Instead, the scope of operations management is much broader, making it relevant to just about every function in any sphere of activity – from personnel to accounting, from government service to charities. Chapter 1 describes the way operations management takes place in a wide range of commercial, industrial and not-for-profit activities.

The following definition establishes the scope of operations management:

> The activities carried out by an organization to provide the service to customers or clients which is its basic reason for existing.

This definition is so broad that it will be helpful to draw out its key elements and implications.

Transformation and added value

It is generally accepted that organizations exist to create added value for customers by transforming inputs into outputs. This topic is developed further in Chapter 1. For the moment a few examples will clarify the point:

- Manufacturing businesses transform raw materials into finished goods.
- Haulage businesses transform freight by moving it from its point of manufacture or import to where the customer wants it.
- Charities transform public goodwill into potential aid.
- Publishers transform authors' ideas into instruction or entertainment for readers.

Transformation adds value in many forms. It may result in outputs which offer convenience, availability, ease of access or which customers cannot create for themselves. In Chapter 2 I explain how organizations decide the outputs and value they will offer through the strategic planning process, and the customers they will seek to satisfy. We also describe the impact of those decisions on operations managers.

Effectiveness, efficiency and responsiveness

The transformation process costs money. Customers will only pay a limited amount for added value: if the price exceeds the value, they will look elsewhere or go without. Consequently, as Chapter 3 explains, it is important for operations managers to ensure that the operations for which they are responsible are:

- effective – meeting customer needs, on time, every time
- efficient – keeping costs and inputs to a minimum
- responsive – adapting to changes in the external environment, competition and customer requirements.

Further chapters in this book address aspects of these three essentials. Chapter 5 considers the need to match quality to customer expectations. Chapter 7 explores ways of measuring performance, whilst Chapters 8 and 9 focus on identifying and correcting performance shortfall.

Customers

Customers were traditionally seen as coming at the end of the production chain and contact with them was limited to sales, marketing and accounts staff. This is no longer the case. As Chapter 4 points out, organizations are increasingly recognizing the importance of internal customers, which radically alters the role of operations managers. In order to meet the requirements of internal customers, operations managers are responsible for:

- identifying their needs (Chapter 4)
- meeting their expectations (Chapter 5)
- matching or exceeding the competition (Chapter 8).

These chapters introduce ideas drawn from total quality management, marketing, and organization development.

Managing resources

This is the title of Chapter 3, but the theme underlies the content of other chapters as well. The resources used in transforming inputs into outputs are made up of raw materials and components, equipment or fixed assets and people. Chapter 3 explores the ways of adapting the availability of resources to customer demand. Chapter 6 examines the importance of maintaining a healthy and safe working environment, whilst the focus of Chapter 10 is people – bosses, peers and subordinates.

The focus of the book can be summarized by stating that managing operations involves:

- ensuring that operational objectives are consistent with corporate goals
- identifying and satisfying the needs of customers (both internal and external)
- achieving efficient and cost-effective outputs
- monitoring and improving performance
- making optimum use of resources.

You may be wondering where people fit into this summary. The answer is that they are too important to be dismissed with a single phrase.

At various points in this book I shall suggest that:

- you will need the support of others to identify, rectify and implement operational improvements
- your staff are essential to performance
- your manager may be your only source of strategic direction
- change cannot be imposed, it must be welcomed
- your staff are a key resource
- the nature of the operation should reflect your staff's capability
- the extent to which you can improve your operation depends on the extent to which you involve and develop your staff.

By the end of the book you should be able to answer the following questions:

- What inputs and resources do you use?
- What transformations are you responsible for?

- Who are your customers? What are their requirements and expectations?
- How does your operation contribute to the achievement of your organization's goals?
- What actions could you take to improve quality?
- Why are health and safety issues important to you?
- How can you measure performance?
- What should you do with performance data?
- When is operational improvement necessary?
- What are the risks of improvement and change?
- Whose support do you depend on?
- How can you increase their contribution and co-operation?

Finally, you should recognize that all managers have an operations management role, regardless of the inputs and resources they use, the transformation and outputs for which they are responsible, their titles, functions or the type of organization which employs them.

1 Operations: the engine of the business

Four managers were debating the relative importance of the functions which they represented.

'A business can't do anything without finance', argued the accountant. 'Without money, there'd be no resources. If we didn't make a profit, we'd go bust. The finance function has a vital job to do. You depend on us to raise the money you need, to make sure everything you do is cost-effective and that you make enough profit for the business to survive'.

'That's all very well', replied the marketing manager, 'but finance doesn't make money. You just borrow it from somebody else, then stop us wasting it. The biggest contribution you make is to say 'No, we can't afford it'. It's marketing that's most important. We're the people who find out what customers want, make sure our products and services meet their needs, tell customers about them and persuade them to buy. You may count the money, but we're the ones who make it'.

'Now hang on', interjected the personnel officer. 'You're both missing the point. Our business depends on people. Whether they're accountants, administrators, sales staff or shop-floor workers, someone needs to recruit them, pay them, deal with the unions, handle their complaints, train them and keep them happy. Of course, we work with line managers to do a lot of that, but don't forget that our staff are our most important resource. And without the personnel function they just wouldn't be there'.

The supervisor from the production line felt a bit overawed by all this. Of course, he saw the accounts for the factory – he and his colleagues reviewed them with the Production Manager once a month. And he knew that finished goods from the line were packed and sent to customers. He'd been involved with personnel when he'd been promoted to supervisor – and it was obvious that someone must prepare the payroll, otherwise nobody would get paid! But surely finance, marketing and personnel were all support functions – there to help him and his production colleagues get on with the real work: making the things that customers paid for. He tried to put his thoughts into words.

'You marketing people talk about "adding value". Well, it seems to me that it's production that does that more than anyone else. We take raw materials and subassemblies, process them and put them together to make the finished goods that customers want. We transform bits that are useless in their original state into products that serve a useful purpose. Without us, marketing would have nothing to sell, finance would have nothing to count and there'd be no need for personnel'.

This debate is typical of discussions which take place regularly in organizations. As you would expect, all the speakers are attempting to justify their own function as the one on which the business depends. As you would also expect, in making their cases, each speaker is making selective use of points in their favour – and conveniently ignoring others!

The four functions represented in the debate – finance, marketing, personnel, operations – are commonly recognized as the core activities which make up the work of any organization. That organization may be:

- a retail business
- a manufacturing business
- offering a service such as dry-cleaning, training courses or vehicle maintenance
- a charity
- a hospital
- a government department
- a local council
- a school or college.

In all cases, the organization will be dependent on the work of all four functions, as will become evident from the descriptions below.

FINANCE

Many managers have difficulty with the principles of finance – and even more with the conventions of accounting! That does not change the fact that the finance function, as our accountant mentioned in the debate, does play a vital role in business. There are two parts to the role. The first is the management of money as a resource. All organizations require resources to conduct their business. These are likely to be made up of materials, labour, premises and equipment. But all these resources need to be paid for. At start-up and during periods of expansion, the organization is unlikely to have enough money to pay for the resources it needs. It will gain access to that money through borrowing or through issuing shares.

Most organizations carry at least some burden of debt. That raises the obligation to ensure that lenders' or shareholders' money is used carefully. Which brings us to the second part of the finance role – to monitor income and expenditure. Financial accounts provide a historic record of the monies which have come into and gone out of an organization. Management accounts monitor income and expenditure against budgets and targets, and provide a basis for forecasting future performance.

CASE STUDY

Training and Enterprise Councils (TECs) exist to encourage the development of both businesses and individuals in local areas. They are funded mainly through money from the Department of Education and Employment (DfEE).

Each year, TECs develop business plans, which are submitted to the Government for approval and funding. This funding depends on the achievement of targets. Failure to achieve these targets not only threatens the financial viability of a TEC, but also leads to a risk that its licence will not be renewed for the following year.

Predictably, the DfEE demands that money given to a TEC should be very carefully managed. In fact, in 1997, one TEC in the West Midlands was closed down as a result of poor financial control.

It is clear from this that the survival of a TEC is dependent on its ability both to make a persuasive case for funding and to control its finances to the satisfaction of the Government.

MARKETING

The Chartered Institute of Marketing defines the marketing function as:

> the management process responsible for defining, anticipating and satisfying customer needs profitably.

This process can, in turn, be broken down into a range of activities:

- Market research finds out what customers want, what they are currently buying and how much they are prepared to pay.
- Advertising and sales promotion are ways of informing customers and persuading them to try a product or service.
- Sales management may involve telephone sales staff or a field sales force.
- Distribution is to do with getting the product or service physically to the customer.
- Product management involves developing, improving and updating in line with changes to customer needs and competitor activity.

Historically, the marketing function has been applied to external customers – those outside the business who paid with their own money for the goods and services which the business produced. The customers may have been members of the general public in the case of retail outlets, other businesses in the case of heavy engineering, or taxpayers in the case of local government, schools or hospitals. Even charities have customers. Somewhat cynically, it has been argued that a charity's customers pay for the benefit of being relieved of guilt when confronted with others less fortunate than themselves. Or, slightly less cynically, for the 'feel-good' factor of knowing they are helping others.

Regardless of the activities in which they are engaged, all organizations need to communicate with customers, offer customers something which they will see as being of benefit to them and persuade them that the benefit is worth paying for.

CASE STUDY

The annual 'Children in Need' appeal is designed to persuade people to part with their money in order to support a wide range of children's charities. Those who contribute receive no obvious benefit. Or do they?

- Many of the fund-raising activities are carried out by groups of friends, neighbours or work colleagues – a social benefit.
- A high proportion of the money raised goes directly to the charities – a 'feel-good' benefit.
- The appeal receives extensive media coverage – people are attracted by the chance of appearing on television or in the newspapers.
- It is also the subject of a night-long BBC programme – people are prepared to pay (indirectly) for the benefit of an evening's entertainment.
- Monies raised are compared with those of previous years – an appeal to the competitive spirit.

As the marketing manager in our debate pointed out, it is the marketing function which ensures that an organization continues to attract the funding it needs by keeping its offerings in line with customer needs and wants.

However, as Chapter 4 of this book will point out, current management thinking has extended the definition of 'customer' to include colleagues within the organization. As a result, every activity in an organization is being encouraged to measure its success in marketing terms:

- Are we giving our customers what they want?
- Is our service efficient enough to meet their needs?
- How well do we compete with alternative suppliers? (For example, if we make components, are they as reliable or as cheap as those from an outside supplier?)

Looked at from this point of view, marketing ceases to be a specialist responsibility with a focus on external customers. Instead, it becomes the responsibility of every member of staff throughout the organization, based on the uncomfortable recognition that there is no such thing as a captive customer. Assuming that the organization is willing to allow it, any activity, from warehousing to payroll preparation to training to transport to selling, could potentially be carried out by an agent or contractor.

PERSONNEL

Increasingly, organizations are abandoning the ‘personnel’ title in favour of the grander term ‘human resources’. There is little justification for this change as far as the meanings are concerned. Rather, it indicates a change in status of the function.

Traditionally, personnel has been regarded largely as a branch of administration – there to hire staff, pay them, train them, draw up employment contracts and, when necessary, to make sure redundancies are legal. Only very rarely has personnel had any involvement with the strategic direction of an organization.

The move to the ‘human resources’ title reflects this strategic involvement. In growing numbers of organizations, strategic decisions are now being taken, not only on the basis of:

- Can we afford it?
- Do customers want it?
- Have we got the technology?

But also on the basis of:

- Have we enough people?
- Do they have the right skills?
- Where will tomorrow’s managers come from?

These are all human resources questions and go to the heart of an organization’s ability to survive and prosper. But, of course, people are no more important as a resource than money or customers.

OPERATIONS

So is our production supervisor right to argue that operations is the most important function?

The answer to that question depends largely on how we define the term. If we view operations as synonymous with manufacturing or service delivery, then it is as important as finance, marketing and personnel; but no more so. From that viewpoint, it is one of four functions, all of which depend on each other.

On the other hand, we have already had several clues which suggest that operations management means more than just manufacturing or service delivery. In the Introduction to this book, we defined operations as:

the activities carried out by an organization to provide the service to customers or clients which is its basic reason for existing.

There are other definitions which make similar points:

Virtually everyone with a management responsibility is involved in managing operations – because almost every management job requires the efficient use of resources to achieve the defined outcomes, which in most cases relate to the needs of customers.
(Professor Ray Wild, Henley Management College)

Managing the physical resources necessary to create products in sufficient quantities to meet market requirements.
(J. Mapes and C. C. New, *The Gower Handbook of Management*, Gower Publishing, 1987)

The emphasis on customer needs is also a reminder that customers can be internal as well as external. Add to that the idea from the Introduction to this book that operations management involves adding value through the transformation of inputs into outputs and we are suddenly faced with a rather daunting prospect: that all managers in every function in every organization are responsible for managing operations. If that is the case, then operations must be the most important of our four functions because it is central to all of them. The remainder of this chapter explains how operations management works in a wide range of industries and activities.

Operations management in manufacturing

The production supervisor in our original debate made most of the points which are relevant to this heading. In broad terms, the manufacturing process takes inputs in the form of raw materials, components or subassemblies and adds value by transforming them into finished goods. Of course, the process is more complicated than that brief description suggests. Operations management in manufacturing must ensure that the necessary inputs are available in the right quantities and at the right times; that machines are set up to the correct specifications; that machine operators are available; that outputs meet quality standards and are delivered in a way that meets the needs of the next internal customer in line – packing, perhaps, or warehousing or transport.

Operations management in retailing

In manufacturing, it is easy to see the change in form or content which the transformation process brings about. In retailing, the transformation is less obvious, but it is still there. Take a petrol station, for example. Its primary products – petrol and oil – come out of the ground in huge quantities many hundreds or thousands of miles away from where the final customer – the motorist – wants them. The petrol station adds value by making them available at convenient locations. It brings about a transformation in both form and location. Or take another example – that of a DIY supermarket. The inputs here are the products on the shelves, but also the expertise of the staff. The customer brings a need – to build a wall, perhaps. A member of staff offers advice on the products to buy, explains how to do the job or provides an explanatory leaflet. The transformation here is that of the customer – from someone with neither the resources nor the knowledge to build a wall, to someone with both.

Operations management in a service industry

In Western Europe more than half of the workforce is employed in the service sector. In the USA three out of four jobs are in the service sector. In most cases, the primary input is the expertise of the worker. These are the jobs that Peter Drucker describes as the 'knowledge workers'. It is tempting to think of jobs in the service sector as involving complex and rather obscure skills – computer programming, for example, or management consultancy, or transport planning. But similar transformations take place as a result of less sophisticated work. Picture the service department of your local garage. You take your car into the garage because it keeps stalling at traffic lights. The mechanic uses his or her expertise and the test equipment available to confirm that petrol is getting to the engine. So it's not a fuel problem. Using his or her experience, the mechanic then asks you when it happens – all the time, or only when the engine has warmed up? The latter, you say. So he or she takes the car out to warm it up and notices the temperature gauge never reaches full temperature. This suggests that the thermostat may be faulty. The mechanic removes it, checks it and confirms that it is not working properly. He or she then fits a replacement and the problem is solved.

- What have the inputs and outputs been in this process?
- What sort of transformation has taken place?
- What value has the process added?

Now compare your thoughts with Figure 1.1.