

工商管理精要系列·影印版

作业管理

Operations Management

OD151/51

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中国人民大学出版社



Prentice Hall 出版公司

图书在版编目 (CIP) 数据

作业管理: 英文/希尔 (Hill, T.) 著·影印版
北京: 中国人民大学出版社, 1997.10
(工商管理精要系列·影印版/巴克利主编)
书名原文: The Essence of Operations Management

ISBN 7-300-02481-5/F·762

I. 作…

II. 希…

III. 企业管理: 生产管理-英文-影印版

IV. F273

中国版本图书馆 CIP 数据核字 (97) 第 21931 号

Terry Hill: The Essence of Operations Management

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工商管理精要系列·影印版

作业管理

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出 版:  中国人民大学出版社

 (北京海淀路 175 号 邮码 100872)

Prentice Hall 出版公司

发 行: 中国人民大学出版社

经 销: 新华书店

印 刷: 星河印刷厂

开本: 787×1092 毫米 16 开 印张: 9.5 插页 1

1997 年 10 月第 1 版 1997 年 10 月第 1 次印刷

印数: 1-5 000 册

定价: 18.00 元

(图书出现印装问题, 本社负责调换)

《工商管理精要系列·影印版》

出版说明

《工商管理精要系列·影印版》是中国人民大学出版社和西蒙与舒斯特国际出版公司继《工商管理经典译丛》之后，共同合作出版的一套大型工商管理精品影印丛书。

本丛书由欧洲著名管理学院和管理咨询公司的教授和专家撰写，它将90年代以来国际上工商管理各专业的最新研究成果，分门别类加以精练浓缩，由享誉世界的最大教育图书出版商 Prentice Hall 出版公司出版。每一本书都给出了该专业学生应掌握的理论框架和知识信息，并对该专业的核心问题和关键理论作了全面而精当的阐述。本丛书虽然篇幅不长，但内容充实，信息量大，语言精练，易于操作且系统性强。因此，自90年代初陆续出版以来，受到欧洲、北美及世界各地管理教育界和工商企业界读者的普遍欢迎，累计发行量已达数百万册，是当今国际工商管理方面最优秀的精品图书之一。

这套影印版的出版发行，旨在推动我国工商管理教育和 MBA 事业的发展，为广大师生和工商企业界读者，提供一套原汁原味反映国外管理科学研究成果的浓缩精品图书。有助于读者尽快提高专业外语水平，扩大知识面，掌握工商管理各专业的核心理论和管理技巧。

本丛书可作为管理院校的专业外语教材和各类企业的培训教材，对于那些接受短期培训的企业管理者、MBA 学生，以及想迅

速了解工商管理各专业核心领域的师生来说，本丛书更是极具价值的藏书和参考资料。

为了能及时反映国际上工商管理的研究成果，中国人民大学出版社今后将与 Prentice Hall 出版公司同步出版本丛书的其他最新内容并更新版本，使中国读者能借助本丛书，跟踪了解国际管理科学发展的最新动态。

1997 年 8 月

Contents

| | |
|--|-----------|
| 1 Managing operations | 1 |
| The role of operations management | 2 |
| The mix of manufactured items and services | 2 |
| Misunderstandings of the operations management task | 6 |
| Key points review | 7 |
| 2 Strategic context | 9 |
| Functions dominate strategic outcomes | 9 |
| Functional strategies <i>vis-à-vis</i> a corporate strategy | 9 |
| The reactive role of operations management | 11 |
| Markets are inherently different and dynamic whilst operations management is inherently fixed | 13 |
| Linking marketing and operations | 13 |
| Technical and business specifications | 15 |
| Differentiating the task | 16 |
| Order-winners and qualifiers | 17 |
| Achieving the link | 18 |
| The reality of strategic debate | 23 |
| Benchmarking | 24 |
| Market- or marketing-led? | 25 |
| Key points review | 25 |
| 3 Operations and design | 28 |
| Operations and design | 28 |
| Operations management's responses to supporting product/service range | 35 |

| | |
|---|------------|
| Key points review | 37 |
| Notes | 38 |
| 4 The delivery system | 39 |
| The transformation process | 39 |
| Process choice | 40 |
| Process alternatives | 41 |
| The reality of process choice | 44 |
| The fixed nature of process investments | 46 |
| Trade-offs of process choice | 47 |
| Products/services and markets | 49 |
| Operations | 49 |
| Organizational implications | 52 |
| Hybrid processes | 53 |
| Product/service profiling | 59 |
| Issues in service delivery systems | 63 |
| Capacity decisions | 65 |
| Location | 70 |
| Layout | 70 |
| Bottlenecks | 70 |
| Reviewing delivery systems | 72 |
| Operational approaches to improving the delivery system | 73 |
| Key points review | 75 |
| Notes | 76 |
| 5 Controlling operations | 79 |
| Planning and control systems | 79 |
| Aggregate planning | 81 |
| Operations control | 84 |
| Developments in planning and control systems | 90 |
| Short-term changes to meet demand fluctuations | 96 |
| Inventory control systems | 99 |
| The functions provided by inventories | 101 |
| Approaches to controlling inventory | 102 |
| Key points review | 105 |
| Notes | 106 |
| 6 Quality | 108 |
| Concept of quality | 108 |
| Quality assurance and quality control | 109 |
| Developments concerned with quality | 109 |

| | |
|---------------------------------------|------------|
| Service issues | 116 |
| Key points review | 118 |
| Notes | 119 |
| 7 The job of work in the 1990s | 120 |
| Managerial philosophies of work | 120 |
| Outcomes | 122 |
| Traditional approaches | 123 |
| Operations management alternatives | 126 |
| Key points review | 137 |
| Notes | 138 |
| Index | 141 |

Managing operations

The 1980s proved to be more challenging and difficult for the operations manager than any other time since the Industrial Revolution. The 1990s will prove even more so. The traditional problems of out-of-date technologies, underdeveloped infrastructures, inefficient work methods and manning arrangements, inappropriate payment systems and ineffective scheduling and control systems have been coupled with a whole set of new challenges – increasing world competition, decreasing product/service life cycles, customers' expectations regarding quality and product performance, stringent regulations concerning employees, the environment and safety protection, together with the scarcity and rising costs of energy and raw materials. Furthermore, the linked world economy has resulted in a more complex business environment, with new and different competitive situations bound up with legal and tax issues and the different political, social and business pressures which exist – a situation, the difficulties of which have been accelerated by the forming and breakdown of political blocs and the subsequent market opportunities which have resulted.

Similar pressures have started to unfold in the service sector. Although many service industries are protected to varying degrees by geography, many major services have increasingly been subjected to national and international competition. This move from sheltered to traded environments within the service sector is continuing. Deregulation in US airlines, the growth in the hotel chain concept and the interrelation between share and money markets through the world's stock and financial centres have imposed similar demands on related businesses and highlighted the

importance of the operations manager's role. Although the phenomenon of international (and for some services even national) competition will be less widespread than in the manufacturing sector, it will show similar increases, if not at the same overall level. The continued and significant improvements in data storage and transmission will open up many areas to competition and spawn services new in themselves or in their application.

As a consequence, the operations manager will need increasingly to provide the support essential to the success of the wide range of goods and services involved, different in themselves, and changing in nature over time with life cycles which will continue to become shorter. New efforts to increase productivity, to create technological advantage and to find additional methods to increase the return on assets will be part of the challenge facing those in charge of these functions.

The role of operations management

Production management and operations management describe the same set of tasks. Both are concerned with managing those resources of an enterprise that are required to produce the goods or services to be sold to consumers or other organizations. The term 'production management' came first, with the emergence of manufacturing industry and the subsequent emphasis placed on the production management task within that sector. The growth of service industries in the industrially developed countries has brought with it the term 'operations management' as a more appropriate general title. Throughout this book, therefore, the terms 'production management' and 'operations management' will be treated as synonymous.

The mix of manufactured items and services

As economies develop, the relative mix of the primary, secondary and tertiary sectors changes. For more developed countries, there has been a growing and distinct shift towards the tertiary sector and away from the primary and secondary sectors, as shown in Table 1.1.

Table 1.1 Percentage of gross domestic product by sector^a grouping for certain more developed economies (1989)

| Country | Primary | Secondary | Tertiary |
|-------------|---------|-----------|----------|
| Australia | 8 | 24 | 68 |
| Belgium | 2 | 27 | 71 |
| Canada* | 10 | 25 | 65 |
| Denmark | 5 | 22 | 73 |
| France | 8 | 27 | 69 |
| Japan | 3 | 38 | 59 |
| Netherlands | 7 | 26 | 67 |
| UK* | 8 | 28 | 64 |
| USA* | 7 | 27 | 66 |
| USSR* | 21 | 56 | 24 |
| W. Germany* | 2 | 38 | 60 |

^aThese sectors include the following activities:

primary – agriculture and mining;

secondary – manufacturing and construction;

tertiary – utilities, wholesale/retail trade, transport, services and others (unclassified activities which constitute in all instances a relatively high percentage of the total GDP).

*Figures are for 1987.

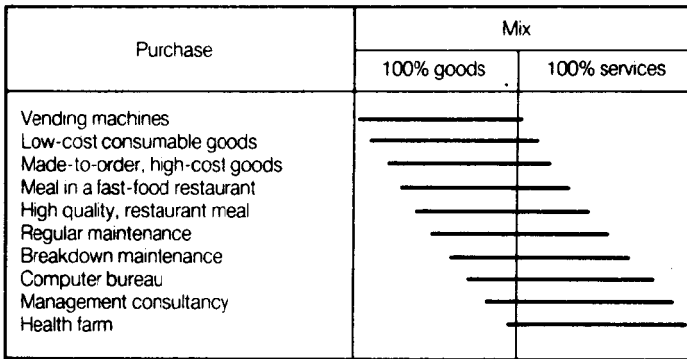
Source: *UN Bulletin of Statistics* (July 1991).

However, it is important to remember that most organizations provide and sell a mixed products/services offering. This will change from market to market and between segments within a market, as shown in Figure 1.1.

What characterizes all of these, however, is the role of the operations function. The provision of a service or production of a product will be the principal responsibility of operations and will entail a number of tasks, the characteristics of which together make up the operations management role. The key features which make up the tasks are now explained.

Managing a large cost centre

The operations function is typically responsible for some 80 per cent of all the costs incurred by a business. These comprise most, if not all, the direct costs (employees and materials) and a portion of the overheads which fall within its jurisdiction.



Source: Terry Hill, *Production/Operations Management: Text and cases* (2nd edn), Prentice Hall International, Hemel Hempstead, 1991, p. 7 (with permission).

Figure 1.1 Different product/service mixes provided in a range of purchases

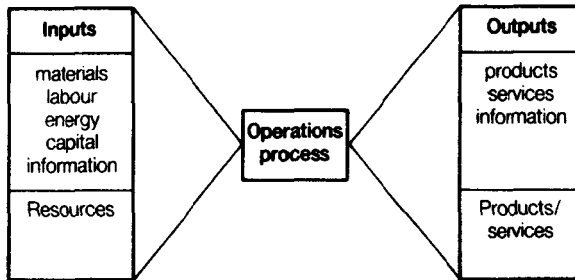
Managing the work and money flow

The basic task in operations is to take inputs in the form of resources and convert them into outputs in the form of products and services. This conversion process (see Figure 1.2), therefore, is at the core of operations and comprises the basic workflow throughout an organization.

However, given the high level of costs involved, the function also has a prime role in managing the money flow. This comes simply from the fact that costs are built up as a product/service moves from raw materials through work-in-progress to finished goods. The purchase of raw materials, components and subassemblies and the direct labour costs involved in the conversion process need, therefore, to be well managed and controlled as they reflect key elements of cash flow. Thus, within operations rests a substantial portion of two key elements of a successful business – profits through the control of costs, and cash flow through planning decisions and lead-time control.

Interface between the doing and thinking ends of a business

The operations function provides the essential interface between corporate direction and the operational task, and the corporate



Source: Hill, op. cit., p. 4 (with permission).

Figure 1.2 Outline of the operations process

philosophies and individual value systems which reside within an organization.

Measurement by tangible outputs

Unlike most functions, the performance within operations can be measured in tangible terms. Whilst this offers many advantages, it also normally leads to reinforcing of detailed, short-term reviews with correspondingly less emphasis on the long term, a fact which will be discussed more fully in Chapter 2.

Managing the short and long term

As implied in the last point, executives need to manage the short and long term well within the frame of the operations function. Given the large cost, asset and people base referred to earlier, managing costs within set and agreed budgets is essential to the short-term prosperity of a business. In the same way, the large cost, asset and people base within operations offers saving opportunities of a substantial nature.

Managing complexity

The descriptions of the operations management task given so far have underlined the dimensions of size and importance. One outcome of these characteristics concerns the issue of managing complexity. However, this is not to say that the individual facets of the task are complex; they are no more so than the elements of most

managers' jobs. What creates the complexity is the interrelationship between the many dimensions which comprise the operations task. The number of facets is a direct outcome of the function's size (assets, costs and people) whilst the interrelationship is due to the linked nature of all these elements within the function itself.

Misunderstandings of the operations management task

Having described the key features and elements of the operations management task it will be beneficial to clarify further the nature of this key managerial and functional role by highlighting two specific areas of misunderstanding. These concern production engineering and operations research.

Production engineering

Within a manufacturing company, production engineering is often confused with production management. However, a review of any firm will illustrate the different sets of functional responsibilities and tasks which go with the two jobs. Invariably they have different reporting structures. The reason for this is fundamental to the sets of responsibilities involved. Whereas production management is concerned with the conversion process and with the distinct features and tasks which go with that, production engineering is a staff function which provides specialist support in the areas of equipment/processes technologies and associated areas of expertise.

The misunderstanding which exists between these functions emanates to some extent from the perception of the role, importance and integral nature of technology and engineering in manufacturing. But operations is not a technical/engineering-related function but a business-related function. The only exception is in firms which provide one-off specialist products or services. In these low-volume situations, the operations manager will be involved in both the product/service specification and alignment of capability (processes and people) with the tasks to be completed. However, these business situations are the exception rather than the rule, as more fully explained in Chapter 4. Most businesses make standard products using known processes with specialist engineering/

technical functions as part of the support provision. Thus, the product/service and process technologies (no matter how involved and sophisticated) are givens. The task of the operations manager is to provide the critical business orientation which this function should provide.

Operations research

The second basic and almost universal misunderstanding comes with the area known as operations (or operational) research (OR). In part, the confusion comes from the word 'operations' and, in part, from the fact that the majority of applications of OR techniques are in the area of operations management.

In the 1960s and 1970s, scholars and business people were optimistic about the future role of OR techniques such as linear programming, model building, computer simulation, dynamic programming and other computer-related applications in organizations. It was implied, if not explicitly argued, that these developments would routinize many of the traditional functions of middle management, typically in the operations functions.

The use of such techniques draws both its origins and argued relevance from the specialist functions which developed these approaches. It is only since the early 1980s, however, that the approaches have been challenged, both in terms of the usefulness of their application in companies and the consequent relevance of their position in the teaching and research activities under the umbrella of operations management.

The change in orientation towards the management of operations has been both timely and relevant, even though late in the day. However, as with many changes, the inertia of the past has been hard to shake off. The residual presence of operations research activity in the form of lingering arguments, past applications and existing resources is still in evidence. Though the confusion with operations management has been clearly identified, reinforcement of the difference needs to be continuously highlighted.

Key points review

The size of operations underscores the need for this function to be managed well, both in the short and long term. The control of some

70–80 per cent of costs is at the core of working to budgeted performances. Continuous improvement in these same large areas will, on the other hand, yield the best potential results. Managing these essential tasks is at the core of the operations task.

However, key developments in the operations function have only more recently attracted the necessary level of resources and have been given appropriate direction. Managing this area as a business function and prioritizing developments and activities in line with market needs have only recently come to the fore, a fact covered in more detail in the next chapter. However, the complexity of the task has often hindered this key and appropriate orientation. But if companies are to succeed in today's markets then the role of operations needs to be at the forefront of a firm's strategic response.

Strategic context

Functions dominate strategic outcomes

Functional strategies *vis-à-vis* a corporate strategy

9

Table 2.1 Changes in the dominant role of functions in corporate strategy formulation

| Period | Typical function | Reasons |
|----------------------------|--------------------------|--|
| 1945 to 1965 | Production/operations | During this period, in most industrial sectors world demand was greater than world capacity. Companies could typically, therefore, sell all they could make and hence the production/operations function tended to hold sway in strategic debate. |
| 1965 to early 1980s | Marketing | In about the mid-1960s, the imbalance between available world capacity and world demand had begun to be redressed. The outcome was that in most markets selling products became increasingly difficult. Hence the advent of marketing's strategic role which came to the fore from this time onwards. |
| Early 1980s to present day | Marketing and/or finance | The recession which occurred in the late 1970s and early 1980s resulted in many companies experiencing financial difficulties and witnessed a spate of corporate failures. Already gaining ground, these events stimulated the emergence of the finance/accounting function and its role in strategic formulation. |

little or no debate on how these key perspectives interrelate with one another. The need to identify the level of match or mismatch which exists between functional strategies is at the very core of corporate strategy formulation. Only through this interchange can a company reconcile differences, identify implications and assess investments and time-scales. Only in this way can firms arrive at well-thought-through, well-articulated and coordinated corporate strategies which all functions understand, have agreed and will be able to support.

There is an urgent need for companies to review the way in which they develop strategies. The nearest they get to inter-functional debate is that these individually prepared statements sit side by side in the same binder. Charged individually to prepare a functional strategy, each part of the business responds and arrives at its own view of what is best for the business as a whole. The inherent ramifications of one function's strategy on other functions is not discussed. But this interchange is the very essence of strategy formulation. Without it, and given the dynamic nature of today's markets, companies will become increasingly disadvantaged.