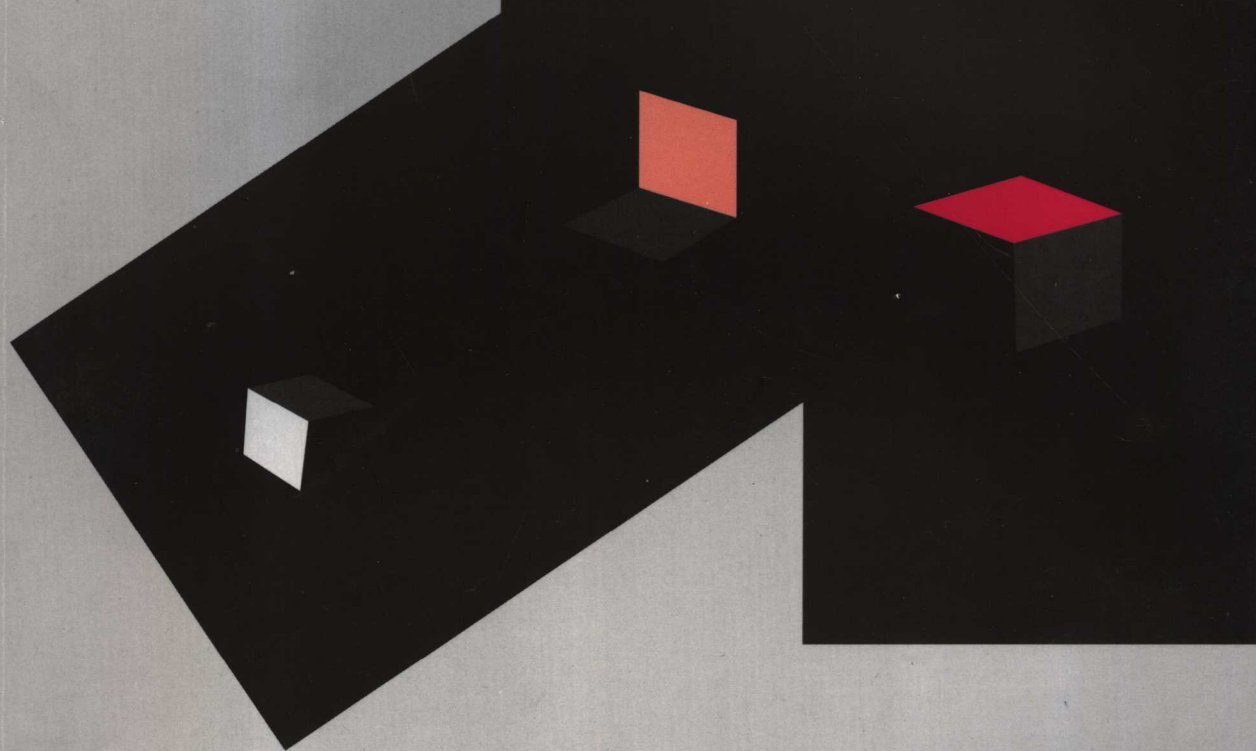


高等院校经济管理类专业双语系列教材

LOGISTICS AND SUPPLY CHAIN MANAGEMENT

现代物流与供应链管理概论

主编 姜阵剑 卢山 荆海鸥



WUHAN UNIVERSITY OF TECHNOLOGY PRESS

高等院校经济管理类专业双语系列教材

LOGISTICS AND SUPPLY CHAIN MANAGEMENT

(现代物流与供应链管理概论)

主 编 姜阵剑 卢 山 荆海鸥
副主编 罗能钧 王莉莉

Wuhan University of Technology Press

武汉理工大学出版社

图书在版编目(CIP)数据

现代物流与供应链管理概论(双语)/姜阵剑,卢山,荆海鸥主编. —武汉:武汉理工大学出版社,2006.8

高等院校经济管理类专业双语系列教材

ISBN 7-5629-2409-0

I. 现… II. ①姜… ②卢… ③荆… III. ①物流-物资管理-概论 ②物资供应-物资管理-概论 IV. F252

中国版本图书馆 CIP 数据核字(2006)第 072388 号

出版发行:武汉理工大学出版社

地 址:武汉市武昌珞狮路 122 号 邮编:430070

<http://www.techbook.com.cn>

E-mail:wutpcqx@163.com wutpcqx@tom.com

印 刷 厂:武汉理工大印刷厂

开 本:787×1092 1/16

印 张:17

字 数:435 千字

版 次:2006 年 8 月第 1 版

印 次:2006 年 8 月第 1 次印刷

印 数:1—3000 册

定 价:26.00 元

凡购本书,如有缺页、倒页、脱页等印装质量问题,请向出版社发行部调换。

本社购书热线电话:027-87394412 87383695 87384729 87397097(传真)

· 版权所有 盗版必究 ·

高等院校经济管理类专业双语系列教材

出版说明

为了提高我国高等教育的国际竞争能力,教育部早在2001年8月就印发了《关于加强高等学校本科教学工作提高教学质量的若干意见》的通知(教高[2001]4号),文件强调,“按照‘教育面向现代化、面向世界、面向未来’的要求,为适应经济全球化和科技革命的挑战,本科教育要创造条件使用英语等外语进行公共课和专业课教学……”该文件还大力提倡编写、引进和使用先进教材。教育部[2005]1号文件《关于进一步加强高等学校本科教学工作的若干意见》中又进一步明确提出,要提高双语教学课程的质量,继续扩大双语教学课程的数量。为响应国家教育部的要求,全国各大高校纷纷以各种形式开设双语课程,通过几年的探索和实践,各高校对双语教学的涵义有了更明确的认识,也积累了一些教学经验。

教材是教学的基础,对于双语教学来说尤其如此。经济管理类专业招生人数最多、就业面最广,而且随着我国加入WTO及对外交往的日益增多,今后对能够熟练使用外语(尤其是英语)的经济管理类人才的需求会越来越大。因此,在经济管理类专业中实施双语教学,具有更加现实的意义。要搞好经济管理类专业的双语教学工作,必须要有相应的英文教材,而我们对十余所教育部所属院校的调研表明,经济管理类专业的原版英文教材与我国的教学大纲及教学体系差异较大,而且普遍存在厚、贵、难等问题,不太适合我国高校的教学状况。此外,我国大学生现阶段的英语水平参差不齐,大多数学生的英语水平还不足以很好地理解英文原版教材的体系和内容,故英文原版教材现在还不可能在我国一般的高等院校大面积地推广。

许多高等院校的经济管理类专业,在开展双语教学的试点工作中,除了采用少量英文原版教材之外,还编写了部分英文讲义,经过试用后有的已经出版。但迄今为止,各校出版的零星英文教材,大多还没有形成系列,远远不能满足日益发展的双语教学的需要。为此,武汉理工大学出版社经过广泛、深入的调研,决定组织编写一套面向全国普通高等院校经济管理类专业双语教学的系列教材。首期五种教材于2005年秋季正式出版发行。

这套教材主要适用于高等院校经济管理类专业的本科生、研究生和MBA学生,其主要特点如下:

1. 通过名校名家,打造高质量的双语系列教材。为了切实保证教材的编写质量和水平,我们将系列教材的编写单位定位于教育部所属且经济管理类专业实力较强的院校,同时对编写人员的资历提出了一定要求,这套系列教材由上海交通

大学、山东大学、中南财经政法大学、武汉理工大学等院校双语教学经验丰富的教师编写,并特邀从事过本专业双语教学的专家、教授和外教审定书稿,力图通过名校名家,打造高质量的精品双语系列教材。

2. 按照中国的教学大纲及教学要求编写。教材的体例和内容完全按照中国的教学大纲及教学要求设置,并以优秀的英文原版教材为参考。考虑到我国大学生现阶段的英语水平参差不齐,不少学生的英语阅读能力有限,教材中通过增加注释量对书中的重点和难点尤其是一些关键术语加以解释;或给出相应的参考译文,以帮助学生迅速理解和掌握教材中的知识点,不断提高英语阅读和理解能力。

由于组织编写经济管理类专业双语系列教材在国内还不多见,尽管我们做出了巨大努力,但在编写出版中难免还会存在这样或那样的问题,欢迎广大师生多提宝贵意见,也希望这套教材能得到大家的认可。

武汉理工大学出版社

2005年7月

Preface

The Chinese proverb “May you live in interesting times” has special meaning for managers working in major corporations around the world. Constant change, propelled by information technologies, is making the job of managers increasingly difficult. Product life cycles are getting shorter; barriers to entry are falling; globalization is changing the entire competitive landscape in certain industries. At the same time, there is constant pressure on management from stakeholders to deliver increasing value—financial quarter after quarter. Mergers and acquisitions and corporate divestitures are changing the way firms work—internally, with their suppliers, and with their customers.

As the window of opportunity to realize the benefits from an innovative product or concept gets smaller and smaller, a firm’s competitive agility has become critical. Given this turbulent environment, some management gurus question the need for long-term strategy and recommend planning for uncertainty instead. Many firms have already developed a vision of how to transform their businesses so that they can function in the electronic business arena. Unfortunately, translating the visions to actionable plans is a difficult proposition. Based on the infrastructure provided by Internet technologies, we believe that there are fundamental changes occurring in the way firms design, assemble, deliver, and support products and services. However, this is a process of evolution, not revolution.

The book presents a framework with which managers can help transit their firm and its supporting supply chain to pursue strategic business objectives while retaining competitive agility. Our approach to the Web-based technological evolution is based on sound economic and management principles that have been proven over time. We present a framework that enables managers to identify areas of value within the firm and across the supply chain that can be mined using Internet technologies. The opportunities highlighted in this book existed even before the advent of Internet technologies.

Firms have long attempted to use IT to make their operations more efficient and effective. However, no previous technology provided the same degree of flexibility and open architecture as the Web-based technologies. Competitive flexibility was difficult to achieve with proprietary information technologies. This opportunity for flexibility has important implications for the organizational structures and processes within firms. We argue that technology in and of itself can’t add value without simultaneously changing the firm’s supporting processes and structures. Open-architecture technology has freed firms from having to invest in specialized organizational forms and organizational functions that do not directly support firms’ primary product or service.

Firms can now develop laserlike focus and specialize in a few areas, divesting themselves of functions that are not core to their vision and mission. Ultimately, firms will be able to

join forces and disband at will, virtually enabled by information technology. We want to reach managers in all functional areas of a firm: marketing, human resources finance, manufacturing, purchasing, etc. Because the organizational change associated with implementing the new information technologies affects all these different functional areas, we address many different areas of operations within a firm and across its supply chain. We give specific examples of where a firm can leverage technology, structure, and processes to improve efficiency or enhance competitive flexibility.

The customers "pull" a product from the supply chain based on their individual tastes. The supply chain has to provide maximum flexibility to support this "build to order" demand. While operational efficiencies do matter, there is a trade-off between customization and the costs of customization. Firms must focus on customer satisfaction, retention, and enhancement. The supply chain systems supporting forecasted demand models are very different from the supply chain systems supporting customization models. To make matters worse, due to the fact that products shift between the push model and the pull model as they advance through the product life cycle, firms face considerable uncertainty regarding the optimal operational model.

This book is not meant to be a technical exposition of supply chain principles and systems. However, we will present enough material to help non-technical managers understand some of the fundamental principles of supply chain management. Most importantly, we want to emphasize how technology will cause the natural evolution of the term *supply chain* beyond the purchasing function into all other business areas within the firm. Information technology topics are presented to enable the non-technical manager or executive to make informed IT and architecture decisions. We maintain that the IT function in firms should be to facilitate the technology selection process; managers or executives who understand the long-term implication of the technology choices on a firm's strategic business options must make the actual choice.

This book is divided into sixteen chapters. Such as the introduction of logistics, procurement, marketing, logistics information management, transportation, warehouse management, stock control, logistics decision-making, logistics/supply-chain management, market economy solutions, network economy solutions of SCM, selecting supply chain solution, international trade, logistics best practices, best practices companies in SCM action, analytical report on Chinese logistics market of 2000.

This book will provide managers and executives from all functional areas with the necessary background to make informed decisions as their firm enters the era of electronic business. Managers from established firms with legacy systems will learn how to transit their firms to benefit from technology investments in the supply chain area. They will learn to identify the organizational and process changes that are necessary to successfully implement these technologies. Executives will discover the appropriate technology and architecture choices that will allow their firms to shift focus to customer needs and at the same time

reduce the constraints imposed by historical investments in physical plant, organization, process, and technology. Executives of “young” firms will learn how to organize for maximum scalability in order to support unexpected increases in demand. Many startups with promising product launches fail to make the transition to long-term viability.

CONTENTS

Chapter One	The Introduction of Logistics	(1)
	Reading Material: Logistics Development in the 21st Century	(13)
Chapter Two	Procurement	(15)
	Reading Material: Procurement Planning and Strategy	(25)
Chapter Three	Marketing	(28)
	Reading Material: Commercial Policy and Public Relations	(39)
Chapter Four	Logistics Information Management	(42)
	Reading Material: Internet and Chinese Logistics Development	(55)
Chapter Five	Transportation	(57)
	Reading Material: Traffic Management	(73)
Chapter Six	Warehouse Management	(77)
	Reading Material: Housekeeping	(87)
Chapter Seven	Stock Control	(89)
	Reading Material: Storage Technology	(99)
Chapter Eight	Logistic Decision-Making	(103)
	Reading Material: Specific Factors to Be Considered	(114)
Chapter Nine	Logistics/Supply-Chain Management	(117)
	Reading Material: Improving Supply Chain Competence	(134)
Chapter Ten	Market Economy Solutions	(138)
	Reading Material: Supply Chain Planning	(146)
Chapter Eleven	Network Economy Solutions of SCM	(149)
	Reading Material: Service Chain, the Pull Model's Relative Impact on Service and Manufacturing Industries	(161)
Chapter Twelve	Selecting Supply Chain Solution	(164)
	Reading Material: Implementation	(176)
Chapter Thirteen	International Trade	(178)
	Reading Material: Export Procedures	(198)
Chapter Fourteen	Logistics Best Practices	(200)
	Reading Material: Creating a Chief Logistics Officer	(212)
Chapter Fifteen	Best Practices Companies in SCM Action	(214)
Chapter Sixteen	Analytical Report on Chinese Logistics Market of 2000	(240)

CHAPTER ONE

THE INTRODUCTION OF LOGISTICS

The term “logistics” originally came from the moving, lodging and supplying of troops. Military commanders have always been aware of the importance of good logistics to the success of their campaigns. Many military failures have arisen from failure to maintain a logistic line of communication. The term involves not only the movement of goods, but also of people, as well as housing and feeding them. Before the materiel, food and accommodation can be supplied, it must first be obtained from somewhere. It may be bought “off the shelf”, but if it is not readily available it must be designed and made. Also, logistics is described as the art of achieving the “six rights”, they are: getting the right things; in the right quantity; to the right place; at the right time; in the right condition and at the right price.

1. Definitions and Functions

Logistics (business definition): Logistics is defined as business-planning framework for management of material, service, information and capital flows. It includes the increasingly complex information, communication and control systems required in today’s business environment.

—(Logistics Partners Oyo, Helsinki, FI, 1996)

Logistics (military definition): The science of planning and carrying out movement and maintenance of force, including those aspects of military operations as position, maintenance, evacuation and disposition of material; movement, evacuation, and hospitalization of personnel; acquisition of construction, maintenance, operation and disposition of facilities; and acquisition of furnishing of services.

—(JCS Pub 1-02 excerpt)

Logistics: The process of planning, implementing, and controlling the efficient, cost effective flow and storage of raw materials, in-process inventory, finished goods and related information from point of origin to point of consumption for the purpose of meeting customer

2 Logistics and Supply Chain Management

requirement.

—(Reference: Canadian Association Logistics Management)

Professor Donald J. Bowersox, a famous expert on Logistics in the University of Michigan State, pointed out in *Logistic Management* (3rd edition) published in 1986 that, “The term of Logistics is neither restricted in the field of commerce nor in that of military. It is applicable for commercial activities of both public and private enterprises.” In his works, he also applied the following terms to illustrate part or all of the activities of Logistics: Business Logistics, Physical Distribution Materials, Logistics Management, Material Management, Physical Supply, Logistics of Distribution, Total Distribution, etc. He also advanced a model of logistics, which is illustrated in Figure 1. 1.

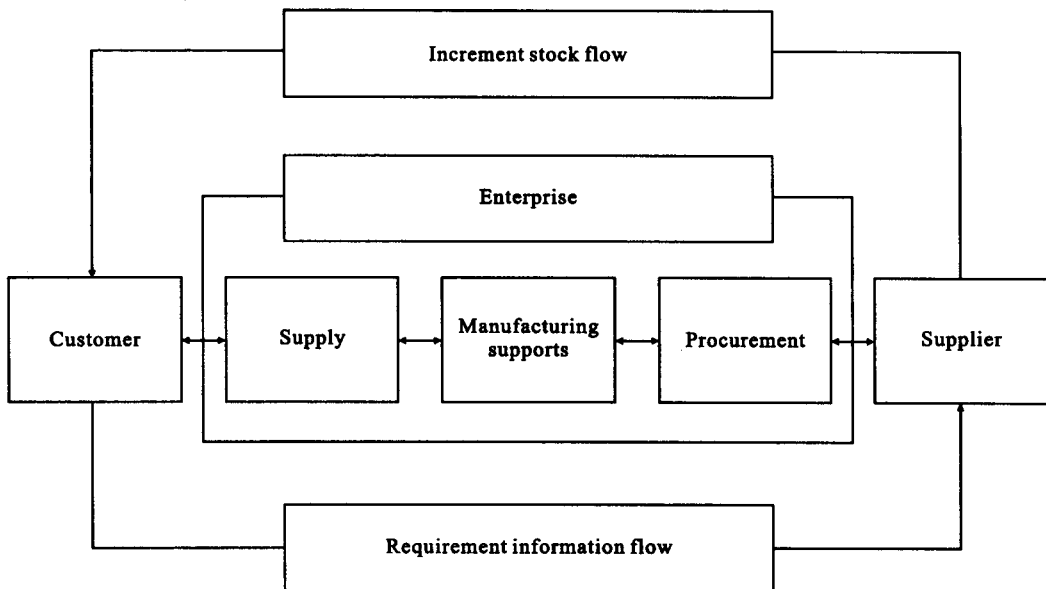


Figure 1. 1 A Model of Logistics by Donald J. Bowersox

The modern military definition of logistics reflects the broad scope of functions involved and The Institute of Logistics and Transportation’s definition follows this closely: “Logistics is the science and art of the design, optimisation and management of networks for the time-related positioning of resource.” In its most comprehensive sense, those functions deal with the following aspects:

- 1) design and development, acquisition, manufacture, storage, movement, distribution, maintenance and disposition of goods;
- 2) design, development, management and maintenance of passenger systems;
- 3) acquisition or construction, maintenance, operation and disposition of facilities;
- 4) acquisition or provision of services.

Logistics is a method of managing organizations so that the organizational aims are achieved in the most efficient and effective way. There are four principal aspects about managing in this logistic way.

1) Outcome; logistics management focuses on the desired outcome and produces the best plan to achieve that outcome (within any constraints that are applied), irrespective of the degree of difficulty or inconvenience that may be caused by any of the intermediate processes.

2) Sequence; logistics involves establishing and controlling the best sequence in which a number of operations or processes are carried out.

3) Timing; the operations or processes must be carried out at the best time, both relative to one another and to the overall aim.

4) Location; the operations or processes must be carried out in the best place, relative to one another and the overall aim.

It concludes the coordination of the functions and key aspects as they apply to the particular organization in the combination that is most effective and efficient in producing the required outcome. For this reason, the true logistics picture is only really seen by those at the very top, strategic, level of management. At the lower organizational levels, people are very likely to be involved only in one or other of the functional areas. Everybody in the organization, at all levels, must understand the importance of the interconnection between the five logistics functions and the importance of the four key aspects so that they can contribute effectively to the organization's activities.

Although logistics is primarily a strategic-level management process, the basic ideas are still highly relevant at all the lower organizational levels. For example, the flow of paperwork round an office can be sequenced and timed, with the separate stages of processing being carried out in the best part of the room to facilitate the flow.

2. The Ways of Logistics Work

Logistics is about the sequence of operations that result in the placing of finished goods or services in the hands of an end-user. Although there are some key aspects that apply to all logistics, the specific processes differ from one logistics to another because of the different nature of the goods and services that they relate to. This section deals with some of the essential elements common to most logistics and the importance of the interactions between certain of them.

Procurement

The procurement is the process of obtaining all the goods and services required by an organization from external sources. It involves; analysis of conditions and opportunities in the supply market; evaluation of potential suppliers; calculation of total cost of acquisition; development of sourcing strategies; joint responsibility with users for agreeing specifications; identifying sources and assuring continuity of supply; establishing a commercial agreement. The main role of the procurement function (or purchasing function) in an organization is to act as the prime interface with the external market place. Relationships are developed with suppliers, following a process of evaluation to determine their fitness to provide required

4 Logistics and Supply Chain Management

goods and services.

The main function of procurement is to assess the risks, costs and benefits of different strategic sourcing arrangements as the basis of effective commercial arrangements. The trade-off between size and frequency of orders and average level of inventory may be part of this assessment. So, strategic partnerships are becoming common, particularly for large infrastructure projects.

Markets and Suppliers Analyzing

Supply market analysis involves obtaining information about potential suppliers, the nature of products, prices and economic forecasts. The information can then be analyzed and incorporated in a market intelligence system to provide knowledge and understanding of the markets being used. Supplier appraisal is undertaken before a supplier is awarded business and is designed to establish whether a potential supplier is capable of meeting the organization's requirements. In other words, can the supplier meet specified levels of price, quality and time? Various possible sourcing strategies are possible by depending on the nature of the requirement, such as following aspects;

- 1) Single sourcing (i. e. using just a single supplier);
- 2) Multiple sourcing (i. e. using more than one supplier for each requirement);
- 3) Local, national or global market supply;
- 4) Framework agreements (broad, overall agreements against which buyers may make regular orders without the need to negotiate terms afresh each time);
- 5) Partnerships and alliances.

Planning

An understanding of all the elements of any particular logistics and all their possible interactions and consequences is vital to proper logistic planning. It is probably inevitable that there will never be an ideal solution, but the object of logistics is to arrive at the optimum solution that provides the best overall result from the combination of elements and factors when measured against certain key logistic drivers, even though none of the individual logistics components are as efficient as they could be.

Computerised systems enable the integration of the purchasing process with wider purchasing and logistics functions (e. g. requisitioning, ordering, tendering, and placing orders, deliveries, stock control and payments). Electronic data interchange and e-business enable direct electronic links with suppliers. Forward business plans should generate the necessary information to formulate purchasing plans. A purchasing plan may include; a schedule of required goods and services with estimated quantities and required delivery dates (linked to supply lead times); contracts requiring renewal with expiry dates and lead time for renegotiation.

The customers make their specifications to define their needs but purchasing should; give details on available products and sources of supply; provide supplier appraisal data; identify risk factors against suppliers and products; identify opportunities for aggregation

and standardisation; advise on the best form of specification.

Contracts and Managing Suppliers

The contractual arrangements must be structured to match the particular requirement.

Examples of different types of arrangement are as follows:

- 1) Spot orders;
- 2) One-off purchase order;
- 3) Blanket order against framework agreement;
- 4) Call-off order against framework agreement;
- 5) Fixed-price contract;
- 6) Contract with rates.

These may be set up through a tendering process or by negotiation. Once the supplier has been selected and the deal negotiated, a contract can be drawn up. This can be as simple as raising a purchase order with standard terms of trading printed on the back. More complex requirements involve using national standard forms of contract with comprehensive commercial terms and conditions.

The follow progressing of an order to ensure that suppliers meet their contractual obligations in respect of order quantity, delivery date and delivery point. Expediting is achieved by the buying organization communicating with the supplier to check on delivery intentions and to identify any possible problems. Goods are normally delivered to a store department where there are formal processes for receipt and inspection. Purchasing is responsible for ensuring compliance with contractual requirements.

Suppliers rating are a process for objective monitoring of supplier performance. It uses scoring and weighting against criteria such as performance on delivery, quality and price. Where suppliers are strategically important to an organization, supplier development programmes may be used. This involves close working relationships and collaboration between the buying organization and the supplier. Purchasing will have specified the terms of payment in the contract. Finance will make actual payments to suppliers and purchasing should check that payment claims are in accordance with the terms and conditions before payments are made.

Transportation

Transportation is another element that pervades the entire logistics, rather than being a separate element of it. Transportation provides flexibility and exists not only as a link between the different elements of the logistics (raw materials to processing plant, distribution of finished goods to wholesalers and retailers, return of unsold or faulty goods and waste packaging) but very often within the elements. The manufacturers require work in progress to move between different processes; separated sometimes by a few hundred meters (a conveyor belt or pipeline is transportation), sometimes by thousands of miles (clothing, electronic goods, cars), so considerable amounts of transportation exist within the manufacturing function as well.

6 Logistics and Supply Chain Management

The long distance heavier transportation enables the sort of distributed manufacture that is common in the car industry. Consider the case of Ford with a factory in South Wales making fuel injection bodies that are shipped to Spain to be fitted to engines. These engines may then be taken to Belgium to be put into the car body, along with transmission parts from Germany. Finally the finished car may be delivered anywhere in the world for sale. Transportation also enables people to enjoy the quality of life that comes from living in the country and the opportunity for employment that comes from working in a city. Parents can choose which school their children will attend because the government allows them to, but only because they also have access to transportation for the home-school journey.

Storage

The term storage is used to cover the temporary "storage" of people, as well as goods. Storage gives flexibility, so that when demand for goods is seasonal or unpredictable the production capacity can nevertheless operate at a fixed level because the output can be stored against later sale. Carrying stock at the point of sale leads to rapid satisfaction of customer demand. "Hub and spoke" operation can work only because there is the facility for temporary storage at the hubs.

Such operation also applies to people and makes possible a range of journey options that would otherwise not exist. Without this temporary storage, there would be very few connecting services because straight "cross-docking" would be impossible to arrange within the practicalities of timetables and "slots". Country railway stations require parking space because there is often little or no public transportation available to serve the area and the only means of access to the railway service is by interchange from car to train.

3. Discussion

It is very unlikely that any logistics will be a perfect mix of all its various components. This may be the accidental result of a failure of proper logistic planning or it may be simply recognition that there is only infrequently anything approaching an ideal solution. There will almost always be some element of "trade-off" necessary to create an optimum, rather than an ideal, combination. If the procurement process is not fully integrated with operations, the situation may arise that the purchasing department see an opportunity to reduce cost by buying a consignment of raw material at lower than budgeted cost. However, if this cheap raw material turns out to need additional machining to achieve the desired finish, the extra machining cost may well outweigh the saving in purchase price. The cheap material may also not be to the required durability standard and may fail in service, again with additional cost or even a tragedy.

Special grants are available in some areas that are earmarked for development so that companies can set up an installation cheaply. However, these areas, by definition, will be remote from the marketplace for the goods produced so, although the construction cost of

the plant will be lower, there will be an increased transportation cost of moving the goods to market. Parents can choose to send their children to any school that will take them, not only the local one. This gives an important element of choice but the consequence is the congestion and pollution that is generated by the "school run". The decision to live in the country and work in the city poses a similar problem.

Land-use decisions made by national and local planners are meant to take account of the transportation impact (and also, vice versa, the land-use implications of transportation infrastructure projects), but all too often do not and sites for development are frequently chosen that, as well as destroying the character of the area, have very serious impacts on the ability of the transportation infrastructure to cope with the additional demand. Using storage to enable steady production may result in avoidance of the cost involved in stop-start production, but there is a cost of storage, including not only the cost of the land and buildings used but also the cost of protecting the goods from theft or damage.

Logistics and market orientation have very similar aims and philosophies. Both are concerned with providing customer satisfaction—whatever that takes. The logistics philosophy is not concerned with constraining the outcome in order to meet the convenience of the inputs (as product orientation may be), but with doing whatever is necessary to provide the required output (customer satisfaction) irrespective of the difficulties involved.

In reality there are constraints that have to be recognized, but the focus of logistics is on looking for ways to minimize those constraints. This requires certain features in terms of management and the organization and we look at those in the next section. The discipline of logistics is concerned with managing a whole range of issues that are almost entirely governed by a derived demand for services that are necessary for the satisfaction of the customer's primary demand. In modern economies there may be several close substitutes for any given goods or services, all of which are equally suitable. When this happens, customers base their buying decisions on the total buying (and using) experience and this means that performance of the whole supply-chain is important.

Importance of Logistics

The first evolution has taken place in the form of the global logistics management, which has been applied by Macs. With declining profit margin in the domestic market and in face of need of continued business expansion, these corporations are seeking new worldwide markets on an unprecedented scale. Global marketing and sale initiatives are the trends toward Macs are increasingly gearing up. This trend for internationalization, in turn, requires much more sophisticated management techniques over the entire process of the commodity movement from the countries of origins to the countries of destinations.

Moving a wide variety of products around the world 24 hours a day, 365 days a year require logistics management techniques significantly different from those developed for domestic markets. Closely linkage of all players in the global supply chains requires the logistics management underpinned by the international EDI system. This globalization of business

activities is a major factor reshaping the international trading activities to all countries are required to adjust by adapting their institutional frameworks.

The Total Logistics Concept

It has extended the concept beyond one firm to all firms involved in the whole supply chain, outsourcing the internally supplied materials and products to external suppliers. This extended view of enterprise, offered firms an opportunity to view the relationship with vendors, suppliers, third party logistics support agents and customers in a different way, each forming a part of the channel. Participants in the channel gain competitive advantage through improving the overall channel efficiency by reducing risk and effectively leveraging the corporate resources of each channel member. Coupled with the recent development of electronic data interchange (EDI), this approach began to bring about a broader impact on macro economic efficiency.

The total logistics concept (TLC) aims to treat many different elements that come under the broad category of distribution and logistics as one single integrated system. It is a recognition that the interrelationships between different elements, for example, delivery transportation and storage need to be considered within the context of the broader supply chain. Thus, the total system should be considered and not just an individual element or sub-system in isolation.

An understanding of the concept is especially important when planning for any aspect of distribution and logistics. A simple, practical example helps to emphasize the point: A company produces plastic toys that are packaged in cardboard boxes. These boxes are packed on to wooden pallets that are used as the basic unit load in the warehouse and in the transportation vehicles for delivery to customers. Study indicates that the cardboard box is an unnecessary cost because it does not provide any significant additional protection to the quite robust plastic toys and it does not appear to offer any significant marketing advantage. Thus, the box is discarded lowering the unit cost of the toy, and so providing a potential advantage in the market place. However, one unforeseen result is that the toys without their boxes cannot be stacked on to wooden pallets because they are unstable and must be stored and moved instead in special trays. These trays are totally different to the unit load that is currently used in the warehouse and on the vehicles (i. e. the wooden pallet). The additional cost in providing special trays and catering for another type of unit load for storage and delivery is much higher than the savings made on the product packaging.

This example illustrates a classic case of sub-optimization in a distribution system. It shows how the concept of total logistics can be ignored at some significant cost. As the product packaging costs have been reduced, those concerned with this company function will feel that they have done their job well. The overall effect on the total logistics cost is, in fact a negative one. The company is better served by disregarding this potential saving on packaging because the additional warehouse and transportation costs mean that total costs increase.