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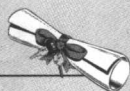


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LOGISTICS ENGLISH

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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.

This book presents a framework with which managers can help transform 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, including the introduction of logistics, procurement, marketing, logistic 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 transform 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 can find 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.

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CHAPTER ONE

INTRODUCTION TO 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 the movement of goods, but also of people, as well as housing and feeding them. Before the material, food and accommodation can be supplied, They 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. Logistics is also 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, business environment.

(Logistics Partners Oyo, Helsinki, FI, 1996)

Logistics (military definition): The science of planning and carrying out movement and maintenance of forces, 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 requirement.

(Reference; Canadian Association of 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 of Materials, Logistics Management, Material Management, Physical Supply, Logistics of Distribution, Total Distribution, etc. He also advanced a modal of logistics, which is illustrated in Figure 1.1.

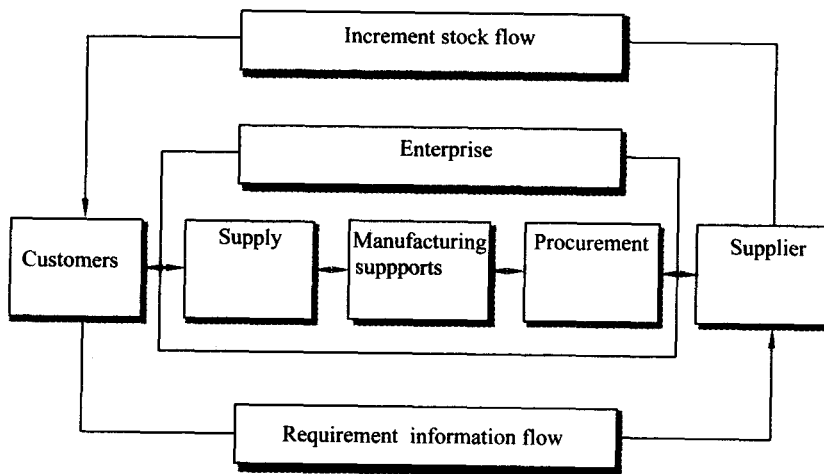


Figure 1.1 A Modal of Logistics by Donald J. Bowersox

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 which deal with the following aspects such as:

- 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 to be managed in this logistic way.

Outcome: logistic 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 to any of the intermediate processes.

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

Timing: the operations or processes must be carried out at the best time, and relative to each other and to the overall aim.

Location: the operations or processes must be carried out in the best place, and relative to each other 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 logistic 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 strategy-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; establis-

hing 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 goods and services.

Markets and Suppliers Analysing

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 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 with which buyers may make regular orders without the need to negotiate terms afresh each time);
- 5) Partnerships and alliances.

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. Public-private partnerships (PPP, the Labour government's name for what its predecessor called the Private Finance Initiative, PFI) and Design, Build, Finance and Operate (DBFO) schemes have been used to create national infrastructure.

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 enables the integration of the purchasing process with wider purchasing and logistics functions (e. g. requisitioning, ordering, tendering, and pla-

cing 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 stores 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.

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 but 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 have to 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.