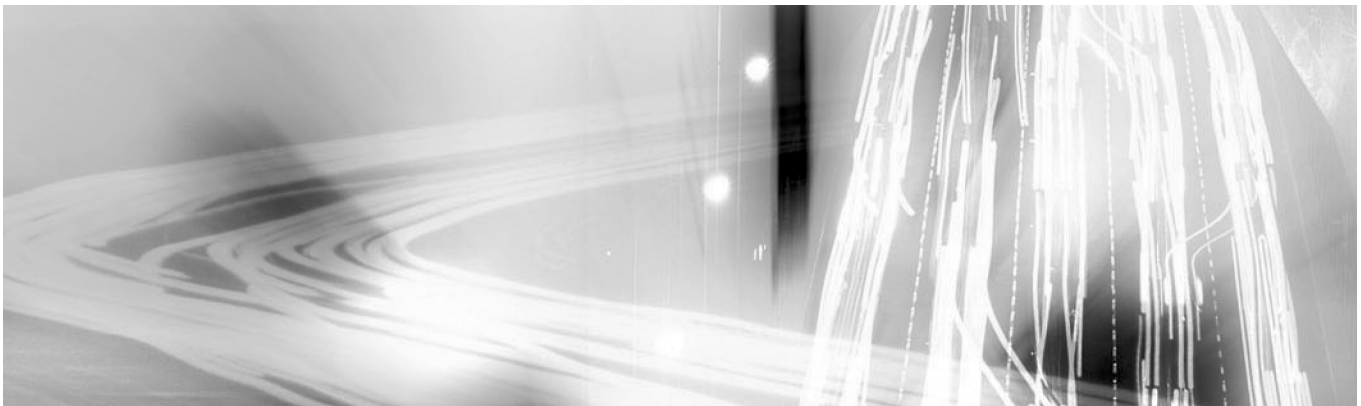


CHAPTER 4

PURCHASING AND

PROCUREMENT



CHAPTER OUTLINE

Chapter Objectives

Introduction

The Role of Purchasing in the Supply Chain

Purchasing Activities

Purchasing Research and Planning

Purchasing Cost Management

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Managing Supplier Relationships

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OBJECTIVES

CHAPTER OBJECTIVES

- To show how better management of purchasing activities can lead to increased profitability
- To identify the activities that must be performed by the purchasing function
- To describe the impact of just-in-time production on purchasing
- To present issues in purchasing cost management
- To illustrate the role of partnering in supplier relationship management

INTRODUCTION

Purchasing agents for manufacturing firms in the European Union's 25 member states buy almost €4.1 trillion worth of goods each year.¹ How well this money is spent is an issue of considerable concern to companies. When one reflects that purchases consistently represent the largest single expense of doing business, it becomes evident that there is a pressing need for reliable measures of purchasing efficiency and effectiveness.

The purchasing area within many organizations is undergoing many changes, including broadening its responsibilities, which is often reflected in departmental name changes. The group that used to be called purchasing may now be called, to name a few, procurement, sourcing, strategic sourcing, supply management, strategic supply management, supplier management or materials management.

Along with the name changes has come a growing recognition of the importance of purchasing activities to the success of an organization, and a growth and shift in the types of activity performed by the sourcing area. The shifts in purchasing's activity and recognition mirror shifts in the status and responsibility of logistics activities in general.

While the sheer euro volume of purchases is impressive, it is just as significant to note that the average value of purchases in manufacturing industries has increased from approximately 40 per cent of sales in the late 1970s to over 72 per cent in 2000, reflecting a trend in outsourcing goods and subassemblies.² Purchase value is also significant in the service sector. For example, purchases average about 15 per cent of revenues at investment firms like Salomon Brothers and Merrill Lynch.³

The Role of Purchasing in the Supply Chain

As presented more fully in Chapter 1, supply chain management is an integration of business processes from end user through original suppliers that provide products, services and information that add value to customers. Figure 4.1 illustrates how purchasing, or procurement in its expanded role, supports supply chain management.

Purchasing is responsible primarily for inbound, or upstream, channel activities, whereas logistics spans both inbound and outbound relationships and material flows. The specific activities for which purchasing is frequently responsible are presented next.

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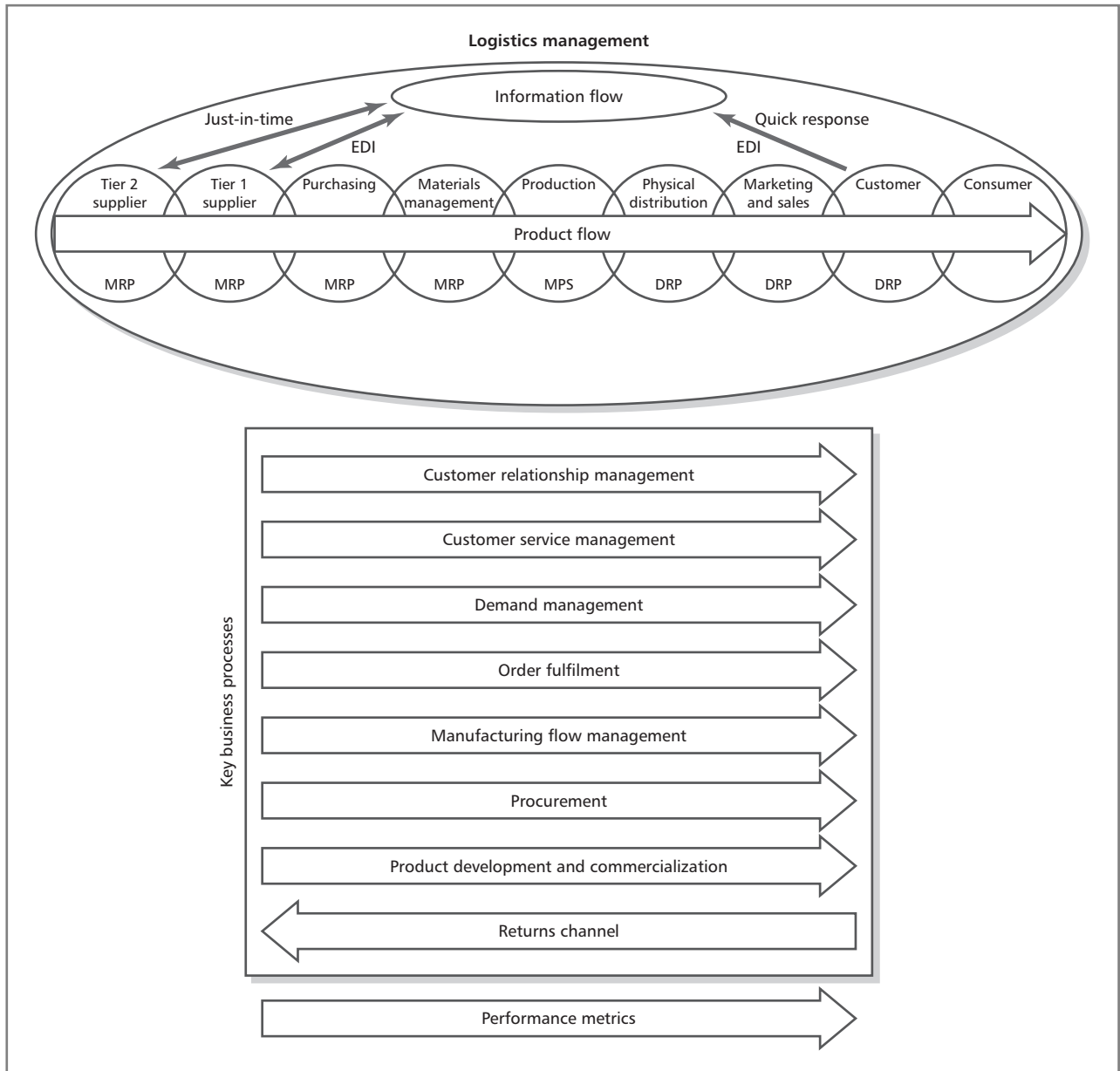


FIGURE 4.1 Supply Chain Management

Source: International Center for Competitive Excellence, University of North Florida.

Purchasing Activities

Purchasing was once looked upon primarily as a service function. As such, its responsibility was to meet the needs of the manufacturing function or other internal functions for which it was buying. It was not the responsibility of purchasing to question those needs, forge long-term relationships with suppliers or to understand the needs of the end customer.

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This perspective severely limited the contribution that purchasing could make to the firm. In this scenario, purchasers had to focus primarily on a narrow set of activities to serve the needs of the internal interfaces, such as production, marketing, operations and others who needed to procure something from outside the organization. The scope of purchasing activities was defined and limited by those inside the organization.

Purchasing focused on getting the right product or service to the right place at the right time – in the right quantity, in the right condition or quality, and from the right supplier at the right price. While this may sound like a broad range of responsibilities, it really was not because the internal client, or other functional areas within the company with whom purchasing interfaces, was defining what was ‘right’ at each step.

While purchasing played a key role in keeping the operation running smoothly by ensuring a reliable source of supply, this was not always accomplished at the lowest total cost. In many cases, purchasing may have contributed directly to the bottom line of the organization by reducing prices paid to suppliers.

Many organizations still see this as the focal point for purchasing. For example, a survey of over 100 UK firms by A.T. Kearney and the Manchester School of Management revealed that 39 per cent of them admitted they threatened suppliers with withdrawal of business to obtain lower prices while 64 per cent said customers had used that threat against them.⁴ This operational perspective focuses on the use of power in short-term, day-to-day purchasing details, rather than the big picture. Clearly, the proper purchasing perspective must be the systems approach: to look at how purchasing can support broader organizational goals for both suppliers and customers.

Typically, purchasing was not seen as an activity of strategic importance. It involved following a series of prescribed steps, which included writing up a purchase order, contacting suppliers for pricing, and sometimes following up on a supplier who failed to deliver.

Development of the Purchasing and Procurement Functions

The purchasing function has gradually evolved from simply the sourcing and buying of materials and those activities related to the buying process. As organizations increasingly automate and outsource many activities, the funds spent on external purchases increase compared to those spent on labour. Thus purchasing activities have been receiving more attention.

For the past 30 years or so, organizations have given purchasing more leeway in performing its activities. In some cases, purchasers have taken the initiative in broadening their roles in order to contribute more fully to the organization as a whole. The term procurement extends purchasing activities to a more strategic and process-orientated level and includes selection of supply source locations, determination of the form in which the material is to be acquired, timing of purchase, price determination and quality control.

In many ways, purchasing today stands at a crossroads in its development. Many of its activities that were once mainstream are being eliminated and automated in a rationalization role.⁵ Activities such as purchase order placement, expediting, matching documents and calling to check stock have either been eliminated or are now possible online with electronic data interchange (EDI) or electronic point-of-sale (EPOS) exchanges.

While elimination of routine clerical activities frees up time, enabling purchasing to play a more proactive role in the firm, purchasers must recognize and seize the opportunity or they may face job elimination in an environment where downsizing and reengineering are common occurrences.

An important part of recognizing opportunities comes from understanding the organization’s strategic goals and direction, so that purchasing and procurement can support those goals in a

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development role. It also comes from understanding the important role that purchasing plays in helping the organization achieve total customer satisfaction.

The Role of Purchasing in Total Customer Satisfaction

The major objective of any business is to create value for the owners. Many managers recognize that this can be accomplished more successfully by focusing on 'serving the customer' or 'providing a service to the customer'. This reflects the realization that if they do not serve the customer effectively by meeting some otherwise unfulfilled need, the firm will cease to exist. This is not a change in the marketing concept, but a better implementation of the concept.

Traditionally, purchasing has been separated from the firm's final customers, or end users. However, the receipt of high-quality, reliable goods and services on a timely basis at a reasonable cost often directly affects customer satisfaction. The relationship is illustrated in Figure 4.2.

An organization cannot provide its ultimate customers with better-quality goods and services than it receives from its suppliers. If a supplier is late with a delivery or has quality problems, the quality and availability of the product or service to the customer will be affected unless the firm carries higher inventory. In such cases, the supplier increases the total cost of the product or service.

It is important that purchasers understand the needs of their organization's customers. This understanding will allow purchasing to make the 'right' decisions to meet the organization's needs. The skills required and tasks performed by purchasing are very similar for buyers in the retail, manufacturing, government and service sectors.

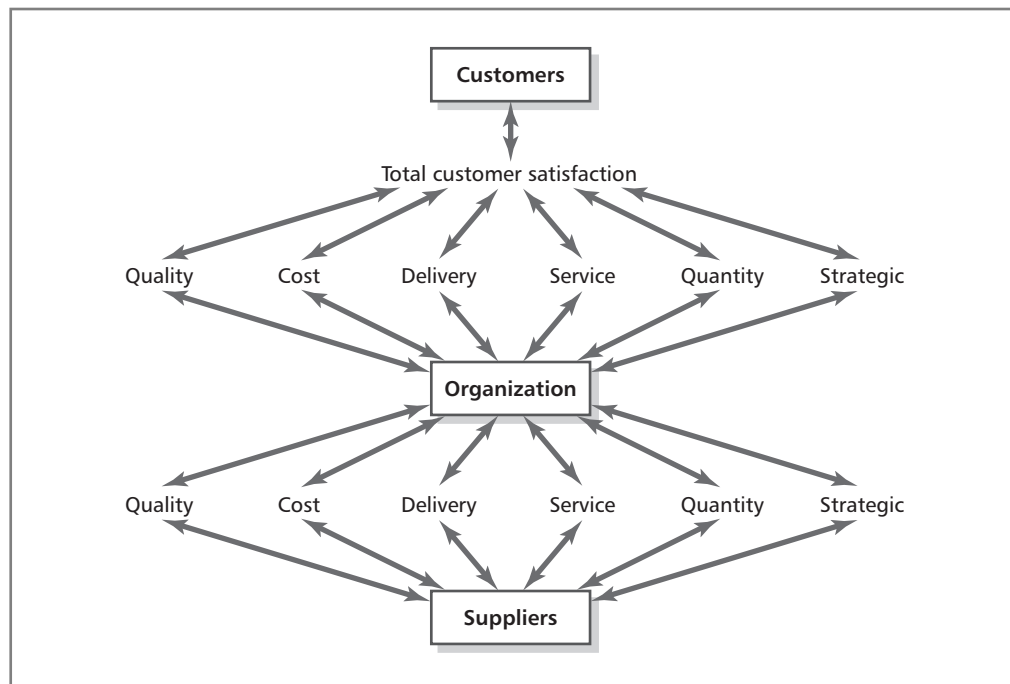


FIGURE 4.2 Total Customer Satisfaction Depends on Supplier Performance

Source: Michiel Leenders, and Anna Flynn, *Value Driven Purchasing: Managing the Key Steps in the Acquisition Process*. Burr Ridge, IL: Irwin Professional Publishing, 1994, p. 3.

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The Strategic Role of Purchasing and Procurement

The strategic role of purchasing and procurement is to perform sourcing-related activities in a way that supports the overall objectives of the organization. Procurement can make many contributions to the strategic success of the organization through its key role as one of the organization's primary boundary-spanning activities of Porter's value chain, as discussed in Chapter 1.

Access to External Markets

Through external contacts with the supply market, purchasing can gain important information about new technologies, potential new materials or services, new sources of supply, and changes in market conditions.

By communicating this competitive intelligence, purchasing can help reshape the organization's strategy to take advantage of market opportunities. The Creative Solutions box illustrates the important strategic role that purchasing can play in the aviation sector.



CREATIVE SOLUTIONS

Network Innovations at Lufthansa

Global commercial aviation markets have seen an unprecedented dynamic in growth during the last 20 years after deregulation and liberalization activities. Dynamic markets have led to strong competition among the established carriers and numerous newcomers, resulting in tremendous cost pressure for all airlines and consequently for technical aftermarket. These technical aftermarkets embrace the maintenance, repair and overhaul (MRO) business, providing services such as scheduled checks of airframes, engines, landing gears, components and cabin interiors, and repair and modification programmes including engineering services. In the MRO industry, the market structure is highly competitive. Lufthansa Technik AG (LTAG) is the global market leader with a market share of approximately 10 per cent. Other strong players are Air France Industries, ST Aerospace, FLS Aerospace and General Electric Engine Services, United Technologies/Pratt & Whitney and Rolls-Royce in the engine overhaul market.

The aircraft fleet is by far the most important asset for an airline, and punctuality of flights is of highest importance for the customers. As a result, the top priority in the MRO industry is to provide both safe and reliable aircraft in order to fulfil the airlines' preconditions. Therefore, all spare parts have to be available immediately whenever and wherever they are needed to make the aircraft fly. In the past, this has often led to excessive safety stocks no matter what costs were implied. High stock values are not only a result of limited cost awareness, but also a consequence of a significant portion of non-routine work included within major MRO tasks, with only limited predictability of parts needed to be replaced during a specific event. In combination with partly excessive lead-times for aircraft parts of up to one year, MRO shops have a wide range of parts available, many of them being slow movers. For example, LTAG keeps detailed information on 775,000 parts within its enterprise resource planning system.

In addition, for aircraft safety reasons, each of these aircraft-related parts needs to be certified by the aviation authorities and requires full traceability back to origin. These high standards for production and approval of parts, as well as other quality regulations for suppliers, in combination with high investment costs, generate an overall highly oligopolistic – and, for key parts, even monopolistic – market structure for the supply of aircraft parts and services.

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However, the aviation industry is suffering from an ongoing decline of average yield per passenger for the airlines, due to the economic downturn after the events of 11 September 2001, a recession in the business cycle of the world economy and increasing competition by new market entrants such as low-fare carriers Ryanair and easyJet in Europe. The combination of these factors has massively increased economic pressure in the new millennium. LTAG has used a four-phase model to overcome this pressure, optimize processes, and to find innovative ways to increase efficiency and therefore improve airline profitability under strong competition in the long term.

Phase 1: cost-cutting programme

After market deregulation in the late 1980s and early 1990s, newly privatized inefficient flag carriers were forced to significantly cut costs and reduce inefficiencies such as heavy overstaffing, excessive inventory levels and bureaucratic processes in order to survive as profit-driven private airlines. In 1996, Deutsche Lufthansa AG set up a programme to decrease its total cost base. This included massive negotiations on big supplier contracts for aircraft and aircraft-related parts and services. The goal was unit costs per seat kilometre offered of 15 Deutsche pfennigs (approximately 7.7 euro cents) by cutting all costs by a minimum of 4 per cent per year. This goal was reached successfully in 1999. In the mid-1990s, Lufthansa started its concept of an aviation group by separating its passenger transport airline and spinning off not only LTAG as an independent company in 1994 to win new MRO markets outside Lufthansa, but also by founding other units in different fields of aviation such as cargo services, leisure travel and IT solutions.

Phase 2: cost-benefit approaches to purchasing processes

A second step was to increase overall efficiency and work on essential processes. This was based on a net present value analysis for each project process and a total cost of ownership approach for all long-term investments such as contracting the parts supply and the customer support for new aircraft for more than a decade. This cost-benefit approach broadened the view from simple cost-cutting to a quality-based, long-term assessment of business cases. During this phase, major original equipment manufacturers (OEMs) started offering parts pools and on-site support services for the aftersales market of engine parts, components, expendables and consumables in order to contribute to common cost-saving initiatives, and also to secure their aftermarkets. LTAG launched programmes such as 'Programm 150' within the strategic purchasing department, which not only focuses on price reductions, but also systematically tackles inventory levels, logistics and transaction costs. Innovative new tools for purchasing enabled LTAG to head in this direction, especially the invention of a state-of-the-art vendor monitoring/purchasing controlling system, as well as the use of Internet-based platforms for reverse auctions such as the international aviation e-marketplace Aeroexchange.

Phase 3: supply chain development

New tools – together with the ongoing economic pressure that could not be absorbed by MRO providers themselves but needed the combined efforts of both MRO providers and suppliers – have led to strategic projects that considered not only purchasing, but included the supplier base as well as selected airline customers. This required a new level of frankness with key suppliers concerning information exchange and openness in mind, resulting in long-term reciprocal agreements, improving predictability of demand and reduced 'bullwhip effects'. During this phase, LTAG began to exchange forecasting information with selected key suppliers to allow production planning according to the expected demand in the long run, and to place orders corresponding to the actual just-in-time demand from production. Consequently, making use of online, on-time availability of information has lowered stock levels drastically. The customized lead-times programme of Airbus Spares Support and Services in Hamburg allows airlines and

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their MRO providers to order Airbus proprietary parts without long catalogue lead-times according to their actual demand. Currently, LTAG and Airbus are working on a joint project to connect their parts management systems in such a way that, for a wide range of parts, the actual demand of LTAG's overhaul shops directly leads to a supply by Airbus without manual interference or additional processes.

To support ongoing supply chain initiatives, LTAG also promotes the extension of already existing, and the invention of new, electronic communication and purchasing tools. Currently, supplier communication via the Internet using the XML-SPEC2000 standard is introduced in cooperation with Aeroxchange. As a result, more, and especially smaller, suppliers that have not run a SPEC2000 converter for cost reasons will be in a position to use electronic communication tools when dealing with LTAG. All participating parties will save costs in ordering and accounting processes as well as finding intelligent supply chain solutions like just-in-time ordering/delivery.

Phase 4: integrated supply chain solutions

The next step in evolving purchasing and SCM will be a systematic cross-functional collaboration within the complete MRO organization including all affiliates; cross-border to the supplier base including their sub-suppliers; and with airline/alliance customers worldwide. LTAG is working on establishing a network with its more than 30 different affiliates and also with selected customers. Airlines and MRO providers are also looking for global cooperation – for example, within the Star Alliance Network or by using cooperative e-auctions.

These purchasing networks inherently face growing complexity of different organizational structures, non-standardized IT systems and global production sites. The necessity of stringent supply chain coordination and standardization is one of the most urgent challenges for the near future in the aviation industry. The MRO sector in the global aviation industry will keep changing due to numerous reasons that will affect the market structure and challenge purchasing and supply chain strategies. For MRO providers in the aviation business, a key success factor will be to build up and orchestrate these supply chain networks between major OEM groups on the one hand and their heterogeneous global airline customer base on the other. Finally, future challenges to survive changing conditions and install efficiently working supply chain networks are a matter of active change management within the organization.

Question: What potential problems do you foresee with these types of network?

Source: adapted from Dr Jörg Rissiek and Joachim Kressel, 'New Developments in Purchasing and Supply Chain Strategies for the Aviation Industry', *Business Briefing: Global Purchasing & Supply Chain Strategies*. London: Touch Briefings, 2004, pp. 52-5.

Supplier Development and Relationship Management

Purchasing can help support the organization's strategic success by identifying and developing new and existing suppliers. Getting suppliers involved early in the development of new products and services or modifications to existing offerings can reduce development times. The idea of time compression – getting to market quickly with new ideas – can be very important to the success of those ideas and perhaps to the organization's position as a market leader or innovator.

Among the primary purchasing activities that influence the ability of the firm to achieve its objectives are supplier selection, evaluation and ongoing management (sourcing), management of quality, and purchasing planning and research.

Relationship to Other Functions

Virtually every department within an organization relies on the purchasing function for some type of information or support. Purchasing's role ranges from a support role to a strategic func-

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tion. To the extent that purchasing provides value to other functional areas, it will be included in important decisions and become involved early in decisions that affect purchasing. Being well informed allows the purchasing function to better anticipate and support the needs of other functional areas. This support in turn leads to greater recognition and participation.

Purchasing often has the same functional reporting relationship as logistics, which is helpful for coordinating materials management. Purchasing and logistics need to work closely in coordinating inbound logistics and associated material flows. The following sections apply to purchases of goods and services; they apply equally to purchasing of logistics services and managing relationships with logistics service providers.

Supplier Selection and Evaluation

In the acquisition process, perhaps the most important activity is selecting the best supplier from among a number of suppliers that can provide the needed materials. The buying process is complex because of the variety of factors that must be considered when making a purchase. The process includes both decision-makers and decision-influencers, who combine to form the **decision-making unit**. Increasingly, organizations are using cross-functional teams to make important decisions. The use of teams is described more fully in Chapter 10, which deals with organizational structures.

Figure 4.3 shows some of the many information flows between purchasing and other internal functions that may affect the supplier selection and evaluation system. These flows exist at many levels, from dealing with users on order commitments, to verifying contractual terms with the legal department, to ensuring adequate materials availability, to supporting marketing's sales promotions.

Figure 4.4 shows a basic, five-step purchasing process for managing supplier relationships from the identification of a need to make a purchase through ongoing evaluation and follow-up. Purchasing managers may consider a broad range of factors when making the purchasing decision. These may include issues such as lead-time, on-time delivery performance, ability to expedite, price competitiveness and post-purchase sales support.

Purchase Categories

There are six major purchase categories in most companies: (1) component parts, (2) raw materials, (3) operating supplies, (4) support equipment, (5) process equipment, and (6) services. These may be routine, ongoing purchases or non-routine purchases that may require special attention because they represent a new buy, an infrequent purchase, a major acquisition, or if there are problems or major opportunities (strategic, cost savings) associated with the buy.

In the 1980s and 1990s, increased concern for productivity improvements and cost reduction caused management attention to focus on the purchasing function and on the development of closer ties with a reduced number of suppliers. To determine the impact of supplier performance on productivity, performance must be measured and evaluated (see phase 5 in Figure 4.4). Next, the data can be used to identify those suppliers with whom the firm wishes to develop long-term relationships, to identify problems so that corrective action can be taken and to realize productivity improvements.⁶

Evaluating Suppliers

A variety of evaluation procedures are possible; there is no best method or approach for all firms. Most important, always use consistent procedures to increase the objectivity of the process. Table 4.1 presents an example of an evaluation procedure.

The manager must identify all potential suppliers for the items being purchased. The next step is to develop a list of factors to evaluate each supplier. These should complement the factors used

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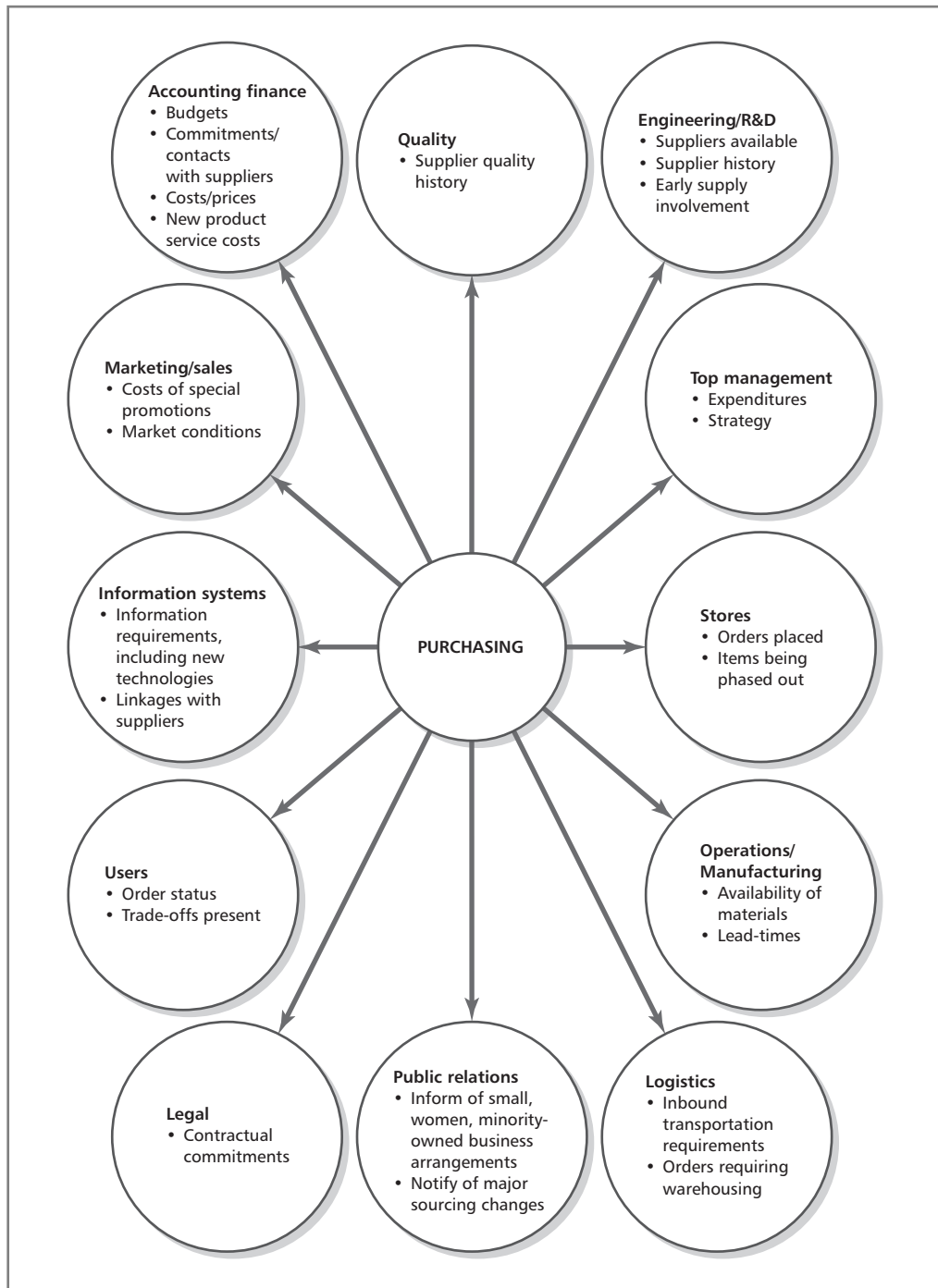


FIGURE 4.3 Overview of Internal Information Flows from Purchasing

Source: adapted from Lisa M. Ellram and Laura M. Birou, *Purchasing for Bottom Line Impact*. Burr Ridge, IL: Irwin Professional Publishing, 1995, p. 74.

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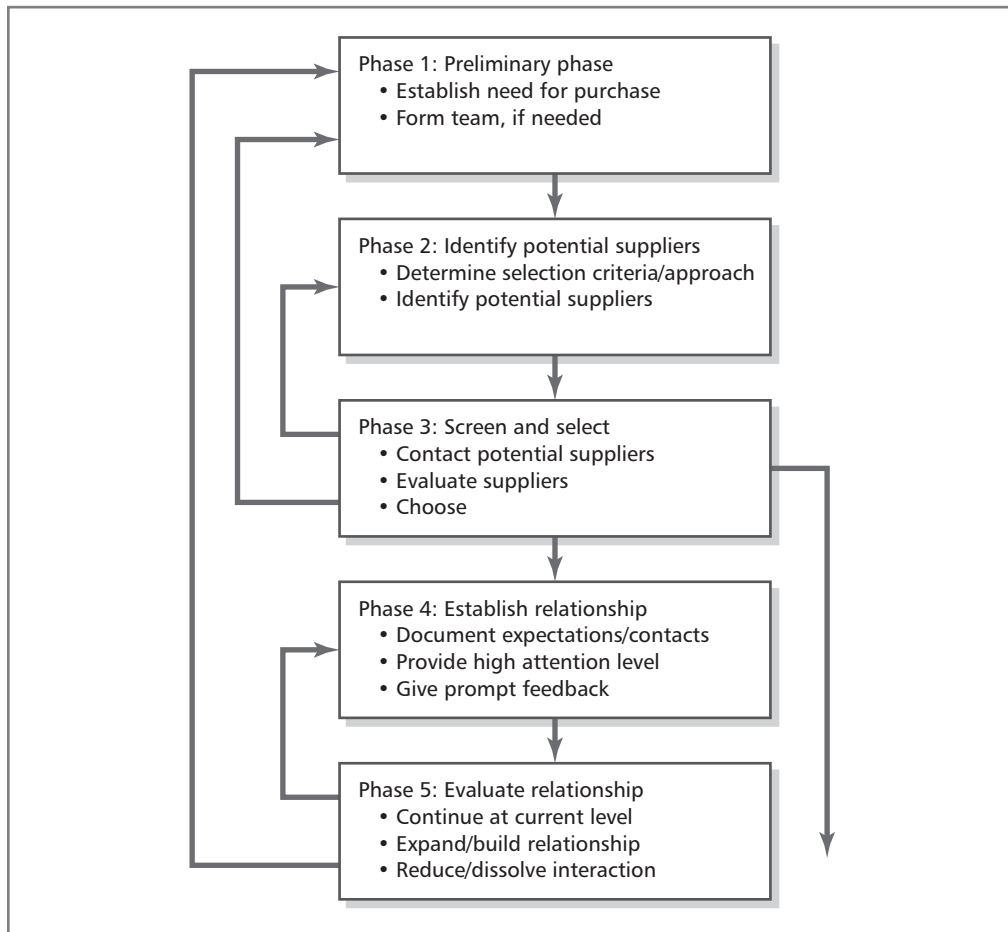


FIGURE 4.4 Five Phases in the Selection, Development and Management of Purchasing Relationships

Source: Lisa M. Ellram, 'A Managerial Guideline for the Development and Implementation of Purchasing Partnerships', *International Journal of Purchasing and Materials Management* 31, no. 2 (1995), p. 12.

earlier in supplier selection. Once the factors have been determined, the performance of individual suppliers should be evaluated on each factor (e.g. product reliability, price, ordering convenience). Table 4.1 uses a five-point scale (1 = worst rating; 5 = highest rating), but other scales may be used.

Prior to evaluating suppliers, management must determine the relative importance of the factors to its particular situation, and assign each a weight. For example, if product reliability were of paramount importance to the firm, it would be given the highest importance rating. If price were not as important as product reliability, management would assign price a lower importance rating. A factor of no importance to the firm would be assigned a zero.

The next step is to develop a weighted composite measure for each factor by multiplying the supplier's evaluation by the factor's importance. The addition of the composite scores for each supplier provides an overall rating that can be compared to the ratings of other suppliers. The

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Factor	Rating of supplier (1 = worst rating; 5 = highest rating) 1 2 3 4 5	×	Importance of factor to your firm (0 = no importance; 5 = highest importance) 0 1 2 3 4 5	=	Weighted composite rating (0 = minimum; 25 = maximum)
Supplier A Product reliability Price Ordering convenience ■ ■ ■ After-sale service Total for supplier A		×		=	Total: _____
Supplier B Product reliability Price Ordering convenience ■ ■ ■ After-sale service Total for supplier B		×		=	Total: _____
Supplier C Product reliability Price Ordering convenience ■ ■ ■ After-sale service Total for supplier C		×		=	Total: _____

TABLE 4.1 Evaluating Suppliers in a Typical Manufacturing Firm

Decision rule: select the supplier with highest composite rating.

higher the composite score, the more closely the supplier meets the needs and specifications of the procuring company. Going through the process itself is one of the major benefits of this approach. This forces management to formalize the important elements of the purchasing decision and to question existing methods, assumptions and procedures.

Implementation of a supplier performance evaluation methodology in a company that assembled kits for the health care industry resulted in a reduction in the number of suppliers, closer relationships with remaining suppliers, and a 34 per cent reduction in component inventories within the first few months.⁷ After two full years of using the quarterly performance reports, buyers had reduced component inventories by more than 60 per cent.

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Selecting Suppliers

Selecting the right suppliers has an immediate and long-term impact on the firm's ability to serve its customers. A formal selection process, similar to the formal evaluation process presented in the previous section, is advisable.

The supplier selection process is more difficult when materials are being purchased in international markets or for international operations. Firms buy raw materials, components and subassemblies from foreign sources because of cost and availability issues.

Some of the complexities of doing business internationally are presented in Chapter 12, which looks at global logistics. The Global box demonstrates how Diageo Scotland uses a framework of 12 key enablers to maximize its procurement efforts for the benefit of the entire Diageo corporation.

The rewards associated with the proper selection and evaluation of suppliers can be significant. As we saw in Chapter 1, logistics cost savings can be leveraged into substantial improvements in profits. Similarly, purchasing activities can have positive effects on the firm's profits. Not only will a reduction in the cost of materials increase the profit margin on every unit manufactured and sold, but the lower cost logistics associated with the materials purchased will reduce the investment in inventories by decreasing the cost per unit and the number of units in inventory.

In addition, customer service improvements are possible because the manufacturing process can operate smoothly, with no slowdowns or shutdowns. Since effective purchasing management results in the acquisition of high-quality materials, there is less likelihood that customers will return finished goods due to product failure.

GLOBAL



Diageo Scotland Uses 12 Enablers for World-class Procurement

Diageo is the world's leading premium drinks business. With its global vision and local marketing focus, Diageo brings to consumers an outstanding collection of beverage alcohol brands across the spirits, wine and beer categories, including Smirnoff, Guinness, Johnnie Walker, Baileys, J&B, Cuervo, Captain Morgan and Tanqueray, and Beaulieu Vineyard and Sterling Vineyards wines. Diageo trades in some 180 markets around the world and is listed on both the New York Stock Exchange (DEO) and the London Stock Exchange (DGE).

As a global company Diageo recognizes the importance of the world-class procurement required to support the company's entire value chain and supply costs, and has invested heavily in improving its total procurement effectiveness accordingly.

One of the many examples of this investment can be seen in the company's operations in Scotland. A procurement team of 25 people have the responsibility for ensuring the seamless supply of a £350 million per annum spend on the goods and services required in order to support 27 malt and two grain distilleries, and three major bottling plants, which provide 120 Diageo brands to 180 markets globally.

To ensure the procurement team continually improves the contribution it makes to the business through cost savings, supply chain risk management, materials quality, service improvement and support to brand growth through supplier innovation, the team uses a framework of 12 enablers of procurement capability to agree priority areas for improvement.

Philip Boyd, procurement director, Diageo Scotland, says, 'The 12 enablers are not exhaustive but they are relevant to diagnosing the capability of the procurement team as well as identifying key areas for future focus.'

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The 12 enablers are as follows.

- 1 *Sponsorship and support*: where does the real drive and support for improving procurement's capability, contribution, standing and rewards come from?
- 2 *Total expenditures impacted*: what is the real organization reach of procurement within the company?
- 3 *Consistent processes*: what is the level of routine application of codified processes to drive source selection, supplier management and capability development?
- 4 *Aggregation of expenditures*: to what extent are purchases being aggregated across business unit and geographic boundaries wherever justified?
- 5 *Supplier selection criteria*: what key criteria determine sourcing and which functions actively input to decision-making?
- 6 *Supplier relationship*: what is the nature of prevailing supplier relationships; how and by whom are they managed?
- 7 *Size of the supply base*: what concerted effort has gone into consolidation of the total supply base?
- 8 *Business and strategic planning processes*: what direct linkages are there between procurement and overall company budgeting, annual and strategic plans?
- 9 *People capability*: what is the principal source of talent and what is the depth and breadth of functional, organizational and leadership capability contained within procurement?
- 10 *Procurement information systems and e-technology systems*: how sophisticated are information systems and e-enablement platforms supporting sourcing strategy, supplier selection decisions, supplier relationship management and capability development?
- 11 *Measurement and reporting*: what key performance indicators measure procurement's contribution against imperative, and when and by whom are they monitored and reviewed?
- 12 *Communications*: how effective are procurement's communications to key internal and external stakeholders?

The procurement leadership team uses these enabling statements in a framework as a diagnostics tool to measure progress. Current priority areas of focus for Diageo Scotland are the organizational impact of expenditures, the leverage of expenditures, e-technology and people capability.

Question: How could these 12 steps be successfully implemented in small and medium-sized enterprises (SMEs)?

Sources: interview with Philip Boyd, procurement director Scotland, Diageo, April 2005, and Diageo website at www.diageo.com (2005). Reprinted with kind permission.

Quality Management

Although cost is an important consideration in materials acquisition, so is quality management. The initial purchase price of an item is only one element of the total cost. For example, some items are easier to work with than others and can save production costs. Materials of higher quality may require fewer fabrication processes or have a longer life span, resulting in lower overall product costs or higher prices for finished products. Companies must achieve some balance between the components of the acquisition process – namely, price, cost and value received.

After the required quality level has been determined and specifications developed, usually by manufacturing, it becomes purchasing's responsibility to secure the proper materials. The correct quality specification must be given to suppliers. The supplier that offers the best cost-quality combination that meets the specifications should be selected.

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The firm should never pay higher prices to obtain materials with quality levels greater than those specified by manufacturing unless justifiable marketing or logistics reasons exist for doing so. Purchasing materials that needlessly exceed quality specifications adds unnecessary costs to products and increased inventory costs.

One way that firms might ensure quality is through inspection of incoming materials parts. However, this is costly and time consuming. Inspection requires human resources, space and perhaps test equipment. In addition, incoming inventory is tied up or delayed awaiting inspection. For these reasons, purchasing managers have turned to **supplier certification**. In the certification process, the supplier's quality levels and processes are closely evaluated by members of the buying firm. If they 'pass', the buying organization no longer inspects that supplier's incoming material.

Quality is even more critical for firms pursuing a JIT philosophy, where little or no inventory is held. Improper quality in a JIT environment can shut down processes immediately, creating excessive costs and delays. This topic is discussed more fully in Chapter 6, on materials management, but is also presented here as it relates to purchasing and procurement activities concerned with quality of inbound materials.

Just-in-time

Just-in-time (JIT) manufacturing is more a philosophy of doing business than a specific technique. The JIT philosophy focuses on the identification and elimination of waste wherever it is found in the manufacturing system. The concept of continuous improvement becomes the central managerial focus.

Typically, JIT implementation involves the initiation of a 'pull' system of manufacturing (matching production to known demand) and the benefits include: significant reductions of raw material, work-in-process and finished goods inventories; significant reductions in throughput time; and large decreases in the amount of space required for the manufacturing process.

A company implementing JIT can usually make the greatest improvement in the area of quality. The JIT focus on the elimination of waste includes the supplier, with the aim of reducing waste and cost throughout the entire supply chain. If a manufacturer decides it will no longer carry a raw materials inventory and that henceforth its suppliers must carry this inventory, the supply chain cost is reduced because inventory with lower value added is being held.

One example of this is Nissan, which requires its suppliers to hold a certain amount of inventory at factories or warehouses near its northeast England production facilities in Sunderland, so suppliers can respond quickly in case of problems. It is preferable that this inventory be eliminated altogether because while those additional inventory carrying costs may be borne in the short term by the seller, eventually they may be passed on to the buyer in the form of higher prices. The supplier needs to reduce its own manufacturing and supplier lead-times. The major differences between 'traditional' and JIT purchasing are summarized in Table 4.2.

Difficulties in Implementing JIT

One of the reasons most frequently cited to do with difficulty in the implementation of JIT is a lack of cooperation from suppliers, due to the changes required in the supplier's system. In addition to changing from traditional quality-control inspection practices to the implementation of statistical process control, the supplier is asked to manufacture in quantities that may differ from the usual lot sizes and to make frequent deliveries of small lots with precise timing. The supplier and buyer are normally required to provide each other with access to their master production planning system, shop floor schedule and material requirements planning system.

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Purchasing activity	Traditional approach	JIT approach
Supplier selection	Minimum of two suppliers; price is central	Often one local supplier; frequent deliveries
Placing the order	Order specifies delivery time and quality	Annual order; deliveries made as needed
Change of orders	Delivery time and quality often changed at the last moment	Delivery time and quality fixed, quantities are adjusted within predetermined margins if necessary
Follow-up of orders	Many phone calls to solve delivery problems	Few delivery problems thanks to sound agreements; quality and delivery problems are not tolerated
Incoming inspection	Inspection of quality and quantities of nearly every delivered order	Initial sample inspections; later, no inspections necessary
Supplier assessment	Qualitative assessment; delivery deviations of up to 10% are tolerated	Deviations are not accepted; price is fixed based on open calculation
Invoicing	Payment per order	Invoices are collected and settled on a monthly basis

TABLE 4.2 Differences Between the Traditional Approach and the JIT Approach in Purchasing

Source: A.J. van Weele, *Purchasing Management: Analysis, Planning and Practice*. New York: Chapman and Hall, 1994, p. 132.

Importance of Buyer–supplier Communication

Under JIT, close and frequent buyer–supplier communication is essential. Suppliers are given long-range insight into the buyer's production schedule. Often, this look ahead spans months, but the schedule for the nearest several weeks is frozen. This allows the supplier to acquire raw materials in a stockless production mode and to supply the buyer without inventory build-ups. Suppliers provide daily updates of progress, production schedules and problems. Purchasers and suppliers must cooperate and have a trusting relationship in order to convert supply chains to JIT operations.

Supplier selection, single sourcing, supply management and supplier communication become critical issues for purchasing and materials managers in implementing JIT. Issues relating to supplier selection include quality-control methods, supplier proximity, manufacturing flexibility and lead-time reliability.

JIT manufacturers and their suppliers generally develop close collaborative relationships supported by long-term, single-source contracts. The concept of partnering, described in further detail later in the chapter, is often applied to JIT buyer–supplier relationships.

Following supplier selection, careful supplier performance measurement and management often lead to supplier certification – a designation reserved for those suppliers whose quality, on-time delivery and reliability have proven acceptable over long periods of time.

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Under JIT, the purchasing department has significantly changed from the processing of orders to a focus on supplier selection and long-term contract negotiation. Many times these close communications are supported by electronic data interchange (EDI) capabilities to facilitate the timely and accurate transmittal of information. The remaining sections apply to purchasing in general, and are critical to support the success of JIT purchasing.

Purchase Agreements

JIT purchasing is facilitated by an even, repetitive master production schedule. Repetitive manufacture of products evens out the demand for individual parts. The steady demand for parts has an impact on shipping quantities, containers and purchasing paperwork. In Japan, JIT purchase agreements usually involve little paperwork. The purchase order may specify price and overall quantity, but the supplier will deliver in accordance with a schedule or with daily production needs, which are telephoned from the buying plant. The JIT purchase agreement does not permit variability. In most cases, the buyer expects and receives the exact quantity. Having a purchase agreement in place saves much time in negotiating and pricing each order.

Value Analysis

Value analysis is a respected purchasing practice that may receive more attention as a result of the interest in JIT purchasing. When negotiating a purchase agreement, the supplier receives the buyer's specifications and provides a bid price. If the price is too high, the buyer may visit the supplier's plant to review its processes. The objective is to identify areas where the supplier's costs exceed the value added and, if possible, to modify the minimal specifications in order to reduce the supplier's cost and the bid price.

'Loose' Engineering Specifications/Early Supplier Involvement

Manufacturing engineers in the USA and Europe tend to specify tolerances for almost every design feature for which parts are purchased. The Japanese place more importance on how the item actually performs than on conformance to tight design specifications. The supplier is permitted to innovate on the premise that the supplier is the expert.

The concept of getting the supplier involved in the design process is often called **early supplier involvement (ESI)**. **Concurrent engineering** is a type of early supplier involvement where the engineers in the buying and selling firms work together on product development or product improvement.

The benefits of closer coordination of engineering and quality matters are significant. Engineers and quality control people may pay frequent visits to a supplier's plant to answer engineering questions and identify potential quality problems before they surface. Xerox Corporation utilizes these practices with its key suppliers, resulting in better supplier quality, responsiveness and competitiveness.

Control of Inbound Transportation

Inbound freight decisions such as delivery and routing are frequently left to the supplier's traffic department. This is often the case when materials are purchased 'Free On Board (FOB) shipping point' and the buyer owns the goods and absorbs the inventory carrying costs from the date of shipment.

JIT purchasing requires steady, reliable incoming deliveries. The objective is to avoid excessive inventory carrying costs for materials that arrive early and to avoid disruptions in manufacturing operations when goods arrive late. Therefore, the buying firms must become involved in selecting both the transportation mode and the specific carrier.

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Supplier Development

Supplier development is a when buyer and supplier jointly:

... make dedicated investments in the relationship and create technical bonds ... in order to create new product and service offerings [and where] the buyer takes the lead in setting 'stretch' [improvement] targets on functionality and costs.⁸

Sometimes organizations find that their current suppliers are unable to support stringent JIT quality and delivery requirements. Such organizations may search for other suppliers or work with suppliers to develop the skills needed to support JIT. Supplier development efforts are increasing as organizations form longer-term relationships with suppliers.

JIT II and JIT III

JIT II is an innovative type of purchasing relationship that aims JIT principles at the purchasing function. Like JIT, JIT II attempts to eliminate waste, redundancy and excess paperwork, and to improve quality, responsiveness and innovation in the purchasing arena. It represents a type of alliance relationship between a buying and selling organization. The term *JIT II* was coined by Bose Corporation to describe this type of relationship.⁹ The steps in developing JIT II are shown in Box 4.1.

Box 4.1 Steps in JIT II Information Flow

- | | |
|---|---|
| <p>Step 1 & 2: Supplier reassigns its sales representative to new duties, and customer reassigns its purchaser.</p> <p>Step 3: In full JIT II implementation, the customer reassigns its material planner to new duties.</p> <p>Step 4: Supplier replaces purchaser, planner and salesperson with a full-time professional at the customer's location. At Bose Corporation, supplier professionals are called 'in-plants'. Although supplier replaces purchaser with an in-plant rep, this step actually assists existing purchasing personnel as more people address the overall department workload.</p> <p>Step 5: The in-plant representative works 40 hours a week at the customer's location, usually in its purchasing department.</p> <p>Step 6: Customer empowers the in-plant within its planning and purchasing systems. The in-plant</p> | <p>works directly from the customer's MRP (or similar) system, and uses the customer's purchase order to place material orders on his or her own company. Note: the customer typically prohibits the in-plant from placing purchasing orders with other companies.</p> <p>Step 7: Customer provides the in-plant with an employee badge (or equivalent), providing free access to customer engineering and manufacturing personnel. When not planning and ordering material, the in-plant practises concurrent engineering by working with the customer's design engineering staff.</p> <p>Step 8: Customer and supplier understand that many more steps lie ahead. JIT II will cause change in both organizations.</p> |
|---|---|

Source: *Purchasing*, 6 May, 1993, p. 17.

In JIT II, the supplier places one of its employees, called an 'in-plant', in the buying company's office, replacing a purchaser, planner and salesperson. In addition to co-location, the concurrent engineering and continuous improvement aspects of JIT II distinguish it from other supplier relationships. One of the companies with which Bose has established this in-plant relationship is G&F Industries, an injection moulder. The in-plant representative places orders, practises concurrent engineering, and has full access to all of Bose's facilities, information and employees. The supplier benefits include greater integration with the customer, improved communications, more efficient administrative processes and savings on 'sales effort'.¹⁰

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JIT III is a further extension of JIT II, where the supplier locates its own factory close to its customer to facilitate sequential and frequent deliveries.¹¹ Suppliers to Nissan's factory in Sunderland, northeast England, are located close to the factory. Sunderland also has good road and rail links that enable Nissan to readily receive supplies from over 100 separate UK component and subassembly suppliers and also to ship completed vehicles.

Purchasing Research and Planning

Uncertainty in the business environment is making the purchasing decisions for key items more complex and the effects of these decisions more long lasting. Important environmental considerations include uncertainty of supply and dependence on foreign sources for key commodities, price increases on key commodities, extended and variable lead-times, energy shortages or price increases, government regulation such as environmental laws, and increasing worldwide competition.

The changing environment makes it necessary for purchasing management to do a more effective job of researching the supply market. Purchasing needs to provide information about supply conditions (e.g. availability, lead-times, prices, technology) to different groups within the firm, including top management, logistics, engineering, design, manufacturing and marketing. This information is important when formulating long-term strategy and making short-term decisions. Key materials for which availability, pricing and quality problems may occur should be identified, so that action plans can be developed before problems become critical and costly.

Strategic planning for purchasing involves the identification of critical purchases, supply market analysis, risk assessment, and strategy development and implementation. It is important to determine whether materials problems or shortages might jeopardize current or future production of new or existing products, whether materials quality can be expected to change, whether prices are likely to increase or decrease, and the appropriateness of forward buying. Management should develop specific plans to ensure an uninterrupted flow of materials.

Typical criteria to use in identifying critical purchases are percentage of product cost, percentage of total purchase expenditure and use on high-margin end items. Criteria used for determining the risk in the supply market include number of suppliers, availability of raw materials to suppliers, supplier cost and profitability needs, supply capacity and technological trends. The more critical the purchase and the riskier the supply market, the greater attention the purchase requires.

Risk assessment requires that the purchaser determine the probability of best or worst conditions occurring. Supply strategies like those shown in Table 4.3 should be developed for the predicted events. Asking these questions for any given strategy or situation can help purchasing ensure that it has considered the important issues. Implementation of a particular strategy requires the involvement of top management and integration with the firm's overall business plan.

Purchasing Cost Management

Given the large percentage of the firm's dollars that purchasing spends, purchasing departments must manage and reduce costs. Purchasing can use a number of methods to reduce administrative costs, purchase prices and inventory carrying costs, but the most prevalent are purchase cost reduction programmes, price change management programmes, volume leverage (time or quantity) contracts, systems contracts and stockless purchasing, and establishing long-term relationships with suppliers.

Purchasing savings have the same sort of profit leverage effect as logistics cost savings (see Chapter 1). If top management calls for a set percentage of cost reduction in all areas of spending, the potential impact of purchasing is large. Because purchasing spends such a large percentage of a firm's revenue, a 10 per cent cost reduction in purchase expenditures has a much greater impact than a 10 per cent reduction in labour or overhead expenses.

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<p>1. What? Make or buy Standard versus special</p> <p>2. Quality? Quality versus cost Supplier involvement</p> <p>3. How much? Large versus small quantities (inventory)</p> <p>4. Who? Centralize or decentralize Quality of staff Top management involvement</p> <p>5. When? Now versus later Forward buy</p> <p>6. What price? Premium Standard Lower Cost-based Market-based Lease/make/buy</p> <p>7. Where? Local, regional Domestic, international Large versus small</p>	<p>Single versus multiple source High versus low supplier turnover Supplier relations Supplier certification Supplier ownership</p> <p>8. How? Systems and procedures Computerization Negotiations Competitive bids Fixed bids Blanket orders/open orders Systems contracting Blank check system Group buying Materials requirements planning Long-term contracts Ethics Aggressive or passive Purchasing research Value analysis</p> <p>9. Why? Objectives congruent Market reasons Internal reasons 1. Outside supply 2. Inside supply</p>
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TABLE 4.3 Supply Strategy Questions

Source: Michiel E. Leenders, Harold E. Fearon, Anna E. Flynn and P. Fraser Johnson, *Purchasing and Supply Management*, 12th edn. Burr Ridge, IL: McGraw-Hill Irwin, 2002, p. 698.

Cost-reduction Programmes

An effective cost-reduction programme by purchasing requires top management support, clear definition of goals, visibility of savings to top management, measurement of savings, reporting on the process and its results, and incorporation of cost-reduction goals in the individual performance appraisal process.

For a cost-reduction programme to succeed, top management must communicate the need for cost-saving accomplishments in both good and bad economic times. The programme must define cost-reduction objectives adequately, so that accomplishments can be measured and performances evaluated.

In many firms, for example, a 'cost reduction' is defined as a decrease in prior purchase price. This means a cost reduction occurs only when the firm is paying a lower price. Cost avoidance is the amount that *would have* been paid less the amount actually paid. The distinction between cost savings and cost avoidance is shown in Table 4.4.

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Cost-reduction and avoidance programmes may include any of the following:

- supplier development
- development of competition
- requirement of supplier cost reduction
- early supplier involvement in new product design and design changes
- substitution of materials
- standardization
- make-or-buy analysis
- value analysis, including supplier involvement
- the reduction of scrap
- a change in tolerances
- improvement of payment terms and conditions
- volume buying
- process changes.

The appropriateness of each technique will vary with the purchase situation and type of supplier relationship.

	Per unit cost
Scenario 1 – Cost savings:	
Current price paid	€20.00
New price	<u>19.00</u>
Cost savings	€1.00
Scenario 2 – Cost avoidance:	
Current price paid	€20.00
New price quoted by supplier	25.00
Price obtained from alternate supplier	22.00
Cost savings	
Current price paid	€20.00
New price actually paid	<u>22.00</u>
Cost savings [Actually a €2.00 price increase]	– €2.00
Cost avoidance	
New price quoted	€25.00
New price actually paid	<u>22.00</u>
Cost avoidance	€3.00

TABLE 4.4 Cost Savings Versus Cost Avoidance

Price Change Management

Purchasing managers must challenge supplier price increases and not treat them as pass-through costs. It is important to work with suppliers to restrict price increases to a reasonable and equitable level. Furthermore, purchasing should establish a systematic method of handling all price increase requests from suppliers. At a minimum, the system should require:

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- determination of the reason for the price change request
- specification of the total euro value impact on the firm
- justification of the price change by suppliers
- review of the price change by management
- strategies to deal with price increases
- alternatives for reducing other price elements or improving processes to offset the price increase.

Purchasing should work with the supplier to offset price increases through other improvements, such as reduced delivery lead-times, better service or other opportunities. To restrict price increases, management should require price-protection clauses and advance notification of 30, 60 or 90 days for price increases. As part of a programme of price change management, purchasing should determine the impact of engineering changes on product costs before it recommends making these changes.

Forward Buying Versus Speculative Buying

Frequently, conditions such as potential supply constrictions or inflationary markets cause purchasing managers to buy more of a product than is required for current consumption. This practice, called **forward buying**, serves to protect the organization from anticipated shortages or to delay the impact of rising prices. The trade-off, of course, is increased inventory carrying costs. When using this strategy, the purchasing manager must evaluate the trade-off between inventory carrying cost increases and the risk of supply constriction or increased prices.

Speculative buying refers to purchases made not for internal consumption, but to resell at a later date for profit. Speculative goods may be the same as goods purchased for consumption, but the quantities purchased will be in excess of current or future needs. An example occurs in the diverting of retail goods.

Companies may offer special discounts to retailers only in certain areas of the country. Retailers will buy substantial quantities of goods to ship to other locations or even to sell to other retailers in different parts of the country where the discount is unavailable. The retailer makes a profit by selling for more money or saving enough money to offset the increased freight and handling costs. The fundamental intent is to take advantage of expected increases in price to profit from the resale of the goods.

Volume Contracts

Volume contracts are a way to leverage purchase requirements over time, between various business units or locations in the company, or on different line-item requirements. As a result of combining purchases, the buyer's leverage with suppliers can lead to reductions in purchase prices and administrative costs. Cumulative volume discounts allow a buyer to combine purchase volume over time, getting lower prices with successive buys as it places additional orders throughout the year. More companies are using this approach to support smaller, more frequent buys in JIT purchasing.

In non-cumulative discounts, the price is based on the amount of each order. A review of purchase prices for a particular item often identifies the opportunity for suppliers to provide quotes on a semi-annual or contract basis. An increase in the purchase quantity can enable suppliers to reduce their costs and prices as a result of production or purchasing economies. In addition, the supplier may be willing to accept lower per unit margins on a higher volume of business.

Past purchase patterns should be available from computer-generated requirement plans and from suppliers. Management needs to review the firm's purchase history systematically and regularly to find new opportunities for volume contracting.

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Stockless Purchasing

Stockless purchasing, or **blanket orders**, are a means of reducing materials-related costs such as unit purchase price, transportation, inventory and administration. Contracts are arranged for a given volume of purchases over a specified period of time. The supplier provides products to individual plant locations as ordered, and payment is arranged through purchasing. Logistics is involved in the actual order release, which simplifies repetitive ordering considerably and lowers transaction costs.

Stockless purchasing implies that the firm does not carry inventory of purchased materials. While it may or may not result in 'zero' inventory, the underlying principles of stockless purchasing support improved inventory management. The objectives of stockless purchasing are to:

- lower inventory levels
- reduce the supplier base
- reduce administrative cost and paperwork
- reduce the number of purchases of small euro value and requisitions that purchasers have to handle, freeing up time for more important activities
- achieve volume leverage with suppliers, lowering costs and improving service
- provide for timely delivery of material directly to the user
- standardize purchase items where possible
- have suppliers manage inventory and, in some cases, place orders.¹²

Stockless purchasing systems are best suited to frequently purchased items of low euro value where administrative processing costs are relatively high compared with unit prices. In many cases, the combined administrative, processing and inventory carrying costs may exceed the item's cost. Stockless purchasing may lead to larger supplier discounts, reduced processing costs and increased product availability.

Going beyond systems contracts is the concept of **integrated supply**. Under this concept, a purchaser will combine all buys of like items with one supplier, further reducing administrative costs and increasing leverage. Examples of items well suited to integrated supply are office supplies, lab supplies, small tools, screws, nuts and bolts, and standard electrical components.

Usually, the length of the contract for purchasing agreements varies from one to five years and includes price-protection clauses. The purchaser should have the right to research the market to ensure that suppliers' unit prices are reasonable.

In the European Union the Utilities Directive and the proposed consolidated public-sector Directive both define a **framework agreement**, which is an agreement with public-sector suppliers, the purpose of which is to establish the terms governing contracts to be awarded during a given period, in particular with regard to price and quantity. In other words, a framework agreement is a general term for agreements with suppliers that set out terms and conditions under which specific purchases (call-offs) can be made throughout the term of the agreement. Framework agreements can be concluded with a single supplier or with several suppliers, for the same goods, works or services. The length of call-offs is not specifically limited by the directives – for example, call-offs might be for three, six or 12 months, or longer.

Vendor Managed Inventory (VMI) and Supplier Managed Inventory

VMI and SMI are two initiatives within a broad class of automatic replenishment programs (ARPs).¹³ Other ARPs of continuous replenishment, quick response and efficient consumer response were discussed in Chapter 2. VMI involves the coordinated management of finished goods inventories outbound from a manufacturer, distributor or reseller to a retailer or other merchandiser, while SMI involves the flow of raw materials and component parts inbound to a manufacturing process.

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VMI is the more common of the two replenishment programs. VMI vendors generate purchase orders on an as-needed basis by closely monitoring customer inventory levels and replenishing supplies based on an established inventory plan. The inventory plan accounts for dynamic changes in demand associated with the product forecast, life cycle and related promotional activity.

SMI employs a similar logic to VMI but on the inbound side to the manufacturing operation. The key difference between SMI and VMI is that rather than replenishing finished goods on a reorder point basis, the manufacturer's production schedule triggers the replenishment of materials in the SMI program. Suppliers are provided with production schedules in advance with regular updates on 'takt' time (desired time between output units of production that are synchronized to customer demand), production assortments, and total volume adjusted to changes in demand.

E-procurement

The widespread use of the Internet has created numerous opportunities for improving supply chain performance, particularly in purchasing and procurement. E-procurement is the use of the Internet in purchasing and procurement. There are six forms of e-procurement applications: e-sourcing, e-tendering, e-informing, e-reverse auctions, e-MRO and web-based enterprise resource planning (ERP).¹⁴

E-sourcing consists of identifying new suppliers using Internet technology. E-tendering is the process of sending requests for information and proposals to suppliers, and receiving responses via the Internet. E-informing is the process of gathering and distributing purchasing information among internal and external parties, using Internet technology.

E-reverse auctioning is the Internet-based equivalent of a reverse auction, which enables a supplier to sell surplus goods and services to a number of known or unknown buying organizations. Lastly, e-MRO and web-based ERP are processes for creating and approving purchasing requisitions, placing purchase orders, and receiving goods and services ordered using Internet-based software systems.

The Technology box gives an example of how suppliers to the German government can take advantage of an initiative to tender bids and supply on an e-procurement basis.



TECHNOLOGY

E-procurement in Public Purchasing

Germany's e-procurement flagship project, which has been supported since 2000 with around €4.5 million of funding from the Federal Ministry of Economics and Technology, has led the country's public administration into new territory. For the first time, the pilot project shows that even the complexities of public procurement procedures can be handled via the Internet, while adherence to all the procurement rules and a high level of security remain assured. All the types of procurement, be they the purchasing of paper-clips or the construction of town halls, can be dealt with fully online.

The e-procurement system covers all the necessary steps, from the contract notice to the contract award, and does so in conformity with the law. The economic impact of the new electronic technologies is immense. The federal government, the Länder and the municipalities award public contracts worth a total of €250 billion a year and are therefore Germany's largest

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purchaser of goods and services. These contracts account for around 13 per cent of gross national product and 25 per cent of public-sector spending.

The e-procurement project pursues several objectives. First, it aims to use modern information and communications technologies and multimedia to enhance quality and efficiency, and thus to contribute towards an efficient and economic public administration. A reference model for the electronic award of public contracts is being developed, which can be used by contracting authorities at federal, Länder and municipal level and by other public agencies.

E-procurement also aims to turn the public sector into a driving force for the spread of more electronic business processes in Germany. E-procurement is one of the most important examples of applications in the government-to-business part of e-business. This project makes an important contribution to ensuring that e-business and e-government fit together. The digital structures of public administration and business are designed in the project in such a way that they can be linked up throughout the process and that interactions do not require the use of different media. Ultimately, the aim is to integrate the entire process chain in a holistic e-business and e-procurement concept.

Both the contracting authorities and the companies submitting bids benefit from e-procurement. The companies obtain simpler access to the invitations to tender via the Internet. This shortens their response times and facilitates direct contact with further partners when drawing up a bid. Also, the processing times in the authorities are shortened substantially since the move from the submission of the bid to the evaluation and award process occurs seamlessly and, in many cases, in parallel and can also be documented without any difficulty.

Finally, e-procurement has the aim of encouraging the increased use of multimedia and the Internet in business. After all, the opportunity to participate in the contracts issued by the federal government, Länder and municipalities is a major incentive for the continued expansion of modern information and communications technologies in business. The achievement of greater transparency in the field of contract notices also suggests that more small and medium-sized enterprises (SMEs) will participate in public procurement procedures. Greater competition creates expectations of lower procurement prices and thus savings.

The German government will do all it can to make the electronic award of public contracts via e-procurement the prevailing form of modern procurement. There will be no alternative in future to e-procurement as a key element of e-business. The experience gained must be deepened by further electronic invitations to tender so that this method can replace the paper form in the foreseeable future. It is already apparent that the platform created by the e-procurement flagship project can also become a model for public procurement in Europe.

Question: Discuss the use and potential applications of electronic purchasing in other, non-public sectors.

Source: adapted from Dr Andreas Goerdeler, 'Electronic Public Procurement in Germany', *Business Briefing: Global Purchasing & Supply Chain Strategies*. London: Touch Briefings, January 2003, pp. 51–4.

Managing Supplier Relationships

Supplier partnerships have become one of the hottest topics in inter-firm relationships. Business pressures such as shortened product life cycles and global competition are making business too complex and expensive for one firm to go it alone. Despite all the interest in partnerships, a great deal of confusion still exists about what constitutes a partnership and when it makes the most sense to have one. This section will present a model that can be used to identify when a partnership is appropriate as well as the type of partnership that should be implemented.

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While there are countless definitions of partnerships in use today, we prefer this one:

A partnership is a tailored business relationship based on mutual trust, openness, shared risk and shared rewards that yields a competitive advantage, resulting in business performance greater than would be achieved by the firms individually.¹⁵

Types of Partnership¹⁶

Relationships between organizations can range from arm's length relationships (consisting of either one-time exchanges or multiple transactions) to vertical integration of the two organizations, as shown in Figure 4.5. Most relationships between organizations have been at arm's length where the two organizations conduct business with each other, often over a long period of time and involving multiple exchanges. However, there is no sense of joint commitment or joint operations between the two companies. In arm's length relationships, a seller typically offers standard products/services to a wide range of customers who receive standard terms and conditions. When the exchanges end, the relationship ends. While arm's length represents an appropriate option in many situations, there are times when a closer, more integrated relationship, called a partnership, would provide significant benefits to both firms.

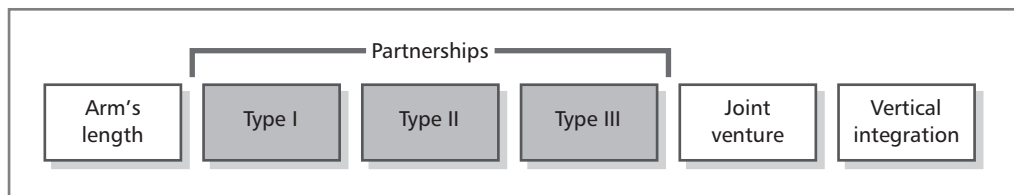


FIGURE 4.5 Types of Relationship

Source: Douglas M. Lambert, Margaret A. Emmelhainz and John T. Gardner, 'Developing and Implementing Supply Chain Partnerships', *The International Journal of Logistics Management* 7, no. 2 (1996), p. 2.

A partnership is not the same as a joint venture or strategic alliance, which normally entails some degree of shared ownership across the two parties. Nor is it the same as vertical integration. Yet a well-managed partnership can provide benefits similar to those found in joint ventures or vertical integration.

While most partnerships share some common elements and characteristics, there is no one ideal or 'benchmark' relationship that is appropriate in all situations. Because each relationship has its own set of motivating factors as well as its own unique operating environment, the duration, breadth, strength and closeness of the partnership will vary from case to case and over time. Research has indicated that three types of partnerships exist.

Type I

The organizations involved recognize each other as partners and, on a limited basis, coordinate activities and planning. The partnership usually has a short-term focus and involves only one division or functional area within each organization.

Type II

The organizations involved progress beyond coordination of activities to integration of activities. Although not expected to last 'for ever', the partnership has a long-term horizon. Multiple divisions and functions within the firm are involved in the partnership.

Type III

The organizations share a significant level of integration. Each party views the other as an extension of their own firm. Typically no 'end date' for the partnership exists.

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Normally, a firm will have a wide range of relationships spanning the entire spectrum, the majority of which will not be partnerships but arm's length associations. Of the relationships that are partnerships, the largest percentage will be of Type I, and only a limited number will be of Type III. Type III partnerships should be reserved for those suppliers or customers who are critical to an organization's long-term success. The relationship between Coca-Cola and McDonald's restaurants, for instance, has been evaluated as a Type III partnership.

The Partnership Model

The partnership model shown in Figure 4.6 has three major elements that lead to outcomes: drivers, facilitators and components. **Drivers** are compelling reasons to partner. **Facilitators** are supportive corporate environmental factors that enhance partnership growth and development. **Components** are joint activities and processes used to build and sustain the partnership. Outcomes reflect the performance of the partnership.

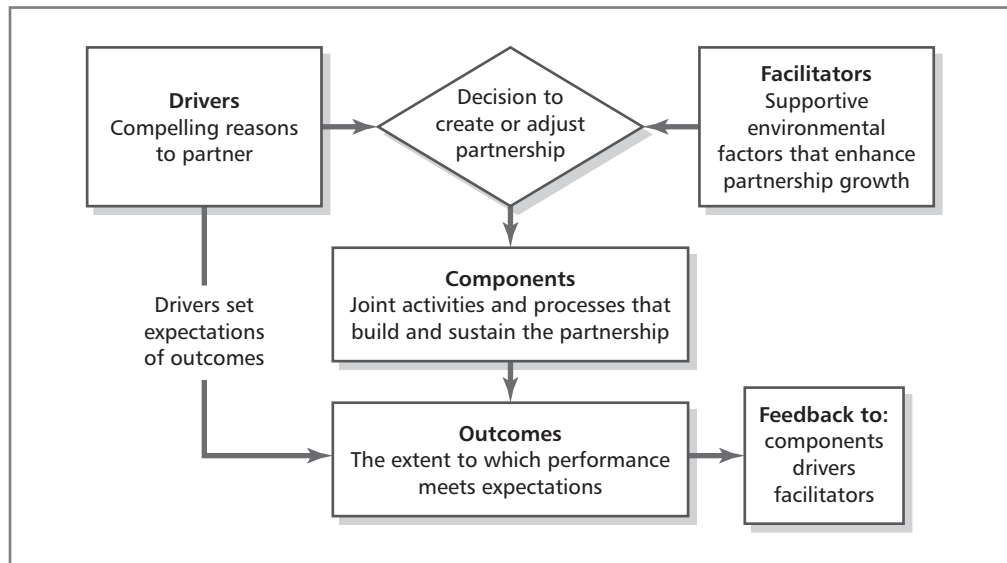


FIGURE 4.6 The Partnering Process

Source: Douglas M. Lambert, Margaret A. Emmelhainz and John T. Gardner, 'Developing and Implementing Supply Chain Partnerships', *The International Journal of Logistics Management* 7, no. 2 (1996), p. 4.

Drivers

Both parties must believe that they will receive significant benefits in one or more areas and that these benefits would not be possible without a partnership. The primary potential benefits that drive the desire to partner include: (1) asset/cost efficiencies, (2) customer service improvements, (3) marketing advantage, and (4) profit stability/growth (see Box 4.2 for examples).

While the presence of strong drivers is necessary for successful partnerships, the drivers by themselves do not ensure success. The benefits derived from the drivers must be sustainable over the long term. If, for instance, the marketing advantage or cost efficiencies resulting from the relationship can easily be matched by a competitor, the probability of long-term partnership success is reduced.

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Box 4.2 Partnership Drivers, Facilitators, and Components

Partnership drivers

- **Asset/cost efficiency:** What is the probability that this relationship will substantially reduce channel costs or improve asset utilization – for example, product costs, distribution costs savings, handling cost savings, packing costs savings, information-handling costs savings, managerial efficiencies and assets devoted to the relationship?
- **Customer service:** What is the probability that this relationship will substantially improve the customer service level as measured by the customer – for example, improved on-time delivery, better tracking of movement, paperless order processing, accurate order deliveries, improved cycle times, improved fill rates, customer survey results and process improvements?
- **Marketing advantage:** What is the probability that this relationship will lead to substantial marketing advantages – for example, new market entry, promotion (joint advertising, sales promotion), price (reduced price advantage), product (jointly developed product innovation, branding opportunities), place (expanded geographic coverage, market saturation), access to technology and innovation potential?
- **Profit stability/growth:** What is the probability that this relationship will result in profit growth or reduced variability in profit – for example, growth, cyclical levelling, seasonal levelling, market share stability, sales volume and assurance of supply?

Partnership facilitators

- **Corporate compatibility:** What is the probability that the two organizations will mesh smoothly in terms of: (1) culture – for example, both firms place a value on keeping commitments, constancy of purpose, employees viewed as long-term assets and external stakeholders considered important, and (2) business – for example, strategic plans and objectives consistent, commitment to partnership ideas and willingness to change?
- **Management philosophy and techniques:** What is the probability that the management philosophy and tech-

niques of the two companies will match smoothly – for example, organizational structure, use of TQM, degree of top management support, types of motivation used, importance of teamwork, attitudes toward 'personnel churning' and degree of employee empowerment?

- **Mutuality:** What is the probability both parties have the skills and predisposition needed for mutual relationship building? Is management skilled at two-sided thinking and action, taking the perspective of the other company, expressing goals and sharing expectations, and taking a longer-term view, for example, or is management willing to share financial information and integrate systems?
- **Symmetry:** What is the probability that the parties are similar on the following important factors that will affect the success of the relationship: relative size in terms of sales, relative market share in their respective industries, financial strength, productivity, brand image/reputation and technological sophistication?

Partnership components

- **Planning** (style, level and content)
- **Joint operating controls** (measurement and ability to make changes)
- **Communications** (non-routine and day-to-day: organization, balanced flow and electronic)
- **Risk/reward sharing** (loss tolerance, gain commitment and commitment to fairness)
- **Trust and commitment to each other's success**
- **Contract style** (time frame and coverage)
- **Scope** (share of partner's business, value added and critical activities)
- **Investment** (financial, technology and people)

Partnership outcomes

- **Global performance outcomes** (enhancement of profits, levelling of profits over time)
- **Process outcomes** (improved service, reduced costs)
- **Competitive advantage** (market positioning, market share, access to knowledge)

In evaluating a relationship, how does a manager know if there are enough drivers to pursue a partnership? First, drivers must exist for each party. It is unlikely that the drivers will be the same for both parties, but they need to be strong for both. Second, the drivers must be strong enough to provide each party with a realistic expectation of significant benefits through a strengthening of the relationship. Each party should independently assess the strength of its specific drivers.

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Facilitators

Drivers provide the motivation to partner. But even with a strong desire for building a partnership, the probability of success is reduced if the corporate environments are not supportive of a close relationship. Just as the relationship of a young couple with a strong desire to marry can be derailed by unsupportive in-laws, different communication styles and dissimilar values, so can a corporate relationship be side-tracked by a hostile environment. On the other hand, a supportive environment that enhances integration of the two parties will improve the success of the partnership.

Facilitators are elements of a corporate environment that allow a partnership to grow and strengthen. They serve as a foundation for a good relationship. In the short run, facilitators cannot be developed: they either exist or they don't. And the degree to which they exist often determines whether a partnership succeeds or fails. Facilitators include: (1) corporate compatibility, (2) similar managerial philosophy and techniques, (3) mutuality and (4) symmetry (see Box 4.2 for details).

Facilitators apply to the combined environment of the two potential partners. Therefore, unlike drivers, which are assessed by managers in each firm independently, facilitators should be assessed jointly. The discussion of corporate values, philosophies and objectives often leads to an improved relationship even if no further steps towards building a partnership are taken. The more positive the facilitators, the better the chance of partnership success.

If both parties realistically expect benefits from a partnership and if the corporate environments appear supportive, then a partnership is warranted. The appropriateness of any one type of partnership is a function of the combined strength of the drivers and facilitators. A combination of strong drivers and strong facilitators would suggest a Type III partnership, while low drivers and low facilitators suggest an arm's length relationship.

While it might seem, from all of the literature on the importance of integrated relationships and alliances, that managers should attempt to turn all of their corporate relationships into Type III partnerships, this is not the case. In partnering, more is not always better. The objective in establishing a partnership should not be to have a Type III partnership; rather it should be to have the *most appropriate* type of partnership given the specific drivers and facilitators. In fact, in situations with low drivers and/or facilitators, trying to achieve a Type III partnership is likely to be counter-productive. The necessary foundation is just not there. Having determined that a partnership of a specific type is warranted and should be pursued, the next step is to actually put the partnership into place. This is done through the components.

An assessment of drivers and facilitators is used to determine the potential for a partnership, but the components describe the type of relationship that has actually been implemented.

Components

Components are the activities and processes that management establishes and controls throughout the life of the partnership. Components make the relationship operational and help managers create the benefits of partnering. Every partnership has the same basic components, but the way in which the components are implemented and managed varies. Components include: planning, joint operating controls, communications, risk/reward sharing, trust and commitment, contract style, scope and financial investment. Box 4.2 summarizes the drivers, facilitators and components of partnership.

Outcomes and Feedback

Whatever type of supplier partnership is implemented, the effectiveness of the relationship must be evaluated and possibly adjusted. The key to effective measurement and feedback is how well the drivers of partnership were developed at the outset. At this beginning point, the measurement and metrics of relating to each driver should have been made explicit. These explicit

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measures then become the standard in evaluation of the partnership outcomes. Feedback can loop back to any step in the model. Feedback can take the form of periodic updating of the status of the drivers, facilitators and components.

SUMMARY

In this chapter, we saw how better management of purchasing activities can lead to increased profitability. We described the activities, such as supplier selection, evaluation and management, that must be performed by the purchasing function, and explored the implications of just-in-time and JIT II in purchasing. We examined various types of supplier relationship and the role of purchasing in supply chain management, with an emphasis on various types of partnership. Because the costs of purchased materials represent a significant cost of doing business, we devoted a considerable amount of attention to the management of purchasing cost. Effective logistics plays an important role in effective purchasing management. In addition, third-party logistics service providers are 'suppliers' to the firm. Much can be learned from purchasing about better managing those relationships.



KEY TERMS

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A full Glossary can be found at the back of the book.



QUESTIONS AND PROBLEMS

- 1 Explain why supplier selection and evaluation is frequently considered the most important activity in the purchasing function.
- 2 What are some of the reasons that purchasing is taking on a more strategic role in organizations?

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- 3 Explain the concept of forward buying and its relationship to total cost trade-off analysis.
- 4 What are the major advantages of just-in-time purchasing? What are the possible difficulties in implementing a JIT system?
- 5 Why is cost measurement an important activity for purchasing management?
- 6 Why is it necessary for two firms each to have strong drivers if they are considering forming a partnership?
- 7 The chapter stated that the majority of a firm's relationships would be arm's length. Why do you think this would be the case?
- 8 Why are quality suppliers important to a firm? Why is this even more true in a JIT environment?

THE LOGISTICS CHALLENGE!



PROBLEM: PAPERLESS PURCHASING

The not-so-humble invoice is at the heart of the entire economic system. It might only be a bit of paper but it says 'Pay Me' in the clearest possible way. A supplier provides a customer with a service and then sends them an invoice. The two are as inextricably linked as bees and honey, and as sequential as night and day.

The basic rule of business, probably the only one everybody understands, is: no invoice, no payment. Without the invoice, money would stop moving, companies would stop working and business would grind to a halt.

Yet Björn Algkvist, former chief executive officer at the Swedish software company Intenia International AB, has posed the question, 'Why can't we do away with invoices?'

But how can you bill someone without an invoice? Of course, this is a reactionary view and one that Mr Algkvist simply does not accept. He argues that business has become unreasonably wedded to the concept of the invoice and is simply fearful of abandoning it.

The technology is readily available to handle transactions without bits of paper littering people's desks and occasionally falling down the back of the photocopier. Then there is the effort involved in printing out invoices, stuffing them into envelopes and posting them. And, at the other end, the envelopes have to be opened and the invoices processed.

The interesting part of all this activity is that the invoice will likely have been generated by computer and its information likely re-keyed into a computer at the customer end. That is no doubt good for employment but it will hardly win a business efficiency award.

There are serious questions to be asked: 'Are we failing to make the most of the purchasing technologies available to us through basic conservatism or even prejudice? Are we simply too unwilling to give up these comforting bits of paper?'

Perhaps Mr Algkvist is right. Perhaps we should simply accept that the invoice is rapidly going the way of videotape technology, and leave it to the technology to handle the transaction.

Do you think invoiceless purchasing is the way of the future and do you trust it to work properly?

What Is Your Solution?

Source: adapted from Malory Davies, 'No Invoice, No Payment', *Distribution Business* 15, no. 8 (October 2002), p. 3.

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SUGGESTED READING

BOOKS

Axelsson, Björn and Finn Wynstra, *Buying Business Services*. Chichester, UK: John Wiley & Sons Ltd, 2002.

Day, Marc (ed.), *Gower Handbook of Purchasing Management*, 3rd edn. Aldershot, UK: Gower Publishing Ltd, 2002.

Dixon, Lance and Anne Millen Porter, *JIT II: Revolution in Buying and Selling*. Newton, MA: Cahners, 1994.

Ellram, Lisa M. and Laura M. Birou, *Purchasing for Bottom Line Impact*. Burr Ridge, IL: Business One Irwin, 1995.

Gadde, Lars-Erik and Håkan Håkansson, *Supply Network Strategies*. Chichester, UK: John Wiley & Sons Ltd, 2001.

Leenders, Michiel, Harold E. Fearon, Anna E. Flynn and P. Fraser Johnson, *Purchasing and Supply Management*, 12th edn. Burr Ridge, IL: McGraw-Hill Irwin, 2002.

Leenders, Michiel R. and Anna E. Flynn, *Value Driven Purchasing*. Burr Ridge, IL: Irwin Professional Publishers, 1995.

Lysons, Kenneth, *Purchasing and Supply Chain Management*, 5th edn. Harlow, UK: Financial Times Prentice Hall, 2000.

Raedels, Alan R., *Value Focused Supply Management*. Burr Ridge, IL: Irwin Professional Publishers, 1995.

JOURNALS

Harrington, Thomas C., Douglas M. Lambert and Martin Christopher, 'A Methodology for Measuring Vendor Performance', *Journal of Business Logistics* 12, no. 1 (1991), pp. 83–104.

Lambert, Douglas M., Margaret A. Emmelhainz and John T. Gardner, 'Developing and Implementing Supply Chain Partnerships', *The International Journal of Logistics Management* 7, no. 2 (1996), pp. 1–17.

Newbourne, Paul T., 'The Role of Partnerships in Strategic Account Management', *The International Journal of Logistics Management* 8, no. 1 (1997), pp. 67–74.

Tersine, Richard J. and Albert B. Schwarzkopf, 'Optimal Transition Ordering Strategies with Announced Price Increases', *The International Journal of Logistics Management* 2, no. 1 (1991), pp. 26–34.

Tully, Shawn, 'Purchasing's New Muscle', *Fortune*, 20 February 1995, pp. 75–83.

REFERENCES

¹ Eurostat, 'Industry, Trade and Services Annual Enterprise Statistics for Manufacturing in 2000', <http://europa.eu.int> (2005).

² Kenneth Lysons, *Purchasing and Supply Chain Management*, 5th edn. Harlow, UK: Financial Times Prentice Hall, 2000), pp. 3–4; and Eurostat, 'Industry, Trade and Services Annual Enterprise Statistics for Manufacturing in 2000'.

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- ³ Shawn Tully, 'Purchasing's New Muscle', *Fortune*, 20 February 1995, p. 76.
- ⁴ A.T. Kearney and Manchester School of Management, *Partnership or Power Play?* Manchester, UK: Manchester School of Management, 1994, p. 14.
- ⁵ Lars-Erik Gadde and Håkan Håkansson, *Supply Network Strategies*. Chichester, UK: John Wiley & Sons Ltd, 2001), p. 8. Copyright John Wiley & Sons Ltd. Reproduced with permission.
- ⁶ Thomas C. Harrington, Douglas M. Lambert and Martin Christopher, 'A Methodology for Measuring Vendor Performance', *Journal of Business Logistics* 12, no. 1 (1991), p. 83.
- ⁷ *Ibid.*, pp. 97–8.
- ⁸ Andrew Cox, 'The Art of the Possible: Relationship Management in Power Regimes and Supply Chains', *Supply Chain Management: An International Journal* 9, no. 5 (2004), p. 349.
- ⁹ Lance Dixon and Anne Porter Millen, *JIT II: Revolution in Buying and Selling*. Newton, MA: Cahners, 1994, pp. 9–15.
- ¹⁰ *Ibid.*, pp. 143–50, 159–60.
- ¹¹ Gadde and Håkansson, *Supply Network Strategies*, p. 70.
- ¹² Lisa M. Ellram, *Fundamentals of Purchasing*, seminar workbook provided to the National Association of Purchasing Management, 1995.
- ¹³ Terrance L. Pohlen and Thomas J. Goldsby, 'VMI and SMI Programs: How Economic Value Added can Help Sell the Change', *The International Journal of Physical Distribution & Logistics Management* 33, no. 7 (2003), pp. 565–81.
- ¹⁴ Luitzen de Boer, Jeroen Harink and Govert Heijboer, 'A Conceptual Model for Assessing the Impact of Electronic Procurement', *European Journal of Purchasing and Supply Management* 8, no. 1 (2002), pp. 25–33.
- ¹⁵ Douglas M. Lambert, Margaret A. Emmelhainz and John T. Gardner, 'Developing and Implementing Supply Chain Partnerships', *The International Journal of Logistics Management* 7, no. 2 (1996), p. 2.
- ¹⁶ This and the following section are taken from Lambert, Emmelhainz and Gardner, 'Developing and Implementing Supply Chain Partnerships', pp. 1–17.