Strategic Logistics Management

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Chapter Objectives

- To show how better management of purchasing activities can lead to increased profitability.
- To introduce the activities that must be performed by the purchasing function.
- To describe the impact of just-in-time production on purchasing.
- To show how purchasing costs can be managed.
- To show how to measure and evaluate purchasing performance.
- To introduce the concept of strategic sourcing.
- To describe how e-procurement aids sourcing.
- To describe a model that can be used for developing and implementing partnerships with suppliers.
Introduction

In the United States, purchasing agents for manufacturing firms buy more than $1.6 trillion worth of goods each year. In addition, state and federal purchases are more than $1.2 trillion. How well this money is spent is a question that is of considerable concern to both purchasing agents and top management. The fact that purchases consistently represent the largest single expense of doing business shows that there is a pressing need for reliable measures of purchasing efficiency. Table 12–1 presents purchasing data for the entire U.S. manufacturing sector; purchased materials account for 52 percent of the sales dollar on average and range from 27 to 83 percent. When expenditures for capital equipment are included, the average percentage increases to 55. As firms respond to the mandate to become more efficient if they are to compete with foreign manufacturers, it is likely that additional labor costs will be designed out of the processes used. Also, many companies (examples include Lucent Technologies and Sara Lee Corporation) are outsourcing portions or all of their manufacturing operations. Thus, the material/sales ratio will increase. Any function for which costs amount to over half of a firm’s sales is going to attract a great deal of managerial attention. In this chapter, we will examine the challenges of purchasing and see how firms are dealing with this important concern.

Purchasing Activities

The terms purchasing and procurement are often-used interchangably, although they differ in scope. Purchasing generally refers to the actual buying of materials and those activities associated with the buying process. As we move into the future, purchasing will evolve into the procurement process of supply chain management described in Chapter 2. In procurement the activities are recognized as process-oriented and strategic. Structurally, commodity teams, product supply groups, and cross-functional teams are more prevalent than in the past. The process itself is less transaction-oriented, depends on the implementation of good information systems, and focuses on closer supplier relations with fewer suppliers, while considering sources from around the world.

In his address to AlliedSignal shareholders at the 1995 annual meeting, Larry Bossidy provided an example of these changes:

The second thrust of our productivity program this year is the Materials Management Program, which has yielded outstanding results since it was initiated in 1992. Twenty-two multifunctional commodity teams have been charged with overseeing relationships with materials suppliers across our many product lines.

We have culled 3,000 preferred suppliers from a list of 9,500 three years ago, giving them more business in return for better quality, lower prices, greater responsiveness and increased productivity.

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2Leenders and Pearson, Purchasing and Supply Management, p. 513.

3Ibid.

### Table 12-1  Cost of Materials—Value of Industry Shipments Ratios for Manufacturing Firms, 1993

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Food and kindred products</td>
<td>$257,293</td>
<td>$9,389</td>
<td>$266,682</td>
<td>$423,257</td>
<td>61</td>
<td>63</td>
</tr>
<tr>
<td>21</td>
<td>Tobacco products</td>
<td>7,581</td>
<td>388</td>
<td>7,969</td>
<td>28,384</td>
<td>27</td>
<td>28</td>
</tr>
<tr>
<td>22</td>
<td>Textile mill products</td>
<td>43,411</td>
<td>2,450</td>
<td>45,861</td>
<td>73,951</td>
<td>59</td>
<td>62</td>
</tr>
<tr>
<td>23</td>
<td>Apparel and other textile products</td>
<td>37,169</td>
<td>961</td>
<td>38,130</td>
<td>73,997</td>
<td>50</td>
<td>52</td>
</tr>
<tr>
<td>24</td>
<td>Lumber and wood products</td>
<td>57,430</td>
<td>1,951</td>
<td>59,381</td>
<td>94,547</td>
<td>61</td>
<td>63</td>
</tr>
<tr>
<td>25</td>
<td>Furniture and fixtures</td>
<td>23,435</td>
<td>973</td>
<td>24,408</td>
<td>47,549</td>
<td>49</td>
<td>52</td>
</tr>
<tr>
<td>26</td>
<td>Paper and allied products</td>
<td>74,136</td>
<td>7,364</td>
<td>81,500</td>
<td>133,486</td>
<td>56</td>
<td>61</td>
</tr>
<tr>
<td>27</td>
<td>Printing and publishing</td>
<td>55,785</td>
<td>4,874</td>
<td>60,659</td>
<td>172,737</td>
<td>32</td>
<td>35</td>
</tr>
<tr>
<td>28</td>
<td>Chemicals, allied products</td>
<td>144,094</td>
<td>15,679</td>
<td>159,773</td>
<td>314,764</td>
<td>46</td>
<td>51</td>
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<tr>
<td>29</td>
<td>Petroleum and coal products</td>
<td>119,863</td>
<td>6,304</td>
<td>126,167</td>
<td>144,715</td>
<td>83</td>
<td>87</td>
</tr>
<tr>
<td>30</td>
<td>Rubber, miscellaneous</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Plastics products</td>
<td>59,676</td>
<td>4,995</td>
<td>64,671</td>
<td>122,776</td>
<td>49</td>
<td>53</td>
</tr>
<tr>
<td>32</td>
<td>Leather, leather products</td>
<td>5,401</td>
<td>131</td>
<td>5,532</td>
<td>9,991</td>
<td>55</td>
<td>56</td>
</tr>
<tr>
<td>33</td>
<td>Stone, clay, glass products</td>
<td>29,509</td>
<td>2,417</td>
<td>31,926</td>
<td>65,374</td>
<td>45</td>
<td>49</td>
</tr>
<tr>
<td>34</td>
<td>Primary metal</td>
<td>86,939</td>
<td>4,726</td>
<td>91,665</td>
<td>142,384</td>
<td>61</td>
<td>64</td>
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<tr>
<td>35</td>
<td>Fabricated metal</td>
<td>86,829</td>
<td>4,913</td>
<td>91,742</td>
<td>175,137</td>
<td>50</td>
<td>52</td>
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<tr>
<td>36</td>
<td>Machinery, except electric</td>
<td>138,398</td>
<td>7,931</td>
<td>146,329</td>
<td>277,957</td>
<td>50</td>
<td>53</td>
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<tr>
<td>37</td>
<td>Electric, electronic equipment</td>
<td>105,331</td>
<td>9,985</td>
<td>115,316</td>
<td>233,343</td>
<td>45</td>
<td>49</td>
</tr>
<tr>
<td>38</td>
<td>Transportation equipment</td>
<td>250,829</td>
<td>11,408</td>
<td>262,237</td>
<td>414,614</td>
<td>60</td>
<td>63</td>
</tr>
<tr>
<td>39</td>
<td>Instruments and related</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Miscellaneous manufacturing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**All Operating Manufacturing Establishments**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Output</th>
<th>Total Value of Industry Shipments</th>
<th>Material/Sales Ratio</th>
<th>Total Purchase Sales Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1981</td>
<td>$1,195,960</td>
<td>$78,632</td>
<td>78,256</td>
<td>78,256</td>
</tr>
<tr>
<td>1982</td>
<td>$1,700,258</td>
<td>61,931</td>
<td>61,931</td>
<td>61,931</td>
</tr>
<tr>
<td>1983</td>
<td>$1,726,013</td>
<td>85,257</td>
<td>85,257</td>
<td>85,257</td>
</tr>
<tr>
<td>1984</td>
<td>$1,531,803</td>
<td>78,868</td>
<td>78,868</td>
<td>78,868</td>
</tr>
<tr>
<td>1985</td>
<td>$1,503,258</td>
<td>97,187</td>
<td>97,187</td>
<td>97,187</td>
</tr>
<tr>
<td>1986</td>
<td>$1,554,284</td>
<td>101,953</td>
<td>101,953</td>
<td>101,953</td>
</tr>
<tr>
<td>1987</td>
<td>$1,503,925</td>
<td>98,916</td>
<td>98,916</td>
<td>98,916</td>
</tr>
<tr>
<td>1988</td>
<td>$1,572,520</td>
<td>103,211</td>
<td>103,211</td>
<td>103,211</td>
</tr>
<tr>
<td>1989</td>
<td>$1,646,850</td>
<td>102,201</td>
<td>102,201</td>
<td>102,201</td>
</tr>
</tbody>
</table>

*Refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. Manufacturers included the cost of materials or fuel consumed regardless of whether these items were purchased by the individual establishment or from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory. It excludes the cost of services used (such as advertising, insurance, and telephone) and research, development, and consulting services of other establishments. It also excludes materials, machinery, and equipment used in plant expansion or capitalized repairs that are chargeable to fixed asset accounts.

1Includes funds spent for permanent additions and major alterations to manufacturing establishments, and new machinery and equipment used for replacement purposes and additions to plant capacity if they are chargeable to a fixed asset account.

2The receipts or receivable net selling values, FOB plant, after discounts and allowances, and excluding freight charges and excise taxes. However, the products of an industry are customarily delivered by the manufacturing establishment, e.g., bakery products, the value of shipments is based on the delivered price of the goods.

Chapter 12

The Goals of Purchasing

The goals of purchasing are to:

1. Provide an uninterrupted flow of materials, supplies, and services required to operate the organization.
2. Keep inventory investment and loss at a minimum.
4. Find or develop competent suppliers.
5. Standardize, where possible, the items bought.
6. Purchase required items and services at the lowest total cost.
7. Improve the organization's competitive position.
8. Achieve harmonious, productive working relationships with other functional areas within the organization.
9. Accomplish the purchasing objectives at the lowest possible level of administrative costs.5

Among the primary purchasing activities that influence the ability of the firm to achieve its objectives are supplier selection and evaluation (sourcing), quality control, and forward buying.

The Strategic Role of Purchasing

The strategic role of purchasing is to perform sourcing-related activities in a way that supports the overall objectives of the organization. Purchasing can make many contributions to the strategic success of the organization through its key role as one of the organization's boundary-spanning functions.

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.

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); total quality management; and purchasing planning and research.

Relationship to Other Functions. Purchasing’s role ranges from a support role to a strategic function. 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

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5Ibid., pp. 35-37.
anticipate and support the needs of other functional areas. This support in turn leads to
greater recognition and participation.

Purchasing and logistics need to work closely in coordinating inbound logistics and
associated material flows. The following sections apply to purchases of goods and ser-

tices; 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 sup-
plier from among a number of potential vendors. The buying process is complex
because of the variety of actors that must be considered when making such a decision.
The process includes both decision makers and decision influencers, which combine to
form the decision-making unit (DMU). The process has a number of stages and includes
the following 12 steps: identify needs, establish specifications, search for alternatives,

establish contact, set purchase and usage criteria, evaluate alternative buying actions,

determine budget availability, evaluate specific alternatives, negotiate with suppliers,

buy, use, and conduct postpurchase evaluation.6 It may not be necessary to go through

all 12 steps of the buying process unless the decision is a totally new one. If the decision

has been made before (routine buying), then many of the steps can be bypassed.

Purchasing managers may consider some or all of the following attributes when making

the purchasing decision:

- Lead time.
- Lead-time variability.
- Percentage of on-time deliveries.
- Percentage in-stock availability.
- Convenience in ordering/communication.
- Ability to expedite.
- Downtime caused by vendor errors, partial shipments, and/or late deliveries.
- Product reliability.
- Ease of maintenance or operation.
- Product failures caused by faulty parts or materials.
- Quality rejects.
- Technical specifications.
- Technical/training services offered.
- Competitiveness of price.
- Confidence in the sales representative.
- Past experience with vendor.
- Overall reputation of the vendor.
- Financing terms.
- Postpurchase sales service.
- Vendor’s flexibility in adjusting to the buying company’s needs.
- Engineering/design capabilities.

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In a study of purchasing managers, White identified six major product categories that were purchased by most companies: (1) component parts, (2) raw materials, (3) operating supplies, (4) support equipment, (5) process equipment, and (6) services. Each product category could be purchased in any of four buying situations:

1. **Routine order situations**—includes situations where the product has been purchased many times previously and where order routines or procedures are generally established.

2. **Procedural problem situations**—includes purchases that are not routine and that may require that employees learn how to use the product.

3. **Performance problem situations**—includes nonroutine purchases of products that are designed to be substitutes for current products but that must be tested for performance.

4. **Political problem situations**—includes nonroutine purchases of products whose use would affect many departments of the company; thus, a number of individuals throughout the firm will be involved in the decision process.\(^7\)

In the 1980s and 1990s, the increased concern for productivity improvements caused management attention to focus on the purchasing function and on the development of closer ties with a reduced number of suppliers.\(^8\) In order to determine the impact of supplier performance on productivity, performance must be measured and evaluated. 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.\(^9\)

A variety of evaluation procedures are possible; there is no best method or approach. The important thing is to make certain that some evaluation procedure is used. Table 12–2 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 attributes by which to evaluate each supplier. Once the attributes have been determined, the performance of individual suppliers should be evaluated on each attribute (e.g., product reliability, price, ordering convenience). A five-point scale (1 = worst rating; 5 = highest rating) is used in the illustration, but other scales may be used.

After evaluating suppliers on each attribute, management must determine the importance of each of the attributes to the firm. If, for example, product reliability was of paramount importance to the firm, that attribute would be given the highest importance rating. If price was not as important as product reliability, management would assign price a lower importance rating. Any attribute that was not important to the firm would be assigned a zero.\(^10\)

The next step is to develop a weighted composite measure for each attribute. This is done by multiplying the supplier’s rating for an attribute by the attribute’s importance.

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\(^7\)Reprinted by permission of the publisher from "Decision Making in the Purchasing Process: A Report," *AMA Management Briefing*, by Phillip D. White, pp. 15–17, © 1978 by AMACOM, a division of American Management Association, New York. All rights reserved.


\(^10\)Some attributes may be of no importance to the firm in one type of buying situation but of moderate or high importance at other times. Therefore, it is necessary that all potential attributes be included in the rating form in order to eliminate the need for a different form for each buying situation.


Table 12-2 Evaluating Suppliers in a Typical Manufacturing Firm

<table>
<thead>
<tr>
<th>Factor</th>
<th>Supplier A</th>
<th>Supplier B</th>
<th>Supplier C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rating of Supplier</td>
<td>Importance of Attribute</td>
<td>Weighted Composite Rating</td>
</tr>
<tr>
<td></td>
<td>(1 = \text{Worst Rating} ) (5 = \text{Highest Rating})</td>
<td>(1 = \text{Worst Rating} ) (5 = \text{Highest Rating})</td>
<td>(0 = \text{Minimum} ) (25 = \text{Maximum})</td>
</tr>
<tr>
<td></td>
<td>1 2 3 4 5</td>
<td>(x)</td>
<td></td>
</tr>
<tr>
<td>After-sale service</td>
<td>Total for supplier A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product reliability</td>
<td>Total for supplier B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price</td>
<td>Supplier C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ordering convenience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After-sale service</td>
<td>Total for supplier B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product reliability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ordering convenience</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After-sale service</td>
<td>Total for supplier C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product reliability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ordering convenience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decision Rule: Select the supplier with highest composite rating.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The addition of the composite scores for each supplier provides an overall rating that can be compared to other suppliers. The higher the composite score, the more closely the supplier meets the needs and specifications of the procuring company. One of the major benefits of this approach is that it forces management to formalize the important elements of the purchasing decision and to question existing methods, assumptions, and procedures.

Implementation of a vendor performance evaluation method 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 percent reduction in component inventories within the first few months.\(^{11}\) After two full years of using the quarterly performance reports, buyers had reduced component inventories by more than 60 percent.

The process of supplier selection is more difficult when materials are being purchased in international markets. However, more firms are buying raw materials, components, and subassemblies from foreign sources, primarily because of cost and availability. When a company uses foreign suppliers, it should have an understanding of some of the problems associated with international sourcing.

Implementing a Global Buying Strategy

Based on success of implementing a global sourcing agreement for office supplies, buyers at Elias Bailey Process Automation N.V., now are purchasing PCs, electronic components, and transportation services from global suppliers for sites located throughout North America, and Europe. These global buying agreements have helped to reduce purchasing costs at the automation systems and products manufacturer by $15 million annually. Much of these savings are due to consolidating the buys across a number of Elias Bailey locations worldwide, says Rich Heider, regional procurement director for the Americas. Future cost savings, he says, will come from increased efforts at standardizing these buys and specification changes. Heider works out of Elias Bailey's Wickliffe, Ohio, facility.

Based in Amsterdam, The Netherlands, Elias Bailey manufactures automation systems and services for the process industries—electric power, chemicals, metals & minerals, oil & gas, pulp & paper, food & beverage, and environmental services. In addition to the Wickliffe office, other regional offices are located in Frankfurt, Germany; Genoa, Italy; and Singapore. About 40 operating companies located in 20 countries make up Elias Bailey Process Automation. In the U.S., these include Fischer & Porter, Warrington, Pa., and Applied Automation, Bartlesville, Oklahoma. Revenues for 1997 were $1.5 billion (U.S. dollars). In the past four years, Elias Bailey has tripled in size. Like many global companies, Elias Bailey's recent growth is due mainly to its having acquired a number of smaller businesses. Most recently, the company itself was acquired—by the ABB Group, Zurich, Switzerland.

To leverage its growing purchasing power, Elias Bailey had the foresight to put in place in 1997 a strategy that promises to help reduce buying costs and improve relationships with suppliers. This effort includes formation of a global buying team of which Heider is a member. He and other representatives of Elias Bailey's U.S. purchasing operation as well as buyers of the company's European operation also worked on the team with two of the company's senior group vice presidents.

One of the benefits that Elias Bailey hopes to realize through global sourcing is for "geography to become transparent." This, Heider explains, means that the company intends to engineer its products to the exacting requirements of its customers using products procured throughout the world without any disruption in quality or delivery levels.

Not jeopardizing the company's capability to deliver to its customers is of utmost importance to Heider and the other members of the global buying team. Initially, the team evaluated some $120 million in annual purchases of office supplies, personal computers, electronic components, transportation services, and corporate travel. (All told, Elias Bailey's buying tab amounts to some $500 million annually.) One of the buying team's first initiatives: office supplies.

For its $3.7 million office supplies buy, Elias Bailey's purchasing strategy is to reduce the supplier base and standardize on the products that requisitioners order every day. At the same time, buyers work to continually improve customer satisfaction and efficiency of internal purchasing processes. "Even with office supplies, there were challenges involved in consolidating the purchase on a global level," says Bob McAvoy, purchasing manager, Fischer & Porter, and leader of the global team for office supplies. These included gathering data on company purchasing activity and meeting customer needs of different organizations. Also on the team representing the U.S. buying operation: Bill Manning of Applied Automation.

"In Germany, we had been purchasing office supplies for seven locations from 27 different suppliers," says Ulrich Neumann, purchasing manager, Hartmann & Braun GmbH & Co. KG, Bouchen, Germany. On the global purchasing team, Neumann represents Elias Bailey's European purchasing operation.

Another challenge is developing specifications. "It wasn't much of a problem in the U.S.," says Heider, "but we had to take into account the fact that Canada uses the metric system, which complicates price comparisons. And, in Germany, France, and Italy, specs are different for such supplies as binders, paper, and pens and pencils." Then, Elias Bailey buying operations outside of the U.S. are loyal to local suppliers, recalls Heider. For instance, since the supplier the team ultimately selected did not have operations in Canada, it wanted to service the sites from an office in Detroit. "At the country level, including Canada, buyers are nationalistic," says Heider.

Supplier selection criteria varies [sic] by commodity being evaluated by the global buying team. Members determine the criteria. In the team's search for its office-supplies provider, selection criteria included competitive pricing.
Implementing a Global Buying Strategy

quality, and capability to deliver office supplies to all of the company’s U.S. operations as well as those located in Canada and Germany. “With office supplies, it’s also important to optimize customer satisfaction,” says Neumann.

Ultimately, the team selected BT Office Products International (BT OPI), entering into an agreement with the supplier in January, 1998. Negotiations by the team are conducted in English and U.S. currency is used. Eventually, the team plans to use the euro to do business with suppliers in Europe. The agreement with BT OPI is implemented locally. For instance, locations in Germany purchase office supplies through BT OPI’s affiliate in Europe, Hartman & Cie. “As part of our organizational change, we decided to give users responsibility to order directly from the supplier,” says Neumann. “This way, purchasing can focus its efforts on more important, strategic issues.”

In the U.S. at Elsag Bailey’s location in Philadelphia, for instance, requisitioners use an online buying process provided by BT OPI to order office supplies. They make their selection from a standardized list of 400 different items. Requisitioners at other offices phone in or fax their orders using the same standardized list.

“Internally, we learned a lot from consolidating the office supplies purchase, which can be carried over to some of our other buys,” says Heider. “We got to know ourselves better. Now, we have an understanding of our annual spend, as well as our supplier base. We have improved communication, gaining a better understanding of specifications. And, in looking at our supplier base, we are taking a closer look at what suppliers can do to help us reduce our costs, aside from offering us rebates on our purchasing volume.”

For computer equipment—another of the team’s early initiatives—Elsag Bailey’s strategy is to improve internal processes through increased use of the Web to buy PCs that go into the manufacturing of its automation products. Again, capability to deliver quality products at a competitive cost to locations worldwide made up the global buying team’s selection criteria for PC suppliers. This time, the team selected Compaq/DEC and Dell. Standardization efforts for PCs include use of products supplied by these providers in its automation systems. “Which is what we are doing unless our customer insists on our using another OEM,” says Heider. “We, in turn, will pass our cost savings from consolidating our volume on to our customers.”

“Setting standards for electronic components and computer equipment ‘forces us to look at specifications,’” says Heider. “To do that, we develop a closer relationship with engineering, who then becomes part of the supply management team. With engineering’s assistance, we can select alternative products that will help us further reduce our costs.” Elsag Bailey also has in place two global agreements for electronic components, as well as three agreements for connectors. The former were negotiated in Germany.

In addition, the team looked at purchasing transportation services globally. “We do a tremendous amount of exporting,” says Heider. “We reduced transportation suppliers from 56 freight forwarders down to three. We’ve had very good success with transportation.”

To measure supplier performance, one metric Elsag Bailey uses is capability to meet service requirements. For electronic components, for instance, the company has in place a dock-to-stock quality program with three key suppliers. Orders are shipped to one location, and performance is reviewed formally each month.


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When purchasing offshore, it is easy to ignore some of the hidden costs. The buyer must compare total landed cost of the domestic and international supplier. The following checklist is recommended:12

**Checklist of Cost Factors**

- Price in U.S. dollars (if quoted in another currency).
- Commissions to customs brokers.
- Terms of payment costs and finance charges: letter of credit fee, translation costs, exchange rate differentials.

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• Foreign taxes imposed.
• Extra inventory and the associated inventory carrying costs.
• Extra labor, documentation.
• Obsolescence, deterioration, spoilage, taxes, losses to damage or theft, longer delivery time frames, administrative costs, business travel.
• Packing, marking, and container costs.
• Fees for consultants or inspectors.
• Marine insurance premium.
• Customs documentation charges.
• Import tariffs.
• Transportation costs, including: from manufacturer to port, ocean freight, from port to company plant, freight forwarder’s charges, port handling charges, warehouse costs.

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 profit improvements. 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 that is manufactured and sold, but the lower cost associated with the materials purchased will also reduce the investment in inventories. Better logistics service by suppliers will also result in lower inventory in units required and thus dollars invested. In addition, customer service improvements are possible because the manufacturing process can operate smoothly, without slowdowns or shutdowns. The service improvements can result in higher unit sales and in some cases higher prices. And since effective purchasing management results in the acquisition of high-quality materials, there is also less likelihood of customer return of finished goods due to product failure.

**Total Quality Management**

*The Purchase Price of an Item Is Only One Element of the Total Cost*

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 thus 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.13

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.

The firm should never pay higher prices to obtain materials with quality levels greater than those specified by manufacturing unless justifiable marketing or logistics

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13For a comprehensive discussion of total cost issues in purchasing, see Lisa M. Ekman, Total Cost Modeling in Purchasing (Tempe, AZ: Center for Advanced Purchasing Studies, 1994).
reasons exist for doing so. Purchasing materials that needlessly exceed quality specifications adds unnecessary costs to products.\textsuperscript{14}

One way that firms might ensure quality is through inspection of incoming materials parts. But 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 just-in-time philosophy, where little or no inventory is held. Improper quality in a JIT environment can shut down processes immediately, creating excessive costs and delays.

\textbf{Forward Buying}

All purchasing activities, except emergency purchases, represent forward buying if materials, component parts, and subassemblies are available in advance of the time they are needed. More accurately, \textit{forward buying} refers to the purchase of materials in quantities exceeding current requirements, well in advance of their need or use.

Essentially, there are two major reasons why a firm would engage in forward buying. First, forward buying minimizes the effects of rising material costs. At least for a time, until the materials are depleted from inventory, the firm is protected from price increases in the marketplace. Second, forward buying provides protection against future availability problems. Forward buying becomes more popular among firms as availability uncertainties become more commonplace. It is particularly prevalent in retailing, where manufacturers offer special prices at the end of the quarter in order to make sales objectives.

While there are benefits associated with forward buying, there are also disadvantages. Many companies make forward purchases in anticipation of price increases. There are times, however, when materials prices actually go down because of technological developments, competitive pressures, or other factors. There is a risk that the firm may purchase materials at prices higher than necessary. Another often-overlooked disadvantage of forward buying is the increased inventory carrying cost incurred with holding excess inventory. The savings realized from forward buying must exceed the additional inventory carrying costs.

Table 12–3 presents an example of the role of inventory carrying costs in the forward buying decision. In this example, the firm purchases $2,000 worth of an item once a month. The $2,000 purchase represents the firm’s monthly usage of this item. The vendor’s salesperson explains that the price will increase by 10 percent next month and encourages the purchasing manager to consider forward buying. If the firm buys for a period of one month, the average level of inventory would be $1,000 for the first month. But there would be no savings in the purchase price. The inventory carrying costs incurred would equal $25 for one month (30 percent of the average level of inventory, which is $1,000 divided by 12), and $302.50 for the next 11 months (30 percent $\times$ $1,100 \times 11/12$). Since the firm would experience a total inventory carrying cost of $327.50 with no forward buying, the net savings from

### Table 12-3 Using Inventory Carrying Costs to Evaluate Forward Buying

<table>
<thead>
<tr>
<th>Number of Months Supply</th>
<th>Value</th>
<th>Average Inventory (1/2’s Order Quantity)</th>
<th>Savings in Order Processing Cost from Firmed Order Being Placed</th>
<th>Saving in Purchase Price</th>
<th>Increase in Inventory Carrying Cost</th>
<th>Inventory Carrying Costs for Buy-Ahead Period 90% x Avg. Inv. x (No. of Months/12)</th>
<th>Least Increase in Inventory Carrying Costs of No Forward Buying Taking Place</th>
<th>Net Saving from Forward Buying</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$2,000</td>
<td>$1,000</td>
<td>$--</td>
<td>$--</td>
<td>$.25*</td>
<td>$307.50</td>
<td>$327.50</td>
<td>$--</td>
</tr>
<tr>
<td>2</td>
<td>4,000</td>
<td>2,000</td>
<td>20</td>
<td>200</td>
<td>100</td>
<td>255</td>
<td>275.00</td>
<td>172.50</td>
</tr>
<tr>
<td>3</td>
<td>6,000</td>
<td>3,000</td>
<td>40</td>
<td>400</td>
<td>225</td>
<td>347.50</td>
<td>327.50</td>
<td>255.00</td>
</tr>
<tr>
<td>4</td>
<td>8,000</td>
<td>4,000</td>
<td>60</td>
<td>600</td>
<td>400</td>
<td>544.50</td>
<td>327.50</td>
<td>367.50</td>
</tr>
<tr>
<td>5</td>
<td>10,000</td>
<td>5,000</td>
<td>80</td>
<td>800</td>
<td>625</td>
<td>925</td>
<td>327.50</td>
<td>390.00</td>
</tr>
<tr>
<td>6</td>
<td>12,000</td>
<td>6,000</td>
<td>100</td>
<td>1,000</td>
<td>900</td>
<td>1650</td>
<td>327.50</td>
<td>482.50</td>
</tr>
<tr>
<td>7</td>
<td>14,000</td>
<td>7,000</td>
<td>120</td>
<td>1,200</td>
<td>1,225</td>
<td>1375</td>
<td>327.50</td>
<td>525.00</td>
</tr>
<tr>
<td>8</td>
<td>16,000</td>
<td>8,000</td>
<td>140</td>
<td>1,400</td>
<td>1,600</td>
<td>1100</td>
<td>327.50</td>
<td>575.00</td>
</tr>
<tr>
<td>9</td>
<td>18,000</td>
<td>9,000</td>
<td>160</td>
<td>1,600</td>
<td>2,025</td>
<td>825</td>
<td>327.50</td>
<td>625.00</td>
</tr>
<tr>
<td>10</td>
<td>20,000</td>
<td>10,000</td>
<td>180</td>
<td>1,800</td>
<td>2,500</td>
<td>555</td>
<td>327.50</td>
<td>675.00</td>
</tr>
<tr>
<td>11</td>
<td>22,000</td>
<td>11,000</td>
<td>200</td>
<td>2,000</td>
<td>3,025</td>
<td>275</td>
<td>327.50</td>
<td>725.00</td>
</tr>
<tr>
<td>12</td>
<td>24,000</td>
<td>12,000</td>
<td>220</td>
<td>2,200</td>
<td>3,600</td>
<td>--</td>
<td>327.50</td>
<td>775.00</td>
</tr>
</tbody>
</table>

**Assumptions:**
1. Monthly usage = 2,000.
2. Sustained price increase = 10 percent.
3. Inventory carrying cost = 30 percent.
5. Vendor pays the freight.

*\(2,000 \times 30\% \times 1/12 = 25\)
*\(3,000 \times 30\% \times 1/12 = 302.50\)
*\(5,000 \times 30\% \times 1/12 = 530\)

continuing with the current practice is zero. However, if the purchasing manager obtains a two-month supply, the forward buy of one month’s worth of product will result in a $20 savings in ordering costs and a $200 savings in purchase price, for a total savings of $220. The increase in inventory carrying cost would be $47.50 ($375.00 – $327.50), resulting in a net savings of $172.50 ($220.00 – $47.50). If the purchasing manager buys an amount equal to nine months of usage, however, the savings in purchase price and ordering costs is offset entirely by the additional inventory carrying costs.

As shown in Table 12-3, the optimal forward buy would be a five-month supply, which would result in a net savings of $390. However, if the purchasing manager is judged sole on the per-unit purchase price, he or she would purchase a 12-month supply, at a cost to the firm of $832.50. That is, purchasing a 12-month supply would result in a decrease in pretax profits of $832.50. This example illustrates that inventory carrying costs must be included in the forward buying decision. Since the funds expended for inventories are not available for other uses, the firm should anticipate future working capital needs before engaging in forward buying.

Cost trade-offs are a key to successfully managing the purchasing function. By thinking in terms of the cost trade-offs shown in Figure 12-1, management should minimize the total of these costs rather than attempt to minimize the cost of either component. This is critical, as attempts to reduce individual costs may in fact actually increase total costs.

39
Just-in-Time Purchasing

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 its suppliers must carry this inventory, the cost for the total supply chain is reduced because inventory with lower value-added is being held. Also, when a supplier holds the inventory, the cash value is equal to the supplier's out-of-pocket cost of purchased materials plus manufacturing. The customer's cash value of inventory is equal to the supplier's selling price.

One example of this is Compaq, which requires its suppliers to hold a certain amount of inventory at a warehouse near Compaq's production facilities, 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 covered 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.
In the JIT system, the ordering costs are reduced so that the savings in inventory carrying cost gained from cutting lot sizes are not offset by increased purchase order cost. Figure 12-2 illustrates how a reduction in ordering costs shifts the total cost curve downward to the left and results in a smaller economic order quantity. In addition, with JIT every effort is made to improve vendor quality levels.

Just-in-time purchasing requires frequent releases of orders and frequent deliveries of products. For this to work, purchasers and suppliers must develop long-term relationships rather than use the multiple sourcing practices popular in the United States.

The JIT characteristics are interrelated and categorized in four groups: suppliers (number, location, longevity, and assistance/advice offered); quantities (product outputs, parts inputs, contracts administered, and purchasing paperwork); quality (specifications coordination, and control); and shipping (inbound freight and freight/storage modes).15

Difficulties in Implementing JIT

One of the most frequently cited reasons for 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

qualities 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.

Importance of Buyer–Supplier Communication

Under JIT, close and frequent buyer–supplier communication is essential. Suppliers are given a long-range view of the buyer’s production schedule. Often this view spans months, but the schedule for the nearest several weeks is frozen. The supplier is thus able to acquire raw materials in a stockless production mode and supply the buyer without inventory buildups. Suppliers provide daily updates of progress, production schedules, and problems. Purchasers and suppliers must cooperate and have a trusting relationship in order to convert 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 term partnership is often applied to the JIT buyer–supplier relationships. Partnerships will be described in detail later in this chapter.

Once suppliers have been selected, ongoing performance measurement may result in supplier certification, a designation reserved for those suppliers whose quality, on-time delivery, and reliability have proved acceptable over long periods of time.

Under JIT, the focus of the purchasing department is not merely on processing orders but rather on supplier selection and long-term contract negotiation. Many times these close communications are supported by electronic data interchange (EDI) to facilitate the timely and accurate transmission of information. The following sections apply to purchasing in general and are critical to the success of JIT purchasing.

Supplier Selection

Management can facilitate JIT purchasing by developing long-term relationships with a small number of nearby suppliers. The objective is to achieve strong, stable purchase agreements with an uninterrupted supply of materials. The closer the JIT purchasing comes to piece-by-piece delivery, the greater the contribution to productivity and avoidance of defective lots. But piece-by-piece delivery leads to higher transportation costs unless the supplier and seller are close to each other. For example, if a manufacturer builds an assembly plant near suppliers’ plants, it can supply its assembly lines with multiple deliveries per day in small vehicles, rather than infrequent deliveries in 40-foot truckloads. Thus, one way to reduce the transportation cost associated with small lots is to reduce the distance between supplier and buyer plants.

The potential advantages of supplier–buyer proximity apply in the United States as well as in Japan. Yet most U.S. industries have considered vertical integration to be a desirable path to corporate growth and success. Nevertheless, a strong case can be made for developing special manufacturing competency in more narrowly focused areas. Focused factories offer significant cost savings in areas such as construction and operating costs. This approach downgrades integration in favor of a narrow base of highly competent suppliers. Japanese manufacturers tend to avoid vertical integration. Instead,
they develop final assembly competency and contract out as much fabrication as possible to experts. This helps cement stable purchase agreements with reliable suppliers.

**Purchase Agreements**

JIT purchasing is facilitated by an even, repetitive master production schedule. Repetitive manufacture of products even out the demand for individual parts. This 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, like a blanket order, may specify an 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**

In the United States, *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**

Traditionally, U.S. engineers would specify tolerances for almost every design feature for which parts were purchased. However, many firms are implementing practices more like the Japanese, who 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). This concept has been applied successfully by companies like Bose, Chrysler (in the introduction of the Neon), and Harley Davidson. 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 on 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 uses 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 "F.O.B. shipping point" and the buyer owns the goods and absorbs the inventory carrying costs from the date of shipment.\(^{16}\)

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\(^{16}\) F.O.B. terms were presented in Chapter 7.
JIT Purchasing
Requires Steady,
Reliable Incoming
Deliveries

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. For example, CTI and Ryder Integrated Logistics (1) review manufacturers’ production schedules, (2) notify the supplier of requirements, (3) schedule pickup of the materials, (4) pick up and time-sequence the materials, and (5) deliver them directly to the JIT production line.¹⁷

Supplier Development

Supplier development has been defined as

a systematic organizational effort to create and maintain a network of competent suppliers and to improve various supplier capabilities that are necessary for the buying organization to meet its increasing competitive challenges.¹⁸

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. Chrysler is an example of a company that was performing poorly until it adopted innovative purchasing, logistics, and practices such as JIT, supplier development, and early supplier involvement.

Benefits of JIT Purchasing

Benefits to the Buyer

The most important benefit of JIT purchasing to the buyer is the reduction in inventories that it makes possible. There are also scrap/quality and productivity benefits. In addition, purchasing-related paperwork is reduced. Conventional lot size economics suggests that smaller lots mean more orders to process and therefore increased order-processing costs. But the environment in which JIT buying best functions is one in which:

- The buyer’s production schedules are relatively level, so that demand for materials is steady and predictable;
- Larger, steadier orders are given to a smaller number of suppliers, thus encouraging excellence and loyalty;
- Purchase agreements are long-term, with minimal paperwork. They provide for frequent small-lot deliveries, thus revealing quality problems sooner; and
- Suppliers are responsive to the need for improved containers and labeling.¹⁹

Thus, smooth demand, few suppliers, long-term agreements, and fewer quality problems often result in lower order-processing costs.

The supplier also benefits from JIT purchasing. The supplier receives a contract that is exclusive (or nearly so), long-term, and invariable, which affords the supplier the opportunity to cut peak capacity, retain a trained labor force, reduce its inventories, and implement purchasing with its suppliers.

¹⁷Information obtained from CTI and Ryder Integrated Logistics.
¹⁹Ibid., p. 65.
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. The steps in developing JIT II are shown in Table 12-4.

In JIT II, the supplier places one of its employees, called an in-plant representative or in-plant, in the buying company's office, replacing the purchaser, planner, and salesperson. In addition to colocation, 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 molder. The in-plant representative places orders, practices 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."  

**Table 12-4 Steps in JIT II Information Flow**

<table>
<thead>
<tr>
<th>Steps</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2</td>
<td>Supplier reassigns its sales representative to new duties, and customer reassigns its purchaser.</td>
</tr>
<tr>
<td>3</td>
<td>In full JIT II implementation, the customer reassigns its material planner to new duties.</td>
</tr>
<tr>
<td>4</td>
<td>Supplier replaces purchaser, planner, and salesperson with a full-time professional at the customer's location. At Bose Corporation, supplier professionals are called in-plant representatives or in-plants. Although the supplier replaces the purchaser with an in-plant representative, this step actually assists switching purchasing personnel as more people address the overall department workload.</td>
</tr>
<tr>
<td>5</td>
<td>The in-plant representative works 40 hours a week at the customer's location, usually in the purchasing department.</td>
</tr>
<tr>
<td>6</td>
<td>Customer enrolls the in-plant within its planning and purchasing systems. The in-plant works directly from the customer's MRP (or similar system) and feeds the customer's purchase order to place material orders on behalf of the host company. Note: the customer typically prohibits the in-plant from placing purchasing orders with other companies.</td>
</tr>
<tr>
<td>7</td>
<td>Suppliers without the in-plant or employee, without spending free time interacting with the in-plant, can set up electronic data interchange (EDI) systems and manufacturing personnel. Close interaction and concurrent engineering by working with customer's design engineering staff.</td>
</tr>
<tr>
<td>8</td>
<td>Customer provides reassurance that many more steps for about JIT II will cause change in both organizations.</td>
</tr>
</tbody>
</table>


21Ibid., pp. 145-50 and 159-60.
In the business environment, uncertainty makes 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, and increasing worldwide competition.

The changing environment makes it necessary for purchasing management to do a more effective job of researching the supply market and planning. Purchasing needs to provide information about supply conditions, such as availability, lead times, and technology, to different groups within the firm, including top management, engineering and design, and manufacturing. 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 management can develop an action plan before problems become critical and costly.

Strategic planning for purchasing involves materials screening, risk assessment, strategy development, and implementation. It is important to determine whether (1) materials bottlenecks will jeopardize current or future production, (2) new products should be introduced, (3) materials quality may be expected to change, (4) prices are likely to increase or decrease, and (5) forward buying is appropriate. Management should develop specific plans to ensure that the material supply chain will operate uninterrupted.

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 should be developed for the predicted events. Asking these questions for any given strategy or situation can help purchasing managers ensure that they have 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 departments, like other functional areas, 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 programs, price change management programs, volume (time and/or quantity) contracts, and systems contracts and stockless purchasing.

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Cost Reduction Programs

An effective purchasing cost reduction program requires top management support, definition of cost reduction or avoidance, effective goal setting, review and approval of cost reductions or avoidance, measurement of reduction to a specific goal, reporting, and making achievement in individual cost reduction or avoidance part of the performance appraisal process.25

For a successful cost reduction program, top management must communicate the need for cost saving accomplishments in both good and bad economic times. It must also adequately define cost reduction objectives so that accomplishments can be measured and performances evaluated. For example, in many firms cost reduction is defined as a decrease in prior purchase price, and cost avoidance is defined as the amount that would have been paid minus the amount actually paid. Management also has to establish programs with buyers based on opportunities for cost reduction.

Cost reduction and cost avoidance programs 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.

Price Change Management

Purchasing managers must challenge vendor 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 the purchasing department to:

- Determine the reason for the price change request.
- Specify the total dollar-value impact on the firm.
- Ask suppliers to justify the price change.
- Have management review the price change.
- Set strategies to deal with price increases.
In order to restrict price increases, management should require price protection clauses and advance notification of price increases of 30, 60, or 90 days. As part of a program of price change management, purchasing should determine the impact of engineering changes on product costs in order to determine whether engineering changes should be made.

Creative Solutions

How Companies Can Cut Costs by Joining Buying Pools

Kevin Vargas buys $1 million worth of circuit breakers and wiring each year for Comdisco Inc.'s computer refurbishing plant in Schaumburg, Illinois. As a top purchasing manager for the $3.2 billion computer-leasing company, he has the clout to drive a hard bargain with suppliers. But Vargas thinks he has found a way to "super size" his clout. He's testing online buying groups that purchase equipment in huge volumes for equally big discounts. The potential savings: $200,000 a year.

A mile down the road in another Chicago suburb, Boise Cascade Office Products Corporation is just as excited about online purchasing groups. But the $3 billion supplier of stationery goods isn't simply expecting to save big bucks—it's hoping to make them. With purchasing agents banding together at websites run by Wells Fargo & Company and Chase Manhattan Corporation, Boise suddenly has more people to sell its wares to, and they're all jammed into a few Web locales. Boise estimated it would more than double its $250 million in Net sales in 2000.

Comdisco and Boise Cascade may never do business together. But they are both part of a movement sprouting up all over the Web. Huge buying groups and consortia are pooling their corporate purchases to get better deals or special treatment. There's a payoff for vendors, too. They lower their costs by gaining quick access to large, well-defined pools of buyers.

Better Prices

The only ones who benefit more are those who pull together the groups of buyers and sellers. Think of them as market makers. They cover the gamut of industries from banking giant Chase Manhattan to telecommunications behemoth Nippon Telegraph & Telephone Corporation to transportation king SAIRGroup. And on October 18, 1999, tiny Internet startup PurchasingCenter.com got into the act, gathering buyers and sellers of industrial goods such as drill bits and motors. Each hopes to take a slice of the action by charging fees for transactions. But they also get better prices for the goods they need for their own operations. Companies "can not only make money but save money," says Tim Minahan, an e-commerce analyst with Aberdeen Group Inc.

Before the Net, such buying groups simply didn't exist. With the Web, far-flung organizations, sharing nothing more than a need to stock their cafeterias with plastic utensils, can hook up to demand huge discounts. That may sound mundane, but everyday operational goods, including things from janitorial supplies to computer keyboards, typically account for 35 percent of a company's cost of doing business, according to Benchmarking Partners Inc., a research and consulting firm in Cambridge, Massachusetts. By pooling their purchases with other companies that need the same supplies, market makers say they can cut overall procurement costs by as much as 10 percent.

Working on the E-Road

Some companies see cost savings beyond better prices. Jim Limperis, strategic sourcing manager for Motorola Inc.'s Internet and Networking Group in Mansfield, Massachusetts, isn't sure he'll save any up-front costs using PurchasingCenter.com. But Limperis says he's still interested, because it could give him the ability to partly automate his $270 million annual purchases and liberate his workers for other tasks. "If you can help me free up a $30,000-a-year buyer, as opposed to just saving $50,000, I'd put him outside of the department and get him involved with design and development. In the long run, it would produce better cost savings," says Limperis.

Source: Adapted from Kevin Ferguson, "Purchasing in Pools," BusinessWeek, November 1, 1999, pp. EB 33, 34, and 38.
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 noncumulative 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 semianual 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 for new opportunities for volume contracting.

Systems Contracts and Stockless Purchasing

Systems contracts, or blanket orders, as they are sometimes called, are a means of reducing materials-related costs such as unit purchase price, transportation, inventory, and administration. Systems contracts are arranged for a given volume of purchases over a specified time period. The vendor supplies products to individual plant locations as ordered, and payment is arranged through purchasing. According to one observer, “While this agreed-to quantity is not legally binding, it is generally sufficient assurance for the vendor to seek volume purchase from its sources. These volume purchases help reduce the final cost to the buyer. A key advantage is that a stipulated price is fixed over the period of the contract.”

Systems contracts are often referred to as stockless purchasing, which implies that the firm does not carry inventory of purchased materials. While a systems contract may or may not result in “zero” inventory, the underlying principles of systems contracting are necessary for stockless purchasing. The objectives of systems contracts and stockless purchasing are to:

- Lower inventory levels.
- Reduce the number of suppliers.
- Reduce administrative cost and paperwork.
- Reduce the number of purchases of small dollar value and requisitions that purchasers have to handle (and thereby increase the amount of time available for other key activities).
- Provide the opportunity for larger dollar volumes of business to suppliers.
- Provide for timely delivery of material directly to the user.
- Standardize purchase items where possible.27

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Systems contracts and stockless purchasing systems are best suited to frequently purchased items of low dollar value with administrative processing costs that are relatively large compared to unit prices. In many cases, the combined administrative, processing, and inventory carrying costs may exceed the item's cost. Systems contracting may lead to larger supplier discounts, reduced processing costs, and increased product availability. Both systems require the following: identification of appropriate suppliers; supplier selection; use of a standard-item catalog for availability and ordering; establishment of order communication methods; identification of acceptable receipt areas (docks, warehouses, etc.); monitoring of supplier delivery performance within established delivery parameters (e.g., 4, 8, 24, or 48 hours); and established payment methods to accumulate receipts and pay for all items received over a given time period (e.g., 30 days).28

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

Measurement and Evaluation of Purchasing Performance

Management must identify the information that is required to perform purchasing activities and to measure and evaluate purchasing performance.29 The following data should be included in the management information system in order to measure and evaluate purchasing performance:

Data for Measuring and Evaluating Purchasing Performance

- Purchase item number and description.
- Quantity required.
- Date on which item is required.
- Date on which purchase requisition is received or authorized.
- Purchase requisition or authorization number.
- Supplier(s) quoted.
- Date on which supplier(s) is quoted.
- Date on which quotes are required from supplier(s).
- Supplier quote(s).
- Supplier price discount schedule.
- Purchase order number.
- Date on which purchase order is placed.
- Purchase price per unit.
- Quantity or percentage of annual requirements purchased.
- Planned purchase price per unit.
- Supplier name.
- Supplier address.
- Supplier's promised ship date.
- Supplier lead time (days or weeks for purchase item).
- Date on which purchase item is received.

28Ibid., p. 483.
29The material in this section is adapted from Ibid., pp. 485–92.
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- Quantity received.
- Purchase item accepted or rejected (unit/lot).
- Storage location.
- Buyer.
- Work unit.
- Requested price change.
- Effective date of requested price change.
- Date on which price change is approved.
- Ship-to location.\(^\text{30}\)

**Information Needs Differ by Level of Management**

Generally, the primary users of purchasing measurement and evaluation reports include top-level managers, corporate functional managers, operating unit functional managers, and middle managers at plant and operating unit sites.

The information needs of each of these groups are quite different. Top management, for example, may want to know how the firm's purchasing department compares with that of other firms, and how effective it is. Corporate functional managers, such as corporate vice presidents of purchasing, may want complete functional reviews; policy and procedure audits; and a review of key quantitative indicators, such as inventory, minority purchases, and administrative budget measures. The purchasing department manager of the operating unit may want to have a series of regularly reported indicators in order to monitor performance and take corrective action when necessary.

**Performance Measures**

**Key Performance Measures**

Monczka, Carter, and Hoagland found that purchasing organizations use a number of key performance measures for purchasing control, including price effectiveness; cost savings; workload; administrative and control; efficiency; vendor quality and delivery; material flow control; regulatory, societal, and environmental measures; procurement planning and research; competition; inventory; and transportation.\(^\text{31}\)

**Price Effectiveness.** Price effectiveness measures are used to determine (1) actual price performance against plan, (2) actual price performance against market, and (3) actual price performance among buying groups and locations. Purchase price variances from plan can be calculated for individual line items and for the total purchasing budget. Typical indicators are price variances measured in terms of (1) actual unit cost minus planned cost, (2) a price variance percentage (actual unit cost over planned cost), or (3) an extended price variance (actual unit cost minus planned cost, multiplied by an estimated annual quantity).

**Cost Reduction versus Cost Avoidance**

Cost Savings. Measures of cost savings include both cost reduction and cost avoidance. Cost reduction occurs when the new unit cost is lower than the old unit cost on a stock-keeping unit basis. Cost avoidance occurs when the new unit price is lower than the average quoted price, even when the new unit price represents an increase over the old price.

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Workload. Workload can be broken down into three categories: (1) workload in, which is a measure of the new work coming into the purchasing department; (2) workload current, which is a measure of the backlog of work; and (3) workload completed, which is a measure of the work accomplished. Measures of workload in include counts of work received, such as purchase requisitions, purchase information requests received, and the number of pricing requests received. Workload current is usually measured in terms of counts of the backlog of work, such as purchase requisitions on hand and items on hand. Measures of workload completed include purchase orders placed, line items ordered, dollars ordered, contracts written, and price proposals written.

Administration and Control. Administration and control is usually accomplished using an annual administrative budget for the purchasing function. The most common method is to start with the current budget and adjust it up or down, depending on the business forecast, the projected workload, and economic conditions.

Efficiency. Efficiency measures relate purchasing outputs to purchasing inputs. They range from two-factor measures that have one input and one output, to multifactor measures that relate several outputs to several inputs. Common two-factor measures include purchase orders per buyer, line items per buyer, dollars committed per buyer, change notices per buyer, contracts written per buyer, average open order commitment, worker hours per line item, worker hours per purchase order, worker hours per contract, administrative dollars per purchase order, administrative dollars per contract, and administrative dollars per purchase dollar.

Vendor Quality and Delivery. Vendor quality measures include the percentage of items (pieces, orders, shipments, or dollar value) that are accepted or rejected; the total cost of purchasing one unit of product from a vendor; and the frequency and severity of defects. Vendor delivery is generally measured in terms of on-time, early, or late deliveries (pieces, orders, shipments, or dollar value).

Material Flow Control. Reports that measure the flow of material from vendors to the buying organizations can be classified into four groups: (1) open purchase orders and their due dates, (2) past-due open orders, (3) orders that are needed immediately, and (4) ability of buyers and vendors to meet due dates.

Regulatory, Societal, and Environmental Measures. A number of measures can be used to show how a purchasing department is performing relative to regulatory, societal, and environmental goals. Examples include (1) purchases with small and minority-owned businesses, (2) purchases placed in labor surplus areas, and (3) number and percentage of minority employees.

Procurement Planning and Research. Generally, procurement planning and research can be evaluated on the basis of the number of procurement plans established per year (including availability and price forecasting); price forecasting accuracy (actual to forecast); lead-time forecasting accuracy (actual to forecast); and the number of make-or-buy studies completed.

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32 Ibid., p. 490.
33 Ibid.
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Competition. Competition measures the extent to which the buying organization has developed alternatives in the supply marketplace and improved purchase prices and terms. Competition measures may include annual purchase dollars, the percentage of purchases on annual contracts, and the volume of purchases placed with single source suppliers (thereby limiting competition).

Inventory. Inventory measures include inventory turnover, consignments, and inventory levels.

Transportation. Transportation measures are used to determine the expense incurred for premium transportation. Premium transportation costs are incurred when other-than-normal transportation is used.

Impact of Procurement on Return on Net Worth

Figure 12–3 illustrates the many ways in which procurement contributes to return on net worth. First, better management of procurement can result in higher sales as a result of higher prices, higher volume, or more rapid time-to-market for new-
product introductions. Cost of goods sold can be reduced as well as other expenses. These actions will result in much higher profitability. In terms of the balance sheet, excellence in procurement can result in reduction in both current and fixed assets, which leads to increased asset turnover. The higher profitability and higher asset turnover provide two upward pressures on return on assets. This, combined with a reduction in financial leverage as a result of debt repayment, leads to higher return on net worth.

Strategic Sourcing

Executives in many industries are recognizing the value-added role that procurement can bring to their business design. Corporate spending on outside purchases and the changing nature of those purchases are emerging as critical elements for successfully enabling profitable growth. The key to exploiting procurement in the quest for profitable growth is to understand the level of procurement development a company has reached in its sourcing activities and how those capabilities stack up against the requirements of the corporate buy. To gain the full value-added potential of procurement, leading companies are redefining procurement as a key process within the scope of the strategic sourcing. A key underpinning of strategic sourcing is the total cost of ownership concept.

As companies change what they buy, they also must change how they buy in order to unlock savings and growth opportunities. Traditionally, companies have focused on purchase price alone instead of taking a total cost view. Managers who overemphasize purchase price fail to consider several factors that can be the source of innovative, sustainable cost reduction opportunities for suppliers and buyers alike. These factors include:

- Supplier economics and other supply chain costs, such as transportation.
- Buyer’s cost of acquiring and managing products and services.
- Quality, inventory, reliability, and other factors of a product or service over its life cycle.
- The value of a product or service to internal and external customers.

A critical concept within the total cost perspective is the notion of total cost of ownership. Total cost of ownership considers both supplier and buyer activities, and costs over a product or service’s complete life cycle in the context of the competitive forces at work in the relevant purchase category. This perspective means understanding a wide range of cost and value relationships associated with individual purchases. For instance, from a competitive economics perspective, it may be more effective for a buyer to rationalize its supply base to enable higher supplier capacity utilization and, in turn, lower acquisition prices while preserving acceptable margins for the surviving suppliers. From a life-cycle ownership standpoint, buying a higher-quality item with a steeper price tag could be justified because the initial purchase cost would ultimately be offset by fewer manufacturing defects, lower inventory requirements, and lower administrative costs.

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Procurement Pathways

Four Strategic Pathways

Significant savings in total ownership costs can be achieved through a set of four specific strategic pathways. Three of the four pathways—buy for less, buy better, and consume better—represent simple but powerful ways to achieve incremental and overall cost savings by improving procurement. In each case, the magnitude of achievable savings is a function of the company’s position along the pathway, the complexity of its purchases, and its commitment to obtaining savings.

The fourth pathway to growth—sell better—embodies an emerging approach in which procurement plays an important role in forging supplier relationships that ultimately enhance corporate revenue streams. As companies reach higher levels of procurement development, the opportunities for cost savings and revenue enhancement along the procurement pathways improve significantly.

Segmenting the Buy

Each company has a unique buy, or portfolio of purchased goods and services. There are actually three bases for segmenting the purchase portfolio. The first two deal with the complexity of procurement of the relevant category and nature of the impact on corporate performance. Procurement complexity considers such factors as technical complexity, scope of supply chain integration issues, and the extent to which life-cycle management and costs are relevant. The revenue impact/business risk dimension addresses the degree to which a purchase category can influence customers’ perception of value. A third dimension has to do with competitive economic potential, that is, to what extent improvement opportunities are available to the buyer given the cost drivers and competitive dynamics in the industry relevant to the purchase.

Leaders in procurement have strengthened their focus on value growth by stressing the segments of their buy that have the most impact on potential revenue generation or present the greatest risk to corporate performance. For example, the procurement of advertising services could have tremendous risk implications relative to customer perceptions of value, while the purchase of office supplies remains largely a cost issue. Or, in the high-tech arena, the procurement of a new generation of semiconductor technology may essentially be a bet on the company’s future. Such segmentation and prioritization of the buy have become increasingly important as corporate purchases have evolved toward greater technical and commercial complexity and come to rely more on the upstream supply chain.

Sourcing Process Excellence

The sourcing value chain is the set of processes through which strategic sourcing decisions are made and value is created for the organization (Figure 12-4). The processes apply to all purchases, although the specific approaches, strategies, and best practices vary and reflect the priorities and opportunities revealed in the segmentation matrix. Leaders in procurement create an annual plan, develop requirements, develop a sourcing strategy, evaluate and select suppliers, procure materials and services, and manage supplier relationships.
FIGURE 12-4
Sourcing value chain

- Goals and points of focus during the next year by category and in total
- Item requirements by category across the user base
- Strategy to leverage buying power and minimize total cost by category
- Targeted suppliers and negotiation and contracting
- Systems, procedures, and skills to support strategy and execute efficiently
- Performance metrics, benchmarks, and controls to ensure improvement


E-Procurement

The Internet has created numerous opportunities for improving performance in the supply chain, particularly in the area of procurement. Software companies such as Ariba and Commerce One are helping to integrate and streamline the procurement process. The Creative Solutions and Technology boxes in this chapter give examples of how companies in industries from computer products to office products to automobiles are using the Internet to integrate and streamline their purchases. Companies are not just purchasing goods and services using the Internet but also direct materials, which represent the most significant supply chain relationships.

On June 14, 2000, it was announced that 49 leading consumer products companies were uniting to launch Transora.com, a global business-to-business e-marketplace.55 The companies involved in this effort include: The Cola-Cola Company; Colgate-Palmolive Company; ConAgra, Inc.; Diageo PLC; General Mills, Inc.; Heineken International; Kellogg Company; Kraft Foods, Inc.; M&M/Mars Incorporated; McCain Foods Limited; Nabisco Holdings, Inc.; Pepsi Co, Inc.; The Procter & Gamble Company; Ralston Purina Company; Sara Lee Corporation; Unilever NV; and Wm. Wrigley Jr. Company. In terms of the number of firms involved, many of whom are fierce competitors, it is the largest such effort to date.

Transora will enable consumer products companies to use the Internet to streamline business transactions with their suppliers, buyers, and distributors on a worldwide basis. Transora will be an independent company owned and funded by firms from within the industry. By June 2000, 49 consumer products companies had committed nearly $250 million to fund the venture. A maximum stake for any company is 5 percent. The money will be used to build the infrastructure and fund start-up operations for the new company.

55http://www.transora.com. For up-to-date information on developments related to this major industry initiative, simply visit the Transora website.
E-Procurement

Lou Gerstner, the boss of IBM, disarmingly described the thousands of new “dot.com” companies springing up as “fireflies before the storm.” The storm would arrive, he said, when the really big firms—the Global 1,000—seized the power of the Internet and used it to transform themselves. This week saw almost simultaneous announcements (funny, that) from the world’s two biggest car makers, to say that they are moving their entire supply chains onto the Internet. Mr. Gerstner’s storm has arrived with hurricane force.

On November 2, 1999 Ford and then General Motors declared that their huge purchasing operations would swiftly transfer to the Web, connecting suppliers, business partners and customers from all over the world by means of giant online markets. Sadly for Mr. Gerstner, neither company has picked IBM as its technology partner. Instead, Ford will form a joint venture with Oracle, the leader in the database market, to establish AutoXchange. GM has chosen Commerce One, a fast-growing supplier of Web-based procurement software, to build its own MarketSite.

Both sites are expected to be up and running during the first quarter of next year. Oracle will build AutoXchange using its own software and then run it for Ford. (Oracle will be the minority partner, but AutoXchange’s management will be drawn from both it and the car maker.) Commerce One will construct GM’s site and link it to something it calls “The Global Trading Web,” a worldwide network of business-to-business e-commerce portals that use its software.

The sheer scale of both operations marks this as the moment when e-business comes of age. AutoXchange will be the preferred vehicle for all of Ford’s $50 billion annual purchases of components and materials, which are ordered from more than 30,000 suppliers. And such business may be only the beginning for the joint venture. Ford’s extended supply chain has sales of about $300 billion a year, and the companies that are part of it will be encouraged (not bullied, Ford insists) to do business with each other through AutoXchange. Apart from creating straightforward savings on procurement and inventory—of up to 20 percent, it is claimed—AutoXchange should also encourage shorter product cycles. As well as this, it will help parts of the supply chain to work together, especially when developing new products. Both Oracle and Ford say that rival car makers will be welcome to use the AutoXchange market. Ray Lane, the chief operating officer of Oracle, estimates that within a few years the exchange may be handling transactions worth something like $200 billion.

AutoXchange will make most of its money by taking a small cut on each of potentially billions of transactions. It will earn commissions from companies that use the exchange to hold reverse auctions to liquidate surplus supplies. And it will earn fees for managing the supply chains of firms that use it. As the site expands, it should also be able to attract a lot of advertising.

Mr. Lane predicts that, by its second year, AutoXchange will achieve annual sales of $1 billion; within four years its sales could reach $5 billion. Unsurprisingly, the prospect of taking the business public in fairly short order has quickened pulses at both Ford and Oracle. Even current (relatively) depressed Internet valuations mean that PriceLine.com, a name-your-price airline-ticket auctioneer, is worth more than Delta Airlines. It may not be crazy to imagine AutoXchange being worth as much as the traditional businesses of its parents.

GM’s MarketSite, which will operate alongside GM SupplyPower, the new portal for the firm’s suppliers, is expected to attract broadly the same volume of sales as AutoXchange. GM claims that it will be the world’s largest “virtual marketplace” for a wide array of parts, products, raw materials and services. As an incentive, it will also aggregate with its own orders those of smaller firms that do business on the site, to lend them some of its purchasing power.

Jac of E-Trades

Unlike AutoXchange, MarketSite is a GM-only show that is not intended to attract other car makers. GM is saying that it intends to keep control of the portal rather than spin it off in a public offering. But that could change. GM was almost certainly bounced into revealing its plans for MarketSite by the Ford/Oracle announcement. GM is fed up with the campaign of Ford’s boss, Jac Nasser, to portray his company as being in the vanguard of the car industry’s attempts to embrace the Internet. It was determined to steal a share of the limelight for itself.

Both firms are showing how big companies in a range of industries are likely to use the Internet to put themselves at the centre of new e-business ecosystems that will transform their entire way of doing business. Although big car makers have long used electronic data interchange (EDI) to link with their suppliers, EDI is inherently rigid—it provides basic information about transactions, but it cannot adapt to rapidly changing markets. It is also too expensive for smaller firms.

The investor companies spend approximately $350 billion of the $900 billion in industry purchases of goods and services annually. Purchasing practices are fragmented, with manufacturers making purchases from more than 200,000 suppliers. The industry experiences inflated procurement costs as a result of inconsistent and incomplete information. Inefficient processes, such as lack of integration and paper-laden systems, are challenging the industry.

Transora will streamline transactions throughout the supply chain and connect thousands of trading partners. Suppliers will gain access to a much larger customer base at reduced customer acquisition costs. Manufacturers will benefit from improved customer service with retailers and wholesalers. Retailers and wholesalers will be able to simplify their ordering processes and improve order accuracy. Participants throughout the supply chain will benefit from increased connectivity, enhanced automation and improved inventory management.

"With the Internet's borderless connectivity, Transora transcends global boundaries," said Paul Walsh, Group Chief Operating Officer, Diageo PLC. "Economies of the world continue to draw closer together, and our companies increasingly rely on businesses and markets that lie across international boundaries. Transora provides the common marketplace in which our companies can transact and manage business, seamlessly and efficiently."36

Consumer packaged goods companies have common customers, suppliers, and processes. Transora will allow universal collaboration across companies, provide singular connectivity to an array of services and exchanges on the Internet, increase efficiencies, and improve interaction with customers and consumers. The e-marketplace promises to lead the transformation of the consumer products industry by delivering breakthrough benefits across the entire supply chain, and ultimately to consumers. The "killer applications" identified for the marketplace include: consumer promotions; collaborative planning forecasting and replenishment/vendor-managed inventory/scanner-based transactions; industry capacity management; and end-to-end logistics.

Forrester Research expects business-to-business transactions over the Internet to reach $1.3 trillion by 2003.37 Ariba is a leading provider of software; the following quote, from Ariba's website, provides some background information on the company's software solutions:

Ariba business-to-business eCommerce solutions lower costs and streamline the supply chain, delivering benefits to all trading partners. Buying organizations use Ariba solutions to reduce costs by channeling spend to preferred suppliers and to participate in new revenue opportunities by hosting electronic marketplaces, which provide procurement services to others. Suppliers participate in Ariba eCommerce solutions to increase the revenue potential by more efficiently doing business with existing clients and extending their reach to new prospective clients. Net market makers use Ariba's comprehensive electronic marketplace deployment solution to establish high-performance, fully featured, scalable Net markets. The Ariba solution leverages the Ariba Network platform to deliver reduced costs, increased revenue opportunities, and competitive advantage to buyers, suppliers, value-added service providers, and Net market makers.38

36 Ibid.
38 Ariba, Inc. (http://www.ariba.com).
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The following quote is from Commerce One:

Commerce One offers enterprise customers the most comprehensive and completely interactive e-Procurement solution available today. Through the Commerce One solution, comprised of Commerce One BuySite e-procurement application, and access to a Commerce One MarketSite global trading portal, the entire procurement cycle from requisition to payment is completely automated. Information moves instantly from the user’s desktop directly to the supplier’s back office, with industry-leading XML (extensible markup language) technology.39

Managing Supplier Relationships

Supplier partnerships have become one of the hottest topics in interfirm 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 whether a partnership is appropriate and, if so, the type of partnership that should be implemented.

While there are countless definitions of partnership in use today, we prefer the following:

Partnership Defined

A partnership is a tailored business relationship based on mutual trust, openness, shared risk, and shared rewards that results in business performance greater than would be achieved by two firms working together in the absence of partnership.40

Types of Partnerships41

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 12-5. Most relationships between organizations have been those at arm’s length, where the two organizations conduct business with each other, often over a long period of time and involving multiple exchanges, but without a sense of joint commitment or joint operations. In arm’s-length relationships, a seller typically offers standard products or services to a wide range of customers, who receive standard terms and conditions. When the exchanges end, the relationship ends. While arm’s-length relationships are appropriate in many situations, there are times when a closer, more integrated relationship, called a partnership, would provide significant benefits to both firms.

A partnership is not the same as a joint venture, which involves shared ownership between 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. For instance, Pepsi chose to acquire restaurants such as Taco Bell, Pizza Hut,
and Kentucky Fried Chicken and by doing so ensured distribution of its products in
these outlets. Coca-Cola has achieved a similar result without the cost of vertical inte-
gration through its partnership with McDonald's.

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 oper-
ating 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 part-
nerships 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 forever, 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 its own firm. Typically, no end date for the
partnership exists.

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

The Partnership Model

The partnership model shown in Figure 12-6 has three major elements that lead to out-
comes: 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.

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 effi-
ciences, (2) customer service improvements, (3) marketing advantage, and (4) profit
stability/growth. (See Table 12–5 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 be easily matched by a competitor, the probability of long-term partnership success is reduced.

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.

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 sidetracked by a hostile environment. In contrast, 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 do not. 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 Table 12–5 for details.)
### Table 12-5 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 costs 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 taking 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 leveling, seasonal leveling, 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 techniques 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 “personal charm,” 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 (nonroutine 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, leveling of profits over time).
- Process outcomes (improved service, reduced costs).
- Competitive advantage (market positioning, market share, access to knowledge).

Summary

In this chapter we saw how better management of procurement process can lead to increased profitability. We described the activities that must be performed by the purchasing function and explored the implications of just-in-time purchasing. 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 costs and the measurement and evaluation of purchasing performance. Finally, we presented a model that can be used to determine when a partnership is appropriate and, if so, how that relationship should be structured to maximize the benefits for the two organizations.

In Chapter 13 we will see how the concepts that you have learned apply to the global marketplace.

Suggested Readings:


Chapter 12  Procurement


Questions and Problems

1. Explain why procurement is an area of major importance in most companies.
2. Explain why supplier selection and evaluation is frequently considered to be the most important activity in the procurement function.
3. International sourcing of materials is a much more difficult process than domestic sourcing. What are some of the more significant problems in international sourcing that affect the logistics manager?
4. Explain the concept of forward buying and its relationship to total cost trade-off analysis.
5. Using a format similar to that shown in Table 12–3, determine the optimal forward buy (in months) given the following information:
   - Monthly usage is $4,000.
   - Expected price increase is 10 percent.
   - Inventory carrying cost is 40 percent.
   - The ordering cost is $25 per order.
   - Vendor pays the freight.
6. What are the major advantages of just-in-time purchasing? What difficulties are possible in implementing a JIT system?
7. Why is cost measurement an important purchasing management activity?
8. Which of the 12 purchasing performance measures do you believe would be of the greatest use to management? Why?
9. Explain how e-commerce is likely to revolutionize the way purchasing is conducted in most major corporations.
10. Why is it necessary for two firms to each have strong drivers if they are considering forming a partnership?
11. 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?