Preface

The Fourth Edition of *Purchasing and Supply Chain Management* is the culmination of ongoing discussions and research with purchasing and supply chain executives and managers across many industries from around the world. In this edition, we have combined our experience and research to further enhance a managerial perspective of the core tasks and challenges required to effectively manage the purchasing function within the context of an integrated supply chain. Although prior editions have dealt with many components of obtaining goods and services, we have created an integrated text that helps managers develop purchasing and supply chain strategies that contribute to overall business objectives. This new edition includes a number of innovative subjects that have been developed as a result of recent research projects undertaken by the authors.

Some of the subjects that are newly introduced or expanded upon in this edition include:

- Cross-functional teaming
- Purchasing and supply performance measurement
- Supplier integration into new product development
- Digitizing purchasing through electronic procurement systems and full e-sourcing and supply
- Supplier development
- Strategic cost management and total cost of ownership
- B2B electronic commerce and e-reverse auctions
- Enterprise resource planning
- Third-party logistics
- Price analysis tools and techniques
- Negotiation simulations
- Contracting and Internet law
- Creating the lead supply chain
- Emerging strategies and practices
- Expanded and comprehensive cases

We are proud of this new edition and believe that it reflects many new themes that are only beginning to emerge in industries worldwide.

Course Description

Purchasing and Supply Chain Management is intended for college and university courses that are variously entitled purchasing, materials management, supply chain management, sourcing management, and other similar titles. The text is also well suited for training seminars for buyers, and portions of it have been used in executive education forums. Chapters have been used in both undergraduate and M.B.A. classes in purchasing, e-commerce, operations management, and logistics. Some instructors may also elect to use sections of the book for a class in operations management or logistics.

The text is appropriate for either an elective or a required course that fulfills the American Assembly of Collegiate Schools of Business (AACSB) requirements for coverage of materials management issues. Most of the cases included in the book are based on actual companies and have all been used and modified through classroom use by the authors.

Course Objectives

Depending on the placement of a course in the curriculum or the individual instructor's philosophy, this book can be used to satisfy a variety of objectives:

1. Students should be made aware of the demands placed on purchasing and supply chain managers by business stakeholders.
2. As prospective managers, students need to understand the impact of purchasing and supply chain management on the competitive success and profitability of modern organizations.
3. Students should appreciate the ethical, contractual, and legal issues faced by purchasing and supply chain professionals.
4. Students must understand the increasingly strategic nature of purchasing, especially the fact that purchasing is much more than simply buying goods and services.
5. Students entering or currently in the workforce must understand the influence of purchasing on other major functional activities, including product design, information system design, e-commerce, manufacturing planning and control, inventory management, human resource development, financial planning, forecasting, sales, quality management, as well as many other areas.

Unique to This Edition

Many of the insights and topics presented throughout this book are based on examples developed through discussions with top purchasing executives and from various research initiatives, including research published by CAPS Research, work at the North Carolina State University Supply Chain Resource Consortium, and a project on supplier integration funded by the National Science Foundation. In addition, the text has a chapter format that includes an opening vignette, a set of sourcing snapshots, and a concluding good practice example that illustrates and integrates each chapter's topics. These new case studies and examples provide up-to-date illustrations of the concepts presented throughout each chapter.

The concept of teaming is emphasized throughout this book. Many of the case exercises require a team effort on the part of students. We recommend that the instructor have students work in teams for such projects to prepare them for the team environment found in most organizations.

Structure of the Book

This book is subdivided into six parts and 20 chapters that provide thorough coverage of purchasing and supply chain management.

Part 1: Introduction

Chapter 1 introduces the reader to purchasing and supply chain management. This chapter defines procurement and sourcing, introduces the notion of the supply chain, and summarizes the evolution of purchasing and supply chain management as an organizational activity.

Part 2: Purchasing Operations and Structure

The chapters in Part 2 provide an in-depth understanding of the fundamentals surrounding the operational activity called purchasing. These chapters focus primarily on the fundamentals of purchasing as a functional activity. Without a solid understanding of purchasing basics, appreciating the important role that purchasing can play becomes difficult.

Chapter 2 provides an overview of the purchasing process by presenting the objectives of world-class purchasing organizations, the responsibilities of professional purchasers, the purchasing cycle, and various types of purchasing documents and types of purchases. Chapter 3 examines various categories and types of purchasing policy and procedure. Most firms have a set of policies outlining the directives of executive management. These directives guide behavior and decision making and place boundaries on the behavior of personnel. Chapter 4 examines purchasing as a boundary-spanning function. Much of what purchasing involves requires interacting and working with other functional areas and suppliers. This chapter examines the intra-firm linkages between purchasing and other groups, including suppliers. Chapter 5 focuses on purchasing and supply chain organization. This includes a discussion of purchasing in the organizational hierarchy, how the purchasing function is organized, and the placement of purchasing authority. The chapter also describes the team approach as part of the organizational structure.

Part 3: Strategic Sourcing

A major premise underlying this book is that purchasing is a critical process and makes as important a contribution as manufacturing, marketing, or engineering to the pursuit of a firm's strategic objectives. Progressive firms have little doubt about purchasing's impact on total quality, cost, delivery, technology, and responsiveness to the needs of external customers. Part 3 addresses what firms must do to achieve a competitive advantage from their procurement and sourcing processes. Realizing these advantages requires shifting our view of purchasing from a tactical or clerically oriented activity to one focusing on strategic supply management. Strategic supply management involves developing the strategies, approaches, and methods for realizing a competitive advantage and improvement from the procurement and sourcing process, particularly through direct involvement and interaction with suppliers.

Chapter 6 develops an understanding of how firms set purchasing strategies. This process should include a vision and plan of what a firm must do in its purchasing/sourcing efforts to support achieving corporate goals and objectives. Clearly, the strategic planning process should be the starting point for any discussion of strategic supply management. Purchasing and commodity strategy development processes are discussed. Chapter 7 focuses on one of the most important processes performed by firms today—that is, supplier evaluation, selection, and measurement. Selecting the right suppliers helps ensure that buyers receive the right inputs to satisfy their quality,

cost, delivery, and technology requirements. Selecting the right suppliers also creates the foundation for working closely with suppliers, when required, to further improve performance. Chapter 8 describes how a progressive firm manages and improves supplier quality once it selects its suppliers. Improving supplier quality may also create advantages that are not available to competing firms. Six Sigma applications are discussed. Chapter 9 describes what firms must do to manage and develop world-class supply-base performance. Supplier development is a focus. Finally, Chapter 10 focuses on worldwide sourcing, which is an important part of strategic supply management as firms search worldwide for the best resources.

Part 4: Strategic Sourcing Process

Chapter 11 focuses on strategic cost management and cost/price analysis. Progressive firms focus on cost control and reduction with suppliers as a way to improve (i.e., reduce) purchase price over time. Understanding cost fundamentals and appreciating how and when to use advanced costing techniques is critical for purchasers. This chapter details various types of costs, presents cost analysis techniques, and discusses the factors that affect a supplier's price. The chapter also discusses total cost analysis, cost-based pricing, and other innovative techniques designed to provide accurate and timely cost data.

Purchasing professionals rely on an assortment of tools, techniques, and approaches for managing the procurement and supply chain process. Chapter 12 presents various tools and techniques that purchasers use when problem solving and pursuing performance improvements. The use of these tools and techniques can help purchasers achieve specific outcomes such as reducing cost/price, improving quality, reducing time, or improving delivery performance from suppliers.

Chapter 13 deals with purchase negotiation. Effective purchasers know how to plan for and negotiate contracts that create value within a buyer-seller relationship. Increasingly, purchase contracts emphasize more than simply purchase price. Buyers and sellers may negotiate cost reductions, delivery requirements, quality levels, payment terms, or anything else important to the parties. Purchase negotiation will become increasingly important as firms focus on non-price issues and longer-term, complex purchase agreements.

Chapter 14 addresses the fundamentals of contracting. The formal contracting process creates the framework for conducting business between two or more firms. As such, an understanding of contracting is essential when attempting to manage costs within a buyer-seller relationship. Chapter 15 addresses the major legal considerations in purchasing, including the legal authority of the purchasing manager. The chapter also discusses sources of U.S. law, warranties, purchase order contracts, breaches of contract, and patent and intellectual property rights. Because contracting is a part of the legal process, this chapter naturally follows the contracting chapter.

Part 5: Critical Supply Chain Elements

Part 5 describes the major activities that relate to or directly support supply chain management. Some of these activities involve specific disciplines, such as inventory management or transportation; other activities relate to the development of supply chain support systems. These systems include performance measurement systems and computerized information technology systems. The activities presented in this part may or may not be a formal part of the purchasing organization. These activities and systems, however, are key elements of purchasing and supply chain management.

Without them, purchasing probably cannot effectively pursue its goals and objectives. Therefore, purchasing students must be familiar with a range of supply chain activities.

Chapter 16 focuses on a topic of increasing interest—the management of a firm's inventory investment. The money that a firm commits to inventory usually involves a significant commitment of financial resources. This chapter discusses the function of inventory within a firm, factors leading to inventory waste, creating a lean supply chain, approaches for managing a firm's inventory investment, and future trends related to managing inventory. At some firms, purchasing is responsible for the day-to-day management of inventory.

Another area of interest involves the purchase of transportation and other services. We have witnessed major changes in transportation over the last 15 years, many of which have affected purchasing. Since Congress deregulated the transportation industry in the early 1980s, the role of the buyer has changed dramatically. More than ever, purchasing is involving itself in the evaluation, selection, and management of transportation carriers. Even if a buyer does not get involved directly with transportation, having a working knowledge of this dynamic area is critical. Chapter 17 highlights purchasing's role in transportation and service buying, presents a decision-making framework for developing transportation strategy, discusses ways to control and influence inbound transportation, and evaluates trends affecting the purchase of transportation services such as performance-based logistics. In addition, insights into how other services are purchased are discussed.

Information technology systems are changing business. Purchasing, too, can benefit from the development of current information technology systems. Chapter 18 examines the role of supply chain information systems and electronic commerce. The chapter also addresses the electronic linkage between firms through electronic data interchange (EDI) and Internet capability. Finally, this chapter discusses some advanced and future e-purchasing and supply systems' applications. The availability of information technology systems greatly enhances purchasing's ability to operate at the highest levels of efficiency and effectiveness.

Chapter 19 focuses on performance measurement and evaluation. Increasingly, firms must develop valid measurement systems that reveal how well a firm is performing, including the performance of its purchasing and supply chain management efforts. These systems need to be clearly linked to overall company objectives. Measurement systems support procurement and sourcing decision making by providing accurate and timely performance data. This chapter examines why firms measure performance, defines various purchasing performance measurement categories, and discusses how to develop a purchasing performance measurement system, including a balanced scorecard.

Part 6: Future Directions

Chapter 20 focuses on what purchasing and supply chain management will look like in the 21st century. These trends, which are adapted directly from recent surveys and studies of key executive managers from a variety of global organizations, can help students identify how the field of purchasing and sourcing management is changing, and what skills they will need to develop in view of these changes. The latest predictions are included from CAPS Research Project 10X EA and a joint CAPS Research, AT Kearney, and ISM study focused on supply strategies for the decade ahead.

Case Studies and Instructor's Resources

Purchasing and Supply Chain Management contains new and revised cases featured within the book. These cases have been classroom tested and used within the industry. A test bank, PowerPoint® presentation, and other ancillary materials are available on CD-ROM (ISBN: 0-324-38135-2) to help instructors identify how best to use and interpret the text and cases. Of particular interest are the negotiation and supplier selection cases, which allow students to experience the purchasing decision-making process in real time. The Instructor's Resource CD is available to adopters of the Fourth Edition by calling the Academic Resource Center at 1-800-423-0563. More information about this text can be found at the product website, http://monczka.swlearning.com.

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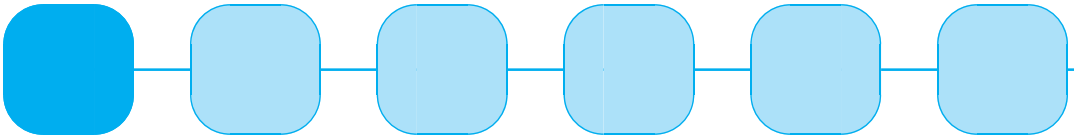


Part 1

Introduction

Chapter 1

INTRODUCTION TO PURCHASING AND SUPPLY CHAIN MANAGEMENT

Learning Objectives

After completing this chapter, you should be able to

- Understand the differences between purchasing and supply management
- Understand the differences between supply chains and value chains
- Identify the activities that are part of supply chain management
- Appreciate the importance of supply chain enablers
- Identify the historical stages of purchasing's evolution

Chapter Outline

Putting the "ROAR" Back in CSX Purchasing

Fran Chinnici, a Penn State University engineering graduate, knows all about the Nittany Lion "roar" from his days in State College (a.k.a. Happy Valley). When Chinnici was named vice president of purchasing and materials at CSX Transportation just over three years ago, he felt that a major change was needed to get his sourcing team on a new track. Since his appointment to the job, he has put the purchasing function on the global track to 21st-century excellence.

CSX is one of four Class 1 Railroads in the United States. In 2007 the company had sales of over $10 billion and earnings of $2.99/share. With a barrel of crude oil fluctuating in the $90 to $100 range and fuel prices at close to $3 a gallon, the railroads have become a favorite of many shippers. The railroads' low cost-per-ton-mile allows them to compete very favorably with other transportation modes.

Supporting this business growth and sustaining high levels of service, while controlling materials costs, posed major challenges for the CSX Purchasing and Materials Department. Meeting the challenge was compounded by a changing supply base. Chinnici states that "a reduction in the number of railroads and the subsequent consolidation of purchases resulted in a downsizing of our domestic supply base." With the growth in shipments experienced by the U.S. Class 1 Railroads, the lack of domestic suppliers is a major concern. This is especially true considering that Chinnici and his team are responsible for $4 billion in purchases. This money is spent on over 100,000 items necessary to keep 21,000 route miles of track, about 100,000 freight cars, and over 4,300 locomotives moving freight to the thousands of localities and customers served by CSX. "Based on the demands of our operating environment, the shrinking supply base, and the need to continuously add value to the company from a supply perspective, it was a no-brainer that we had to develop a more global perspective," says Chinnici.

His goal was to raise the skill levels of his organization to meet the global as well as other challenges required of a 21st-century supply function. Toward that end, he made it a requirement for all current employees and new hires to further develop their skill sets and attain the status of Certified Purchasing Manager (C.P.M.). Leading by example, Chinnici attended C.P.M. training along with his staff members and successfully passed the necessary exams. He proudly displays his C.P.M. certificate in his office overlooking Jacksonville's growing skyline. "Attending classes with my people was a way of visibly demonstrating my commitment to raising our level of professionalism," he says, "and the C.P.M. is just a start." After three years he is proud to say that over 95% of his supply management professionals are C.P.M. certified.

"The journey from a domestic to a global supply base is not always smooth and it requires both time and effort to make a significant impact," Chinnici states. Without adding headcount, Chinnici reorganized his resources and formed a team focused on developing current suppliers and growing the supply base. Led by Rod Keefe, the Purchasing Strategy and Supplier Development team was formed to develop suppliers and create a process to begin sourcing railroad materials globally. An early success was the sourcing of rail from Eastern Europe. So now, in addition to two domestic rail mills and mills in Japan, CSX sources rail from the Czech Republic. Then, 25-year purchasing veteran Jim Fronckoski, manager of Locomotive Purchasing, began scouring the globe for rail wheels, brake shoes, and coupler parts. "Many of the commodities in the marketplace where we play are becoming global," states Fronckoski. So in order to move the skill set of his purchasing team to yet another level of professionalism in global awareness, Chinnici had his key managers and staff attend a series

of global sourcing workshops. "The customized workshops provided my staff with a much deeper understanding of global sourcing issues and required relationships," he states. To date, the department has several global sourcing initiatives in the pipeline. Some are pending approval from the American Association of Railroads standards board; others require extensive laboratory and field testing to ensure their integrity for service use.

"We won't cut corners," says Chinnici. As evidence of that, the Penn State engineer recently huddled resources from around CSX to expand the supplier quality efforts for purchased materials, and it's no surprise he gave them a global perspective on launch day. With the cooperation and vision of Rich Regan, vice president of Mechanical Operations, Chinnici centralized this technical group in Purchasing, added additional resources, and expanded the focus to include all critical materials from around the globe.

Complementing the global push is CSX's extensive involvement in e-commerce. The railroads have a long history of doing business electronically, beginning with their pioneering efforts in using EDI with their customers. CSX continues the use of electronic tools to facilitate sourcing. "98.6% of our purchasing expenditures are now transmitted electronically," states Stan Hefley, director of Process Improvement. Hefley further states, "On an average month we run about 2,000 items a day over our Oracle system." Another major e-commerce initiative is the association with Railmarketplace.com, where the four major railroads meet to discuss potential purchases of nonstrategic items. Elaine Mosley, manager of Supplier Development, says, "The consortium gives CSX and the other major railroads an opportunity to leverage their smaller nondirect purchases to provide savings for all the participants."

Putting the right structure in place to achieve these results is no easy task. "I felt my direct reporting staff was somewhat disjointed and hindered the ability to make rapid decisions," states Chinnici. "We needed to streamline our organization and become able to identify and seize market opportunities quickly." Chinnici's vision is to have a lean, responsive supply management organization that anticipates and meets the needs of CSX. "I want to be like Wal-Mart . . . by having a quality product available, at a convenient place and at the right cost, while working with both our suppliers and internal customers to provide a very high level of cooperation and service."

Chinnici is pushing his procurement team to work at a much higher strategic level in the industry, providing even more value-added service to CSX. To that end the supply group is starting to become a player in areas often described as nontraditional, because these areas of spend were traditionally purchased by functional groups outside of purchasing. Becoming involved in these new service areas, such as audit, legal, and advertising, allows the CSX supply function to apply professional supply management and contracting practices to areas that were previously the domain of users in other functional areas. Chinnici sums it up by stating that "in today's rapidly changing environment we need skilled, open-minded supply professionals who can deliver results to our organization regardless of economic conditions and in any area of spend." Oscar Munoz, CSX executive vice president and chief financial officer, concurs. "I view our purchasing and supply area as a major contributor to the bottom line and critical to the service capabilities of our railroad company," says Munoz. Accomplishing their mission requires a staff of dedicated professionals who can ensure availability of the locomotives, cars, track, and maintenance parts needed to keep CSX trains running at a very demanding operating capacity. Chinnici and Munoz both are optimistic that their sourcing group will continue to build on their string of recent successes. The ROAR is back . . . at least at CSX Purchasing and Materials.

Source: L. Giunipero, Interview with Fran Chinnici and CSX supply management personnel, February 2008.

As the CSX story illustrates, the development of progressive purchasing approaches and strategies can help a company maintain or improve its competitive position. In reality, it is only recently that managers would even place the words "progressive" and "purchasing" in the same sentence. Not so long ago, the life of a purchasing professional was comfortable and predictable. When someone required something, a buyer sent a request to suppliers for competitive bids, awarded short-term contracts based on price, enjoyed a free lunch or ball game with salespeople, and figured out how to meet not-too-demanding performance measures. Although the buying position did not carry much prestige, it was a good way to earn a pension.

This model worked relatively well until new competitors from around the world showed there was a better way to manage purchasing and the supply base. New and better methods helped these competitors achieve dramatic reductions in cost, exponential improvements in quality, and unheard-of reductions in the time it takes to develop new products. This new model featured closer relationships with important suppliers, performing due diligence on suppliers before awarding long-term contracts, conducting worldwide Internet searches for the best sources of supply, and participating with suppliers during product and process development. Furthermore, executive managers began to require purchasing professionals to achieve demanding performance improvements. What really changed the purchasers' comfortable world, and ended the era of free lunches, was global competition. Borrowing a phrase from Thomas Friedman, the world is flat and competition is now 24/7, anywhere and anytime.[1]

As is illustrated in the CSX story, global sourcing is a requirement and no longer a luxury for most firms. This chapter introduces the reader to the changing world of purchasing and supply chain management. It is a world that has changed more during the last 15 years than the previous 150 years combined. The first section of this chapter describes the new competitive environment where we now operate—an environment that affects every major industry. We next present the reasons why purchasing has taken on increased importance. Third, we clarify the confusing terminology that surrounds purchasing and supply chain management. The next sections present the activities that are part of supply chain management, discuss the four enablers of purchasing and supply chain excellence, and review the historic evolution of purchasing and supply chain management. The last section outlines the contents of this book.

A New Competitive Environment

The new millennium features increasing numbers of world-class competitors, domestically and internationally, that are forcing organizations to improve their internal processes to stay competitive. Sophisticated customers, both industrial and consumer, no longer talk about price increases—they demand price reductions! Information that is available over the Internet will continue to alter the balance of power between buyers and sellers. An abundance of competitors and choices have conditioned customers to want higher quality, faster delivery, and products and services tailored to their individual needs at a lower total cost. If a company cannot meet these requirements, the customer will find someone who is more accommodating.

Throughout the 1960s and 1970s, companies began to develop detailed market strategies that focused on creating and capturing customer loyalty. Before long,

organizations also realized that this required a strong engineering, design, and manufacturing function to support these market requirements. Design engineers had to translate customer requirements into product and service specifications, which then had to be produced at a high level of quality at a reasonable cost. As the demand for new products increased throughout the 1980s, organizations had to become flexible and responsive to modify existing products, services, and processes, or to develop new ones to meet ever-changing customer needs.

As organizational capabilities improved further in the 1990s, managers began to realize that material and service inputs from suppliers had a major impact on their ability to meet customer needs. This led to an increased focus on the supply base and the responsibilities of purchasing. Managers also realized that producing a quality product was not enough. Getting the right products and services to customers at the right time, cost, place, condition, and quantity constituted an entirely new type of challenge. More recently, new technology has spawned a whole set of time-reducing information technologies and logistics networks aimed at meeting these new challenges. The availability of low-cost alternatives has led to unprecedented shifts toward outsourcing and offshoring. The impact of China as a major world competitor poses tremendous challenges for U.S. firms in both the manufacturing and services sectors. Because the services sector now accounts for over 70% of the Gross Domestic Product, new strategies are required for effective supply management in this sector.

All these changes have made 21st-century organizations realize how important it is to manage their supply base. They must be involved in the management of (or at least take a serious interest in) the suppliers that provide materials and services. They must also be concerned with the network of downstream firms responsible for delivery and aftermarket service of the product to the end customer. From this realization emerged the concept of the supply chain and supply chain management.

Several factors are driving an emphasis on supply chain management. First, the *cost and availability of information resources* between entities in the supply chain allow easy linkages that eliminate time delays in the network. Second, the *level of competition* in both domestic and international markets requires organizations to be fast, agile, and flexible. Third, *customer expectations and requirements* are becoming much more demanding. Fourth, the *ability of an organization's supply chain to react rapidly* to major disruptions in both supply and downstream product or services will lessen the impact on lost sales. As demands increase, organizations and their suppliers must be responsive or face the prospect of losing market share. Competition today is no longer between firms, it is between the supply chains of those firms. The companies that configure the best supply chains will be the market winners and gain competitive advantage.

Why Purchasing Is Important

As companies struggle to increase customer value by improving performance, many companies are turning their attention to purchasing and supply management. Consider, for example, CSX, the company featured at the beginning of this chapter. Over 40% of the total sales of CSX is expended with suppliers for the purchase of materials and services. It does not take a financial genius to realize the impact that suppliers can have on a firm's total cost. Furthermore, many features that make their way

into final products originate with suppliers. The supply base is an important part of the supply chain. Supplier capabilities can help differentiate a producer's final good or service.

In the manufacturing sector the percentage of purchases to sales averages 55%. This means that for every dollar of revenue collected on goods and services sales, more than half goes back to suppliers. It is not difficult to see why purchasing is clearly a major area for cost savings. However, savings come in different forms; the traditional approach is to bargain hard for price reductions. A newer approach is to build relations with suppliers to jointly pull costs out of the product or service.

A three-year study within the automobile industry studied the extent to which major producers emphasized relationships. The results showed a clear difference in the approach taken to managing suppliers. When suppliers were asked to rate their automobile customers, the Japanese transplants Toyota, Honda, and Nissan were all above the median on their "Supplier Relations Working Index" score, whereas Chrysler, Ford, and General Motors were rated below the median. This says something about how suppliers perceive the dominant purchasing philosophy of these large automobile companies. The 17-category index measured key supplier relationship parameters including relationship development and communications. Out of a maximum score of 500, Toyota was first with an index score of 399, while General Motors was last with a score of 144. The superior management of supplier relationships has helped give Japanese automobile producers a cost advantage over Detroit's Big Three.[2]

Purchasing and supply management also has a major impact on product and service quality. In many cases, companies are seeking to increase the proportion of parts, components, and services they outsource in order to concentrate on their own areas of specialization and competence. This further increases the importance of the relationships between purchasing, external suppliers, and quality.

The following example illustrates this important link between supplier quality and product quality. Heparin is a main ingredient in products for patients requiring dialysis and medicines that prevent blood clots during surgery and thin the blood. Heparin has recently come under suspicion in the deaths of four Americans and allergic reactions from another 350 patients who obtained heparin from Baxter International. Interestingly, more than half of the world's heparin comes from China. The recent deaths have highlighted the need to control sourcing accountability. One of the key ingredients in the process of making heparin is pulp extracted from pig intestines, which is then heated in large vats. This key ingredient is widely sourced in small, poorly regulated Chinese factories. For example, one Chinese firm, Yuan Intestine and Casing Factory, also manufactures sausage casings. Baxter buys its heparin from Scientific Protein. The president of Scientific Protein says it can't trace its supplies in China as well as it can in the United States. The example illustrates the importance of the supplier selection process and its role in the entire supply chain, from raw material to finished product. This example further illustrates how lapses in managing supplier quality can potentially tarnish a firm's reputation.[3]

Purchasing, acting as the liaison between suppliers and engineers, can also help improve product and process designs. For example, companies that involve suppliers early, compared to companies that do not involve suppliers, achieve an average 20% reduction in materials cost, 20% improvement in material quality, and 20% reduction in product development time. Development teams that include suppliers as members

also report they receive more improvement suggestions from suppliers than teams that do not involve suppliers. Thus involving suppliers early in the design process is a way purchasing can begin to add new value and contribute to increasing their competitiveness.

Many executives will agree that a focus on effective purchasing has become a critical way to gain competitive advantage. An indication of this enhanced reputation and recognition is the higher salaries that are being paid to purchasing professionals. The most recent *Purchasing* magazine salary survey showed an average annual income of $84,611. Interestingly, those with responsibility for sourcing services are among the highest earners in the profession, with an average annual compensation of $104,110. Purchasers who buy IT goods and services make $101,104, and those purchasing logistics services are compensated $97,802. Additionally, the survey found that purchasers continue to make more when compared to their colleagues in other related fields, such as logistics and engineering. Eighty percent of purchasing executives made over $100,000, with bonuses averaging over 13% of base salaries.[4]

Understanding the Language of Purchasing and Supply Chain Management

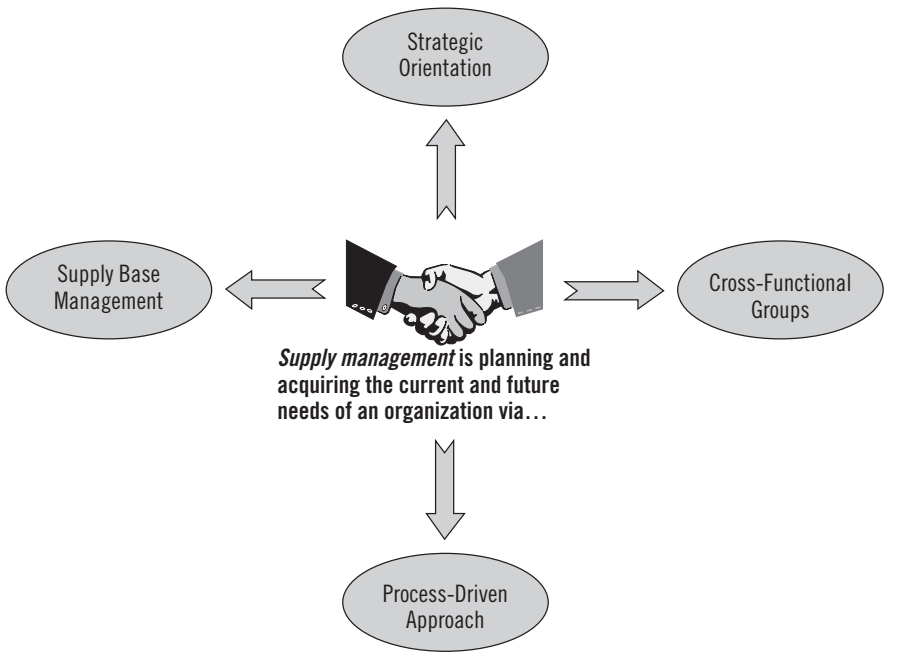
Anyone who has written about purchasing and supply chain management has defined the various terms associated with these concepts one way or another, making confusion about the subjects a real possibility. How, for example, is purchasing different from supply management? Are supply chains and value chains the same? What is supply chain management? What is an extended enterprise? It is essential to define various terms before proceeding with this book.

Purchasing and Supply Management

We need to recognize the differences between purchasing and supply management. **Purchasing** is a functional group (i.e., a formal entity on the organizational chart) as well as a functional activity (i.e., buying goods and services). The purchasing group performs many activities to ensure it delivers maximum value to the organization. Examples include supplier identification and selection, buying, negotiation and contracting, supply market research, supplier measurement and improvement, and purchasing systems development. Purchasing has been referred to as doing "the five rights": getting the right quality, in the right quantity, at the right time, for the right price, from the right source. In this text we will interchange the terms "purchasing" and "procurement."

Supply management is not just a new name for purchasing but a more inclusive concept. We feel **supply management** is a *strategic approach to planning for and acquiring the organization's current and future needs through effectively managing the supply base, utilizing a process orientation in conjunction with cross-functional teams (CFTs) to achieve the organizational mission.* Similar to our definition, the Institute for Supply Management defines supply management *as the identification, acquisition, access, positioning, and management of resources and related capabilities an organization needs or potentially needs in the attainment of its strategic objectives.*[5] Exhibit 1.1 depicts the key elements in our definition of supply management.

Exhibit 1.1 Defining Supply Management



Supply management requires pursuing **strategic responsibilities**, which are those activities that have a major impact on longer-term performance of the organization. These longer-term responsibilities are not pursued in isolation, but should be aligned with the overall mission and strategies of the organization. These strategies exclude routine, simple, or day-to-day decisions that may be part of traditional purchasing responsibilities. The routine ordering and follow-up of basic operational supplies is not a strategic responsibility. The development of the systems that enable internal users to order routine supplies, however, is considerably more important.

Supply management is a broader concept than purchasing. Supply management is a progressive approach to **managing the supply base** that differs from a traditional arm's-length or adversarial approach with sellers. It requires purchasing professionals to work directly with those suppliers that are capable of providing world-class performance and advantages to the buyer. Think of supply management as a progressive and supercharged version of basic purchasing.

Supply management often takes a **process approach** to obtaining required goods and services. We can describe supply management as the process of identifying, evaluating, selecting, managing, and developing suppliers to realize supply chain performance that is better than that of competitors. We will interchange the terms "supply management" and "strategic sourcing" throughout this book.

Supply management is **cross-functional**, meaning it involves purchasing, engineering, supplier quality assurance, the supplier, and other related functions working together as one team, early on, to further mutual goals.[6] Instead of adversarial relationships, which characterize traditional purchasing, supply management features a long-term win-win relationship between a buying company and specially selected suppliers. Except for ownership, the supplier almost becomes an extension of the buying company. Supply management also involves concrete, on-site, and frequent help to suppliers in exchange for dramatic and continuous performance improvements, including steady price reductions. In short, supply management is a new way of operating, involving internal operations and external suppliers to achieve advances in cost management, product development, cycle times, and total quality control.

Organizationally, leading and coordinating strategic supply management activities has largely become the responsibility of the functional group called purchasing. Practicing professionals often use the terms "supply management" and "purchasing" interchangeably. Through the above discussion we have sought to clarify some of the differences while recognizing that good purchasing and supply management practices can have significant impact on the organization's overall performance.

Supply Chains and Value Chains

Over time, researchers and practitioners have developed dozens of definitions to describe supply chains and supply chain management. One group of researchers has indicated that defining supply chain management both as a philosophy and as a set of operational activities[7] creates confusion. These researchers break down the concept into three areas and separate supply chain orientation from supply chains and from supply chain management.

A **supply chain orientation** is a higher-level recognition of the strategic value of managing operational activities and flows within and across a supply chain. A **supply chain** is a set of three or more organizations linked directly by one or more of the upstream or downstream flows of products, services, finances, and information from a source to a customer. **Supply chain management**, then, endorses a supply chain orientation and involves proactively managing the two-way movement and coordination of goods, services, information, and funds (i.e., the various flows) from raw material through end user. According to this definition, supply chain management requires the coordination of activities and flows that extend across boundaries. Organizations that endorse a supply chain orientation are likely to emphasize supply chain management.[8]

Regardless of the definition or supply chain perspective used, we should recognize that supply chains are composed of interrelated activities that are internal and external to a firm. These activities are diverse in their scope; the participants who support them are often located across geographic boundaries and often come from diverse cultures.

Although many activities are part of supply chain management (which a later section discusses), an improved perspective visualizes supply chains as composed of processes rather than discrete, often poorly aligned activities and tasks. A process consists of a set of interrelated tasks or activities designed to achieve a specific objective or outcome. New-product development (NPD), customer-order fulfillment, supplier evaluation and selection, and demand and supply planning are examples of critical organizational processes that are part of supply chain management. Recent

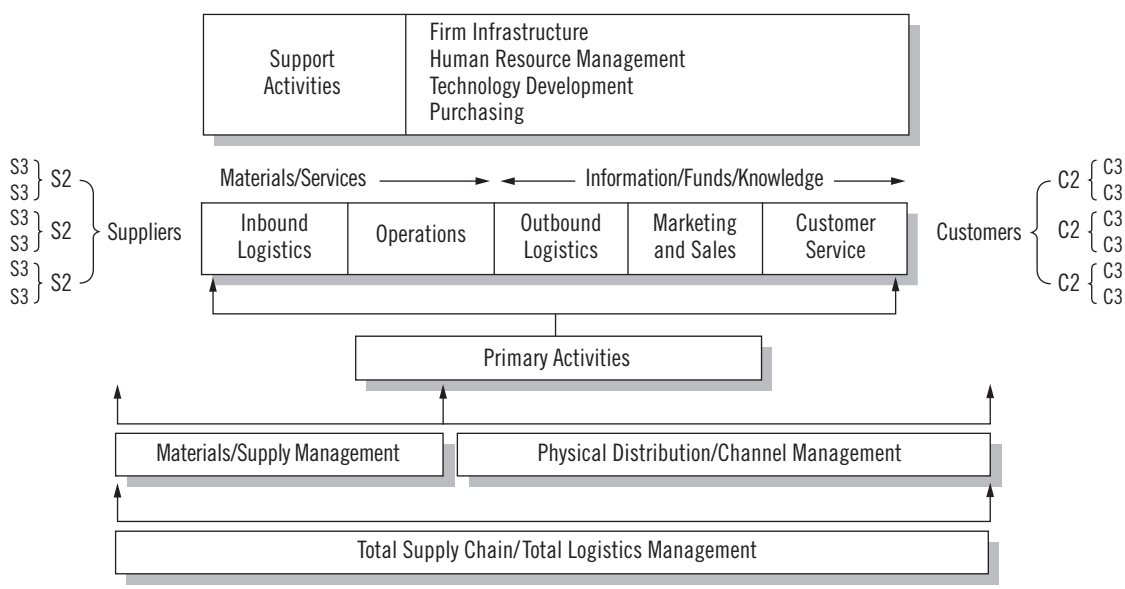
product recalls of consumer products such as toys, peanut butter, and dog food have placed increasing emphasis on a new supply chain concept: the reverse supply chain; its goal is to rapidly identify and return these tainted products back through the supply chain.

Conceiving of supply chains as a series of systematic processes makes sense for a number of reasons. Almost by definition, processes usually move across functional boundaries, which aligns well with a supply management and supply chain orientation. Well-communicated processes also accelerate learning as participants become familiar with a defined process. Furthermore, formal supply chain processes can "build in" best practices and knowledge that enhance the likelihood of success. Perhaps most importantly, organizations can document, measure, and improve their supply chain processes.

A question that often arises, and one that has no definite answer, involves the difference between a value chain and a supply chain. Michael Porter, who first articulated the value chain concept in the 1980s, argues that a firm's **value chain** is composed of primary and support activities that can lead to competitive advantage when configured properly. Exhibit 1.2 presents a modified version of Porter's value chain model. This exhibit also defines some important supply chain–related terms and places them in their proper context.

One way to think about the difference between a value chain and supply chain is to conceptualize the supply chain as a subset of the value chain. All personnel within an organization are part of a value chain. The same is not true about supply chains. The primary activities, or the horizontal flow across Exhibit 1.2, represent the operational part of the value chain, or what some refer to as the supply chain. At an organizational level, the value chain is broader than the supply chain, because it includes all

Exhibit 1.2 The Extended Value Chain



activities in the form of primary and support activities. Furthermore, the original value chain concept focused primarily on internal participants, whereas a supply chain, by definition, is both internally and externally focused.

To reflect current thinking, we must expand the original value chain model, which focused primarily on internal participants, to include suppliers and customers who reside well upstream and downstream from the focal organization. Multiple levels of suppliers and customers form the foundation for the **extended value chain** or the **extended enterprise** concept, which states that success is a function of effectively managing a linked group of firms past first-level suppliers or customers. In fact, progressive firms understand that managing cost, quality, and delivery requires attention to suppliers that reside several tiers from the producer. The extended enterprise concept recognizes explicitly that competition is no longer between firms but rather between coordinated supply chains or networks of firms.

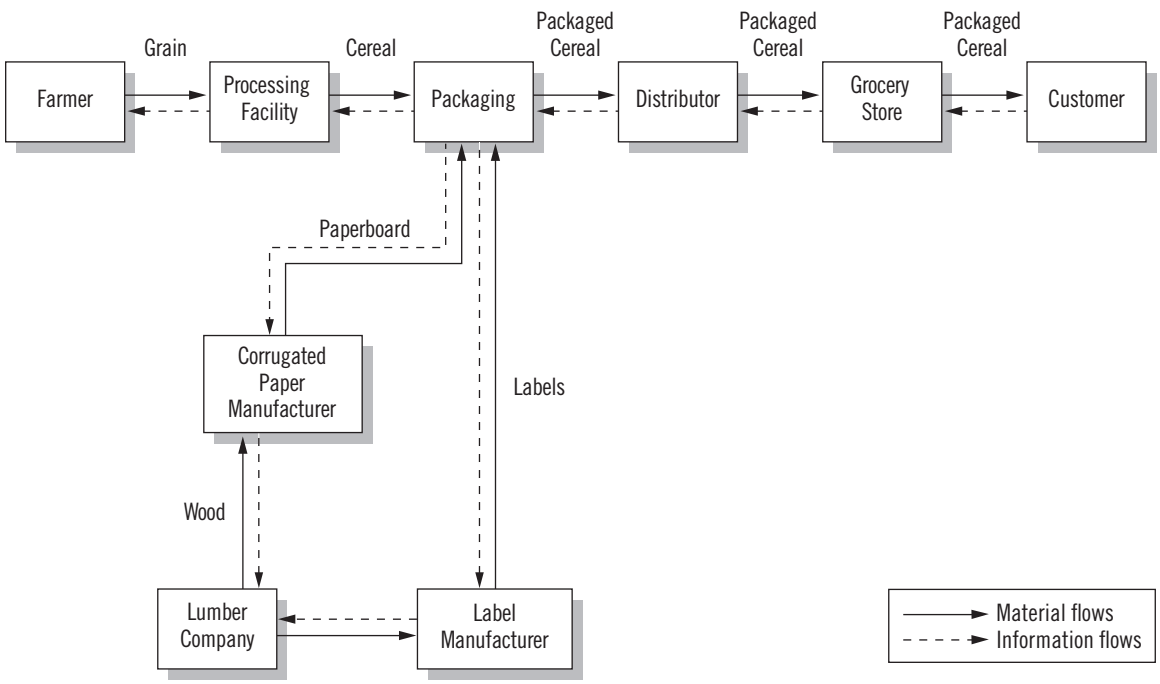
Notice that Exhibit 1.2 identifies purchasing as a support activity. This means that purchasing provides a service to internal customers. Although purchasing is the central link with suppliers that provide direct materials, which is the upstream or left-hand side of Exhibit 1.2, purchasing can support the materials and service requirements of any internal group. (Direct materials are those items provided by suppliers and used directly during production or service delivery.) Purchasing is becoming increasingly responsible for sourcing indirect goods and services required by internal groups. Examples of indirect items include personal computers, office and janitorial supplies, health care contracts, transportation services, advertising and media, and travel. Although indirect items are not required for production, they are still vital to the effective running of an organization. The right-hand side of the model illustrates the customer, or downstream, portion of the supply chain. Because meeting or exceeding customer expectations is the lifeblood of any organization, it should become the focal point of supply chain activities. Exhibit 1.2 presents a relatively straightforward and linear view of the value and supply chain, which is often not the case. First, the flows of materials, information, funds, and knowledge across a supply chain are often fragmented and uncoordinated. The "hand-off" points from one group to the next or from one organization to the next usually provide opportunity for improvements. Second, the value chain model shows suppliers linking with inbound logistics and then operations. Although this is usually the case with direct materials, indirect items and finished goods sourced externally can result in suppliers delivering to any part of the supply chain.

Supply Chains Illustrated

The increasing importance of supply chain management is forcing organizations to rethink how their purchasing and sourcing strategies fit with and support broader business and supply chain objectives. Supply chains involve multiple organizations as we move toward the raw material suppliers or downstream toward the ultimate customer. Simple supply chains pull materials directly from their origin, process them, package them, and ship them to consumers.

A good example of a simple supply chain involves cereal producers (see Exhibit 1.3). A cereal company purchases the grain from a farmer and processes it into cereal. The cereal company also purchases the paperboard from a paper manufacturer, which purchased the trees to make the paper, and labels from a label manufacturer, which purchased semifinished label stock to make the labels. The cereal is then packaged and sent to a distributor, which in turn ships the material to a grocer, who then

Exhibit 1.3 A Cereal Manufacturer's Supply Chain



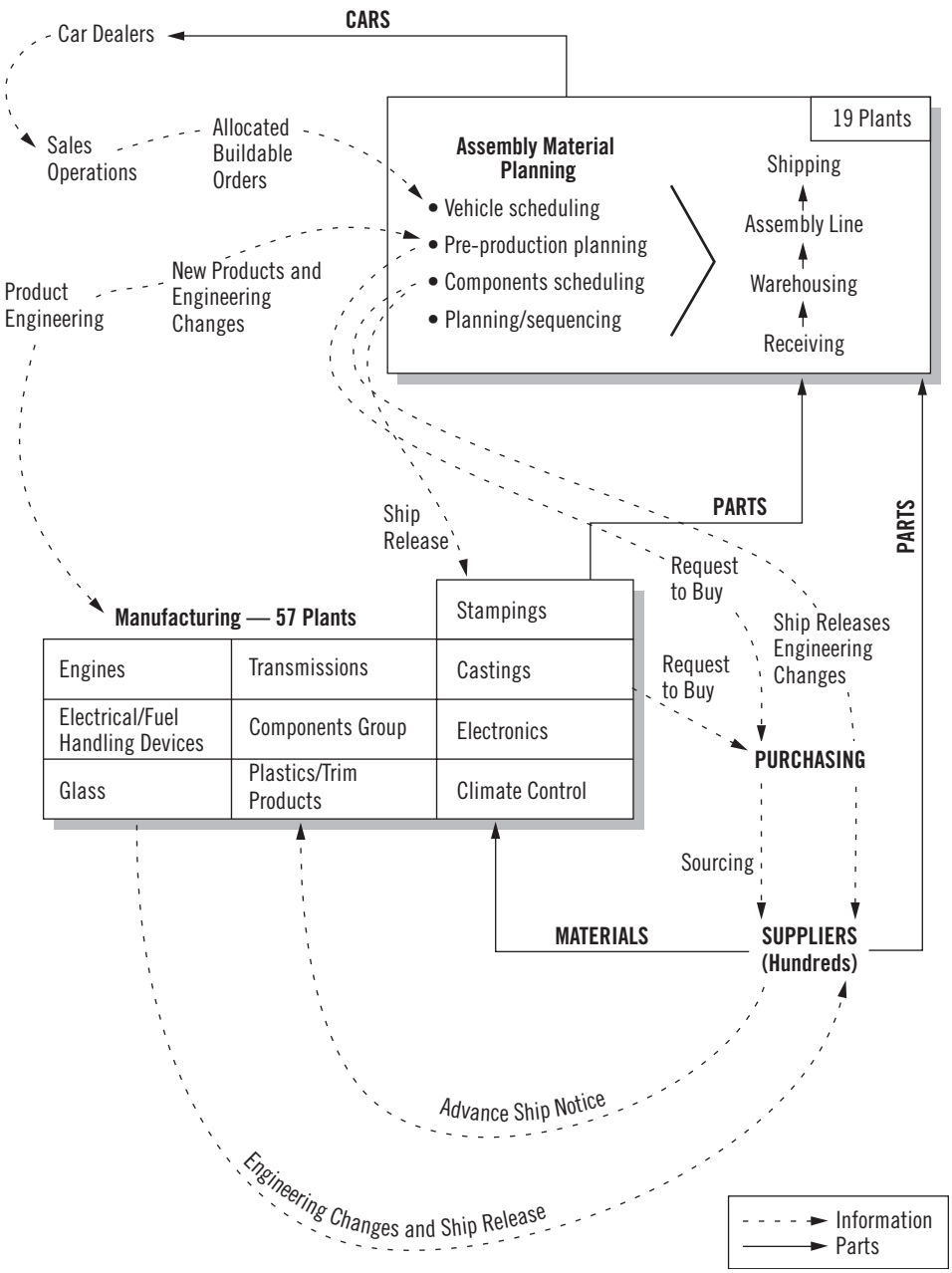
sells it to an end customer. Even for a simple product such as cereal, the number of transactions and of material and information flows can be considerable.

The supply chain for the cereal manufacturer features an extensive distribution network that is involved in getting the packaged cereal to the final customer. Within the downstream portion of the supply chain, logistics managers are responsible for the actual movement of materials between locations. One major part of logistics is transportation management, involving the selection and management of external carriers (trucking companies, airlines, railroads, shipping companies) or the management of internal private fleets of carriers. Distribution management involves the management of packaging, storing, and handling of materials at receiving docks, warehouses, and retail outlets.

For products such as automobiles, which feature multiple products, technologies, and processes, the supply chain becomes more complicated. The materials, planning, and logistics supply chain for an automotive company is shown in Exhibit 1.4 on p. 14, which illustrates the complexity of the chain, spanning from automotive dealers back through multiple levels or tiers of suppliers. The automotive company's supplier network includes the thousands of firms that provide items ranging from raw materials, such as steel and plastics, to complex assemblies and subassemblies, such as transmissions, brakes, and engines.

Participants in a supply chain are willing to share such information only when there is trust between members. Thus, the management of relationships with other

Exhibit 1.4 An Automotive Supply Chain: The Role of Materials Planning and Logistics in the Production and Delivery System



parties in the chain becomes paramount. Organizations are effectively forming new types of relationships (sometimes called "partnerships" or "alliances") that require shared resources. For instance, organizations may provide dedicated capacity, specific information, technological capabilities, or even direct financial support to other members of their supply chain so that the entire chain can benefit.

Achieving Purchasing and Supply Chain Benefits

When the pieces come together, can assuming a supply chain orientation with the right kinds of activities really produce the results envisioned by proponents? Consider the rebirth of Apple Computer, which had *BusinessWeek* asking in 1997, "Is Apple mincemeat?" Apple made a great comeback through an impressive, steady stream of new and innovative products such as the iPod, iPod Nano, and iPhone. Apple has re-engineered itself from being considered "mincemeat" to now once again being the "darling of Wall Street."[9] Facilitating this turnaround was Apple's pursuit of an impressive array of purchasing and supply chain activities to manage product demand, inventory investment, channel distribution, and supply chain relationships. The company reduced its product line by almost half, forecasted sales weekly instead of monthly with daily adjustments to production, and relied on suppliers to manage inventory for standard parts and components. Apple also formalized a partnership with a supplier to build components close to Apple facilities with just-in-time (JIT) delivery, created a direct ship distribution network through the Web, and simplified its finished goods distribution channel. Because of these activities, Apple now rivals, and sometimes exceeds, Dell Computer in terms of supply chain performance.

The Supply Chain Umbrella

A large set of activities besides purchasing is part of supply chain management. Each of these seemingly diverse activities has one important feature in common—it is part of a network that will define how efficiently and effectively goods and information flow across a supply chain. Although the need to perform supply chain–related activities has been present for many years, it is an organization's willingness to align, coordinate, integrate, and synchronize these activities and flows that is relatively new. What are the activities that are part of this concept called supply chain management?

Management Activities

Purchasing

Most organizations include purchasing as a major supply chain activity. Because purchasing is the central focus of this book, there is no need to provide more detail here.

Inbound Transportation

Larger organizations usually have a specialized traffic and transportation function to manage the physical and informational links between the supplier and the buyer. For some organizations, transportation is the single largest category of single costs,

especially for highly diversified organizations. Although a firm may have minimal common purchase requirements among its operating units, there usually are opportunities to coordinate the purchase of transportation services.

Quality Control

Quality control has taken on increased importance during the last 15 years. Almost all organizations recognize the importance of supplier quality and the need to prevent, rather than simply detect, quality problems. The emphasis has shifted from detecting defects at the time of receipt or use to prevention early in the materials-sourcing process. Progressive organizations work directly with suppliers to develop proper quality control procedures and processes.

Demand and Supply Planning

Demand planning identifies all the claims (or demand) on output. This includes forecasts of anticipated demand, inventory adjustments, orders taken but not filled, and spare-part and aftermarket requirements. Supply planning is the process of taking demand data and developing a supply, production, and logistics network capable of satisfying demand requirements.

Receiving, Materials Handling, and Storage

All inbound material must be physically received as it moves from a supplier to a purchaser. In a non-just-in-time environment, material must also be stored or staged. Receiving, materials handling, and storage are usually part of the materials management function because of the need to control the physical processing and handling of inventory. Receipts from users indicating that services have been performed are also run through receiving to trigger invoice payment.

Materials or Inventory Control

The terms "materials control" and "inventory control" are sometimes used interchangeably. Within some organizations, however, these terms have different meanings. The materials control group is often responsible for determining the appropriate quantity to order based on projected demand and then managing materials releases to suppliers. This includes generating the materials release, contacting a supplier directly concerning changes, and monitoring the status of inbound shipments. Materials control activities are sometimes the responsibility of the purchasing department, particularly in smaller organizations.

The inventory control group is often responsible for determining the inventory level of finished goods required to support customer requirements, which emphasizes the physical distribution (i.e., outbound or downstream) side of the supply chain. Integrated supply chain management requires that the materials and inventory control groups coordinate their efforts to ensure a smooth and uninterrupted flow to customers.

Order Processing

Order processing helps ensure that customers receive material when and where they require it. Problems with order processing have involved accepting orders before determining if adequate production capacity is available, not coordinating order processing with order scheduling, and using internal production dates rather than the

customer's preferred date to schedule the order. Order processing is an important part of supply chain management—it represents a link between the producer and the external customer.

Production Planning, Scheduling, and Control

These activities involve determining a time-phased schedule of production, developing short-term production schedules, and controlling work-in-process production. The production plan often relies on forecasts from marketing to estimate the volume of materials that are required over the near term. Because operations is responsible for carrying out the production plan and meeting customer order due dates, order processing, production planning, and operations must work together closely.

Warehousing/Distribution

Before a product heads to the customer, it may be stored for a period in a warehouse or distribution center. This is particularly true for companies that produce according to a forecast in anticipation of future sales. Increasingly, as companies attempt to make a product only after receiving a customer order, this part of the supply chain may become less important.

Shipping

This activity involves physically getting a product ready for distribution to the customer. This requires packing to prevent damage, completing any special labeling requirements, completing the required shipping documents, and/or arranging transportation with an approved carrier. For obvious reasons, shipping and outbound transportation must work together closely.

Outbound Transportation

Fewer organizations "own" the transportation link to their customers, compared with just a few years ago. Increasingly, full-service transportation providers are designing and managing entire distribution networks for their clients.

Customer Service

Customer service includes a wide set of activities that attempt to keep a customer satisfied with a product or service. The three primary elements of customer service are pre-transaction, transaction, and post-transaction activities.

Four Enablers of Purchasing and Supply Chain Management

Now that we have a better understanding of the terminology surrounding purchasing and supply chain management, we must recognize that excellence in these areas does not just happen. What separates firms that achieve real benefits from those that fail to reap any benefits is a commitment to the four enablers of purchasing and supply chain excellence. These enablers provide the support that makes the development of progressive strategies and approaches possible. Later chapters present these four areas in detail.

Exhibit 1.5 Four Pillars of Purchasing and Supply Chain Excellence

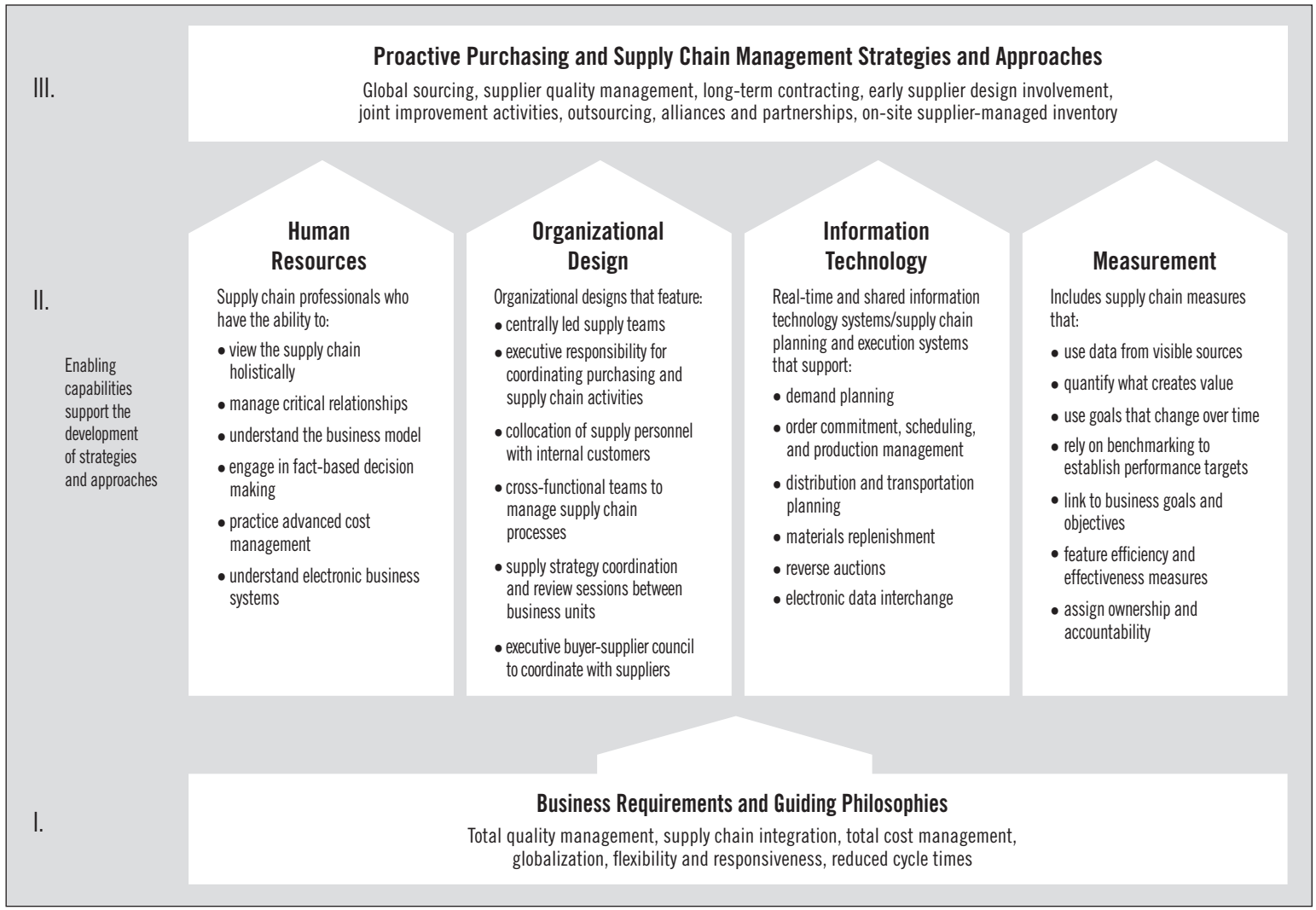


Exhibit 1.5 presents the four enablers of purchasing and supply chain excellence. This model shows that firms have certain guiding philosophies and business requirements that are the foundation of all supply chain activities. These guiding philosophies and requirements may relate to areas such as globalization, customer responsiveness, or supply chain integration. The four enablers, in turn, support the development of strategies and approaches that not only align with an organization's philosophies and requirements but also support the attainment of purchasing, supply chain, and organizational objectives and strategies.

Capable Human Resources

The key to the success of any company is the quality of its employees. This is certainly true for purchasing. Exhibit 1.5 identifies, from focus group research, the various kinds of knowledge and skills demanded of today's supply chain professional. The knowledge and skills that purchasing and supply chain professionals require are different from just a few years ago. Recent research indicated that the top five knowledge areas for purchasers of the future were (1) supplier relationship management, (2) total cost analysis, (3) purchasing strategies, (4) supplier analysis, and (5) competitive market analysis.[10] Effective supply chain management requires close collaboration with suppliers as well as internal coordination with engineering, procurement, logistics, customers, and marketing to coordinate activities and material flows across the supply chain. These relationships with key suppliers become the basis for purchasing strategies. The Babson College Good Practice Example illustrates how suppliers and the college benefit from developing these strong ties. Developing strong ties often requires purchasers to take a more entrepreneurial approach to running their business.

Cost-management skills are becoming more important. With an inability to raise prices to customers, cost management becomes essential to longer-term success. Purchasing specialists at a major U.S. chemical company, for example, evaluate major supply decisions using total cost models with data provided by suppliers and other sources. Another company requires its teams to identify upstream cost drivers past immediate suppliers, which the teams then target for improvement. Cost management has become an integral part of purchasing and supply chain management. These analyses of total cost are then imposed upon the market situation and analysis of supplier capabilities to arrive at an overall purchasing strategy.

Gaining access to the right skills will require a sound human-resources strategy that includes internal development of high-potential individuals, recruiting talent from other functional groups or companies, and hiring promising college graduates. This occurs to satisfy one primary objective—ensuring that qualified participants are available to support purchasing and supply chain requirements.

Proper Organizational Design

Organizational design refers to the process of assessing and selecting the structure and formal system of communication, division of labor, coordination, control, authority, and responsibility required to achieve organizational goals and objectives, including supply chain objectives.[11] Although formal charts illustrate an organization's formal design, they also present an incomplete picture. Organizational design is much more than a series of lines and boxes across a chart.[12] Exhibit 1.5 highlights the more important features that promote the achievement of purchasing objectives.[13]

The use of teams as part of supply chain design will continue to be important. However, managers should use teams selectively. Few studies have established a clear connection between teaming and higher performance, and even fewer have quantitatively assessed the impact of teaming on corporate performance. The use of organizational work teams to support purchasing and supply chain objectives does not guarantee greater effectiveness.

Real-Time and Shared Information Technology Capabilities

The development of information technology (IT) software and platforms that support an end-to-end supply chain have grown rapidly in the 21st century, as have identification technologies such as radio frequency identification (RFID). These technologies allow enhanced collaboration between the parties in the supply chain. One example of this is highlighted by the mission of e-supply chain company EPIC: "EPIC delivers a comprehensive product line that enhances enterprise profit margins through collaboration and real-time connectivity."[14] Software packages that are gaining the attention of purchasers include e-purchasing suites (see Chapter 18), which have become popular with firms. Two primary supply chain applications involved in supply chain collaboration that involve purchasing are supply chain planning and supply chain execution. Planning software seeks to improve forecast accuracy, optimize production scheduling, reduce working capital costs, shorten cycle times, cut transportation costs, and improve customer service. Execution software helps obtain materials and manage physical flows from suppliers through downstream distribution to ensure that customers receive the right products at the right location, time, and cost.

Regardless of the type of information technology platform or software used, supply chain systems should capture and share information across functional groups and organizational boundaries on a real-time or near-real-time basis. This may involve transmitting the location of transportation vehicles using global positioning systems (GPSs), using Internet-based systems to transmit material requirements to suppliers, or using bar code technology to monitor the timeliness of receipts from suppliers. RFID tags are being used in more applications to capture real-time data about material and product movement across the supply chain.

Examples regarding the relationship between information technology and supply chain excellence are not hard to find. TaylorMade adidas has led the golf industry's technological revolution since its founding in 1979. TaylorMade uses supply chain planning and execution software from i2 to optimize its end-to-end supply chain activities. It all starts with demand planning, which is needed to manage TaylorMade's strong yet unpredictable product sales. For example, when a competitor dropped its prices on a new line of titanium drivers, demand spiked much higher than the company anticipated. This resulted in multiple suppliers being required to meet the extra demand at a premium cost. The new system enables improved visibility into demand, which can then be immediately seen by the purchasing function, permitting a more integrated approach to sourcing and reduced inventory. Demand from retail customers is now collected on wireless devices by sales representatives, who then transmit it to the warehouse. If stock is not available at the warehouse, then another wireless transmission is made to the TaylorMade facility. This may require purchasing action to obtain the desired components to complete the order. By sharing demand forecasts with suppliers, every member of the chain now has demand visibility, allowing better planning on all fronts. Suppliers now can look ahead and improve

their schedules and TaylorMade gets shipments of items that are needed to satisfy customer requirements with less inventory. One of TaylorMade's executives sums it up: "In the past we never really knew how much we were going to sell in one period; as a result we built up inventory to guard against placing customers on backorder."[15]

Right Measures and Measurement Systems

The right measures and measurement systems represent the fourth pillar supporting purchasing and supply chain excellence. Unfortunately, there are many roadblocks between measurement and improved performance. Some of these include (1) too many metrics, (2) debate over the correct metrics, (3) constantly changing metrics, and (4) old data.[16] Overcoming these roadblocks requires that the organization know what it wants to measure, has a process in place to measure it, and has accessibility to the right data. The next step involves taking action on the measurement data.[17] Finally, as with any planning system, the targets are revised to reflect the realities of the marketplace, competition, and changing goals of the organization.

Why is measurement so important? First, objective measurement supports fact-based rather than subjective decision making. Secondly, measurement is also an ideal way to communicate requirements to other supply chain members and to promote continuous improvement and change. When suppliers know their performance is being monitored, they are likely to perform better. Many firms use the measurement system not only to improve future supplier performance but also to recognize outstanding performance. For example, United Technologies awarded two suppliers its "General Procurement Key Supplier Award."[18] Measurement also conveys what is important by linking critical measures to desired business outcomes. The measurement process also helps determine if new initiatives are producing the desired results. Finally, measurement may be the single best tool to control purchasing and supply chain activities and processes.

Although there is no definitive or prescriptive set of supply chain measures, and there certainly is no one best way to measure supply chain performance, we do know that effective measures and measurement systems satisfy certain criteria. These criteria, which Exhibit 1.5 summarizes, provide a set of principles with which to assess supply chain measures and measurement systems.

These four enablers support the pursuit of progressive approaches and strategies that begin to define purchasing and supply chain excellence. If organizations ignore these areas, they will see their ability to develop progressive practices and approaches fall short of competitors that have stressed these enabling areas.

The Evolution of Purchasing and Supply Chain Management

There have been more changes affecting purchasing over the last 15 years than over the previous 125 years. To appreciate how we arrived at where we are today requires a brief understanding of the evolution of purchasing and supply chain management, although some might argue the last 15 years resembled a revolution. This evolution covers seven periods spanning the last 150 years.

Period 1: The Early Years (1850–1900)

Some observers define the early years of purchasing history as beginning after 1850. There is evidence, however, that the purchasing function received attention before this date. Charles Babbage's book on the economy of machinery and manufacturers, published in 1832, referred to the importance of the purchasing function. Babbage also alluded to a "materials man" responsible for several different functions. Babbage wrote that a central officer responsible for operating mines was "a materials man who selects, purchases, receives, and delivers all articles required."[19]

In the textile industry, the selling agent often handled purchasing and was also responsible for the output, quality, and style of the cloth. The selling agent was responsible for all purchasing decisions, because the grade of cotton purchased was a factor in determining the quality of the cloth produced. Customer orders were transformed into purchase orders (POs) for cotton and subsequently into planned production.[20]

The greatest interest in and development of purchasing during the early years occurred after the 1850s. During this period, the growth of American railroads made them one of the major forces in the economy. Railroads were vital to the country's ability to move goods from the more developed Eastern and Midwestern markets to less developed Southern and Western markets. By 1866, the Pennsylvania Railroad had given the purchasing function departmental status, under the title of Supplying Department. A few years later, the head purchasing agent at the Pennsylvania Railroad reported directly to the president of the railroad. The purchasing function was such a major contributor to the performance of the organization that the chief purchasing manager had top managerial status.[21]

The comptroller of the Chicago and Northwestern Railroad wrote the first book exclusively about the purchasing function, *The Handling of Railway Supplies—Their Purchase and Disposition,* in 1887. He discussed purchasing issues that are still critical today, including the need for technical expertise in purchasing agents along with the need to centralize the purchasing department under one individual. The author also commented on the lack of attention given to the selection of personnel to fill the position of purchasing agent.

The growth of the railroad industry dominated the early years of purchasing development. Major contributions to purchasing history during this period consisted of early recognition of the purchasing process and its contribution to overall company profitability. The late 1800s signaled the beginning of organizing purchasing as a separate corporate function requiring specialized expertise. Before this period, this separation did not exist.

Period 2: Growth of Purchasing Fundamentals (1900–1939)

The second period of purchasing evolution began around the turn of the 20th century and lasted until the beginning of World War II. Articles specifically addressing the industrial purchasing function began appearing with increasing regularity outside the railroad trade journals. Engineering magazines in particular focused attention on the need for qualified purchasing personnel and the development of materials specifications.

This era also witnessed the development of basic purchasing procedures and ideas. In 1905 the second book devoted to purchasing—and the first nonrailroad

purchasing book—was published. *The Book on Buying* contained 18 chapters, each written by a different author.[22] The editors devoted the first section of the book to the "principles" of buying. The second section described the forms and procedures used in various company purchasing systems.

Purchasing gained importance during World War I because of its role in obtaining vital war materials. Purchasing's central focus during this period was on the procurement of raw material versus buying finished or semifinished goods. Ironically, the years during World War I featured no publication of any major purchasing books. Harold T. Lewis, a respected purchasing professional during the 1930s through the 1950s, noted that there was considerable doubt about the existence of any general recognition of purchasing as being important to a company. Lewis noted that from World War I to 1945, at least a gradual if uneven recognition developed of the importance of sound procurement to company operation.

Period 3: The War Years (1940–1946)

World War II introduced a new period in purchasing history. The emphasis on obtaining required (and scarce) materials during the war influenced a growth in purchasing interest. In 1933, only nine colleges offered courses related to purchasing. By 1945, this number had increased to 49 colleges. The membership of the National Association of Purchasing Agents increased from 3,400 in 1934 to 5,500 in 1940 to 9,400 in the autumn of 1945. A study conducted during this period revealed that 76% of all purchase requisitions contained no specifications or stipulation of brand. This suggested that other departments within the firm recognized the role of the purchasing agent in determining sources of supply.[23]

Period 4: The Quiet Years (1947–Mid-1960s)

The heightened awareness of purchasing that existed during World War II did not carry over to the postwar years. John A. Hill, a noted purchasing professional, commented about the state of purchasing during this period: "For many firms, purchases were simply an inescapable cost of doing business which no one could do much about. So far as the length and breadth of American industry is concerned, the purchasing function has not yet received in full measure the attention and emphasis it deserves."[24]

Another respected purchasing professional, Bruce D. Henderson, also commented about the state of affairs facing purchasing. In his words, "Procurement is regarded as a negative function—it can handicap the company if not done well but can make little positive contribution."[25] He noted that purchasing was a neglected function in most organizations because it was not important to mainstream problems. He went on to say that some executives found it hard to visualize a company becoming more successful than its competitors because of its superior procurement.

Articles began appearing during this period describing the practices of various companies using staff members to collect, analyze, and present data for purchasing decisions. Ford Motor Company was one of the first private organizations to establish a commodity research department to provide short- and long-term commodity information.[26] Ford also created a purchase analysis department to give buyers assistance on product and price analysis.

The postwar period saw the development of the value analysis (VA) technique, pioneered by General Electric in 1947. GE's approach concentrated on the evaluation of

which materials or changes in specifications and design would reduce overall product costs. Although important internal purchasing developments occurred during this era, there was no denying that other disciplines such as marketing and finance overshadowed purchasing. The emphasis during the postwar years and throughout the 1960s was on satisfying consumer demand and the needs of a growing industrial market. Furthermore, firms faced stable competition and had access to abundant material —conditions that historically have diminished the overall importance of purchasing. The elements that would normally cause an increase in the importance of purchasing were not present during these quiet years of purchasing history.

Period 5: Materials Management Comes of Age (Mid-1960s–Late 1970s)

The mid-1960s witnessed a dramatic growth of the materials management concept. Although interest in materials management grew during this period, the concept's historical origins date to the 1800s, when U.S. railroads organized under the materials management concept during the latter half of the 19th century. They combined related functions such as purchasing, inventory control, receiving, and stores under the authority of one individual.

External events directly affected the operation of the typical firm. The Vietnam War, for example, resulted in upward price and materials availability pressures. During the 1970s, firms experienced materials problems related to oil "shortages" and embargoes. The logical response of industry was to become more efficient, particularly in the purchase and control of materials.

There was widespread agreement about the primary objective of the materials concept and the functions that might fall under the materials umbrella. The overall objective of materials management was to solve materials problems from a total system viewpoint rather than the viewpoint of individual functions or activities. The various functions that might fall under the materials umbrella included materials planning and control, inventory planning and control, materials and procurement research, purchasing, incoming traffic, receiving, incoming quality control, stores, materials movement, and scrap and surplus disposal.

The behavior of purchasing during this period was notable. Purchasing managers emphasized multiple sourcing through competitive bid pricing and rarely viewed the supplier as a value-added partner. Buyers maintained arm's-length relationships with suppliers. Price competition was the major factor determining supply contracts. The purchasing strategies and behaviors that evolved over the last half century were inadequate when the severe economic recession of the early 1980s and the emergence of foreign global competitors occurred. Overall, the function was relegated to secondary status in many companies. Dean Ammer's classic 1974 article in the *Harvard Business Review* categorized top management's view of purchasing as passive, risk averse, and a dead-end job. Ammer felt overcoming this perception could be accomplished by active purchasing, which is measured in terms of meeting overall company objectives and contributing to bottom-line profitability.[27] He argued that the purchasing executive should be part of non-purchasing decisions, for the entire organization loses when purchasing is not part of the organization's consensus on major decisions.[28] Finally, Ammer suggested that the function should have sufficient stature to report to top management or a division manager. However, this happened in only 37% of his responding firms.[29]

Period 6: The Global Era (Late 1970s–1999)

The global era, and its effect on the importance, structure, and behavior of purchasing, has already proved different from other historical periods. These differences include the following:

- Never in our industrial history has competition become so intense so quickly.
- Global firms increasingly captured world market share and emphasized different strategies, organizational structures, and management techniques compared with their American counterparts.
- The spread and rate of technology change during this period was unprecedented, with product life cycles becoming shorter.
- The ability to coordinate worldwide purchasing activity by using international data networks and the World Wide Web (via intranets) emerged.

This intensely competitive period witnessed the growth of supply chain management. Now, more than ever, firms began to take a more coordinated view of managing the flow of goods, services, funds, and information from suppliers through end customers. Managers began to view supply chain management as a way to satisfy intense cost and other improvement pressures.

Period 7: Integrated Supply Chain Management (Beyond 2000)

Purchasing and supply chain management today reflects a growing emphasis concerning the importance of suppliers. Supplier relationships are shifting from an adversarial approach to a more cooperative approach with selected suppliers. The activities that the modern purchasing organization must put in place are quite different from just a few years ago. Supplier development, supplier design involvement, the use of full-service suppliers, total cost supplier selection, long-term supplier relationships, strategic cost management, enterprisewide systems (enterprise resource planning, or ERP) and integrated Internet linkages and shared databases are now seen as ways to create new value within the supply chain. Purchasing behavior is shifting dramatically to support the performance requirements of the new era.

It is possible to reach three conclusions about 21st-century purchasing. First, the reshaping of purchasing's role in the emerging global economy is under way, in response to the challenges presented by worldwide competition and rapidly changing technology and customer expectations. Second, the overall importance of the purchasing function is increasing, particularly for firms that compete in industries characterized by worldwide competition and rapid change. Third, purchasing must continue to become more integrated with customer requirements, as well as with operations, logistics, human resources, finance, accounting, marketing, and information systems. This evolution will take time to occur fully, but the integration is inevitable.

The history and evolution of purchasing and supply chain management provides an appreciation for the growth, development, and increased stature of the profession over the last 150 years. Each historical period has contributed something unique to the development of purchasing, including the events that have shaped today's emphasis on integrated supply chain management.

Looking Ahead

This book comprises 20 chapters, divided into six parts including this introduction. The remainder of this book addresses the major tasks and challenges facing the modern purchasing professional operating within the context of a dynamic supply chain.

Part 2, *Purchasing Operations and Structure,* Chapters 2 through 5, provides a basic understanding of the functional activity called purchasing. Without a solid understanding of basic purchasing processes and organization, appreciating the important role that purchasing has within a supply chain is difficult.

With this understanding, Part 3, *Strategic Sourcing,* considers how purchasing evaluates, selects, manages, and improves supplier performance. Chapters 6 through 10 present strategic sourcing activities, which are activities that can affect the competitiveness of a firm. The ability to realize advantages from our purchasing and supply efforts requires shifting our view of purchasing from a tactical or clerically oriented activity to one that focuses on strategic supply management.

Part 4, *Strategic Sourcing Process,* recognizes that purchasing professionals must play a major role in improving supply chain performance. Chapters 11 through 15 present an assortment of tools, techniques, and approaches for managing the procurement and sourcing process, including an understanding of contracting and legal issues.

Part 5, *Critical Supply Chain Elements,* deals extensively with the critical elements of integrated supply chains from supplier through customer. The activities and topics presented in Chapters 16 through 19 may or may not be a formal part of the purchasing organization. They are, however, integral stepping stones to effective supply chain management.

The last part, *Future Directions,* contains a single chapter that presents future directions identified during research and experience with many organizations. The trends identified in Chapter 20 help us identify how the field of purchasing and supply chain management is changing, what is behind these changes, and how best to respond. As we move further into the 21st century, this section must change on a continuous basis to reflect the dynamic changes occurring in purchasing and supply chain management.

Good Practice Example

Taking an Entrepreneurial Approach to Purchasing at Babson College

MEET A PURCHASING ENTREPRENEUR

Peter Russo has been an entrepreneur for more than 20 years. His hands-on experience is diverse—everything from founding start-ups in his basement, to serving as chairman of a venture-owned turnaround, to licensing products to billion-dollar companies. He has opened design, sales, and distribution offices in both China and Japan, overseeing the transition of production and materials supply from the United States to China. Russo has also created production methods that are proprietary to the United States, successfully defending them

against competitors with overseas sourcing. He's set up direct consumer selling systems and has developed and sold hundreds of products to America's largest big-box retailers, such as Wal-Mart, Toys "R" Us, and Petco.

So what could entice this serial entrepreneur to leave his own business and become the director of purchasing at Babson College? Considering that Babson has the premier entrepreneurship program in the country, according to *U.S. News and World Report,* it's a perfect partnership. The academic world has traditionally been characterized as somewhat rigid and bureaucratic, following traditional rules and regulations engrained by decades of use or imposed by state legislators, boards of regents, or other governing boards. Purchasing is no exception. It, too, operates in a clerical, paper-intense atmosphere. But true to the very definition of an entrepreneur, Russo believes there is always the ability to innovate, so he decided to come to Babson.

"I undertook the challenge only because Babson encouraged me to take a fresh view," says Russo. "They recognize that providing superior service and value can only be achieved by thinking of supply management as an entrepreneurial business." Russo's approach was to evaluate college purchasing in the same way he evaluated consumer products. "Buying can usually be segmented into buying processes and customer groups," says Russo.

In this discussion, Russo focuses on three buying processes and their associated customers:

1. *Automated buying.* This empowers the customer to independently purchase and manage material from a defined inventory. Office supplies are the best example of this type of purchase.
2. *Competitively bidded buying.* This requires the research and evaluation of multiple options to determine needs, best price, and service levels and is sent to multiple suppliers soliciting their bids. Examples in this category include desktop printers, kitchen equipment, software, and construction materials.
3. *Contracted services.* This buying process involves using the expertise of suppliers that team with the college to provide products used on a daily, ongoing basis, such as dining services and books.

"Our purchasing department is no different from most companies in the private sector," says Russo. As he sees it, today's challenge is twofold:

1. Leverage technology to simplify and automate repetitive activities while capturing and disseminating information/knowledge.
2. Maximize strategic alliances for best practices and supply management in areas that are outside its expertise.

Russo goes on to explain how Babson's purchasing group plans to address these challenges.

PREPARING FOR CHANGE

Among Russo's first endeavors was to reinforce the idea and benefit of centralized purchasing, operating on a foundation of service. "Creating an effective, efficient process requires consistent campuswide use," says Russo. "To achieve this goal, our purchasing department would have to be recognized by our customers as capable of reducing complexity and adding value, knowledge, and skill to the process."

In the past, the typical purchasing process was initiated with the customer coming to the purchasing department with a product and supplier already selected. Overall, the process was fairly manual, with hand-completed paper forms and little use of technology. Everyone knew

that before a purchase order was placed for any significant buy, policy required three bids to be received by the purchasing department. Some thought this process turned the purchasing department into the "purchasing police"—a mindset that Russo feels can be avoided with the proper buying processes. "We want to be viewed as fast and flexible, with creative solutions to sourcing," he says.

Russo inherited an experienced team, led by two veteran staffers with extensive college purchasing experience. "I'm very fortunate," he says, "to have a staff that's not just talented and experienced, but service-minded."

Russo and his team evaluated and modified the buying process to meet the desired format of the customers, but he felt it would also be critical to increase the campus awareness of each new service. Russo also wanted to communicate the staff's knowledge and professionalism. He and two key staff members are currently taking certification training to become Certified Purchasing Managers. Raising the bar higher, Russo has set his sights on attaining the new Certified Professional in Supply Management (CPSM) designation.

"Many of our customers have advanced degrees," says Russo. (It should be added that Russo considers everyone on campus a customer.) "We are obviously in an environment that values expertise," he continues, "but it takes more than education. It takes motivation to enhance credibility. We need to continually increase our level of knowledge, professionalism and service."

TAKING CHARGE OF PROCESS IMPROVEMENTS

In his first few weeks at Babson, Russo realized that his purchasing manager, Anne, and his buyer, Kerrie, were very good at administering the process that was in place. "More importantly, they were well respected by the customers on our campus," he adds. "But I realized that the antiquated, paper-based system they were using needed updating. It was too labor intensive and dependent on the staff's personal knowledge."

The system was weighed down by lengthy procedures and minimal automation, with no capabilities to assimilate current technology-driven processes, thereby creating two obstacles. First, Russo's team was prevented from fully leveraging group buying efficiencies or maximizing product knowledge. Second, Russo was concerned with "what if?" Should one of the purchasing team leave for another job, a major setback would be inevitable.

Speaking with his team, Russo discovered that day-to-day operations required 100% of their attention, leaving little time to enhance the purchasing process. He quickly learned that his talented staff was drowning in paperwork and telephone calls.

The inspiration came in the form of a question: What would you do to fix what isn't working? "My staff really had knowledge of which processes were effective and which needed changes. In many instances they had started to lay out solutions; however, limited time and resources kept the realization of these improvements on perpetual hold," says Russo. "I also believe," Russo continues, "that an effective purchasing process is built upon the customers' desired buying behavior. We realized it was not effective to force customers to change their behavior to meet a purchasing process. Our first steps were to prioritize our objectives, establish our strategies and timelines, and outline measurable goals. Next, we quickly determined what actions could reduce their current workload without risking service levels, so my team could focus on enhancing the process. Then we went into action."

Russo empowered his staffers to get the job done, then let them be. After just six months, their progress was impressive!

AUTOMATING THE EVERYDAY

Kerrie focused on the automated buying processes. She spent many hours at the computer, creating an interactive purchasing website for both internal customers and suppliers. When it's up and running, a new era will begin. Gone will be manual entries and multiple data inputs. POs being faxed across campus and then re-entered by hand into the system will finally be a thing of the past. Customer-friendly, user-driven resource pages will also be in place. The campus will have a master supplier list with links to company websites, eliminating the time-consuming search for basic products and suppliers.

The suppliers will also benefit, with access to complete information on how to do business with Babson and forms for each online process. Best of all, every aspect of the website can be continually refined, adapting to the appropriate circumstances. As their workload is reduced by automation, both the purchasing and accounts payable departments will be able to explore new, improved ways to serve customers.

CLOSING THE BACK DOOR

The underside, if you will, of Babson's entrepreneurial culture is the action-oriented independence of its internal customers. Supply management channels are often overlooked by those who believe "we know what we want, so why do we need central purchasing?" The result has been multiple purchasing of single-need items, lack of safeguards, inconsistent pricing, and contracts. Russo's goal? "To maximize our department's ability to leverage campuswide buying power, benchmark resources, negotiate better terms, eliminate duplicate spending, and manage contract services." He adds, "We haven't forgotten that faculty and staff want maximum freedom in sourcing, so our challenge is to preserve their independence—and still improve the way we manage the $145 million in college spending every year."

Anne put her efforts behind improving the competitively bidded buying process. She started evaluating current campuswide strategies for products and services that were previously made on a single-purchase basis. A great example of this is the snack vending machines. Around the Babson campus, there are many snack vending machines. Each of these machines was purchased on an individual, as-needed basis. The result was a total of six machines, bought at six different times. More importantly, Babson received no financial incentives, such as a percentage of sales for allowing the suppliers to put the machines on campus. Often the machines had malfunctioning card readers—a problem Babson seemed powerless to impact with so little supplier leverage.

Taking a strategic approach, Anne re-evaluated the customer need for campuswide snack vending. She started with a survey of the customers' buying needs. To develop a new strategy, Anne also evaluated headcounts of residents and office staff, studied traffic flow, and benchmarked her findings against other schools. This effort culminated in a request for quote (RFQ).

An RFQ is a document provided to bidding suppliers which details exacting parameters of the goods or services being requested. For example, an RFQ from snack suppliers might include details like number, kind, and location of vending machines; snack prices; method and timing for refills—even issues regarding potential vandalism are covered. This provides the suppliers with all the specifics on which to base their bids and, later, the contracts.

The result is that now, Babson will have just one supplier that will manage approximately 22 machines, and a comprehensive card payment system. Babson will enjoy shared profits—and online live tracking of snack purchases by machine!

In another effort Anne developed a travel portal to help faculty, staff, and alumni access discounted flight deals, hotel rates, and special promotions.

Anne is also preparing the launch of a beta test for a new procurement card system, allowing customers to make adjustments to a general ledger prior to posting online expenditures. Not only will this allow users to better manage their budgets, but the time spent by the purchasing department making adjustments will be reduced by over 20 hours a month.

DEVELOPING NEW RELATIONSHIPS

Although the traditional college purchasing process presents both challenges and rewards, Russo's enthusiasm peaks when he talks about contract services. He draws from his pre-Babson decades and recalls that finding the right partner was crucial. Leveraging a supplier's expertise, whether it's in raw materials testing or third-party fulfillment and distribution, was a major tool in realizing success. The common perception is that outsourcing reduces supply options and service management flexibility. Russo feels differently. "It actually increases capabilities," he says, "as I can leverage the talent, skills, and assets of both Babson and the supplier."

As a modestly funded entrepreneur, Russo often called on suppliers to perform functions that would traditionally go to a key department in a larger company. In order to make this "outsourced/in-house operation" effective, a cultural shift must take place. Suppliers need freedoms and restrictions, as well as incentives and guidelines that are similar to those of an internal department.

"I try never to fall into the trap of thinking that the customer is always right, or that the supplier is holding out and can always do better," says Russo. "Once you replace 'us' and 'them' with 'we,' the returns come in multiples!"

Russo's relationship-building philosophy is practical and powerful:

- Get a tight contract agreement, stating even the most basic terms. Who gets what, as well as when, where, and how they get it. When facts like this are unclear, the relationship can suffer.
- Set a tone of collaboration and teamwork. When suppliers realize we're all on the same team, they provide revolutionary new products, enhance production methods, and even reduce their prices—voluntarily!
- Fight for supplier rights, protect them in company-driven experiments, help to train their employees, and collaborate on improving their companies! In short, make sure you understand and respect their company's mission, goals, and objectives.
- Together create goals, measurements for success and a communication system that assures clear and constant understanding of action steps and timing.

Establishing such strong relationships with suppliers has often resulted in lifelong friendships for Russo. Ironically, these friendships have made it easy to terminate professional ties if and when the alliance is no longer working. "Cooperation and communication at that level insures that there's no mystery about performance requirements," Russo adds.

WHAT'S IN STORE FOR BABSON?

"At Babson, we aren't experts in every field. Take dining and book sales, for example," says Russo. "In these areas, contracted service companies like Sodexo and Barnes & Noble have done a great job working with student affairs and other such departments."

"These campus departments know their particular customer—the students in this case—and they interface with suppliers as what I call 'Use Managers,' " continues Russo. "They identify the need based on their observations and student comments on use. They then request the service and challenge the supplier to propose a creative solution."

Russo likes the Use Manager model and feels it complements his role. "My intention is to enhance the Use Manager model by working with the contracted service companies as a business partner of sorts—as if we had a stake in their success, which we do!

"In my role I review detailed elements on the operational side, such as tracking equipment life and monitoring the associated repair process and capital planning for replacement."

Russo also gets to look at the Babson customer from an operator's point of view. "The great part," he says, "is the information these contracted service suppliers possess. They provide access to statistical data that adds to the observation-based information we get from the Use Managers. For example, Sodexo dining tracks how many students are served during 15-minute intervals of each day and how much of each entrée is consumed per day. My goal is to add this type of data to information provided by our Use Managers and additional consumer surveys and research to assure that we are providing the best food product, when, where, and how the student desires. I can also work with suppliers to determine the benefits, risks, and effects of various staffing options, service and materials changes, merchandising, advertising, and promotion plans that they may be considering."

Russo believes that once a team approach is truly in place at Babson, "safety positions," otherwise known as "sandbagging," will be abandoned. "When our goals and those of our suppliers are aligned, it follows that mutual benefits are at a maximum, and risk is at a minimum," he says. Another benefit is that Use Managers' operational demands are reduced allowing them to focus energies on their customers. "And that," he adds, "is a definite win/win!"

Peter Russo's 20-plus years of experience are hard at work in his new position at Babson. But it might be argued that his best qualifications are his three children. Two are in college now, and a third is set to begin soon. And so the father, entrepreneur, and director of purchasing wryly sums up his professional philosophy: "Nobody understands how crucial it is to maximize the buying power of every tuition dollar more than I do!"

Source: L. Giunipero, Personal interview with Peter Russo, February 2008.

KEY TERMS

cross-functional, 10
extended enterprise, 12
extended value chain, 12
managing the supply base, 9
organizational design, 19
process approach, 9
purchasing, 8
strategic responsibilities, 9
supply chain, 10
supply chain management, 10
supply chain orientation, 10
supply management, 8
value chain, 11

DISCUSSION QUESTIONS

1. Why are more top managers recognizing the importance of purchasing/supply management?
2. What is the difference between purchasing and supply management? What is the difference between a supply chain orientation and supply chain management?
3. What is the difference between a supply chain and a value chain?
4. Do you think organizational purchasers should behave like entrepreneurs? Why or why not?
5. What are some of the factors that might influence how important purchasing is to the success of an organization?
6. What knowledge and skills do you feel are required for a purchasing professional?
7. What challenges do organizations face as they attempt to integrate different activities and organizations across the supply chain?
8. What performance areas do you think will benefit most from purchasing involvement in the future?
9. Discuss the four enablers of purchasing and supply chain excellence.
10. What is the relationship between the growth in worldwide competition and the evolution of the supply chain concept?
11. Briefly discuss each of the seven periods in the evolution of purchasing and supply management. What do you forecast for the future?

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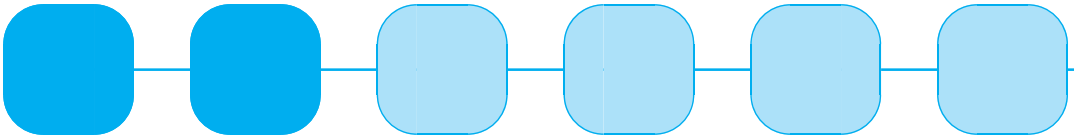


Part 2

Purchasing Operations and Structure

Chapter 2

THE PURCHASING PROCESS

Learning Objectives

After completing this chapter, you should be able to

- Understand the key objectives of any purchasing function
- Understand the responsibilities of the purchasing function
- Understand the purchasing process and the role of e-procurement tools in the process
- Understand the different types of purchases made by organizations
- Understand how organizations are seeking to improve the purchasing process

Chapter Outline

A Supplier's View of the P2P Process at a Large Chemical Company

A large chemical company was seeking to build and extend relational capital with suppliers, by building trust and becoming the "Customer of Choice." The capital gained through this approach can result in preferred supplier delivery priorities, information sharing, participation on supplier councils, and other important rewards. Some important elements in becoming a "Customer of Choice" are to enable rapid payment, provide equitable and ethical treatment of suppliers, and focus on improving the procure to pay (P2P) process.

To address some of the major problems identified by suppliers, the company interviewed suppliers to identify their experiences with the current procure to pay process with some of their major customers. The most common symptoms experienced by suppliers involve high manual workarounds required to address problems, long cycle times for payment, no central point of contact, and a problem with matching the **purchase order (PO)** and invoice.

Suppliers interviewed also noted a number of root causes associated with the P2P problems. The most common root causes were associated with the lack of a formally designed P2P process, the lack of a central relationship management, and problems associated with supplier interfaces with their enterprise resource planning (ERP) system. Other reasons included the increased complexity associated with ERP catalog and line items, and the lack of a forecasting process.

Suppliers believed that the fundamental root causes are the lack of a process with designated roles and specific processes; in association, different internal and external functions are not defined. Maintenance people, buyers, planners, schedulers, accounts payable, project planners, and others are not in synch. Further, the system is not designed to be able to withstand the various approaches in which people enter data and request information. When too many people are not using the system in a unified manner, it is no wonder that the system rejects the input and causes problems! This points to a choice: either the tolerances of such systems must be changed, or the manner in which the system is used must be changed.

RECOMMENDED SOLUTIONS

Suppliers recommended that their customers explore the following solutions: redesigning the P2P process, developing a dedicated relationship manager to work with suppliers on key areas of interface, exploring the use of a vendor portal using the CATS interface in SAP, and reducing catalog items through a spend analysis to reduce the inherent complexity of entering information into the SAP system.

These responses by and large provide significant insights into the problems and complexities associated with improving the P2P cycle from a supplier's perspective. Unfortunately, these issues also translate into significant problems for the purchasing company, which is often lost in translation when the need for P2P improvement is communicated to a senior management team.

Late payment and excessive workaround to obtain payment in a timely manner will definitely increase the cost to serve for companies with a broken P2P process. Some of the typical problems that can occur when a malfunctioning P2P process is not fixed include the following events (adapted from Handfield 2006):

- Deteriorating response time from suppliers, which have no motivation to improve performance and respond quickly to a customer that fails to pay them for 90 days or more

- Lower service levels from suppliers, which may choose to service their more profitable customers first in their Cost to Serve Model
- Deterioration as the "Customer of Choice" in the minds of suppliers' senior management, which further breaks down trust and strategic alignment
- Delivery delays
- Higher pricing due to the cost of money that is attributed to late payment and excessive personnel allocated to the account
- Increased personnel on non-value-added activities (e.g., chasing payments) to the detriment of other value-added activities that can improve customer service
- Loss of the supplier as a critical link in the supply chain
- Higher costs internally for the purchasing company, which must also dedicate AP people and buyers to non-value-added activities

A world-class purchasing staff must continuously work to improve the efficiency and effectiveness of what we call the **purchasing process**. This is the process used to identify user requirements, evaluate the need effectively and efficiently, identify suppliers, ensure payment occurs promptly, ascertain that the need was effectively met, and drive continuous improvement. The challenges in ensuring that this process occurs effectively and efficiently are the theme of this chapter. Until an organization can streamline the day-to-day purchasing process, it will continually delay implementing other important strategic activities that help their organization become more competitive. This chapter introduces the following topics and ideas associated with purchasing in multiple industries:

- Purchasing objectives
- Purchasing responsibilities
- E-procurement and the procure to pay process
- Types of purchases
- Purchasing process improvements
- Good practice example at Federal Express

Purchasing Objectives

The objectives of a world-class purchasing organization move far beyond the traditional belief that purchasing's primary role is to obtain goods and services in response to internal needs. To understand how this role is changing, we must understand what purchasing is all about, starting with the primary objectives of a world-class purchasing organization.

Objective 1: Supply Continuity

Purchasing must perform a number of activities to satisfy the operational requirements of internal customers, which is the traditional role of the purchasing function. More often than not, purchasing supports the needs of operations through the purchase of raw materials, components, subassemblies, repair and maintenance items, and services. Purchasing may also support the requirements of physical distribution

centers responsible for storing and delivering replacement parts or finished products to end customers. Purchasing also supports engineering and technical groups, particularly during new-product development and outsourcing of key processes.

With the dramatic increase in outsourcing, enterprises are relying increasingly on external suppliers to provide not just materials and products, but information technology, services, and design activities. As a greater proportion of the responsibility for managing key business processes shifts to suppliers, purchasing must support this strategy by providing an uninterrupted flow of high-quality goods and services that internal customers require. Supporting this flow requires purchasing to do the following:

1. Buy products and services at the right price
2. Buy them from the right source
3. Buy them at the right specification that meets users' needs
4. Buy them in the right quantity
5. Arrange for delivery at the right time
6. Require delivery to the right internal customer

Purchasing must be responsive to the materials and support needs of its internal users (sometimes also called **internal customers**). Failing to respond to the needs of internal customers will diminish the confidence these users have in purchasing, and they may try to negotiate contracts themselves (a practice known as **backdoor buying**).

Objective 2: Manage the Purchasing Process Efficiently and Effectively

Purchasing must manage its internal operations efficiently and effectively, by performing the following:

- Determining staffing levels
- Developing and adhering to administrative budgets
- Providing professional training and growth opportunities for employees
- Introducing procure to pay systems that lead to improved spending visibility, efficient invoicing and payment, and user satisfaction

Purchasing management has limited resources available to manage the purchasing process and must continuously work toward improved utilization of these resources. Limited resources include employees working within the department, budgeted funds, time, information, and knowledge. Organizations are therefore constantly looking for people who have developed the skills necessary to deal with the wide variety of tasks faced by purchasing. Procurement people must be focused on continuously improving transactional-level work through efficient purchasing systems that keep suppliers satisfied, which makes life easier for internal users.

Objective 3: Develop Supply Base Management

One of the most important objectives of the purchasing function is the selection, development, and maintenance of supply, a process that is sometimes described as **supply base management**. Purchasing must keep abreast of current conditions in supply markets to ensure that purchasing (1) selects suppliers that are competitive, (2) identifies new suppliers that have the potential for excellent performance and develops

closer relationships with these suppliers, (3) improves existing suppliers, and (4) develops new suppliers that are not competitive. In so doing, purchasing can select and manage a supply base capable of providing performance advantages in product cost, quality, technology, delivery, and new-product development.

Supply base management requires that purchasing pursue better relationships with external suppliers and develop reliable, high-quality supply sources. This objective also requires that purchasing work directly with suppliers to improve existing capabilities and develop new capabilities. A good part of this text focuses on how purchasing can effectively meet this objective.

Objective 4: Develop Aligned Goals with Internal Functional Stakeholders

U.S. industry has traditionally maintained organizational structures that have resulted in limited cross-functional interaction and cross-boundary communication. During the 1990s, the need for closer relationships between functions became clear. Purchasing must communicate closely with other functional groups, which are purchasing's internal customers. These are sometimes called **stakeholders**, in that they have a significant stake in the effectiveness of purchasing performance! If a supplier's components are defective and causing problems for manufacturing, then purchasing must work closely with the supplier to improve its quality. Similarly, marketing may spend a great deal on advertising and promotion, so purchasing must ensure that the pricing is competitive and that service-level agreements are being met. In order to achieve this objective, purchasing must develop positive relationships and interact closely with other functional groups, including marketing, manufacturing, engineering, technology, and finance.

Objective 5: Support Organizational Goals and Objectives

Perhaps the single most important purchasing objective is to support organizational goals and objectives. Although this sounds easy, it is not always the case that purchasing goals match organizational goals. This objective implies that purchasing can directly affect (positively or negatively) total performance and that purchasing must concern themselves with organizational directives. For example, let's assume an organization has an objective of reducing the amount of inventory across its supply chain. Purchasing can work with suppliers to deliver smaller quantities more frequently, leading to inventory reductions. Such policies will show up as improved performance on the firm's balance sheet and income statements. In so doing, purchasing can be recognized as a strategic asset that provides a powerful competitive advantage in the marketplace.

Objective 6: Develop Integrated Purchasing Strategies That Support Organizational Strategies

Far too often the purchasing function fails to develop strategies and plans that align with or support organizational strategies or the plans of other business functions. There are a number of reasons why purchasing may fail to integrate their plans with company plans. First, purchasing personnel have not historically participated in senior-level corporate planning meetings, because they were often viewed as

providing a tactical support function. Second, executive management has often been slow to recognize the benefits that a world-class purchasing function can provide. As these two conditions are rapidly changing, purchasing is being integrated within the strategic planning process in multiple industries. A purchasing department actively involved within the corporate planning process can provide supply market intelligence that contributes to strategic planning. Effective supply market intelligence involves the following:

- Monitoring supply markets and trends (e.g., material price increases, shortages, changes in suppliers) and interpreting the impact of these trends on company strategies
- Identifying the critical materials and services required to support company strategies in key performance areas, particularly during new-product development
- Developing supply options and contingency plans that support company plans
- Supporting the organization's need for a diverse and globally competitive supply base

Purchasing Responsibilities

Functional groups carry out certain duties on behalf of the organization. We refer to this as a function's responsibility or **span of control**. Purchasing must have the legitimate authority to make decisions that fall within their span of control. Span of control is established through senior management policies and support. Although internal customers influence many important decisions, final authority for certain matters must ultimately be assigned to the purchasing department. This section details those decision areas that are rightfully part of purchasing's operating authority in most organizations. (Further details on the factors that influence how senior management determines purchasing's span of control are discussed in Chapter 5.)

Evaluate and Select Suppliers

Perhaps the most important duty of purchasing is the right to evaluate and select suppliers—this is what purchasing personnel are trained to do. It is important to retain this right to avoid **maverick** buying and selling—a situation that occurs when sellers contact and attempt to sell directly to end users (purchasing's internal customers). Of course, this right does not mean that purchasing should not request assistance when identifying or evaluating potential suppliers. Engineering, for example, can support supplier selection by evaluating supplier product and process performance capabilities. The right to evaluate and select suppliers also does not mean that sales representatives are not allowed to talk with non-purchasing personnel. However, non-purchasing personnel cannot make commitments to the seller or enter into contractual agreements without purchasing's involvement. A trend that is affecting purchasing's right to select suppliers is the use of sourcing teams with purchasing and non-purchasing representation. The selection decision in sourcing teams requires that the members reach a consensus in selecting suppliers.

Review Specifications

The authority to review material specifications is also within purchasing's span of control, although engineering sometimes disputes this right. Purchasing personnel work hard to develop knowledge and expertise about a wide variety of materials but must also make this knowledge work to an organization's benefit. The right to question allows purchasing to review specifications where required. For example, purchasing may question whether a lower-cost material can still meet an engineer's stress tolerances. The right to question material specifications also helps avoid developing material specifications that only a user's favorite supplier can satisfy. A review of different requisitions may also reveal that different users actually require the same material. By combining purchase requirements, purchasing can often achieve a lower total cost.

Act as the Primary Contact with Suppliers

Purchasing departments historically have maintained a policy that suppliers have contact only with purchasing personnel. Although this makes sense from a control standpoint, some firms today are beginning to relax this policy. Today, we recognize that purchasing must act as the primary contact with suppliers, but that other functions should be able to interact directly with suppliers as needed. Involving multiple people enables the communication process between internal customers, purchasing, sales, and the suppliers' internal functions to be more efficient and accurate. Although purchasing must retain the right to be the primary contact with suppliers, involving other people can improve the transfer of information and knowledge between buying and selling organizations.

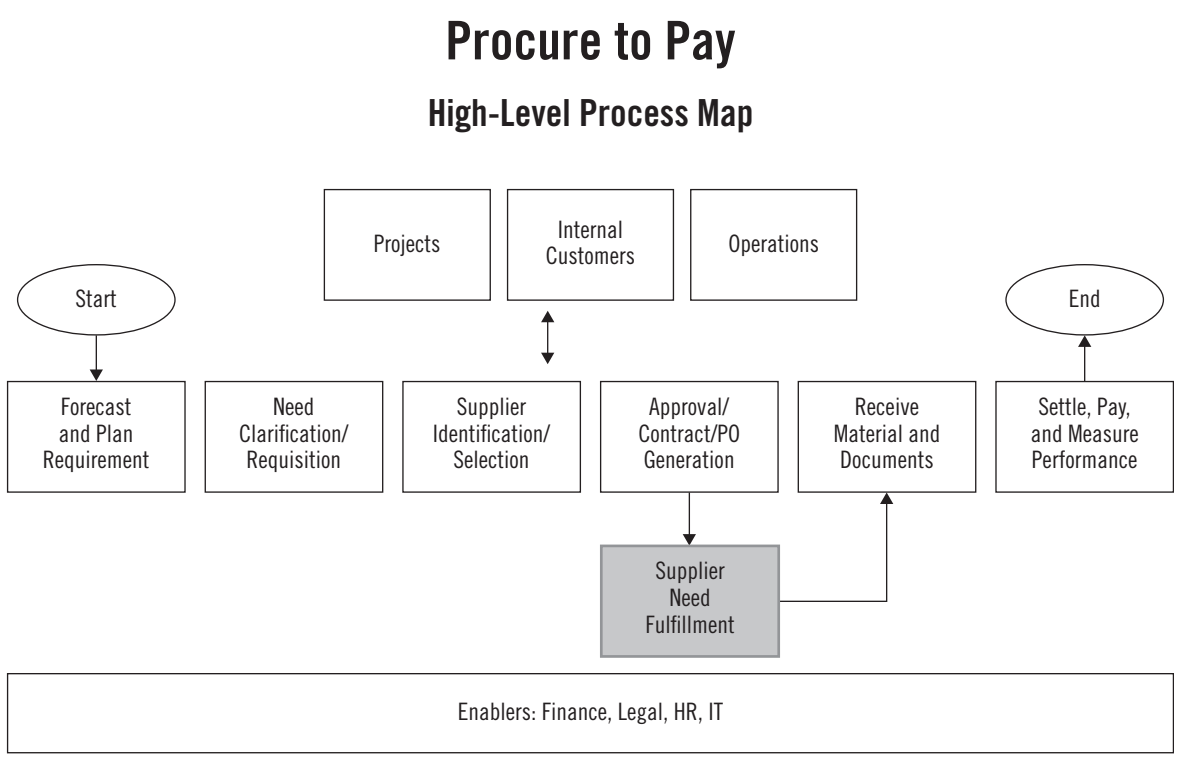
Determine the Method of Awarding Purchase Contracts

An important area of control is that purchasing has the right to determine how to award purchase contracts. Will purchasing award a contract based on competitive bidding, negotiation, or a combination of the two approaches? If purchasing takes a competitive bidding approach, how many suppliers will it request to bid? Purchasing should also lead or coordinate negotiations with suppliers. Again, this does not mean that purchasing should not use personnel from other functions to support the negotiation process. It means that purchasing retains the right to control the overall process, act as an agent to commit an organization to a legal agreement, and negotiate a purchase price.

E-Procurement and the Procure to Pay Process

In this section, we examine in detail the purchasing process, which includes all the steps that must be completed when someone within the organization requires some product, material, or service. As stated in the chapter introduction, purchasing is a process made up of all activities associated with identifying needs, locating and selecting suppliers, negotiating terms, and following up to ensure supplier performance. These activities, or steps, are highlighted in Exhibit 2.1; this is often referred to as the procure to pay cycle. This term includes all of the steps required, from the initial identification of requirements, to the procurement/purchasing of the item, through the receipt of the goods, and finally, to the payment of the supplier once the goods are received.

Exhibit 2.1 The Purchasing Process



There are two things to keep in mind as we describe the purchasing process. First, how much effort a company spends on these activities will differ greatly from one situation to the next. The purchasing process leading to a $30 billion contract for military jets is very different from that for a routine purchase of office supplies!

Second, as you look at the steps in the procure to pay cycle shown in Exhibit 2.1, recognize that companies can often gain a competitive advantage by performing these activities better than their competitors. Many organizations, for example, use information systems to automate routine purchase order preparation, whereas others use sourcing management teams to improve the outcome of supplier evaluation and selection efforts.

This section presents the purchasing process as a cycle consisting of six major stages:

1. Forecast and plan requirement
2. Need clarification (requisition)
3. Supplier identification/selection
4. Contract/purchase order generation
5. Receipt of material or service and documents
6. Settlement, payment, and measurement of performance

These stages may vary in different organizations, depending on whether purchasing is sourcing a new or a repetitively purchased item, and also whether there is a detailed approval process for purchases that exceed a specific dollar amount. New items require that purchasing spend much more time up front evaluating potential sources. Repeat items usually have approved sources already available. Exhibit 2.1 illustrates a typical purchasing process used in many enterprises, with some typical contingency elements shown.

The process flow shown in Exhibit 2.1 is often called the procure to pay process, as it documents all of the stages from the initiation of a need, through to the payment element. A document flow accompanies the movement of orders and material throughout the procure to pay process. Historically, preparing and managing the proper purchasing documents has been a time-consuming process. Most firms have streamlined the document flow process to reduce the paperwork and handling required for each purchase. The suite of tools used to achieve efficiency in purchasing transactions is broadly defined as **e-procurement**. Companies are using e-procurement tools to manage the flow of documents by (1) automating the document generation process and (2) electronically transmitting purchase documents to suppliers. The benefits of electronically generating and transmitting purchasing-related documents include the following:

1. A virtual elimination of paperwork and paperwork handling
2. A reduction in the time between need recognition and the release and receipt of an order
3. Improved communication both within the company and with suppliers
4. A reduction in errors
5. A reduction in overhead costs in the purchasing area
6. A reduction in the time spent by purchasing personnel on processing purchase orders and invoices, and more time spent on strategic value-added purchasing activities

The electronic documents often used in the process are represented in Exhibit 2.1 by boxes, which we shall now discuss.

Forecast and Plan Requirement

The purchasing cycle begins with the identification of a need (a requirement). In most cases, procurement personnel have an annual or biannual planning process, whereby they will review the spending pattern for the organization (through a spend analysis, discussed later in the chapter), and prepare a forecast of what will be purchased. In some cases, there may be a whole set of new requirements that have not been planned for (such as for new product introductions). In such cases, purchasing personnel meet with internal customers to discuss their needs for the coming year. In many firms today, purchasing is the primary vehicle for obtaining external inputs (products or services) from suppliers, so that means that purchasing personnel have to work with a large number of internal customers, which will often include marketing, operations, finance, information technology, and other internal customers. Through a structured dialogue, purchasing will understand and plan for what these customers will be buying and translate this into a forecast that is shared with suppliers. (In the next chapter, we will discuss the sourcing process that takes place to identify which suppliers are to receive the business associated with fulfilling this need.)

Sourcing Snapshot

Honeywell: Understanding Future Demand

Many spend analysis systems capture data only after the money is gone. Honeywell's OneSource, by contrast, is like an expanding universe, covering both backward- and forward-looking spend data. It gives the company's commodity managers a way to spot strategic sourcing and spend management opportunities in real time.

Powered by an i2 Technologies SRM, Strategic Sourcing platform, OneSource automatically gathers procurement data from 107 (eventually 152) Honeywell locations. Data available for analysis and decision supports span two previous years plus the current year. Each site provides six discrete data feeds: open purchase orders, receipts, rejects, unplaced demand or forecast (demand from MRP system but not yet purchased), supplier master, and accounts payable spend, including off-purchase order MRO spend. The seventh and eighth data feeds capture contract manufacture bill of materials (part list) and component part approved vendor list for businesses doing subcontract spend analysis.

OneSource is technology agnostic, meaning Honeywell's business units don't need to change the way they capture and store their spend data. "Data in a specified format is taken from the systems the site has—from Excel spreadsheets to a vast array of ERP and MRP systems, including Avalon, BPICS, Cullinet, JD Edwards, MacPac, Oracle, SAP as well as some homegrown versions," says Dennis Lemon, corporate director of supplier quality and health management. That's important for a diversified company like Honeywell, where procurement is decentralized.

Data classification and cleansing is done as part of project rollout and continues using data maintenance applications administered by designated sites or business resources. "As deployment has continued," Lemon says, "data cleansing has identified up to 25% overlap with other sites as new sites are added. Global supplier rationalization has allowed Honeywell to realize supply base reductions in the 40–50% range."

Typically, according to Lemon, it takes about three months to bring a new site on board with OneSource. A key factor has been the development of a formal process for doing this. "We use a defined process that specifies who we work with and how. We involve their sourcing, IT, and quality people. We help them create data feeds, test, and validate their data, and we train them to use the system. We really nurture them as they begin to use OneSource."

Source: "Purchasing Honors Seven Companies in 2004 for Their Leading-Edge Practices in Spend Analysis," *Purchasing,* March 18, 2004.

A projected need may take the form of a component (e.g., a set of fasteners), raw material (e.g., resins), subassembly (e.g., a motor), or even a completely finished item (e.g., a computer). In other cases, the need may be a service, such as the need to contract with an ad agency for a new marketing campaign, or a food service to provide lunches at the company cafeteria. Because purchasing is responsible for acquiring products and services for the entire organization, the information flows between the purchasing function and other areas of the organization can be extensive.

Of course, not all needs can be forecasted ahead of time. There are situations that arise when an internal customer has a need that comes up suddenly, which is not planned for and for which there is no pre-existing supplier identified to provide the

product or service required. Such needs are often handled through a **spot buy** approach, which is also discussed within the context of the P2P process. For example, marketing may need to purchase a set of pens and cups for a special promotion and may alert purchasing on sudden notice of this need. If it was not planned for, then purchasing must work with marketing to quickly identify a supplier to provide these products on short notice at the lowest possible cost with an acceptable level of quality and delivery time.

When creating a forecast for a needed product or service, internal customers may not always be able to express exactly what it is they will need at a single point in time. For example, a chemical plant maintenance group may say that they will need replacement parts for their equipment, but they might not be able to provide details on the exact nature of the specific parts they will need, nor the exact time they will need them. In such cases, purchasing may negotiate agreements with distributors of parts that can provide a whole different set of products that can meet that need. In other cases, an internal customer may say that they need to work with a specific service provider for temp services, consulting services, or software programming, but they cannot express exactly what type of service they will need in advance. Purchasing will then go off and attempt to secure a contract with predefined costs for different classes of workers who can provide these services on short notice.

Needs Clarification: Requisitioning

At some point, however, internal customers identify their need for a product or service and communicate to purchasing exactly what it is they need and when it is required.

Internal users communicate their needs to purchasing in a variety of ways including purchase requisitions from internal users, forecasts and customer orders, routine reordering systems, stock checks, and material requirements identified during new-product development. Let's take a closer look at these electronic (or paper) documents that communicate internal customer requirements to purchasing.

Purchase Requisitions/Statement of Work

The most common method of informing purchasing of material needs is through a **purchase requisition**. (An example is shown in Exhibit 2.2.) Users may also transmit their needs by phone, by word of mouth, or through a computer-generated method. Although there are a variety of purchase requisition formats, every requisition should contain the following:

- Description of required material or service
- Quantity and date required
- Estimated unit cost
- Operating account to be charged
- Date of requisition (this starts the tracking cycle)
- Date required
- Authorized signature

Although varieties of formats exist, at a minimum a purchase requisition should include a detailed description of the material or service, the quantity, date required, estimated cost, and authorization. This form of communication for a specific need is called a requisition. A requisition is an electronic or paper form that provides some

Exhibit 2.2 The Purchasing Requisition

AnyCompany

TO: PURCHASING DEPARTMENT, PLEASE FURNISH THE FOLLOWING

REQUISITION

			OUR P.O. NUMBER	No. 36010
ACCOUNT CODE NO./A.F.E. NO./A.F.M. NO./W.O. NO./EQUIP. NO.			REQUESTED BY	VENDOR NO.
DATE	DATE DELIVERY REQ'D.	F.O.B.	DEPARTMENT OR LOCATION	TERMS
TO BE USED FOR			COST ESTIMATE	APPROVAL
			APPROVAL REQUIRED BY	

SUGGESTED SUPPLIER	SHIPPING INSTRUCTIONS
	☐ TAXABLE ☐ TAX EXEMPT

ITEM NO.	QUANTITY	PART NO.	DESCRIPTION	PRICE

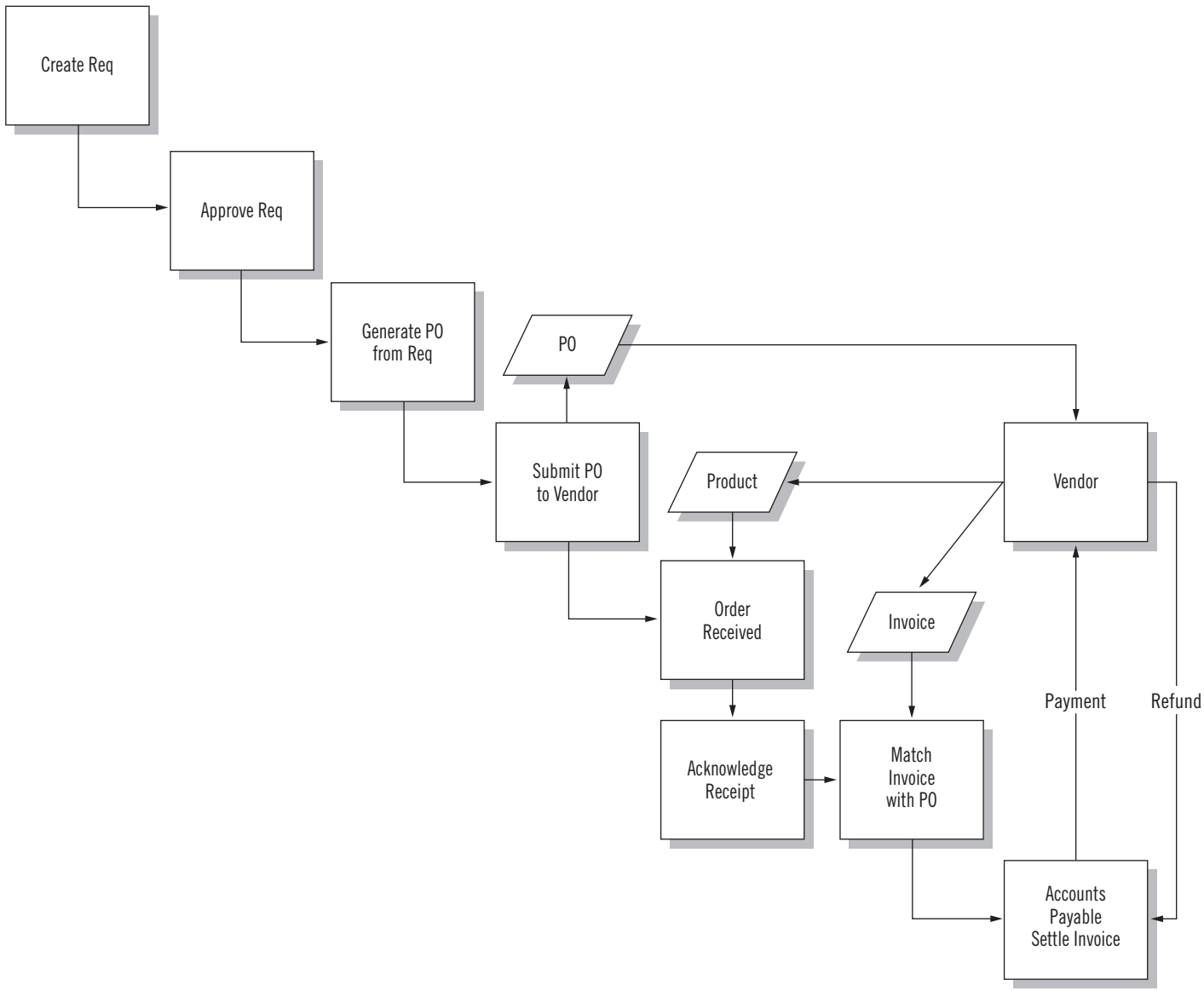
DELIVER TO			INSPECTION REQUIRED	
☐ CONFIRMING ORDER	TO	DATE	BY	METHOD
COPIES OF PURCHASE ORDER TO			☐ ACKNOWLEDGMENT COPY	☐ PURCHASING APPROVAL OF INVOICE REQUIRED

REASON FOR AWARD

❑ Low Bid	❑ Blanket Order	❑ Priority Source
❑ Only Bid	❑ Only Approved Source	❑ Commitment made outside of Purchasing Department
❑ Only Available Source	❑ Emergency	❑ Low Bidder not acceptable (explanation attached)
❑ National Account/Contract Supplier	❑ Small Purchase	❑ Other – or additional comments

CORPORATE FORMS MANAGEMENT

Exhibit 2.3 Purchase Requisition Flow



critical information about the need. A typical requisition will provide a description of the product (e.g., a valve), the material and color (brass, red valve), the quantity required (20 red brass valves), the intended purpose (20 red brass valves to be used in a maintenance project for equipment XYZ), and the required date for delivery (three weeks).

Sometimes a service is required. For instance, marketing may want to purchase an advertising campaign, R&D may need a clinical trial, or human resources may need to print a brochure. In this case, the user will complete a **statement of work (SOW)** that specifies the work that is to be completed, when it is needed, and what type of service provider is required.

A standard purchase requisition or SOW is used most often for routine, noncomplex items that are increasingly being transmitted through online requisitioning systems linking users with purchasing. An online requisition system is an internal system designed primarily to save time through efficient communication and tracking of material requests. Users should use these systems only if they require purchasing involvement. It is possible that users have access to other systems that will allow them to purchase an item directly from a supplier, such as a corporate procurement card. In that case requisitions forwarded to purchasing are unnecessary.

There are wide differences across organizations in the quality and use of electronic purchase requisition systems. A system that simply requires users to submit to purchasing what they require for electronic transmission is similar to electronic mail. This type of system provides little added value except to speed the request to purchasing. Conversely, one system studied was so complex that users were afraid to use it. They bypassed online requisitioning and relied instead on the phone or intracompany mail.

Exhibit 2.3 provides further details regarding how a purchase requisition is approved, converted into a purchase order, and ultimately prepared for delivery and payment. Although the user may suggest a supplier, purchasing has final selection authority. For routine, off-the-shelf items, the requisition may contain all the information that purchasing requires. However, for technically complex or nonstandard items, purchasing may require additional information or specifications with the requisition. Examples of such specifications include the grade of material, method of manufacture, and detailed measurements and tolerances. Purchasing may send an acknowledgment of the receipt of the purchase requisition to the requestor. This acknowledgment often takes the form of a confirming order requisition. The acknowledgment may be a separate form notifying the user that purchasing has received and is processing the requisition, or it may be a copy of the original requisition. The confirmation verifies the accuracy of the user's material request.

Traveling Purchase Requisitions/Bar Codes

Material needs are also communicated through a traveling purchase requisition—a form consisting of a printed card or a bar code with information about whom the item is purchased from. This method is used primarily for very small companies that have not automated their purchasing or inventory management processes. Information on the card or the database entry associated with the bar code can include the following:

- Description of item
- List of approved suppliers

- Prices paid to suppliers
- Reorder point
- Record of usage

A traveling requisition can be helpful because it can conserve time when reordering routine materials and supplies. When stock levels reach a specified reorder point, an employee notifies purchasing by forwarding the traveling requisition maintained with the inventory, or by electronically scanning the bar code into the ordering system. The employee notes the current stock level and desired delivery date. To eliminate the need to research information, the traveling requisition includes information required by a buyer to process an order. This system saves time because it provides information for the item on the card (or in the database) that otherwise would require research by a buyer. For example, the traveling requisition can include a list of approved suppliers, prices, a history of usage and ordering, and lead-time information. Historical ordering information is noted directly on the record over a period of time. As inventory systems continue to become computerized (even at smaller companies), traveling requisitions are used less frequently. With an automated system, clerks simply enter the order requirement and the system generates a purchase requisition or automatically places an order.

Forecasts and Customer Orders

Customer orders can trigger a need for material requirements, particularly when changes to existing products require new components. Customer orders can also signal the need to obtain existing materials. As companies increasingly customize products to meet the needs of individual customers, purchasing must be ready to support new material requirements. Market forecasts can also signal the need for material. An increasing product forecast, for example, may signal the need for additional or new material. If a supplier is already selected to provide that material, then an automated ordering system such as a material requirements planning (MRP) system may forward the material request to suppliers automatically.

Reorder Point System

A reorder point system is a widely used way to identify purchase needs. Such a system uses information regarding order quantity and demand forecasts unique to each item or part number maintained in inventory. Each item in a reorder point system, which is usually computerized, has a predetermined order point and order quantity. When inventory is depleted to a given level, the system notifies the materials control department (or the buyer, in some organizations) to issue a request to a supplier for inventory replenishment. This signal might be a blinking light on a screen, a message sent to the materials control department's e-mail address, or a computer report. Most reorder point systems are automated using predetermined ordering parameters (such as an economic order quantity, which considers inventory holding and ordering costs). Electronic systems (such as material requirements planning systems) can instantly calculate reorder point parameters. Most systems can also calculate the cost tradeoffs between inventory holding costs, ordering costs, and forecast demand requirements. Reorder point systems are used for production and nonproduction items.

An automated reorder point system efficiently identifies purchase requirements. This type of system can routinely provide visibility to current inventory levels and requirements of thousands of part numbers. The reorder point system is the most

common method for transmitting routine material order requests today, particularly for companies that maintain spare-part distribution centers.

Stock Checks

Stock checks (or cycle counts) involve the physical checking of inventory to verify that system records (also called the **record on hand**, or **ROH**) match actual on-hand inventory levels—also called the **physical on-hand (POH)** levels. If the physical inventory for an item is below the system amount, an adjustment to that part's record can trigger a reorder request for additional inventory. Why might physical inventory be less than what the computerized system indicates should be on hand? Placing material in an incorrect location, damage that is not properly recorded, theft, and short shipments from the supplier that receiving did not notice all can contribute to the POH being less than the ROH. For example, at one major hardware retailer, missing inventory on the shelf may be located in another area of the store, or may simply be missing because of a problem with the incorrect item being entered into the system.

Smaller firms that rely on standard, easy-to-obtain items often use stock checks to determine material ordering requirements. In this environment, the stock check consists of physically visiting a part location to determine if there is enough inventory to satisfy user requirements. No purchase reorder is necessary if there is enough inventory to cover expected requirements.

Cross-Functional New-Product Development Teams

When users contact purchasing with a specific need, we say that purchasing is operating in a *reactive* manner. When purchasing works directly with internal customers to anticipate future requirements, such as during new-product development, purchasing is being *proactive*. What does it mean to anticipate a requirement? If purchasing is part of new-product development teams, then the opportunity exists to see product designs at early stages of the process. Purchasing can begin to identify potential suppliers for expected requirements rather than reacting to an engineering requirement at a later date. Anticipating requirements can contribute to faster product development cycle times and better supplier evaluation and selection. As firms continue to be forced to reduce the time required to develop new products, cross-functional interaction will increasingly be the means through which organizations identify, and hopefully anticipate, material requirements in the purchasing process cycle.

However the need is clarified, the point here is that a requisition document is completed by a requisitioner. A requisitioner is someone who is authorized by purchasing to complete the needs clarification process. In some cases, the person who expresses the need can also be the requisitioner. This occurs in cases where the supplier has already been qualified, and the individual who has the need can go to a supplier's online catalog, order the product or service directly (e.g., through Amazon), and pay for the item using a company purchasing credit card. In such cases, the item is typically low cost, and it is not worth the expense and trouble of completing an entire requisition and going through the entire P2P cycle.

Description

Within the requisitioning process, it is important to include a description of what is to be sourced. Why? If the time is not spent to describe the product or service,

purchasing will have no idea of what to go out and purchase! How purchasing accomplishes this will differ dramatically from one situation to the next. There are a variety of methods for communicating the user's requirements. **Description by market grade** or **industry standard** might be the best choice for standard items, where the requirements are well understood and there is common agreement between supply chain partners about what certain terms mean. **Description by brand** is used when a product or service is proprietary, or when there is a perceived advantage to using a particular supplier's products or services. A builder of residential communities, for example, might tell the purchasing staff to purchase R21 insulation, an industry standard, for walls, and to buy finish-grade lumber, a market grade, for the trim and fireplace mantels. In addition, it might also specify brands such as Georgia-Pacific's Catawba® hardboard siding, Kohler® faucets, and TruGreen-Chemlawn® lawn treatment for all the homes. As you can see, brand names, market grades, and industry standards provide purchasing with an effective and accurate shortcut for relaying the user's needs to potential suppliers.

More detailed and expensive methods of description will be needed when the items or services to be purchased are more complex, when standards do not exist, or when the user's needs are harder to communicate. Three common methods include description by specification, description by performance characteristics, and prototypes or samples.

In some cases, an organization may need to provide very detailed descriptions of the characteristics of an item or service. We refer to such efforts as **description by specification**. Specifications can cover such characteristics as the materials used, the manufacturing or service steps required, and even the physical dimensions of the product. Consider one extreme example: the special heat shield tiles used on NASA's space shuttles. Each tile has a unique shape and location on the space shuttle. Furthermore, each shield must be able to protect the space shuttle from heat generated by re-entry into the Earth's atmosphere. In providing a description of these tiles, NASA almost certainly includes specifications regarding the exact dimensions of the tiles and the composite materials to be used in making them. Such information might be relayed in the form of detailed blueprints and supporting documentation. Furthermore, NASA likely specifies the precise manufacturing steps and quality checks to be performed during the manufacture of the tiles.

In contrast, **description by performance characteristics** focuses attention on the *outcomes* the customer wants, not on the precise configuration of the product or service. The assumption is that the supplier will know the best way to meet the customer's needs. A company purchasing hundreds of PCs from Dell Computer might demand (1) 24-hour support available by computer or phone, and (2) 48-hour turn-around time on defective units. How Dell chooses to meet these performance characteristics is its choice.

Firms often develop prototypes or samples to share with their suppliers. Prototypes can provide critical information on the look or feel of a product or service. Such information is often difficult to convey in drawings or written descriptions. Note that prototypes or samples are not limited to physical products. An excellent example is a prototype information system that a company might share with potential software vendors. The prototype may include sample output screens and reports. Through the prototype, the company can give its software vendors a clearer idea of how the company expects its users to interact with the system.

Sourcing Snapshot

Subject Matter Expert Insights into P2P Processes

As part of a research study, a number of senior procurement executives from a variety of different industries were interviewed to get their responses to the same problems associated with the P2P cycle. Each of these individuals provided a different perspective on how to improve the P2P process, but some common themes validated many of the vendors' suggested recommendations as well.

ROBUST PROCESSES AND TRAINING

A critical element identified by all of the subject-matter experts was the need to develop standardized processes and training around the P2P process. Specifically, roles and duties of the different people involved in the process must be clearly defined, training should emphasize how invoices and requests should be processed, and the reasons why deviation from the process is unacceptable and what consequences are involved with deviating from the process should be explained. This ensures that everyone not only is compliant, but understands the need and rationale behind the compliance. Part of the process redesign effort should also focus on simplifying processes to reduce complexity. If there is no need for a specific channel for purchasing, then eliminate it.

ON-SITE RELATIONSHIP MANAGERS

An important point that many respondents noted was the need to establish dedicated roles around on-site relationship managers from procurement who were on site to manage invoices, service entries, and the like. The simple fact is that many maintenance and project managers do not think in terms of procurement, but rather are focused on people, equipment, and schedules; they do not have the time or patience required to ensure that the correct entries are put into a P2P system. The relationship manager can also act as the liaison between the supplier and the maintenance organization, to ensure prompt payment, resolution of issues, and improvement of processes.

SIMPLIFIED ONLINE PORTALS TO MINIMIZE HUMAN INTERVENTION

A number of SMEs described the need to eliminate the manual intervention of multiple untrained individuals in entering information into systems such as SAP. Many ERP systems have modules for purchasing and plant maintenance, but they all require significant configuration. On the other hand, a number of bolt-on packages are also available, but our SMEs advise against these because of the high probability of interface issues associated with deployment.

IMPROVE FORECASTING FOR MAINTENANCE AND PLANNING FOR EMERGENCIES THAT CAN FLEX WITH DIFFERENT SITUATIONS THAT ARISE

The need to improve forecasting processes is a critical element in ensuring that maintenance needs are met. Although maintenance is often an emergency, there are many scheduled maintenance activities that can be planned and communicated to suppliers. Even in emergency situations, having a plan in place with a designated supplier can avoid many of the problems that occur downstream in the P2P cycle. Too often, data, invoices, service entries, and other key elements are entered incorrectly as a result of a fundamental lack of planning and forecasting. These elements need to be incorporated into the design of new P2P systems.

REDUCE COMPLEXITY IN CATALOGS AND BUYING CHANNELS TO STREAMLINE PROCUREMENT

Many of the experts also emphasized that the need to reduce complexity in the interface systems through pre-defined procurement buying channels is critical to improving the entire P2P cycle. There is no need for users to have multiple channels for procurement. However, establishing the credibility for users to only be able to use these channels also requires significant management support.

Source: R. Handfield, "Best Practices in the Procure to Pay Cycle," *Practix,* March 2006, Center for Advanced Purchasing Management, http://www.caps.org.

Supplier Identification and Selection

Once the need and the description of the need are identified, one of two things can happen: (1) The need is fulfilled by a supplier that has an existing contractual relationship with the buying company. (2) The need is fulfilled by a new supplier that is not currently qualified to provide products and services to the firm.

In the first case, the P2P process moves quite smoothly. Through the need forecasting process, purchasing personnel have already identified which suppliers will be used to source the need, and they have already taken steps to evaluate and prequalify the supplier. Qualification is important, as the purchasing firm must ascertain that the supplier meets several criteria and evaluate whether it is qualified to do business and meet the needs of their internal customers in a satisfactory manner. This evaluation process is described in some detail in the next chapter.

In the second case, where a supplier is not identified, or when the internal customer requests that the need be fulfilled by a specific supplier of their choosing, purchasing face a more difficult challenge. Because there is no existing contract with the supplier, they may balk at approving the need fulfillment from this supplier. When internal customers purchase directly from nonqualified suppliers and try to bypass purchasing in the process, this is known as maverick spending. That is, customers are acting as a maverick, in that they do not wish to use suppliers already deemed by purchasing as qualified to fulfill the need. Although some level of maverick spending is always going to occur in an organization, there are significant risks that can occur when it reaches high proportions. We will discuss some of these risks later in the chapter.

Maverick spending is acceptable when there is little risk associated with the purchase. For example, if someone needs to purchase a box of copy paper, there is little risk when an internal customer goes to the local Staples store and purchases a box using the company procurement card. In fact, purchasing will often encourage them to do so, as this does not represent a productive use of their time in managing these types of expenses. However, when high levels of maverick spending occur repeatedly throughout the company, it can result in major lost opportunities to control cost and also expose the firm to undue risk and loss of control over the purchasing process.

Let's assume for the moment that a qualified supplier is able to provide the product or service, and that the supplier has been through the evaluation process. For some items, firms may maintain a list of **preferred suppliers** that receive the first opportunity for new business. A preferred supplier has demonstrated its performance capabilities through previous purchase contracts and therefore receives preference during

the supplier selection process. By maintaining a preferred supplier list, purchasing personnel can quickly identify suppliers with proven performance capabilities.

In cases when there is not a preferred supplier available, purchasing must get involved in selecting a supplier to fulfill that need.

Final supplier selection occurs once purchasing completes the activities required during the supplier evaluation process. Selecting suppliers is perhaps one of the most important activities performed by companies. Errors made during this part of the purchasing cycle can be damaging and long-lasting. Competitive bidding and negotiation are two methods commonly used for final supplier selection when there is not a preferred supplier.

Bidding or Negotiating?

Identifying potential suppliers is different from reaching a contract or agreement with suppliers. Competitive bidding and negotiation are two methods commonly used when selecting a supplier. Competitive bidding in private industry involves a request for bids from suppliers with whom the buyer is willing to do business. This process is typically initiated when the purchasing manager sends a **request for quotation (RFQ)** form to the supplier. The objective is to award business to the most qualified bidder. Purchasers often evaluate the bids based on price. If the lowest bidder does not receive the purchase contract, the buyer has an obligation to inform that supplier why it did not receive the contract. Competitive bidding is effective under certain conditions:

- Volume is high enough to justify this method of business.
- The specifications or requirements are clear to the seller. The seller must know or have the ability to estimate accurately the cost of producing the item.
- The marketplace is competitive, which means it has an adequate number of qualified sellers that want the business.
- Buyers ask for bids only from technically qualified suppliers that want the contract, which in turn means they will price competitively.
- Adequate time is available for suppliers to evaluate the requests for quotation.
- The buyer does not have a preferred supplier for that item. If a preferred supplier exists, the buyer may simply choose to negotiate the final details of the purchase contract with that supplier.

Buyers use competitive bidding when price is a dominant criterion and the required item (or service) has straightforward material specifications. In addition, competitive bidding is often used in the defense industry and for large projects (e.g., construction projects and information system development). If major nonprice variables exist, then the buyer and seller usually enter into direct negotiation. Competitive bidding can also be used to narrow the list of suppliers before entering contract negotiation.

Negotiation is logical when competitive bidding is not an appropriate method for supplier selection. Face-to-face negotiation is the best approach in the following cases:

- When any of the previously mentioned criteria for competitive bidding are missing. For example, the item may be a new or technically complex item with only vague specifications.
- When the purchase requires agreement about a wide range of performance factors, such as price, quality, delivery, risk sharing, and product support.
- When the buyer requires early supplier involvement.
- When the supplier cannot determine risks and costs.
- When the supplier requires a long period of time to develop and produce the items purchased. This often makes estimating purchase costs on the part of the supplier difficult.

As firms continue to develop closer relationships with selected suppliers, the negotiation process becomes one of reaching agreement on items in a cooperative mode. One thing is certain: The process that buyers use to select suppliers can vary widely depending on the required item and the relationship that a buyer has with its suppliers. For some items, a buyer may know which supplier to use before the development of final material specifications. For standard items, the competitive bid process will remain an efficient method to purchase relatively straightforward requirements. The bid process can also reduce the list of potential suppliers before a buyer begins time-consuming and costly negotiation. Chapter 14 discusses negotiation in detail.

After bids have been received or the negotiation has taken place, the sourcing team will select a supplier and then move on to authorize the purchase through the purchase approval process.

Request for Quotation

If the requisition requests an item for a higher dollar amount with no existing supplier, then purchasing may obtain quotes or bids from potential suppliers. Purchasing forwards a request for quotation to suppliers inviting them to submit a bid for a purchase contract. Exhibit 2.4 presents an example of a request for quotation form. The form provides space for the information that suppliers require to develop an accurate quotation, including the description of the item, quantity required, date needed, delivery location, and whether the buyer will consider substitute offers. Purchasing can also indicate the date by which it must receive the supplier's quotation. The supplier completes the form by providing name, contact person, unit cost, net amount, and any appropriate payment terms. The supplier then forwards the request for quotation to the buyer for comparison against other quotations. The normal practice is for a buyer to request at least three quotations. Purchasing evaluates the quotations and selects the supplier most qualified to provide the item.

Specifications or Blueprints

If the requested item is complex or requires an untested or new production process, purchasing can include additional information or attachments to assist the supplier. This might include detailed blueprints, samples, or technical drawings. In addition, buyers can use requests for quotation as a preliminary approach to determine if a potential supplier even has the capability to produce a new or technically complex item. A buyer must identify suppliers with the required production capability before requesting detailed competitive bids. Further quotation and evaluation can then occur to identify the best supplier.

Exhibit 2.4 Request for Quotation

USE ONLY 3 LINES FOR VENDORS 1 & 3
USE ONLY 4 LINES FOR VENDOR 2. NOTE SMALL NUMBERS 1 2 & 3 FOR FOLDING TO FIT STD. NO. 10 ENVELOPE

CORPORATE FORMS MANAGEMENT

SEPARATE BETWEEN PLIES 2 & 3 – RETAIN 1 & 2 INTACT WITH CARBON IN FOR LATER ENTRIES. DISTRIBUTE 3 - 4 - 5 TO VENDORS & PLY 6 TO REQUISITIONER.

AnyCompany

REQUEST FOR QUOTATION

THIS IS NOT A PURCHASE ORDER

DATE

SUMMARY OF QUOTATIONS QUOTATION NO.

QUANTITY	NO. 1	NO. 2	NO. 3
DELIVERY DATE			
F.O.B.			
FREIGHT COST			
TERMS			

NO. 1 ▶
NO. 2 ▶
NO. 3 ▶

1

2 **PLEASE QUOTE ON THE FOLLOWING ITEMS:** WE WILL ☐ WE WILL NOT ☐ CONSIDER SUBSTITUTE OFFERS.

3 FOR SHIPMENT TO	DELIVERY REQUIRED BY	REPLY MUST BE IN BY:
F.O.B.	TERMS	ADDRESS REPLY TO:

ITEM NO	QUANTITY	DESCRIPTION	UNIT COST	DISCOUNT	NET AMOUNT
1					
2					
3					

AnyCompany PURCHASING DEPARTMENT BY

IN COMPLIANCE WITH THE ABOVE AND SUBJECT TO ALL THE CONDITIONS STATED, THE UNDERSIGNED OFFERS AND AGREES, THAT IF HIS QUOTATION OR PART OF QUOTATION BE ACCEPTED, THAT HE WILL FURNISH AND DELIVER THE ARTICLES OR SERVICES SO LISTED ABOVE, AT THE PRICES QUOTED, TO THE DESIGNATED POINT, AND WITHIN THE TIME SPECIFIED.

QUOTATION DATE _____ FIRM NAME _____ BY _____

QUOTATION MUST BE SUBMITTED ON THIS FORM

PURCHASING DEPT. COPY

If the purchase contract requires negotiation between the buyer and seller (rather than competitive bidding), purchasing sends a **request for proposal (RFP)** to a supplier. In many firms, RFQs and RFPs are synonymous. However, in the latter case, the item's complexity requires that a number of issues besides price need to be included in the supplier's response.

Evaluate Suppliers

As shown in Exhibit 2.1, when the size of the purchase dictates that a detailed evaluation is required for a new purchase, supplier evaluation may be required. The potential evaluation of suppliers begins after determining that a purchase need exists (or is likely to exist) and the development of material specifications occurs. For routine or standard product requirements with established or selected suppliers, further supplier evaluation and selection is not necessary, and the approval process may be generated. However, potential sources for new items, especially those of a complex nature, require thorough investigation to be sure that purchasing evaluate only qualified suppliers.

The source evaluation process requires the development of a list of potential suppliers. This list may be generated from a variety of sources, including market representatives, known suppliers, information databases, and trade journals. For some items, companies may maintain a list of preferred suppliers that receive the first opportunity for new business. A preferred supplier has demonstrated capability through past performance. Relying on a list of preferred suppliers can reduce the time and resources required for evaluating and selecting suppliers.

Buyers use different performance criteria when evaluating potential suppliers. These criteria are likely to include a supplier's capabilities and past performance in product design, commitment to quality, management capability and commitment, technical ability, cost performance, delivery performance, and the ability to develop process and product technology. These factors are weighted in the supplier evaluation process. Specific examples of such weighting schemes appear in Chapter 8 on supplier evaluation. Final evaluation often requires visits to supplier plants and facilities. Because the resources to conduct such visits are limited, the purchaser must take great care in deciding which suppliers to visit.

In recent years, firms have also begun to utilize an electronic competitive bidding tool called a **reverse auction** or an **e-auction**. These mechanisms work exactly like an auction, but in reverse. That is, the buyer identifies potential qualified suppliers to go online to a specific website at a designated time and bid to get the business. In such cases, the lowest bid will often occur as suppliers see what other suppliers are bidding for the business and, in an effort to win the contract, bid it lower. Although they are somewhat ruthless, reverse auctions have been found to drive costs much lower when there is adequate competition in a market.

Approval, Contract, and Purchase Order Preparation

After the supplier is selected or a requisition for a standard item is received, purchasing grant an approval to purchase the product or service. This is accomplished through several different approaches, depending on the type of system in place.

Exhibit 2.5 Purchase Order

CORPORATE FORMS MANAGEMENT

ACCOUNT CODE NUMBER/A.F.E. NO./A/F/M/ NO.	REQUESTED BY	REQUISITION NO.	VENDOR NO.

AnyCompany

PURCHASE ORDER
No.

PURCHASE ORDER NUMBER MUST BE SHOWN ON ALL DOCUMENTS, ACKNOWLEDGEMENTS, SHIPPING PAPERS, PACKING SLIPS, PACKAGES, INVOICES AND CORRESPONDENCE.

INVOICE IN TRIPLICATE ATTN: ACCOUNTS PAYABLE

DATE WRITTEN	DATE DELIVERY REQUIRED	F.O.B.	DEPARTMENT OR LOCATION	TERMS

TO

SHIPPING INSTRUCTIONS

THIS ORDER SUBJECT TO CONDITIONS ON REVERSE SIDE

☐ TAXABLE ☐ TAX EXEMPT

ITEM NO	QUANTITY	DESCRIPTION	PRICE

– IMPORTANT –
IF YOU CANNOT DELIVER THIS MATERIAL OR SERVICE BEFORE DATE REQUIRED PLEASE NOTIFY US **IMMEDIATELY**

NOTICE:
EQUIPMENT, MATERIALS AND/OR SERVICE UNDER THIS CONTRACT MUST COMPLY WITH ALL APPLICABLE STATE AND FEDERAL SAFETY CODES FOR PLACES OF EMPLOYMENT, INCLUDING OSHA.

AnyCompany

_____
PURCHASING AGENT ☐ ASST ☐ BUYER

AN EQUAL EMPLOYMENT OPPORTUNITY EMPLOYER

Purchase Order

The drafting of a purchase order, sometimes called a **purchase agreement**, takes place after supplier selection is complete. Purchasing must take great care when wording a purchase agreement because it is a legally binding document. Almost all purchase orders include on the reverse side of the agreement the standard legal conditions that the order (i.e., the contract) is subject to. The purchase order details critical information about the purchase: quantity, material specification, quality requirements, price, delivery date, method of delivery, ship-to address, purchase order number, and order due date. This information, plus the name and address of the purchasing company, appears on the front side of the order. Exhibit 2.5 on p. 59 presents an example of a purchase order, and Exhibit 2.6 illustrates a typical set of conditions and instructions.

Companies with an older paper system have a cumbersome process (see Exhibit 2.3). Approximately seven to nine copies typically accompany the purchase order. In computerized environments, a file containing a copy of the PO is sent to each department's computer mailbox. The supplier receives the original copy of the purchase order along with a file copy. The supplier signs the original and sends it back to the buyer. This acknowledges that the supplier has received the purchase order and agrees with its contents. In legal terms, the transmittal of the purchase order constitutes a contractual offer, whereas the acknowledgment by the supplier constitutes a

Exhibit 2.6 A Typical Set of Conditions and Instructions for a Purchase Order

1. Any different or additional terms or conditions in Seller's (Contractor's) acknowledgment of this order are not binding unless accepted in writing by Buyer.
2. Seller shall comply with all applicable state, federal, and local laws, rules, and regulations.
3. Seller expressly covenants that all goods and services supplied will conform to Buyer's order; will be merchantable, fit, and sufficient for the particular purpose intended; and will be free from defects, liens, and patent infringements. Seller agrees to protect and hold harmless Buyer from any loss or claim arising out of the failure of Seller to comply with the above, and Buyer may inspect and reject nonconforming goods and may, at Buyer's option, either return such rejected goods at Seller's expense, or hold them pending Seller's reasonable instructions.
4. The obligation of Seller to meet the delivery dates, specifications, and quantities, as set forth herein, is of the essence of this order, and Buyer may cancel this order and Seller shall be responsible for any loss to or claim against Buyer arising out of Seller's failure to meet the same.
5. Buyer reserves the right to cancel all or any part of this order which has not actually been shipped by Seller, in the event Buyer's business is interrupted because of strikes, labor disturbances, lockout, riot, fire, act of God or the public enemy, or any other cause, whether like or unlike the foregoing, if beyond the reasonable efforts of the Buyer to control.
6. The remedies herein reserved shall be cumulative, and additional to any other or further remedies provided in law or equity. No waiver of a breach of any provision of this contract shall constitute a waiver of any other breach, or of such provisions.
7. The provisions of this purchase order shall be construed in accordance with the Uniform Commercial Code as enacted in the State of Georgia.
8. Government Regulations:
   (1) Seller's and Buyer's obligations hereunder shall be subject to all applicable governmental laws, rules, regulations, executive orders, priorities, ordinances, and restrictions now or hereafter in force, including but not limited to (a) the Fair Labor Standards Act of 1938, as amended; (b) Title VII of the Civil Rights Act of 1964, as amended; (c) the Age Discrimination in Employment Act of 1967; (d) Section 503 of the Rehabilitation Act of 1973; (e) Executive Order 11246; (f) the Vietnam Era Veteran's Readjustment Assistance Act of 1974; and the rules, regulations, and orders pertaining to the above.
   (2) Seller agrees that (a) the Equal Opportunity Clause; (b) the Certification of Nonsegregated Facilities required by Paragraph (7) of Executive Order 11246; (c) the Utilization of Minority Business Enterprises and the Minority Business Enterprises Subcontracting Program Clauses; (d) the Affirmative Action for Handicapped Worker's Clause; and (e) the Affirmative Action for Disabled Veterans and Veterans of the Vietnam Era Clause are, by this reference, incorporated herein and made a part hereof.
   (3) Seller agrees (a) to file annually a complete, timely, and accurate report on Standard Form 100 (EEO-1) and (b) to develop and maintain for each of its establishments a written affirmative action compliance program which fulfills the requirements of 41 C.F.R. 60-1.40 and Revised Order No. 4 (41 C.F.R. 60-2.1 et seq.).

contractual acceptance. Offer and acceptance are two critical elements of a legally binding agreement.

Purchasing forwards a copy of the purchase order (either electronically or manually) to accounting (accounts payable), the requesting department, receiving, and traffic. Purchasing usually keeps several copies for its records. There are good reasons for allowing other departments to view purchase orders and incoming receipts:

- The accounting department gains visibility to future accounts payable obligations. It also has an order against which to match a receipt for payment when the material arrives.
- The purchase order provides the requesting department with an order number to include in its records.
- The requestor can refer to the purchase order number when inquiring into the status of an order.
- Receiving has a record of the order to match against the receipt of the material. Receiving also can use outstanding purchase orders to help forecast its inbound workload.
- Traffic becomes aware of inbound delivery requirements and can make arrangements with carriers or use the company's own vehicles to schedule material delivery.
- Purchasing use their copies of the purchase order for follow-up and monitoring open orders.
- Orders remain active in all departments until the buying company acknowledges receipt of the order and that it meets quantity and quality requirements.

Note that firms are increasingly using computerized databases to perform these processes and are moving toward a paperless office.

Blanket Purchase Order

For an item or group of items ordered repetitively from a supplier, purchasing may issue a **blanket purchase order**—an open order, usually effective for one year, covering repeated purchases of an item or family of items. Exhibit 2.7 on p. 62 provides an example of such a form. Blanket orders eliminate the need to issue a purchase order whenever there is a need for material. After a buyer establishes a blanket order with a supplier, the ordering of an item simply requires a routine order release. The buyer and seller have already negotiated or agreed upon the terms of the purchase contract. With a blanket purchase order, the release of material becomes a routine matter between the buyer and seller.

Almost all firms establish blanket purchase orders with their suppliers. In fact, blanket orders have historically been the preferred method for making the purchasing process more efficient and user friendly. Buyers usually prefer a purchase order for initial purchases or a one-time purchase, which purchasing professionals may also call a "spot buy." Blanket purchase orders are common for production items ordered on a regular basis or for the routine supplies required to operate. A maintenance supplies distributor, for example, may have a purchase order covering hundreds of items. It is not unusual for the buyer or seller to modify a purchase order to reflect new prices, new quantity discount schedules, or the adding or deleting of items.

Exhibit 2.7 Blank Purchase Order

CORPORATE FORMS MANAGEMENT

ACCOUNT CODE NUMBER/A.F.E. NO./A.F.M. NO.	REQUESTED BY	REQUISITION NO.	VENDOR NO.
Refer to Blanket Order Release	J. M. Smith	20659	02867

AnyCompany
Corporate Purchasing
Street Address
Any City, State 00000
Telephone

PURCHASE ORDER
No. 34833

SEND INVOICE TO:
ATTN: ACCOUNTS PAYABLE

PURCHASE ORDER NUMBER MUST BE SHOWN ON ALL DOCUMENTS, ACKNOWLEDGEMENTS, SHIPPING PAPERS, PACKING SLIPS, PACKAGES, INVOICES AND CORRESPONDENCE.

DATE WRITTEN	DATE DELIVERY REQUIRED	F.O.B.	DEPARTMENT OR LOCATION	TERMS
1/ 3/ 04	As Requested	Our Plant	Various	2% 10, Net 30

TO
Miller Plumbing Supply Company
1616 S. E. 3rd Avenue
Anytown, Any State 90641

SHIPPING INSTRUCTIONS
☑ ATTN: SUPPLY ROOM
☐
☑ TAXABLE ☐ TAX EXEMPT

ITEM NO.	QUANTITY	DESCRIPTION	PRICE
		BLANKET PURCHASE ORDER This Blanket Purchase Order is issued to cover our purchases of valves, pipe and fittings from you for the period 1/3/04 through 6/30/04. Prices are not to exceed your proposal dated 12/15/03 for the period of this order. This order is not a commitment for any material until actual releases are made on our standard Blanket Order Release form #GP-3809 by an authorized AnyCompany employee whose name appears below. All shipments, deliveries, and pick-ups will be accompanied by a delivery ticket or packing slip. All packing slips, delivery tickets, invoices and any other documents relating to this order must reference this Blanket Purchase Order number and the applicable Blanket Order Release number. AnyCompany reserves the right to cancel this order at any time without cost or obligation for any items not released against this order. Personnel authorized to make releases against this Blanket Purchase Order: THIS PURCHASE ORDER SUPERSEDES PURCHASE ORDER #40019, DATED JULY 1, 2002.	

– IMPORTANT –
IF YOU CANNOT DELIVER THIS MATERIAL OR SERVICE BEFORE DATE REQUIRED PLEASE NOTIFY US **IMMEDIATELY.**

AnyCompany
John M Doe
PURCHASING AGENT ☐ ASST ☐ BUYER

THIS ORDER SUBJECT TO CONDITIONS ON REVERSE SIDE

NOTICE: EQUIPMENT, MATERIALS AND/OR SERVICE UNDER THIS CONTRACT MUST COMPLY WITH ALL APPLICABLE STATE AND FEDERAL SAFETY CODES FOR PLACES OF EMPLOYMENT, INCLUDING OSHA.

AN EQUAL EMPLOYMENT OPPORTUNITY EMPLOYER

The blanket purchase order is similar to the purchase order in general content and is distributed to the same departments that receive a copy of a purchase order. The major difference between a purchase order and a blanket purchase order is the delivery date and the receiving department. This information on the blanket order remains open because it often differs from order to order.

When negotiating a blanket purchase order, the buyer and supplier evaluate the anticipated demand over time for an item or family of items. The two parties agree on the terms of an agreement, including quantity discounts, required quality levels, delivery lead times, and any other important terms or conditions. The blanket purchase order remains in effect during the time specified on the agreement. This time period is often, but not always, six months to a year. Longer-term agreements covering several years are becoming increasingly common with U.S. firms. Most buyers reserve the right to cancel the blanket order at any time, particularly in the event of poor supplier performance. This requires an **escape clause** that allows the buyer to terminate the contract in the event of persistently poor quality, delivery problems, and so on.

Material Purchase Release

Buyers use material purchase releases to order items covered by blanket purchase orders. Purchasing specifies the required part number(s), quantity, unit price, required receipt date, using department, ship-to address, and method of shipment and forwards this to the supplier. Purchasing forwards copies of this form to the supplier, accounting, receiving, and traffic. Purchasing retains several copies for its records. The copy to the supplier serves as a notification of a required item or items. Accounting receives a copy so it can match the quantity received against the quantity ordered for payment purposes. Receiving must have visibility of incoming orders so it can compare ordered quantities with received quantities. As with other forms, this part of the process is increasingly becoming electronic.

Different types of material releases exist. Organizations often use the material release as a means to provide visibility to the supplier about forecasted material requirements as well as actual material requirements. One U.S. automobile producer provides suppliers with an 18-month forecast for replacement parts. The first three months of the release are actual orders. The remaining nine months represent forecasted requirements that help the supplier plan.

In other cases, a more detailed contract is required above and beyond a simple purchase order. A contract is typically required if the size of the purchase exceeds a predetermined monetary value (e.g., $1,000), or if there are risks associated with doing business with a supplier where the potential for conflict and problems is not negotiated prior to the purchase. Because purchasing professionals buy products and services as a career, it is not surprising that they deal regularly with contracts. It is therefore critical that purchasing managers understand the underlying legal aspects of business transactions and develop the skills to manage those contracts and agreements on a day-to-day basis. Once a contract has been negotiated and signed, the real work begins. From the moment of signing, it is the purchasing manager's responsibility to ensure that all of the terms and conditions of the agreement are fulfilled. If the terms and conditions of a contract are breached, purchasing personnel are also responsible for resolving the conflict. In a perfect world, there would be no need for a contract, and all deals would be sealed with a handshake. However, contracts are an important part of managing buyer-supplier relationships as they explicitly define the

roles and responsibilities of both parties, as well as how conflicts will be resolved if they occur (which they almost always do).

Purchasing contracts can be classified into different categories based on their characteristics and purpose. Almost all purchasing contracts are based on some form of pricing mechanism and can be categorized as a variation on two basic types: fixed-price and cost-based contracts. The differences in contracts will be discussed later in Chapter 14.

Fixed-Price Contracts

Firm Fixed Price

The most basic contractual pricing mechanism is called a firm fixed price. In this type of purchase contract, the price stated in the agreement does not change, regardless of fluctuations in general overall economic conditions, industry competition, levels of supply, market prices, or other environmental changes. This contract price can be obtained through a number of pricing mechanisms: price quotations, supplier responses to the buying organization's requests for proposal, negotiations, and other methods. Fixed-price contracts are the simplest and easiest for purchasing to manage because there is no need for extensive auditing or additional input from the purchasing side.

If market prices for a purchased good or service rise above the stated contract price, the seller bears the brunt of the financial loss. However, if the market price falls below the stated contract price because of outside factors such as competition, changes in technology, or raw material prices, the purchaser assumes the risk or financial loss. If there is a high level of uncertainty from the supplying organization's point of view regarding its ability to make a reasonable profit under competitive fixed-price conditions, then the supplier may add to its price to cover potential increases in component, raw material, or labor prices. If the supplier increases its contract price in anticipation of rising costs, and the anticipated conditions do not occur, then the purchaser has paid too high a price for the good or service. For this reason, it is very important for the purchasing organization to adequately understand existing market conditions prior to signing a fixed-price contract to prevent contingency pricing from adversely affecting the total cost of the purchase over the life of the contract.

Cost-Based Contracts

Cost-based contracts are appropriate for situations in which there is a risk that a large contingency fee might be included using a fixed-price contract. Cost-based contracts typically represent a lower level of risk of economic loss for suppliers, but they can also result in lower overall costs to the purchaser through careful contract management. It is important for the purchaser to include contractual terms and conditions that require the supplier to carefully monitor and control costs. The two parties to the agreement must agree on what costs are to be included in the calculation of the price of the goods or services procured.

Cost-based contracts are generally applicable when the goods or services procured are expensive, complex, and important to the purchasing party or when there is a high degree of uncertainty regarding labor and material costs. Cost-based contracts are generally less favorable to the purchasing party because the threat of financial risk is transferred from the seller to the buyer. There is also a low incentive for the

supplier to strive to improve its operations and lower its costs (and hence the price to the purchaser). In fact there is an incentive, at least in the short run, for suppliers to be inefficient in cost-based contracts because they are rewarded with higher prices.

Receipt and Inspection

This phase of the purchasing cycle involves the physical transmittal of purchase requirements (see Exhibit 2.1 with further details in Exhibit 2.8). This should be a fairly routine, although not necessarily the most efficient, part of the purchasing cycle. Some organizations transmit orders electronically, whereas others send material releases through the mail or by fax. Purchasing or materials planning must minimize the time required to release and receive material. **Electronic data interchange (EDI)**, which involves the electronic transfer of purchase documents between the buyer and seller, can help shorten order cycle time. EDI transactions, particularly through the Internet, will increase over the next several years. Also, better relationships with suppliers can support a just-in-time (JIT) ordering system. In some companies, once a contract is negotiated, internal end users may be directly responsible for releasing material orders covered under the terms of the contract, and purchasing personnel are no longer involved until the contract is renewed. Exhibit 2.9 on p. 66 shows the trend in how organizations are moving toward automating the different portions of the procurement process.

Purchasing or a materials control group must monitor the status of open purchase orders. There may be times when a purchaser has to expedite an order or work with a supplier to avoid a delayed shipment. A buyer can minimize order follow-up by selecting only the best suppliers and developing stable forecasting and efficient ordering systems. The receiving process should also be made as efficient as possible by using bar code technology to receive and place supplier deliveries in inventory.

Exhibit 2.8 Receiving Process

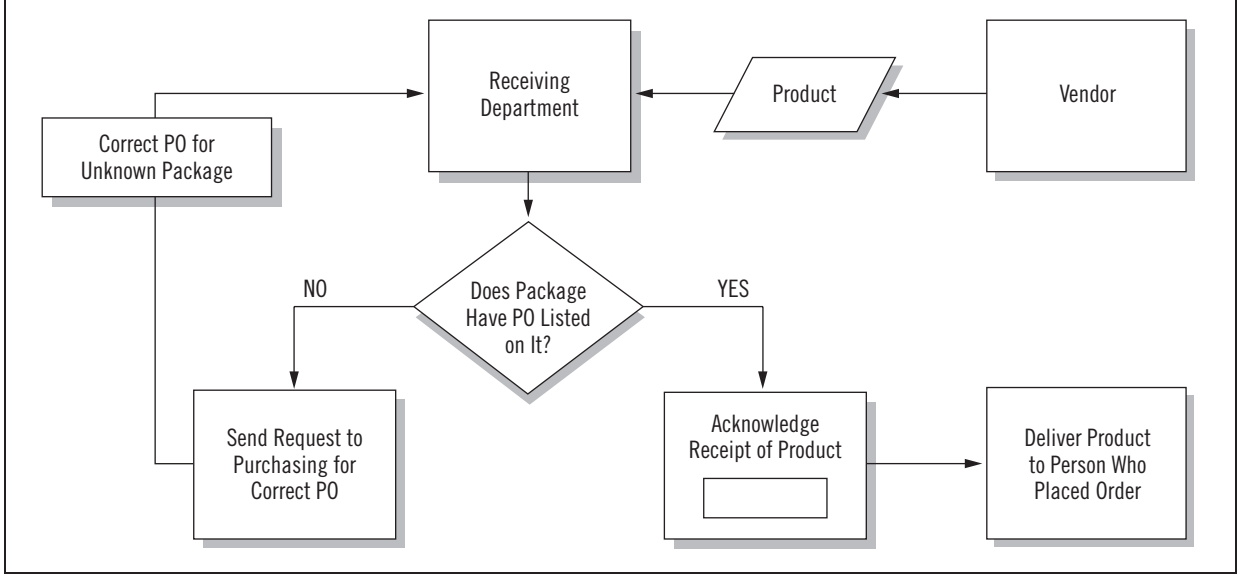


Exhibit 2.9 Methods or Approaches Organizations Expect to Emphasize to Reduce the Effort or Transactions Required to Process Low-Value Purchases

METHOD OR APPROACH	TOTAL SAMPLE	INDUSTRIAL	NONINDUSTRIAL
Online requisitioning systems from users to purchasing	66.3%*	64.9%	67.4%
Procurement cards issued to users	65.1	59.7	69.6
Electronic purchasing commerce through the Internet	60.9	68.8	54.3
Blanket purchase order agreements	57.4	63.7	52.2
Longer-term purchase agreements	54.4	58.4	51.1
Purchasing online ordering systems to suppliers	61.0	46.7	53.3
Purchasing process redesign	53.3	50.7	55.4
Electronic data interchange	52.7	58.4	47.8
Online ordering through electronic catalogs	51.5	49.4	53.3
Allowing users to contact suppliers directly	49.7	54.5	45.7
User online ordering systems to suppliers	49.1	51.9	46.7
	N = 169	*N* = 77	*N* = 92

*Represents the percentage of total respondents expecting to emphasize a method or approach.
Source: Trent and Kolchin, 1999.

The shipping and receiving processes require several other important documents that also can be electronic, including the material packing slip, the bill of lading, and the receiving discrepancy report.

Material Packing Slip

The **material packing slip**, which the supplier provides, details the contents of a shipment. It contains the description and quantity of the items in a shipment. It also references a specific purchase order and material release number for tracking and auditing purposes. A packing slip is a critical document when receiving material at a buyer's facility. The receiving clerk uses the packing slip to compare the supplier packing slip quantity against the actual physical receipt quantity. Furthermore, the packing slip quantity should match the material release quantity. The comparison between material release quantity and packing slip quantity is critical. It determines if suppliers have over- or undershipped.

Bill of Lading

Transportation carriers use a **bill of lading** to record the quantity of goods delivered to a facility. For example, the bill of lading may state that ABC carrier delivered three boxes to a buyer on a certain date. This prevents the purchaser from stating a week later that it received only two boxes. The bill of lading details only the number of boxes or containers delivered. Detailing the actual contents of each container is the supplier's responsibility; that information appears on the packing slip.

The bill of lading helps protect the carrier against wrongful allegations that the carrier somehow damaged, lost, or otherwise tampered with a shipment. This document does not necessarily protect the carrier against charges of concealed damage, however. A user may discover concealed damages after opening a shipping container. Responsibility for concealed damage is often difficult to establish. The receiving company may blame the carrier. The carrier may blame the supplier or maintain that the damage occurred after delivery of the material. The supplier may maintain total

innocence and implicate the carrier. While all this goes on, the buyer must reorder the material as a rush order. This can affect customer service or commitments.

Receiving Discrepancy Report

A **receiving discrepancy report** details any shipping or receiving discrepancies noted by the receiving department. It is often the job of purchasing or material control to investigate and resolve material discrepancies. Material discrepancies usually result from incorrect quantity shipments. They can also result from receiving an incorrect part number or a part number incorrectly labeled.

Just-in-Time Purchasing

Just-in-time purchasing and manufacturing allows firms to eliminate most receiving forms. Honda of America, for example, assumes that if its production line does not shut down it must have received its scheduled shipments from its suppliers. The accounts payable department makes payment unless informed otherwise. Honda's JIT system eliminates the need for packing slips and inbound material inspection. The system also eliminates the need to examine, file, and forward multiple copies of each packing slip to various departments. If a receipt does not arrive on time or is not damage free, Honda realizes this within minutes. With this system, no news means the shipment arrived and is production ready.

Black & Decker employs a similar system called **backflush accounting**. In this system, suppliers are paid only for the quantity of components that are used in each week's production runs. In the event that parts are tossed aside on the production line because of defects, Black & Decker does not pay for them.

Someone (typically purchasing or materials personnel) must monitor the status of open purchase orders. There may be times when the buying firm has to expedite an order or work with a supplier to avoid a delay in a shipment. A company can minimize order follow-up by selecting only the best suppliers and developing internally stable forecasting and ordering systems. When the order for a physical good arrives at the buyer's location, it is received and inspected to ensure that the right quantity was shipped and that it was not damaged in transit. Assuming that the product or service was delivered on time, it will be entered into the company's purchasing transaction system. Physical products delivered by suppliers then become part of the company's working inventory.

In the case of services, the buyer must ensure that the service is being performed according to the terms and conditions stated in the purchase order. For services, the user will typically sign off on a supplier time sheet or other document to signal purchasing that the service was delivered as promised, on time, and according to the conditions stated in the initial SOW. That may mean checking with the actual users within the organization who requested the service in the first place and ensuring that all is going as planned. Deviations from the statement of work must be noted and passed on to the supplier, which in some cases may require modifications to the original PO or contracted SOW (often called a **change notice** when this occurs).

Invoice Settlement and Payment

Once the item or service is delivered, the buying firm will issue an authorization for payment to the supplier. Payment is then made through the organization's accounts payable department. This is increasingly being accomplished through

electronic means. Suppliers are more often being paid through **electronic funds transfer (EFT)**, which is the automatic transfer of payment from the buyer's bank account to the supplier's bank account. More and more organizations are moving to integrated systems where all purchase orders, receipts, and payments are made electronically.

Records Maintenance

After the product or service has been delivered and the supplier paid, a record of critical events associated with the purchase is entered into a supplier performance database. The supplier performance database accumulates critical performance data over an extended period, helping purchasing identify trends or patterns in supplier performance.

Why is it important to capture the transaction-level data associated with all purchasing processes? This answer is discussed in the next section. Specifically, from time to time the firm must identify opportunities for savings through a process known as a spend analysis. Spend analysis becomes a critical input into building sourcing strategies—the topic of the next section.

Continuously Measure and Manage Supplier Performance

One way to identify the best suppliers is to track performance after awarding a contract. Supplier measurement and management is a key part of the purchasing cycle. As shown in Exhibit 2.1, buyers should not assume that the purchasing cycle ends with the receipt of an ordered item or the selection of a supplier. Continuous measurement is necessary to identify improvement opportunities or supplier nonperformance. A later chapter discusses purchasing measurement and evaluation tools. This section simply summarizes the key points about this phase of the purchasing cycle.

A desired outcome from performance measurement is improved supplier performance. If no formal evaluation takes place, a buyer has little insight into supplier performance over time, and tracking any performance improvement that results from supplier development efforts is not possible. Without a measurement and evaluation system, a buyer lacks the quantitative data necessary to support future purchase decisions.

A major issue when evaluating supplier performance is the frequency of evaluation and feedback. For example, should a buyer receive a supplier quality performance report on a daily, weekly, monthly, or quarterly basis? Although most firms recognize the need to notify suppliers immediately when a problem arises, there is little consensus about the frequency for conducting routine or scheduled supplier evaluations. For many firms, this overall evaluation may occur only one or two times a year. Regardless of the reporting frequency, supplier performance measurement is an important part of the purchasing process cycle.

Re-engineering the Procure to Pay Process

Many companies have P2P processes that are in disrepair and are focused on improving the P2P cycle. In re-engineering the procure to pay process, suppliers and experts recommend that executives apply the following approach:

1. Secure top management support for the initiative and budgeting for the project. Develop a list of key benefits and deliverables that will occur as a result of

the improvements. Document the cost of leaving the system "broken" in its current state.

2. Map existing processes and problems with the P2P cycle. Identify where the breakdowns are occurring and why they are occurring.
3. Understand the needs and requirements of the user groups. Many of the people involved—maintenance, planning, project management, supplier's accounts payable, buyers, and so on—have specific issues that prevent them from using the existing system. Also, many of the specific sites may have issues that need to be considered in designing the new system.
4. Team redesign workshops should be used to bring together key subject matter experts (SMEs) from each of the business units. Suppliers should also be invited to attend and participate, as they may have solutions they have adopted with other customers that may prove to be efficient and simple to use ("why reinvent the wheel?").
5. Explore existing technology solutions with ERP systems, as well as bolt-on applications. Map out the business requirements and ensure they are aligned with the technology solutions that are available. Begin to estimate cost of deployment, and ensure that adequate planning and due diligence is taken at this step.
6. Following the workshops, define the new process, and begin to pilot using a planned technology. Ensure that it takes place in a real environment, with actual nontrained users involved in the pilot before cutting over to the next process.
7. Train and deploy other users based on the new processes and systems. Be sure to make the training appropriate to the specific functional unit and user groups.
8. Monitor, update, and improve the system, ensuring that catalogs are kept up to date. Hold periodic meetings with suppliers and user groups to solicit input and identify problems with the systems.

As technology and business requirements evolve, the P2P cycle will probably need to be revisited from time to time to ensure it is meeting the needs of internal customers and that suppliers are satisfied with the system.

Types of Purchases

Organizations buy many different goods and services. All purchases represent a tradeoff between what an organization can make itself versus what it must buy externally. For many items, the make-or-buy decision is actually quite simple. Few firms could manufacture their own production equipment, computers, or pencils. However, all firms require these items to support continued operations. The challenge is deciding which suppliers offer the best opportunity for items an organization must purchase externally. The following sections outline the variety of goods and services a typical purchasing department is responsible for buying. Please note that for each category, organizations should establish measures that track the amount of goods in physical inventory.

Raw Materials

The raw materials purchase category includes items such as petroleum, coal, and lumber, and metals such as copper and zinc. It can also include agricultural raw materials such as soybeans and cotton. A key characteristic of a raw material is a lack of processing by the supplier into a newly formed product. Any processing that occurs makes the raw material saleable. For example, copper requires refining to remove impurities from the metal. Another key characteristic is that raw materials are not of equal quality. Different types of coal, for example, can differ by sulfur content. Raw materials often receive a grade indicating the quality level. This allows raw materials purchases based on the required grade.

Semifinished Products and Components

Semifinished products and components include all the items purchased from suppliers required to support an organization's final production. This includes single-part number components, subassemblies, assemblies, subsystems, and systems. Semifinished products and components purchased by an automobile producer include tires, seat assemblies, wheel bearings, and car frames.

Managing the purchase of semifinished components is a critical purchasing responsibility because components affect product quality and cost. Hewlett-Packard buys its laser jet printer engines, which are a critical part of the finished product, from Canon. HP must manage the purchase of these engines carefully and work closely with the supplier. Outsourcing product requirements increases the burden on purchasing to select qualified suppliers, not only for basic components, but also for complex assemblies and systems.

Finished Products

All organizations purchase finished items from external suppliers for internal use. This category also includes purchased items that require no major processing before resale to the end customers. An organization may market under its own brand name an item produced by another manufacturer. Why would a company purchase finished items for resale? Some companies have excellent design capability but have outsourced all production capability or capacity. Examples include IBM, Hewlett-Packard, Sun, Cisco, General Motors (Geo), and others. The purchase of finished products also allows a company to offer a full range of products. Purchasing (or engineering) must work closely with the producer of a finished product to develop material specifications. Even though the buying company does not produce the final product, it must make sure the product meets the technical and quality specifications demanded by engineering and the end customer.

Maintenance, Repair, and Operating Items

Maintenance, repair, and operating (MRO) items include anything that does not go directly into an organization's product. However, these items are essential for running a business. This includes spare machine parts, office and computer supplies, and cleaning supplies. The way these items are typically dispersed throughout an organization makes monitoring MRO inventory difficult. The only way that most purchasing departments know when to order MRO inventory is when a user forwards a purchase requisition. Because all departments and locations use MRO items, a typical

purchasing department can receive thousands of small-volume purchase requisitions. Some purchasers refer to MRO items as nuisance items.

Historically, most organizations have paid minimal attention to MRO items. Consequently, (1) they have not tracked their MRO inventory investment with the same concern with which they track production buying, (2) they have too many MRO suppliers, and (3) they commit a disproportionate amount of time to small orders. With the development of computerized inventory systems and the realization that MRO purchase dollar volume is often quite high, firms have begun to take an active interest in controlling MRO inventory. At FedEx, an agreement with Staples allows purchasing to be free of the burden of tracking office supply requests. Instead, Staples provides a website listing all supplies with prices; users can point and click on the items they need, and the supplier will deliver to the user's location the next business day.

Production Support Items

Production support items include the materials required to pack and ship final products, such as pallets, boxes, master shipping containers, tape, bags, wrapping, inserts, and other packaging material. Production support items directly support an organization's production operation; this is a key distinction separating production support and MRO items. The DaimlerChrysler sourcing snapshot in Chapter 19 provides a good example of how this activity can be managed.

Services

All firms rely on external contractors for certain activities or services. An organization may hire a lawn care service to maintain the grounds around a facility or a heating and cooling specialist to handle repairs that the maintenance staff cannot perform. Other common services include machine repair, snow removal, data entry, consultants, and the management of cafeteria services. Like MRO items, the purchase of services occurs throughout an organization. Therefore, there has been a tendency to pay limited attention to them and to manage the service purchases at the facility or department level. A study by AT&T several years ago revealed that the company was spending over a billion dollars a year on consultants. As with any purchase category, careful and specialized attention can result in achieving the best service at the lowest total cost. More and more, companies are negotiating longer-term contracts with service providers just as they would with other high-dollar purchase categories.

Capital Equipment

Capital equipment purchasing involves buying assets intended for use over one year. There are several categories of capital equipment purchases. The first includes standard general equipment that involves no special design requirements. Examples include general-purpose material-handling equipment, computer systems, and furniture. A second category includes capital equipment designed specifically to meet the requirements of the purchaser. Examples include specialized production machinery, new manufacturing plants, specialized machine tools, and power-generating equipment. The purchase of these latter items requires close technical involvement between the buyer and seller.

Several features separate capital equipment purchases from other purchases. First, capital equipment purchases do not occur with regular frequency. A production machine, for example, may remain in use for 10 to 20 years. A new plant or power

Sourcing Snapshot

Microsoft: 100% Visibility on Indirect Spend

Few companies have as good a handle on their indirect spending as Microsoft. In February 2003, the software giant began using MS Spend, a tool it developed to link data from MS Market, its e-procurement system, with other information on the company's purchasing activities generated by its MS Vendor and MS Invoice technologies. Now Microsoft has 100% visibility of both its global direct and indirect spends at the commodity code level. Microsoft's annual purchasing tab is about $11.5 billion.

Using the latest versions of its own software, Microsoft developed a series of web-based tools to provide a user-friendly interface to its SAP ERP system. MS Market is the company's electronic ordering system that creates and tracks purchase orders and captures United Nations Standard Products and Services Code (UNSPSC) categorization for purchases. MS Invoice is its electronic invoice-processing system that allows suppliers to invoice Microsoft electronically and track the status of invoices submitted. MS Inquire allows suppliers and internal users to pose queries about orders.

MS Spend integrates information captured using MS Market and MS Invoice to provide comprehensive procurement reporting on the corporate intranet. Users access the tools via Internet Explorer. Although Microsoft does not sell the tools, they are available through such company partners as Accenture and EDS.

At Microsoft, procurement has been completely paperless since 1997. Under its distributed procurement model, all the company's employees are buyers of goods and services. As such, they can purchase directly from suppliers as well as use the online procurement tools.

Once the corporate procurement group slashed transaction costs to about $5 through use of the tools, it turned its focus to strategic sourcing. "Our goal has been to leverage more cost-effective sourcing strategies to increase value and efficiency," says Don Jones, general manager, corporate procurement. "Spend analysis is our cornerstone." On the spend analysis team with Jones are John Stevens and Jana Shull of Microsoft Corporate Procurement and Mike Huber of Microsoft Corporate Services.

After benchmarking other companies, Microsoft selected the UNSPSC as its standard commodity classification system. The procurement team was looking for a coding system that it could use not only to classify spend, but also to communicate with its trading partners. Developing an internal system, Jones says, "would hamper our ability to communicate through our e-procurement system with our supply base." The company's hardware suppliers, for instance, all use the same version of the UNSPSC code.

To ensure accurate reporting of spend data, Microsoft invested in additional technology that guides buyers to select proper codes for goods and services they purchase through MS Market. After more benchmarking, the corporate procurement team learned that other UNSPSC users said requisitioners typically don't make the effort to ensure they are using correct codes when placing orders, typically selecting one of the first codes appearing on a list. In UNSPSC code, one of the first codes is for sheep. Once procurement teams ran reports on spend, they learned only that requisitioners in their companies were purchasing a lot of sheep.

Jones was determined that this would not be the case with buyers at Microsoft. As such, the team incorporated a logical selection into its ordering system. The system is designed to host a subset of UNSPSC codes based on the supplier selected by the buyer. As part of the

ordering process, the buyer discretely identifies the good or service at the transaction level. The buyer is given a targeted selection to choose from based on supplier selected. "This information is integrated for our analysis as well as passed to our reporting tools," Jones says. Although the team has a process to randomly check codes, it doesn't cleanse the data; "no one knows better what they are ordering than the buyers themselves," he adds. Corporate procurement uses an online video to train buyers not only on how to use the codes, but also to explain the benefits gained by Microsoft by their doing so.

Source: "Purchasing Honors Seven Companies in 2004 for Their Leading-Edge Practices in Spend Analysis," *Purchasing*, March 18, 2004.

substation may remain in operation over 30 years. Even office furniture may last over 10 years. A second feature is that capital equipment investment requires large sums of money. This can range from several thousand dollars to hundreds of millions of dollars. High-dollar contracts will require finance and executive approvals. For accounting purposes, most capital equipment is depreciable over the life of the item. Finally, capital equipment purchasing is highly sensitive to general economic conditions.

Buyers can rarely switch suppliers in the middle of a large-scale project or dispose of capital equipment after delivery because of dissatisfaction. Furthermore, the relationship between the buyer and supplier may last many years, so the buyer should also consider the supplier's ability to service the equipment. The consequences of selecting a poorly qualified supplier of capital equipment can last for many years. The reverse is also true. The benefit of selecting a highly qualified capital equipment provider can last many years.

Transportation and Third-Party Purchasing

Transportation is a specialized and important type of service buying. Few purchasing departments involved themselves with transportation issues before the early 1980s. However, legislation passed during the late 1970s and early 1980s deregulated the air, trucking, and railroad industries. This legislation allowed buyers to negotiate service agreements and rate discounts directly with individual transportation carriers. Previously, the U.S. government, through the Interstate Commerce Commission, established the rate (referred to as a **tariff**) that a transportation carrier charged. It was common for suppliers to arrange shipment to a purchaser and simply include the transportation cost as part of the purchase cost.

Purchasing personnel have become involved with transportation buying and the management of inbound and outbound material flows. It is now common for purchasing personnel to evaluate and select logistics providers the same way they evaluate and select suppliers of production items. Buyers are also selecting suppliers that are capable of providing coordinated transportation and logistics services for an entire company, including warehousing, packaging, and even assembly. Because many carriers now provide service throughout the United States, a buyer can rely on fewer transportation carriers. The cost savings available from controlling and managing logistics are significant.

Improving the Purchasing Process

Most companies spend too much time and too many resources managing the ordering of goods and service, particularly lower-value items. Some purchasing departments spend 80% of their time managing 20% of their total purchase dollars. Recent research on maintenance, repair, and operating purchases reported that while the average MRO invoice was $50, the total cost of processing an MRO transaction was $150.[1] In another example, a U.S. government agency reported that in a single year it processed 1.1 million transactions at an estimated cost of $300 per transaction! How can organizations create value through their purchasing process when they spend more time processing orders than what the orders are worth?

A recent study by Trent and Kolchin[2] addressed how organizations are improving the purchasing process by reducing the time and effort associated with obtaining lower-value goods and services. The study involved 169 randomly selected organizations, of which 77 are industrial companies and 92 are nonindustrial companies or organizations. Exhibit 2.9 identifies the methods or approaches that organizations expect to emphasize over the next several years to improve the low-value purchasing process. The following sections summarize the approaches and methods presented in the exhibit.

Online Requisitioning Systems from Users to Purchasing

Online requisitioning systems are internal systems designed primarily to save time through efficient and rapid communication. Users should use these systems only if they require purchasing involvement to support a material or service need. If users do not require assistance, they should have access to other low-dollar systems that do not require purchasing involvement.

Advanced organizations are much more likely to allow users to request low-value purchases through internal electronic systems when the need requires purchasing involvement. Organizations that have made less progress managing low-value purchasing use company mail or the phone to receive user requests. Users should rely on efficient requisitioning systems for items that require purchasing involvement. A longer-term focus should be to create systems and processes that empower users to obtain low-value items directly from suppliers rather than involving purchasing.

Procurement Cards Issued to Users

One tool or system that most organizations agree is central to improving the purchasing process is the use of the procurement card, which is essentially a credit card provided to internal users. When users have a lower-value requirement, they simply contact a supplier and use the card to make the purchase. Cards work well for items that do not have established suppliers or are not covered by some other purchasing system. The users make the buying decisions (the money for which comes out of their department's budget) and bypass purchasing completely. The dollar value of the items covered by procurement cards is relatively low. The cost to involve purchasing or engage in a comprehensive supplier search would likely outweigh the cost of the item.

The study by Trent and Kolchin found that the average cost per transaction due to procurement card use decreased from over $80 to under $30. The primary benefits from using cards include faster response to user needs, reduced transaction costs, and reduced total transaction time. In most organizations, purchasing is responsible for introducing and maintaining the card program.

Electronic Purchasing Commerce through the Internet

Electronic purchasing commerce through the Internet refers to a broad and diverse set of activities. Using the Internet to conduct purchasing business is not extensive today, although commercial Internet usage by purchasers should increase dramatically over the next several years. The highest expected growth areas in e-commerce purchasing include the following:

- Transmitting purchase orders to suppliers
- Following up on the status of orders
- Submitting requests for quotes to suppliers
- Placing orders with suppliers
- Making electronic funds transfer payments
- Establishing electronic data interchange capability

Longer-Term Purchase Agreements

Longer-term purchase agreements usually cover a period of one to five years, with renewal based on a supplier's ability to satisfy performance expectations. These agreements can reduce the transactions costs associated with lower-value purchases by eliminating the need for time-consuming annual renewal. Furthermore, once a purchaser and a supplier reach agreement, material releasing responsibility should shift to user groups. Ideally, material releasing becomes electronic rather than manual, even for lower-value items.

Although the two approaches are conceptually similar, differences exist between a blanket purchase order, which purchasers routinely use, and longer-term purchase agreements. Both approaches rely on a contractual agreement to cover specific items or services; they may be for extended periods; they are legal agreements; and they are highly emphasized ways to manage lower-value purchases. However, blanket purchase orders are typically used more often for lower-value items than for longer-term agreements. Longer-term agreements are usually more detailed in the contractual areas they address compared with blanket purchase orders.

Online Ordering Systems to Suppliers

Online ordering systems involve direct electronic links from a purchaser's system to a supplier's system, often through a modem or other web-enabled technologies. A major feature of online ordering systems is that suppliers often bear the responsibility for developing the software required to link with a customer's system. Online ordering is a logical approach once an organization has established a blanket purchase agreement or longer-term contract with a supplier. The strategic part of the sourcing process involves identifying, evaluating, and selecting suppliers. Online ordering systems allow purchasing or users to place orders directly into a supplier's order-entry system. Advantages of online ordering systems include the following:

- Immediate visibility to back-ordered items
- Faster order input time, which contributes to reduced order cycle times
- Reduced ordering errors
- Order tracking capabilities

Sourcing Snapshot

IBM: Closing the Loop on Spend

The real strength in IBM's spend-analysis system lies with its cyclical—as opposed to linear—approach to strategic planning and sourcing. It lies also with IBM's organizational and corporate governance structures.

Through governance, IBM limits the ways in which people can spend money. External commitment requires a PO, and old spending loopholes—like check requests, wire transfers, and expense accounts—are closely controlled, according to Bill Fanning, director of procurement finance, who reports directly to IBM's finance organization and indirectly to chief procurement officer John Paterson.

"There's no escape route," Fanning says. "Our system detects and reports anyone who bypasses the procurement system every time they do it. If a person comes to us with an invoice in hand, we say, 'Okay, we'll pay, but we have to set up a PO.' That creates an immediate report to their manager. If they do it a second time, they receive an official reprimand. If they do it a third time, they're subject to dismissal. People have been fired."

IBM captures spend data in real time at two different points: when money is committed (often 30–60 days before it is paid out) and again when money goes out the door. Planned refinements to the system will capture even more forward-looking demand data earlier in the decision cycle.

After capturing its spend data, IBM classifies it automatically using a proprietary, highly granular taxonomy and closes the procurement-to-finance loop by mapping corporate spend data —which is organized by commodity, supplier, etc.—to the various brands' and business-units' accounting ledgers. "Financial folks are not really interested in how a commodity is defined," explains Fanning. "They understand the ledger. By building a bridge between procurement's taxonomy and the ledger's taxonomy, we have created an ability to really manage spend and to affect our business units' profit and loss (P&L) statements."

But IBM doesn't stop there. The company also has the ability to associate spend data with other procurement information such as competitive cost (IBM's historical cost curve compared to an industry benchmark cost curve), absolute lowest cost, and other competitive commodity market intelligence gathered routinely by its 31 sourcing councils. "Fundamentally, the only reason procurement has a reason to exist is to develop a competitive advantage, but you have to be able to measure that," Fanning says.

IBM's spend analysis structure allows the procurement organization to do the following:

- Forecast what the company will spend over the coming year and how the spend will break down by business unit
- Provide an outlook as to what is likely to happen with commodity market pricing
- Report how sourcing councils will deliver savings to specific IBM brands or business units
- Plan with brand managers or business units how they will deploy expected savings (either "take down" or invest elsewhere) in their P&Ls
- Close the loop by measuring performance to plans

"Spend data is used in tracking monthly performance of all (31) commodity councils and the global procurement organization," says Fanning. "The data provides a direct link to the profit and loss metrics of each brand and group within IBM."

Source: "Purchasing Honors Seven Companies in 2004 for Their Leading-Edge Practices in Spend Analysis." *Purchasing,* March 18, 2004.

- Order acknowledgment from the supplier, often with shipping commitment dates
- Ability to batch multiple items from multiple users on a single online order
- Faster order cycle time from input to delivery

Suppliers establish online ordering systems so purchasers can have dedicated access to the supplier's order-entry system. The system creates a seamless tie-in or linkage between organizations. Third-party software providers such as Ariba provide turnkey solutions that will help to further this development in the future.

Purchasing Process Redesign

Most organizations recognize that purchasing process redesign efforts often precede the development of low-dollar purchase systems. Properly executed redesign efforts should lead to faster cycle times and simplified processes that result in reduced transactions costs.

The purchasing process is composed of many subprocesses, which means it can benefit from process mapping and redesign. The low-value purchase process affects hundreds or even thousands of individuals throughout a typical organization—users in every department, office, plant, and facility; accounts payable; receiving and handling; purchasing; systems; and of course, suppliers. Anyone with a need for low-value goods or services is part of the low-value purchase process.

Electronic Data Interchange

Electronic data interchange involves a communications standard that supports interorganizational electronic exchange of common business documents and information. It is a cooperative effort between a buyer and seller to become more efficient by streamlining communication processes. When used by buyers and suppliers, EDI can help eliminate some steps involved in traditional communication flows, which reduces time and cost.

Although actual volumes through EDI have increased through the 1990s, actual EDI volume does not match the expected volume that was projected by companies. In 1993, for example, purchasing professionals estimated that 60% of the supply base, 70% of total purchase dollars, and 65 percent of total purchasing transactions would flow through EDI systems. Actual 1997 volume was 28% of suppliers, 38% of total purchase dollars, and 32% of total purchasing transactions flowing through EDI systems.[3] Part of this shortfall is due to the introduction of auto fax technology. For many organizations, especially smaller organizations, auto fax is a quicker and less expensive method of communicating with suppliers. Auto fax systems automatically fax requirements to suppliers once those requirements are known by the buyer. The Internet also captures electronic volume that formerly would have passed through third-party EDI providers. Chapter 19 discusses this important topic in greater detail.

Online Ordering through Electronic Catalogs

Purchasers are increasingly using this approach in conjunction with other low-dollar purchase systems. For example, one organization allows its user to identify supply sources through the Internet and then use a procurement card to process the order. The key benefit of using electronic catalogs is their powerful low-cost search capability and, if users order directly instead of relying on purchasing, reduced total cycle

time and ordering costs. Perhaps the greatest drawback to online ordering is the limited number of suppliers that offer electronic catalogs, along with questions about security of electronic ordering and control issues.

Allowing Users to Contact Suppliers Directly

This general method or approach involves different kinds of low-dollar systems. Procurement cards technically qualify as a system that allows users to contact suppliers directly. Online ordering systems also allow users to contact suppliers directly, or the system may involve nothing more than a multiple part form, such as a limited purchase order, that users complete as they initiate an order. FedEx refers to its "pick up the phone" system, which allows users to contact suppliers directly, as its **convenience ordering system**.

Approaches that allow users to contact suppliers directly shift responsibility for the transaction from purchasing to the user. Even for items with no established supplier, purchasing still may have limited or no involvement unless the requirement reaches a predetermined dollar or activity level. If an item becomes a repetitive purchase, then purchasing may determine if the item warrants a blanket purchase order. Blanket purchase orders usually allow users to contact suppliers directly when a need arises for material. The following Good Practice Example describes a system that allows users to contact suppliers directly below some dollar threshold level.

Why is it important to capture the transaction-level data associated with all elements of the P2P process? This answer is discussed in Chapter 6 on sourcing strategy. Specifically, from time to time the firm must identify opportunities for savings through a process known as a spend analysis. A spend analysis becomes a critical input into building sourcing strategies, the topic of Chapter 6.

Good Practice Example — *Sourcing Process at Federal Express*

FedEx Corporation is a $20 billion market leader in transportation, information, and logistics solutions, providing strategic direction to six main operating companies. These are FedEx Express, FedEx Ground, FedEx Freight, FedEx Custom Critical, FedEx Trade Networks, and FedEx Services.

THE FEDEX CENTER-LED INITIATIVE

Prior to the purchase of the Ground, Freight, and other non-express-based services, Federal Express had reorganized all of its major indirect spend in information technology, aircraft, facilities/business services, vehicles/fuel/ground service equipment, and supply chain logistics groups under the Strategic Sourcing and Supply group, led by Edith Kelly-Green. After the purchase of these different businesses, the supply management function was reorganized into a Center-led supply chain management (SCM) sourcing model. ("Center" refers to a Center of Excellence that focuses on centralizing sourcing strategy teams.) Over the last two years, FedEx Supply Chain Management has been focusing on leveraging sourcing and contracting for all of the FedEx family of companies. For office supplies, instead of having each company run a contract, SCM has a single corporate contract for all of the negotiation effort that allows for different transactional approaches. It has been a gradual migration to a centralized

view of how procurement happens. It is central for the larger spend areas and different policy requirements.

THE SOURCING PROCESS

FedEx established a seven-step sourcing process, shown in Exhibit 2.10 on p. 81.

Step 1: A user provides a requisition for an item. When the user provides the requisition, the sourcing specialist or team must establish whether it is worth putting a strategy around it. This is typically done using a return-on-investment criterion: Is the spend large enough to put a significant amount of time into sourcing the product through a full-blown supplier evaluation? For example, if the requisition is for something that turns out to be a $200,000 per year spend, the payback on it may not be worth the resources required to do a full supplier evaluation and selection process. However, if the spend is large enough, the team will conduct an assessment of the category that profiles that industry and commodity. This assessment involves researching the nature of existing purchasing activity: How much is it, who is it with, and what are the issues with existing suppliers? If it is not large enough, the user may be directed to a simple purchase order and invoice through the Ariba system.

Step 2: Assuming a large spend, based on research conducted in Step 1, the team goes into a process to select the sourcing strategy, in essence taking all of the information it has and deciding how it will approach that marketplace. Is a request for proposal appropriate? Does it need to maintain existing relationships or revisit negotiation and develop a strategy regarding the sourcing strategy?

Step 3: Assuming it is going beyond a negotiation, the team must conduct in-depth research with suppliers in that area, including qualification of the suppliers. Can the suppliers satisfy user requirements, service aspects, and so on? The end goal is to develop a list of suppliers to send RFPs to. The team conducts a supplier portfolio analysis.

Step 4: Another phase of this implementation pass is to revisit this strategy and have the team take another look at it. Has it uncovered something that will cause it to change negotiation? The team develops a strategy for negotiation; does it want to use a reverse auction or use a conventional RFP, as well as criteria for supplier evaluation? Is this still something it wants to do? If so, it proceeds with the RFP to the selected suppliers.

Step 5: After receiving RFPs, the team conducts the supplier selection and negotiation process.

Step 6: Once the team has made the selection, it needs to do the integration. This is done by applying the Ariba toolset with the supplier and identifying integration conflicts to be resolved to make the contract workable.

Step 7: The final stage in this process is to benchmark the supply market by monitoring the supplier(s) through the FedEx Supplier Scorecard system.

E-procurement tools through the Ariba Buyer system play a big role in the process. For example, users who need a PC can select one online and requisition it. Depending on the business rules governing authority threshold, the user may need a supervisor's authorization and may need higher-level approval as well. If the spend goes into the capital range, there is another set of approval rules to ensure that people who oversee capital purchases also approve it. It also draws on the business rules from the IT group, which may be a different set of rules. Business rules are established within Ariba Buyer depending on the category of spend taking place. The types of controls made on purchases will vary. Once those approvals are completed, it releases out to the supplier.

In Ariba, users have an online catalog for contracts that are in place; several thousand office supplies are set up on the catalog. Requisitioners can find what they want, and once submitted, the requisition is bounced against a purchase approval policy. Requisitioners can also use an RFP before they initiate the sourcing process. One of the first things they will do is get a handle on accounts payable information using Ariba to identify the largest suppliers and establish prior sales to FedEx with information on line items. Ariba Buyer also tracks receipts. Because FedEx receives products and services at many different locations around the globe, all employees have an obligation to enter a receipt into the system when the shipment arrives or the service is performed, which generates an acknowledgment and a matching invoice on the system. If an individual does not receive the product or service, Ariba will develop e-mail reminders that will eventually escalate to senior management if left unattended.

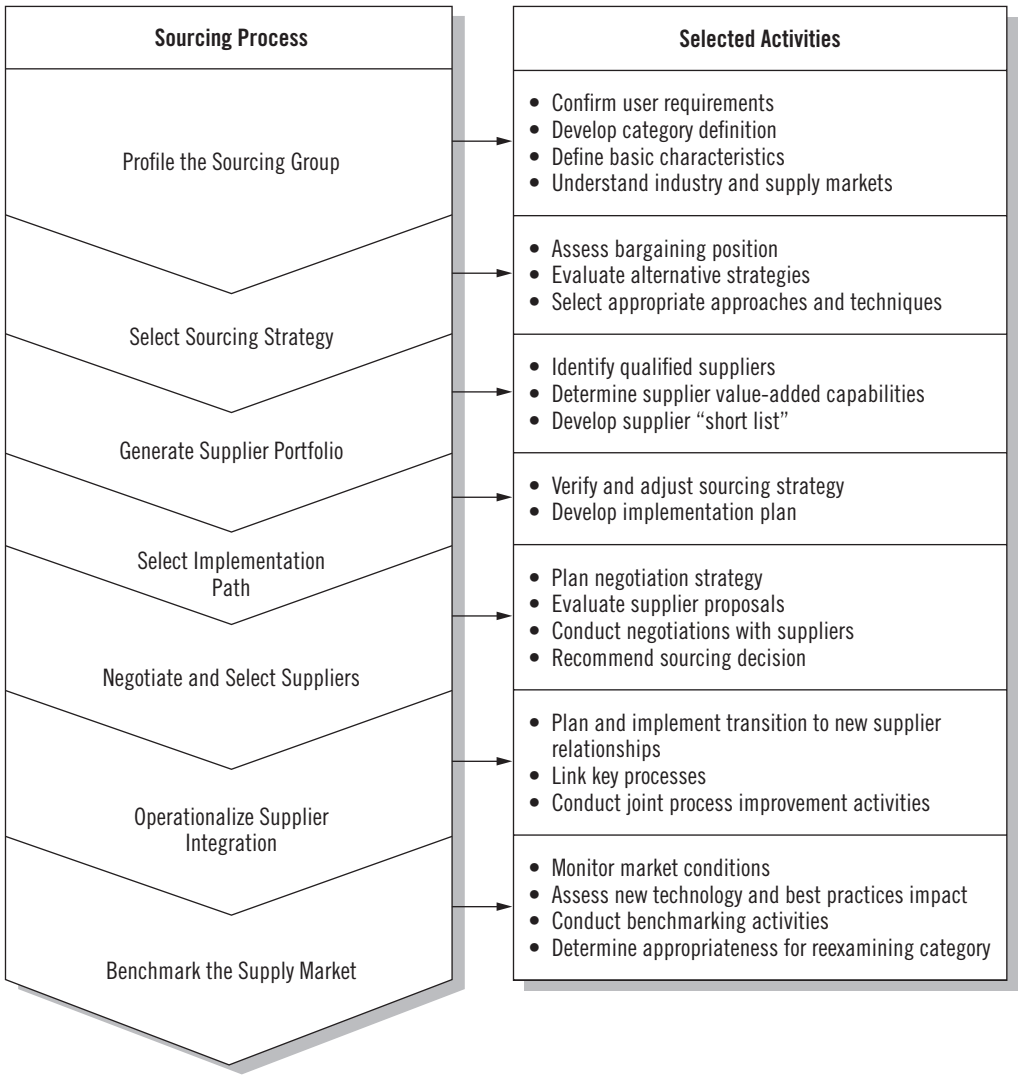
The value of using a single e-procurement system is that if FedEx supply management decides to implement a change on the control levels, it is easy to do across the company using the system. For example, if the CEO mandates a spending freeze (no PCs without VP-level approval), SCM can change the business rules on the system. FedEx also uses ELAMS, another information system for temp labor contract programmers. The ELAMS system allows online requisitions for contract programmers or temp labor based on contracts that are in place—it controls the rate and type of individual sent out by that company and can approve the invoices online. It can also ensure that the skill level of temp labor FedEx is paying for is matched to the skill level of the individual actually doing the work. This enables FedEx to control the type of person that it actually pays for, delivering both value and cost savings to the bottom line.

This example illustrates that improving the purchasing process in terms of efficiency *and* effectiveness requires more than one single system or approach. Purchasing, accounts payable, user groups or departments, and those responsible for handling inventory and material can all benefit from a systematic approach to improving how goods and services flow into an organization.

Questions

1. What steps in the purchasing process are done electronically versus on paper?
2. What types of controls can be used as a result of e-procurement in the sourcing process?
3. What do you think are the challenges associated with implementing e-procurement in this example?

Exhibit 2.10 FedEx Strategic Sourcing Process



CONCLUSION

This chapter provides an overview of purchasing and the purchasing process, including the objectives of a world-class purchasing function, purchasing's span of control, the purchasing cycle, and the documents used to manage the purchasing process. These topics provide the foundation from which to introduce the tools, techniques, and strategies used by purchasing organizations in a competitive market.

This chapter also points out the many different categories of purchases. In addition to buying production material and items, purchasing can be responsible for buying transportation, services, packing supplies, MRO items, capital equipment, and even the corporate jet! There is no one system or approach that applies to all purchase situations. Purchases can vary according to type, importance, impact on quality, time frame for delivery, and dollar volume. We rarely find purchasing personnel who are experts in all the different types of purchases, which is why so many purchasing departments have specialized personnel. These personnel all have one thing in common, however: the opportunity to manage large amounts of resources through the purchasing process. By utilizing e-procurement tools, purchasing can achieve the goals of satisfying user requirements, minimizing non-value-added time, and focusing on deployment of sourcing strategies that can provide tangible value to their enterprise.

KEY TERMS

backdoor buying, 39

backflush accounting, 67

bill of lading, 66

blanket purchase order, 61

change notice, 67

convenience ordering system, 78

description by brand, 52

description by industry standard, 52

description by market grade, 52

description by performance characteristics, 52

description by specification, 52

e-auction, 58

e-procurement, 44

electronic data interchange (EDI), 65

electronic funds transfer (EFT), 68

escape clause, 63

internal customers, 39

material packing slip, 66

maverick, 41

physical on-hand (POH), 51

preferred suppliers, 54

purchase agreement, 60

purchase requisition, 46

purchasing process, 38

receiving discrepancy report, 67

record on hand (ROH), 51

request for proposal (RFP), 58

request for quotation (RFQ), 55

reverse auction, 58

span of control, 41

spot buy, 46

stakeholders, 40

statement of work (SOW), 49

supply base management, 39

tariff, 73

DISCUSSION QUESTIONS

1. How can an effective purchasing department affect organizational performance?
2. Discuss the concept of the internal customer. Who are purchasing's internal customers?
3. Discuss the contributions a purchasing department can make to the corporate strategic planning process.

4. List the areas typically considered within purchasing's span of control. Explain why it is important that purchasing have authority over each of these areas.
5. Describe how purchasing become aware of purchase requirements.
6. How is anticipating a material requirement or need through purchasing's involvement on a new-product development team different from reacting to a purchase need?
7. Why do some firms no longer rely only on competitive bidding when awarding purchase contracts?
8. Provide a list of the major documents that are covered in a suite of e-procurement software tools.
9. Discuss the advantages of electronically transmitting and receiving purchasing documents between a buyer and seller. What are the challenges involved in implementing e-procurement tools?
10. Why is it important to measure and monitor supplier performance improvement over time?
11. How does a just-in-time purchasing and production system reduce the need for certain purchasing documents?
12. Why is purchasing becoming increasingly involved in the purchase of transportation services and other nontraditional purchasing areas?
13. Discuss how the purchase of capital equipment differs from the purchase of routine supplies.
14. Develop a list of topics that non-purchasing personnel should be allowed to talk about with their counterparts at suppliers. Develop a list of topics that only purchasing should be allowed to talk about with suppliers.
15. What is the difference between a purchase order and a blanket purchase order? What are the advantages of using blanket purchase orders?

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2. Trent, R. J., and Kolchin, M. G. (1999), *Reducing the Transaction Costs of Purchasing Low-Value Goods and Services,* Tempe, AZ: Center for Advanced Purchasing Studies.

3. Trent and Kolchin.

Chapter 3

PURCHASING POLICY AND PROCEDURES

Learning Objectives

After completing this chapter, you should be able to

- Understand why purchasing policies are important
- Understand the different types of purchasing policies
- Understand the different types of purchasing procedures

Chapter Outline

Developing a Policies and Procedures Manual in a Decentralized Cement Company

A U.S.-based cement company that is a global leader in cement, building materials, related technologies, and research recently decided to redesign its procurement organization and recognized that policies and procedures were an important part of this process. The company consists of several cement operations located in one region of the United States. Each operation had established decentralized procurement processes. Although the basic manufacturing processes are not dissimilar, there existed a variety of supply strategies, approved suppliers, and procurement channel strategies.

In 1999, the company developed a purchasing policies and procedures manual to define guidelines by which the purchasing function would be practiced at the company.

In January 2007, an external team of experts completed a procure to pay (P2P) assessment of the company, focusing on the requisition to payment process. The key objective was to identify opportunities to improve user satisfaction and transactional efficiency such that the procurement staff could shift their efforts from pushing transactions through the system to strategic sourcing and contracting activities.

The study was concluded and presented in early February 2007. One of the recommendations made by the team was to enhance the current process; improvements were needed to eliminate or reduce current issues and reduce the purchase order cycle time for a tighter distribution, thus reducing the mean cycle time and the effort to achieve this.

In order to begin the multiple improvement efforts needed to accomplish this, the senior executive team, composed of IT, procurement, maintenance, and operations departments, recognized that it was necessary to first re-establish a common and consistent baseline of beliefs, methods, and behaviors across all of the company's facilities. The purchasing policies and procedures manual was a good start, but the manual had not been updated since the time of publication. There was a strong need to educate, train, and monitor compliance with policies and procedures. The eight-year-old manual was also in need of review and revision to capture changes in organizational structure from a decentralized environment to a centralized procurement environment and to reflect the changing set of strategies and practices that impacted the currently accepted business practices.

In addition to the much-needed update, two additional purposes for a policies overhaul were recognized. The first was to set the stage for a concentrated effort to educate employees so that they would comply with policies and procedures. Second, the new policies and procedures manual would serve as the basis for development of a worldwide corporate procurement governance model.

In order to successfully accomplish these goals, a team was chartered to review and update the present documents and address current pain points. The stated goal was the following:

- To revise the current procurement policies and procedures documents to reflect current practices and to relieve pain points and areas of confusion
- To develop a document management strategy, including centralized location, easy accessibility to stakeholders and users, regular review of documents for necessary changes/updates, and a notification method for new or revised documents
- To establish ownership within Central Procurement and establish processes to ensure companywide compliance

The end deliverable will be an updated policies and procedures manual that is accessible online, in compliance with global directives, and available in a common web-based policies and procedures template.

The opening vignette illustrates an important point about purchasing policies: From time to time, it is important to review them and update them as required! Because the company's environment is constantly changing, there is a need to keep up with these changes and provide guidelines and directions to employees regarding how these changes will impact their ways of working. Policies provide the basis for action on the part of sourcing professionals, as well as a set of guidelines for the appropriate way to deal with new situations. As the purchasing and technology environment changes, policies and procedures must be kept up to date with these changes.

Most organizations have a set of policies outlining or detailing the directives of executive management across a range of topics. These directives provide guidance while at the same time placing operating constraints on personal behavior. This chapter, divided into three major sections, discusses the role of purchasing policy and procedures in today's business environment. The first section provides a general overview and discussion of policy. This includes defining policy, the characteristics of an effective policy, the advantages and disadvantages of policy, and the policy hierarchy. The second section focuses on specific categories of purchasing policies, with a special emphasis on one area known as maverick spending. The third section presents purchasing procedures, which are operating instructions detailing functional duties and tasks.

Policy Overview

The term **policy** includes all the directives, both explicit and implied, that designate the aims and ends of an organization and the appropriate means used in their accomplishment.

Policy refers to the set of purposes, principles, and rules of action that guide an organization.[1] Rules of action refer to standard operating procedures along with any rules and regulations. Although policies are usually documented in writing, unwritten or informal policies can also exist. Informal policies are understood over time and eventually become part of an organization's culture.

What Are the Advantages and Disadvantages of Policies?

Having written and implied policies is an opportunity to define and clarify top management objectives. Policy statements are a means for executive management to communicate its leadership and views. Executive management should develop a series of high-level policy statements that provide guidance to employees at all levels.

Another advantage is that policies provide a framework for consistent decision making and action. In fact, one of the primary objectives of a policy is to ensure that personnel act in a manner consistent with executive or functional management's expectations. Finally, an effective policy provides an additional advantage by defining the rules and procedures that apply to all employees.

There are also potential disadvantages to policy development. First, a policy is often difficult to communicate throughout large organizations. Second, employees might view policies as a substitute for effective management. Policy statements are guidelines that outline management's belief or position on a topic. They are not a set of how-to instructions designed to provide specific answers for every business decision. Third, policy development can also restrict innovation and flexibility. Too many

policies accompanied by cumbersome procedures can become an organization's worst enemy.

What Makes for an Effective Policy?

Several characteristics of a policy render it effective. Effective policies are action-oriented guidelines that provide guidance. They provide enough detail to direct behavior toward a specific goal or objective but are not so detailed that they discourage personnel from following the policy.

An effective policy is relevant (avoiding trivial or unimportant issues) and concise (stating a position with a minimum number of words). An effective policy is unambiguous, allowing personnel little doubt as to how to interpret the policy's intent and direction. Policies that are subject to different interpretations will, over a period of time, result in several possible outcomes. This can lead to inconsistent behavior, as people will simply ignore the policy because it is so difficult to interpret.

Sourcing Snapshot

Supplier Relationship Policies Apply to Everyone at Wal-Mart!

Wal-Mart Stores Inc. Chief Executive H. Lee Scott, who recently was accused by a fired marketing executive of accepting sweetheart deals from suppliers, purchased a diamond ring from a Wal-Mart vendor, according to that vendor's officials.

Mr. Scott purchased the ring for his wife in April 2003 from The Aaron Group, a wholesale supplier of jewelry to Wal-Mart, said Robert Kempler, president of the New York–based company. Mr. Kempler declined to discuss the terms of the diamond sale other than to say Mr. Scott hadn't received preferential pricing.

Wal-Mart has a famously strict ethics code that prohibits employees from receiving anything free from suppliers. It has pursued even senior executives who violate these policies. Last week, Julie Roehm, a former Wal-Mart marketing executive who was fired in December for allegedly violating the retailer's ethics rules, claimed in a federal court filing that Mr. Scott obtained "a number of yachts" and "a large pink diamond" at preferential prices.

The lawsuit didn't identify the specifics of the diamond sale, other than to say that Mr. Scott had purchased the stone through a relationship with Irwin Jacobs, a financier who has numerous business relationships with Wal-Mart. It isn't clear whether the diamond ring purchased from The Aaron Group is the same one referred to in Ms. Roehm's suit.

Mr. Kempler said he'd never heard of Mr. Jacobs, and he said everything about the transaction was "above board." Mr. Jacobs said the allegations were without any substance and denied knowing anything about any diamond purchase by the Wal-Mart CEO.

A Wal-Mart spokeswoman declined to comment specifically on the diamond purchase or Wal-Mart's policies on employee purchases from suppliers. Mr. Scott "is subject to the same ethics policy as any other associate and has not violated either the spirit or the letter of Wal-Mart's ethical standards," the spokeswoman said. She characterized the allegations in Ms. Roehm's court filing as "old news. No facts have been presented to back them up."

Source: J. Bandler and G. McWilliams, "Wal-Mart Chief Bought Ring from Firm's Vendor," *Wall Street Journal,* May 30, 2007, p. A4.

Another characteristic of effective policies is that they are timely and current, which assumes that they are periodically reviewed for clarity and conformance. A policy is ineffective or counterproductive if it is confusing, ignored, or outdated. For example, in the opening vignette, each cement plant was operating under a different set of rules, and everyone was essentially ignoring the fact that a common set of policies or procedures existed! Policy formation and review should be a dynamic activity undertaken at least once every year or so. A policy may be timely and correct but not properly enforced by management. In this case, it is management's responsibility to re-educate the workforce about the policy's intent. There is no other substitute for detailed training on policies, to ensure that everyone understands how to do their jobs.

The following characteristics apply to effective policies:

- Action oriented
- Relevant
- Concise
- Unambiguous/well understood
- Timely and current
- Guide problem solving and behavior

Purchasing Policies—Providing Guidance and Direction

Purchasing management develops policies to provide guidance and support to the professional purchasing and support staff. These policies are general outlines clarifying purchasing management's position on a subject. Although many purchasing policies exist, most fall into one of five categories:

- Policies defining the role of purchasing
- Policies defining the conduct of purchasing personnel
- Policies defining social and minority business objectives
- Policies defining buyer-seller relationships
- Policies defining operational issues

The following discussion does not include all possible purchasing policies. Organizations will also develop policies to meet unique operational requirements.

Policies Defining the Role of Purchasing

This set of policies defines purchasing's authority. It usually addresses the objectives of the purchasing function and defines the responsibilities of the various buying levels. These policies often serve as a general or broad policy statement from which more detailed or specific policies evolve.

Origin and Scope of Purchasing Authority

Personnel at all levels must be aware of purchasing's authority to conduct business and to represent organizational interests. An executive committee usually grants this authority and develops this policy. This policy may also detail the authority of

purchasing to delegate certain tasks or assignments to other departments or functions.

An important section of this policy describes the areas where purchasing authority does or does not exist. The policy may exclude the purchasing function from any responsibility for purchasing real estate, medical insurance policies, or other areas where purchasing may not have direct expertise. (However, purchasing is increasingly becoming involved in all types of purchases, including these nontraditional areas.) This policy outlines the overall authority of purchasing as granted by the executive committee while describing the limits to that authority.

Objectives of the Purchasing Function

As noted in Chapter 2, purchasing generally has the final authority over a certain spending area. This is typically set forth in a policy describing the general objectives or principles guiding the purchasing process. The following describes one company's purchasing objectives or principles:

- To select suppliers that meet purchase and performance requirements
- To purchase materials and services that comply with engineering and quality standards
- To promote buyer-seller relations and to encourage supplier contribution
- To treat all suppliers fairly and ethically
- To work closely with other departments
- To conduct purchasing operations so they enhance community and employee relations
- To support all corporate objectives and policies
- To maintain a qualified purchasing staff and to develop the professional capabilities of that staff

Although these objectives or principles appear broad, they are important because they set forth, in writing, management's commitment to achieving a professional level of purchasing behavior. These principles are also important because they give rise to other policies that directly support purchasing activities.

Corporate Purchasing Office Responsibilities

It is also useful to understand the duties and responsibilities of the central or corporate purchasing office (if a central office exists). This policy may also detail the relationship of the corporate office to purchasing centers located at the divisional, business unit, or plant level. The corporate purchasing office is usually a staff position directing, supporting, and coordinating the purchasing effort. This policy can provide guidance concerning the role of the corporate purchasing staff in the following areas:

- Carry out executive policies
- Develop and publish functional purchasing and material policies and procedures to support efficient and effective purchasing operations at all levels
- Coordinate strategy development between purchasing departments or centers to maximize purchasing leverage of critical commodities
- Evaluate the effectiveness of purchasing operations

- Provide expert support to purchasing departments (e.g., international sourcing assistance, contract negotiations, systems development)
- Perform other tasks typically associated with a corporate support staff

Exhibit 3.1 illustrates a policy detailing corporate purchasing office responsibilities.

Policies Defining the Conduct of Purchasing Personnel

These policies outline management's commitment to ethical and honest behavior while guiding personnel who are confronted with difficult situations. Some business practices are technically not illegal but are potentially unethical or questionable.

Because of this, purchasing management must develop policies that provide guidance in these gray areas. Because purchasing personnel act as legal agents and

Exhibit 3.1 Example of a Functional Purchasing Policy

ABC Technologies
Purchasing Policy

Policy Number: 2 Applies to: Corporate Staff
Divisional Purchasing
Plant Buyers

Date: 1-1-04

Subject: Corporate Purchasing Office Responsibilities

This policy outlines the responsibilities and authority of the Corporate Purchasing office and staff and its relationship to Division Purchasing and Buying Units.

Executive policy E-7 sets forth the principles supporting the organization and management of ABC Technologies and its operating Divisions:

ABC Technologies, by executive policy, is organized on a line and staff basis, with divisional operations largely decentralized. It is corporate policy to assign responsibility and delegate authority concerning operational matters to executive divisional management. All responsibilities not delegated to divisional management remain as official responsibilities of the corporate staff.

The Corporate Purchasing staff is one of the corporate staffs referred to in executive policy E-7. As such, it retains responsibility for the following functions, activities, and duties:

- Responsibility for carrying out and ensuring that each division and buying unit adheres to each corporate policy as stated by executive management.
- Responsibility for developing and publishing functional purchasing and material policies and procedures. The purpose of this is to support efficient and effective purchasing operations throughout the company.
- Coordinate strategy development between divisional purchasing and other buying units to support companywide efficiencies and reduced duplication of effort.
- Develop systems to evaluate companywide purchasing performance and operations.
- Provide expert support to purchasing departments and buying units throughout the company.
- Assume responsibility for (1) tasks typically associated with a corporate support staff and (2) tasks not directly assigned to divisional or plant purchasing.

This policy reaffirms the autonomy of the divisions and other buying centers to conduct operational purchasing duties and functions. It also reaffirms the company's commitment to efficient companywide purchasing operations through a strong corporate support staff.

representatives, they must uphold the highest standards as defined by executive policy and the law.

Ethics Policy

Most organizations, particularly medium- and larger-sized ones, have a written policy describing management's commitment to ethical purchasing behavior. Chapter 15 discusses purchasing ethics in considerable detail.

Reciprocity Policy

A formal policy often exists detailing management's opposition to reciprocal purchase agreements. **Reciprocity**, discussed in the purchasing ethics section of Chapter 15, occurs when suppliers are pressured to purchase the buyer's products or services as a condition of securing a purchase contract. A reciprocity policy usually describes management's opposition to the practice and lists the type of behavior to avoid. Personnel must not engage in behavior that suggests any of the following:

- A buyer gives preference to suppliers that purchase from the buyer's organization.
- A buyer expects suppliers to purchase the buying company's products as a condition for securing a purchase contract.
- A buyer looks favorably on competitive bids from suppliers that purchase the buyer's products.

This area requires an executive management policy because disagreement occurs regarding this topic. Reciprocity is relatively easy to control once management issues a policy on the subject.

Contacts and Visits to Suppliers

An understanding must exist regarding direct visits or other communication contacts with suppliers or potential suppliers. This policy should address not only purchasing personnel but also other departments or functions that visit or contact suppliers. Purchasing wants to control unauthorized or excessive contacts or visits because these can impose an unnecessary burden on suppliers.

Also, unauthorized supplier visits or contacts by non-purchasing personnel undermine purchasing's legitimate authority as the principal commercial contact with suppliers. Purchasing wants to avoid situations where suppliers might interpret statements and opinions offered by non-purchasing personnel as commitments.

Former Employees Representing Suppliers

Occasionally, an employee may leave to work for a supplier. This is a concern because the former employee probably has knowledge about business plans or other confidential information that might provide an unfair advantage over other suppliers. One way to address this issue is to establish a policy prohibiting business transactions with suppliers that employ former employees known to have inside or confidential information. This exclusion can range from a period of a few months to several years, depending on the employee and the situation. Another possibility involves including a clause in the employee's original employment contract prohibiting employment with a competitor or a supplier for a specified time. This can offset the advantage a former employee may have from his or her previous employment.

Sourcing Snapshot

Gap Cracks Down on Suppliers with Labor Abuses

Gap's Factory Inspections Continue to Uncover Abuses, Such As Excessive Overtime

Gap Inc.'s continuing crackdown on labor abuses at the overseas factories making the retailer's clothes identified hundreds of plants engaged in a wide range of unsavory practices, including excessive overtime, paltry wages, and fining workers who wanted to quit their jobs.

The San Francisco–based company listed the transgressions Wednesday in a report summarizing the findings of 92 inspectors, who scrutinized all but a handful of the 2,672 supplier factories approved to manufacture clothes for Gap last year.

Spurred by the most terrible violations cited, Gap severed ties with 70 factories last year, down from 136 in 2003. The company rejected 15% of the new factories seeking to make its clothes in 2004 compared with 16% in 2003.

But the owner of Gap, Old Navy, and Banana Republic stores continued to contract with hundreds of overseas factories that mistreated its workers, according to the company's second annual social responsibility report—a document that represents an unusual bit of self-flagellation in corporate America.

The abuses are most prevalent in China, where Gap products are made at 423 factories. Between 25 and 50% of those Chinese companies don't fully comply with local labor laws, Gap said, and 10 to 25% of them pay below the minimum wage. The company ended its business relationship with 18 Chinese factories last year—less than 5% of its suppliers in that country.

The Persian Gulf, where Gap contracts with 29 factories, caused another major headache. More than half the factories inspected there imposed work weeks of more than 60 hours per week. In three cases in Egypt, Morocco, and Vietnam, Gap flagged factories that required their workers to pay them if they resigned before a contract ended. Gap required all three factories to stop the practice.

By publicly acknowledging its role in the recurring labor problems at factories often derided as "sweatshops," Gap hopes to prod its entire industry to embrace reforms and establish more rigorous standards to improve the working conditions.

"To quote U.S. Supreme Court Justice Louis Brandeis, we believe that a 'bright light is the best disinfectant,' " Gap wrote in the 58-page report. "The more open and honest we can be about conditions and challenges, the more helpful we can be in addressing them."

Since Gap first owned up to the troubles at its overseas factories last year, shoe manufacturer Nike Inc. also has launched a similar social responsibility report examining the conduct in its overseas factories. The increased attention will likely make it appear as if things are getting worse before they get better, Gap warned, simply because its inspectors are likely to become progressively better at rooting out violations as time goes on.

Gap acknowledged it has contributed to some of the labor problems by making last-minute production demands that prod overseas contractors into exploiting their workers. The company has vowed to phase out its "inefficient purchasing practices." Bob Jeffcott, policy analyst for the Maquila Solidarity Network, a workers' rights group in Toronto, said he believes Gap and other retailers that rely on overseas factories could make a huge difference by agreeing to pay more for their products—a daunting commitment to make because it could erode profits or result in price increases that alienate customers. "No one is dealing with the

fundamental question on how much you should be paying these suppliers so they can afford to pay their workers better wages," Jeffcott said.

Source: M. Liedtke, "Gap's Factory Inspections Uncover Abuses," Associated Press, July 13, 2005.

Reporting of Irregular Business Dealings with Suppliers

This policy may establish a reporting mechanism for buyers or other employees to report irregular business dealings. Examples of irregular dealings include accepting bribes from suppliers, cronyism, accepting late bids, owning a stake in a supplier's company, and other types of behavior that are not considered part of the normal course of business. The policy can specify the proper office to which to report the irregularity, the safeguards in place to protect the reporting party, and the need to report suspected irregularities as soon as possible. This policy sends the message that management will not tolerate irregular business transactions involving employees.

Policies Defining Social and Minority Business Objectives

In the long run it is likely in a purchaser's best interest to use its power to support social and minority business objectives. This may include supporting and developing local sources of supply or awarding business to qualified minority suppliers.

Purchasing's actions help shape a perception of good corporate citizenship. Pursuing social objectives may require the development of policies specifically defining management's position. A list of the top companies engaged in minority supplier development is shown in Sourcing Snapshot: The Best Companies for Minority Supplier Contracting.

Supporting Minority Business Suppliers

Supporting minority suppliers is not only the right thing to do, it is also the smart thing to do. As the nature of America's demographics and workforce continually changes, organizations will need to hire and train people with multicultural backgrounds and promote relationships with suppliers and customers from diverse backgrounds. At the same time, it is important to recognize that minority suppliers are a special class of supplier. As such, they face many problems that are unique to their special status, while also facing many of the same problems that confront nonminority suppliers. Several factors lie at the core of these problems: lack of access to capital; large firms' efforts to optimize their supply bases; inability to attract qualified managers and other professionals; and minority suppliers' relatively small size, which may lead to over-reliance on large customer firms.

Management's position concerning transactions with minority business suppliers provides guidance to buyers. A minority business supplier is a business that is run or partially owned by an individual classified as a minority by the U.S. government. Such policies typically state that these suppliers should receive a fair and equal opportunity to participate in the purchasing process. The policy may outline a number of steps to achieve the policy's objectives, including the following:

Sourcing Snapshot

The Best Companies for Minority Supplier Contracting

Many companies often deploy supplier diversity programs that are aimed at increasing the representation of minority-owned suppliers in their supply base. For some companies, supplier diversity programs are based on social considerations. However, an increasing number of companies have focused on supplier diversity simply because it is good business. Minorities now represent the largest sales growth markets, especially in consumer goods, and companies realize that increasing the amount of business with minority businesses may mean increased sales for their own firm over the long term.

A list of "America's Top Organizations for Multicultural Business Opportunities" was developed as a result of a poll sponsored by DIV2000.com, an organization that provides business connections and resources for small businesses and large organizational buyers. Over 525,000 women- and minority-owned businesses had the opportunity to vote in the online election. The election was conducted in a secure Internet environment utilizing the latest technology available. Fortune 500 companies and government agencies were selected for the awards based on business opportunities they provide to minority-owned businesses. The best companies for 2005 are shown in the following table.

RANK	TOP 50 CORPORATIONS	RANK	TOP 50 CORPORATIONS
1	Lockheed Martin	28	ExxonMobil
2	Bank of America Corp.	29	Walt Disney Co.
3	BellSouth Corp.	30	Pitney Bowes
4	Dell Computer	31	Fannie Mae
5	Wal-Mart Stores Inc.	32	American Express
6	OfficeMax	32	Chevron
7	IBM	33	Starbucks Corp.
8	Procter & Gamble Co.	34	JC Penney Co.
9	Boeing Co.	34	Verizon Wireless
10	The Coca-Cola Co.	35	Cisco Systems Inc.
11	Time Warner Inc.	36	General Dynamics Corp.
12	Raytheon Co.	36	Bristol-Myers Squibb Co.
12	General Mills	37	McDonald's Corp.
13	SBC Communications/AT&T	38	Ford Motor Co.
14	Office Depot Inc.	39	Verizon
15	General Motors Corp.	40	General Electric Co.
16	Toyota	41	Citigroup Inc.
17	Northrop Grumman Corp.	42	Comcast Corp.
18	United Parcel Service	42	Wells Fargo & Co.
19	Xerox	43	Major League Baseball
20	DaimlerChrysler	44	Merrill Lynch & Co. Inc.
21	Avon Products	45	Corporate Express
21	Pepsico Inc.	46	Pfizer Inc.
22	Altria Group	47	Progress Energy Inc.
23	Home Depot Inc.	47	Cardinal Health
24	Sprint/Nextel	48	Sempra Energy
25	Johnson & Johnson	49	United Technologies
26	Microsoft Corp.	50	Waste Management

Source: http://www.diversitybusiness.com/Resources/DivLists/2007/.

- Set forth management's commitment on this subject
- Evaluate the performance potential of small and disadvantaged suppliers to identify those qualifying for supplier assistance
- Invite small and disadvantaged suppliers to bid on purchase contracts
- Establish a minimum percentage of business to award to qualified small and disadvantaged suppliers
- Outline a training program to educate buyers regarding the needs of the small and disadvantaged suppliers

Policies supporting disadvantaged suppliers are common in contracts with the U.S. government, which encourages awarding subcontracts to small and disadvantaged suppliers. Other companies have formal procedures for including minority business suppliers. For instance, one large pharmaceutical company has developed a process for identifying minority suppliers, which includes the following questions:

- Is the supplier fully qualified?
- Does the supplier satisfy U.S. government criteria defining a minority business?
- Does the supplier meet our standard performance requirements?
- Is the supplier price competitive?
- How much business can we give the supplier given its capacity?

Links and information having to do with minority business development can be found at http://www.mbda.gov.

A recent study on best practices conducted by the Supply Chain Resource Cooperative at NC State University emphasized that companies in many industries are making great improvements in minority supplier development programs. However, until organizations can devote more resources to actively improving minority suppliers through focused supplier development programs, growth of minority suppliers in the supply base will remain problematic.

The research also suggested that almost all industries have limited resources for supplier diversity programs. One interesting observation regarding resource allocation is that industries that are rife with financial difficulties do not have the luxury to dedicate additional resources for these programs. However, in industries that are not experiencing financial difficulties, the research found that there was often a lack of executive sponsorship, which led to the same outcome: Diversity does not get enough attention or budget allocation for its progress. Two important features of any supplier development initiative were identified: process improvement and leadership/corporate commitment. These elements were viewed by many executives as critical foundational elements for any minority supplier development initiative. The industry-specific best practices in how organizations developed their policies and procedures include the following:

- Mandate Tier 1 suppliers to have a Tier 2 diversity spend goal and incorporate the terms in the contracts. Tier 1 suppliers should be able to record their diversity spend online through the customer's website. Increasing Tier 2 diversity spend offsets to some extent the effect of diminishing opportunities for minority suppliers due to increased global sourcing and offshore

contracting. Online tracking of minority spend in Tier 2 suppliers also increases visibility and compliance.

- Include minority suppliers in all RFQs, without exception. Policies may be defined on the basis of mutually agreed-upon terms between business units and the organization's Supplier Diversity Council. Awarding of RFQs should in all circumstances be tied to performance.
- Tie the goals and objectives of the supplier diversity program (SDP) to supply chain management strategies and supply chain job functions. Business units should also have diversity goals tied to performance to increase participation and commitment to the program.
- Incorporate supplier diversity programs within the corporate procurement organization and assign supplier diversity advocates to specific business units. These advocates can provide training and support to buyers and drive compliance. This approach also enables consolidation of spend with the minority suppliers that are being developed by the corporate supplier diversity programs.
- Incorporate all corporate functions in which suppliers are selected and procurement commitments are made. Corporate supplier diversity committees should include management representatives from all such cross-functional areas: Advertising, Public Relations, Finance, Legal, R&D, Human Resources, Engineering, Real Estate, Traffic and Distribution, Sales, and Corporate Office Administration. This is in recognition of the fact that SDP should be a supply chain accountability and not just a corporate accountability.

Environmental Issues

A set of policies outlining a position related to environmental issues is becoming increasingly important. Moreover, governments are now requiring such policies by law. These policies include the use of recycled material; strict compliance with local, state, and federal regulations; and proper disposal of waste material. The Clean Air Act of 1990 imposes large fines on producers of ozone-depleting substances and foul-smelling gases. As a result, buyers must consider a supplier's ability to comply with environmental regulations as a condition for selection. This includes, but is not limited to, the proper disposal of hazardous waste.

A good example of environmental policy involves the chemical industry, which traditionally has been a major source of industrial pollution. This industry knows that if it does not adopt a set of environmental policies, then government regulators will initiate strict regulations. Dow Chemical, for example, considers environmental concerns a critical feature of its policies and procedures.[2] As a member of the Chemical Manufacturers Association, Dow is a participant in Responsible Care, a program initiative that addresses a community's concerns regarding chemicals, including their manufacture, transportation, use, and safe disposal; health and safety issues; prompt reporting of environmental accidents; and counseling of customers. Supplier evaluation involves assessing the environmental policies of suppliers (primarily other major chemical companies). A key element of evaluation involves understanding and assessing the environmental risk associated with the particular chemical being purchased. Dow searches for suppliers that are green, according to industry standards.

Policies Defining Buyer-Seller Relationships

The policies that are part of buyer-seller relationships cover a wide range of topics. Each topic, however, relates to some issue involving the supply base.

Supplier Relations

The principles that guide relations with suppliers are often contained in a policy stating that buyer-seller relationships are essential for economic success. Furthermore, relationships based on mutual trust and respect must underlie the purchasing effort. This policy often describes a number of principles that support positive relationships, including the following:

- Treating suppliers fairly and with integrity
- Supporting and developing those suppliers that work to improve quality, delivery, cost, or other performance criteria
- Providing prompt payment to suppliers
- Encouraging suppliers to submit innovative ideas with joint sharing of benefits
- Developing open communication channels
- Informing suppliers as to why they did not receive a purchase contract
- Establishing a fair process to award purchase contracts

Qualification and Supplier Selection

Buyers may require guidance regarding the performance criteria used to evaluate potential sources of supply or to evaluate an existing supplier for an item not traditionally provided by suppliers. Management wants to make sure that supplier selection occurs only after purchasing thoroughly reviews all criteria. Supplier selection criteria include the following:

- Price/cost competitiveness
- Product quality
- Delivery performance
- Financial condition
- Engineering and manufacturing technical competence
- Management of its own suppliers
- Management capability
- Ability to work with the customer
- Potential for innovation

This policy may also outline management's position on single and multiple sourcing or the use of longer-term purchase agreements. It may also acknowledge purchasing's need to rely on non-purchasing personnel to evaluate technical or financial criteria during the supplier selection process.

Principles and Guidelines for Awarding Purchase Contracts

The process for selecting and awarding purchase contracts is central to effective purchasing. This policy covers a number of critical topics:

- Buyer's authority to award a contract within a certain dollar limit
- Conditions where the competitive bid process is and is not acceptable

- Conditions outlining the use of competitive bids
- Process of analyzing sealed competitive bids
- Conditions prompting the sourcing of an item to other than the lowest bid supplier
- Conditions prompting a rebid
- Operating guidelines that pertain to the negotiation of contracts with suppliers

Although there is a trend toward less reliance on competitive bids and more on negotiated longer-term agreements, many contracts are still awarded through the competitive bid process. Routine items available from many different sources are generally purchased through competitive bidding. It is important for purchasing to have a standard set of guidelines for awarding purchase contracts to suppliers. These guidelines provide assurances that purchasing awards contracts based on a fair set of principles.

Labor or Other Difficulties at Suppliers

Management's position concerning supply or labor disruptions as well as possible courses of action provides guidelines during supplier strikes or other labor problems. One issue this policy can address is the legal removal of company-owned tooling from suppliers during a strike so that the buyer can establish an additional source during the interruption. The policy can provide details about this issue, which can be part of the contract with the supplier, to suspend temporarily any purchase contracts or outstanding orders with a striking supplier. Since 9/11, emergency policies must be established to deal with sudden disruptions in the supply chain. In one case, a single-source supplier to Toyota had a supplying plant burn down; there was no official policy to deal with this issue. Other major automotive companies including Honda and Nissan ended up working with Toyota to help it obtain parts during this crisis.

Other Policies Dealing with Buyer-Seller Relations

Organizations must be cautious about liabilities associated with accepting and using ideas provided by suppliers interested in doing business with a purchaser. A policy may state that the buyer accepts unsolicited proposals from interested suppliers only on a nonconfidential basis with no obligation or liability to the provider. Suppliers may even have to sign a waiver releasing the purchaser from liabilities in this area.

Another policy can clarify management's position on financial obligations to suppliers that provide early product design involvement. A buyer may request that suppliers submit cost-reduction ideas during the early phases of new-product design. This policy can provide guidance about the extent of financial obligation to suppliers, particularly to suppliers whose ideas were not accepted.

In cases where purchasing is attempting to integrate suppliers into the new-product development process, many companies have established a policy manual written by engineering, marketing, manufacturing, and purchasing. This manual specifies the steps in developing a new product and the triggers in the process that identify when and how suppliers should be part of the process. The policy may also specify the types of nondisclosure agreements used, the criteria for sharing patents, and other joint product development policies.

Sourcing Snapshot

Conflict of Interest Issues Becoming Front-Page Materials

Consider the following examples described in the *Wall Street Journal:*[3]

- At Lear Corp., a large Southfield, Mich.–based auto-parts supplier, 17 relatives of senior officials are employed by or have business ties to the company, a group of family ties that the company failed to report until late last year despite a federal requirement to do so.
- Apple Computer Inc. paid Chief Executive Steven Jobs nearly $1.2 million to reimburse him for costs he incurred using his personal Gulfstream V jet on company business in 2001 and 2002. Apple is one of many companies with side deals involving the private planes of their executives.
- Ford Motor Co. paid two of its directors, William Clay Ford and Edsel B. Ford II, hundreds of thousands of dollars in consulting fees. The two members of the auto giant's founding family also receive directors' pay and millions of dollars of dividends on their Ford stock.
- Sam Nunn has served on the board of seven public companies since he left the Senate in 1996. All those companies have done business with his law firm, King & Spalding, while he was serving on the boards.

In the wake of Enron and other corporate scandals, these types of transactions—generally defined as a business deal involving an outside director, senior executive, significant shareholder, or a relative of one of those people—are attracting new attention from government officials and business and labor leaders. New legislation curtails certain deals. Other rules are in the works aimed at increasing the independence and accountability of corporate officers and directors. But related-party transactions remain legal and deeply entwined in the corporate culture. This is an increasingly important area for purchasing policy making to consider.

Policies Defining Operational Issues

The broadest of the five purchasing policy categories involves policies that provide guidance for operational issues that confront buyers during the normal performance of duties.

Hazardous Materials

Purchasers must take an active role controlling hazardous waste. During the last 10 years, new regulations and policies outlined the proper handling of toxic and hazardous material. In the period from 1899 to 1950, the U.S. government passed seven laws that involved environmental protection. From 1976 to 1978, Congress passed nine environmental laws. More recent legislation has further emphasized the need for business to have a carefully considered response to environmental initiatives. Another important trend is the requirement for an organization to be ISO 14000 certified to engage in global business transactions. ISO 14000 certification requires companies to establish an environmental management system (EMS) to deal with environmental issues.[4] An EMS requires a company to do the following:

- Create an environmental policy
- Set appropriate objectives and targets

- Help design and implement a program aimed at achieving these objectives
- Monitor and measure the effectiveness of these programs
- Monitor and measure the effectiveness of general environmental management activities within the firm

Involvement in developing an EMS is a critical responsibility for purchasing, because the purchase of waste disposal services is often a purchasing task. For companies that routinely use or produce hazardous materials, the law requires a policy that outlines in detail the legal requirements and conditions for the handling of toxic waste. Failure to have such a policy is considered a federal offense. This policy details the responsibility of purchasing to select only those contractors that conform to local, state, and federal laws. Before awarding a contract for the hauling and disposing of dangerous materials, some policies require that the contractor provide the following detailed information:

- Evidence of valid permits and licenses
- Specification of the types of disposal services the contractor is licensed to provide
- Evidence of safeguards to prevent accidents along with contingency plans and preparations if a hazardous spill occurs
- Details of the specific process used to control hazardous material once it exits a buyer's facilities
- Evidence of adequate liability insurance on the part of the contractor
- Evidence that the waste transporter uses properly certified disposal sites

Selecting a qualified hazardous waste contractor is critical. On a larger scale, this requires an environmental policy that is clearly expressed. Increased government and public awareness of environmental concerns is driving this issue.

Supplier Responsibility for Defective Material

This policy outlines supplier responsibility for defective material shipments or other types of nonperformance. It usually details the various charge-back costs for which suppliers are liable in the event of nonperformance. These costs can include the cost of material rework, repackaging for return shipment, additional material-handling costs, return shipping costs, or costs associated with lost or delayed production. Purchasers operating in a just-in-time environment are usually quite strict about the charges associated with supplier-caused material problems. A single defective shipment in a just-in-time production environment can shut down an entire production process, resulting in some cases in fines of up to $10,000 per minute (in automotive OEMs).

Defective material policies may also outline purchasing's authority to negotiate and settle claims against suppliers. This requires purchasing to carefully review each nonperformance to determine a fair settlement. This policy provides protection for the purchaser in the case of supplier-caused problems.

Purchased Item Comparisons

Another policy may outline management's position concerning the continued evaluation of purchased items. This evaluation may require buyers to periodically review purchased items or services to determine if existing suppliers still maintain market leadership. This evaluation can include cost, quality, delivery, and technological comparisons.

Sourcing Snapshot

Caterpillar's Code of Conduct

Caterpillar is almost a century old. The company, based in Peoria, IL, has grown from a Midwest manufacturer of farm equipment into a global construction equipment powerhouse. With this growth into different countries, cultures, and markets, the company has also struggled at times to maintain the Midwest homegrown culture of integrity associated with its early roots. To that end, Jim Owens, CEO, has put forth a code of conduct that applies to all associates, based on the code that "integrity is the foundation of all we do." An additional set of implied statements were developed that have direct implications for purchasing policy and actions of purchasing associates. In particular, the following elements stand out:

- We align our actions with our words and deliver what we promise. We build and strengthen our reputation through trust. We do not improperly influence others or let them improperly influence us. In short, the reputation of the enterprise reflects the ethical performance of the people who work here.
- We are honest and we act with integrity. We hold ourselves to the highest standard of integrity. We strive to keep our commitments. Our company's shareholders, customers, dealers, those with whom we do business (suppliers), and our fellow employees must be able to trust what we say and to believe that we will always keep our word.
- We compete fairly. Caterpillar believes that fair competition is fundamental to free enterprise. In relationships with competitors, dealers, suppliers, and customers, we avoid arrangements or understandings with competitors affecting prices, terms upon which products are sold, or the number and type of products manufactured or sold.
- We ensure accuracy and completeness of our financial reports and accounting reports. The same standards of integrity that apply to external financial reporting apply to the financial statements that we use as internal management tools.
- We are fair, honest, and open in our communications. We keep investors, creditors, securities trading markets, employees, dealers, suppliers, and the general public informed on a timely basis through public release of relevant and understandable financial and other information about our company. In releasing information about Caterpillar, we make every effort to ensure that full disclosure is made to everyone without preference or favoritism to any individual or group.
- We handle "inside information" appropriately and lawfully. A Caterpillar employee who has undisclosed information about a supplier, customer, or competitor should not trade in that company's stock, nor should an employee advise others to do so.
- We refuse to make improper payments. In dealing with public officials, other corporations, suppliers, and private citizens, we firmly adhere to ethical business practices.
- We will not seek to influence others, either directly or indirectly, by paying bribes or kickbacks, or by any other measure that is unethical or that will tarnish our reputation for honesty and integrity. Even the appearance of such conduct must be avoided.

Source: Caterpillar Code of Conduct, http://www.cat.com.

For items purchased through the competitive bid process, purchased item comparisons often mean requesting new bids for an item from qualified suppliers. This policy usually states how often management expects competitive comparisons and the general procedure for conducting a comparison. For items on longer-term purchase contracts, purchased item comparisons may involve benchmarking or comparing cost performance against leading competitors.

Other Operating Policies

Many other operating policies guide purchasing. Additional examples include policies that outline the following:

- Compliance with U.S. laws and regulations
- Restrictions on source selection outside of the purchasing function
- The proper disposal of material assets
- Purchasing's legal right to terminate a purchase contract or order
- Supplier responsibility for premium transportation costs
- Supplier-requested changes in contractual terms and conditions
- Supplier use of trademarks or logos

All of the policies just listed have something in common: They clarify management's position on a topic while providing guidance to the personnel responsible for carrying out the policy. The outcome of these policies should be consistent actions on the part of personnel at different locations or organizational levels. A basic set of policy statements outlining management's position on different topic areas should be readily available and distributed. All policies should be regularly reviewed and updated. Increasingly, progressive companies are posting their policies on their intranet.

Purchasing Procedures

Procedures are the operating instructions detailing functional duties or tasks, and a procedure manual is really a how-to manual. A large purchasing department may have hundreds of procedures detailing the accepted practice for carrying out an activity.

It is beyond the scope of this discussion to present more than a brief overview of purchasing procedures, particularly because there is no uniform set of principles to guide the development of purchasing procedures. Every organization develops a unique set of operating instructions to meet its own specific requirements.

A procedure manual serves a number of important purposes. First, the manual is a reference guide for purchasing personnel and is especially valuable to new employees who require explanation about how to accomplish different activities or assignments. For experienced personnel, the manual provides clarification or simply reinforces knowledge about different topics. Second, the manual provides consistency and order by documenting the steps and activities required to perform a task. A well-documented procedure manual supports efficient operations and is usually more extensive and detailed than the policy manual. The procedure manual may also specify industry best practices to follow that are identified through benchmarking comparisons with leading firms.

Exhibit 3.2 Examples of a Functional Purchasing Procedure

ABC Technologies
Purchasing Procedure

Procedure Number: 4.3 Date: 10/1/00

Subject: Sourcing Requests from Engineering

I. INTRODUCTION

This procedure outlines the steps to follow when purchasing receives a material request from engineering with a Specified Source form attached (form SS-1). Processing a specified source request differs from processing a suggested supplier source listing. The purpose of this procedure is to evaluate engineering source requests in a fair, timely, and thorough manner.

II. RELATED POLICY

Executive policy grants purchasing the authority to obtain materials, components, and other items that meet the delivery, quality, lowest total cost, and other competitive requirements of the company. Restriction of this authority can have a serious impact on purchasing's ability to perform its required duties and assignments. Certain conditions, however, may warrant the specification of sources by departments other than purchasing.

III. RESPONSIBILITY

It is the responsibility of the direct supervisor or manager of the buyer that receives the Specified Source form to evaluate and determine the final disposition of the specified source request in accordance with the following procedure.

IV. PROCEDURE

A. Upon receipt of an SS-1 form submitted by engineering, purchasing departmental management verifies that each section of the form is properly completed.

B. Purchasing management must verify that the requested item is not currently an actively purchased item. If the item is currently purchased, purchasing must inform engineering of this.

C. For items not currently purchased, purchasing management must evaluate engineering's reasons for specifying a source for the required item. It is also within purchasing's authority to identify and evaluate equally qualified sources if the reasons for the specified source are found not to reflect acceptable purchasing or market principles.

D. If engineering's source request is accepted, purchasing management signs the Specified Source form and promptly processes the purchase order.

E. Rejected requests are sent back to engineering with reasons. In order to promote close working relations between purchasing and engineering, purchasing will respond to specified source requests within a reasonable amount of time. Furthermore, purchasing agrees to work with engineering to identify sources that satisfy engineering's technical requirements while meeting the commercial requirements of the company.

Simplifying procedures should be a goal whenever possible. A primary emphasis should be on the development of a concise, accurate, and complete set of operating instructions. A word of caution is in order here. A procedure is ineffective if it specifies too many steps to carry out or presents unnecessary detail. Many companies have

found that the traditional procedure for developing new products does not support cooperation between departments. Existing procedures are being replaced by streamlined procedures that encourage timeliness and responsiveness. As with a policy, management must review and evaluate its procedures to make sure that they are timely and accurate and that they contribute to rather than hinder performance.

Exhibit 3.2 shows a purchasing procedure for a large high-technology company. This procedure, which establishes purchasing's authority to select sources of supply, includes the different sections just discussed. As with all procedures, this procedure will require future review to verify its timeliness and effectiveness. Increasingly, engineering and purchasing are located closer together to reduce product development cycle times. When this occurs, the determination of source selection often is made by a team rather than an individual. Existing procedures may no longer apply when well-established processes are changed.

Purchasing Procedural Areas

There are procedures to cover just about any subject involving purchasing. Most purchasing procedures correspond to one of the following areas.

The Purchasing Cycle

Existing procedures usually document the proper steps to follow during each stage of the purchasing cycle or process. The purchasing process is described in Chapter 2.

The Proper Use of Purchasing Forms

A typical purchasing function relies on many forms to conduct its business. Recall that Chapter 2 provided examples of commonly used purchasing documents and forms. The procedure manual is a valuable source that includes a description of the proper use of each form, the detailed meaning of each information field on the form, and a description of the proper handling and storage of each form. For the latter point, this usually includes information about where, and for how long, to store each copy of the form along with required signatures or approvals. Storage can be manual or electronic. The movement toward electronic storage of forms requires major revisions to procedures relating to this subject.

The Development of Legal Contracts

The development of legal purchase contracts can require dozens of pages and address many topics. Most organizations have specific procedures for contracting with outside suppliers and individuals for goods and services. It is the purchasing employee's responsibility to become familiar with and follow the procedures covering legal contracts. Some of the topics discussed in legal contract procedures include the following:

- Basic features of the standard purchase contract
- Basic contract principles
- Execution and administration of agreements
- Essential elements of the contract
- Compliance with contract terms and performance assessment
- Formal competitive contracting procedures
- Contract development process

- Examples of sample agreements
- Legal definitions
- Use of formal contract clauses

The procedures covering the development, execution, and enforcement of legal purchase agreements and contracts are usually quite detailed (much like the contracts themselves!). A purchaser may rely on a specialized staff to provide assistance in this complex procedural area.

Operational Procedures

Operational procedures provide instruction and detail across a broad range of topics. A procedure can be developed for any operational topic that benefits from following a specific set of steps, requires consistent action to promote efficiency and consistency, or carries out the directives of functional or executive policies. The following procedure topics appear in the material manual of a Fortune 500 company:

- Control of material furnished to suppliers
- Storage of purchasing documents
- Process of supplier qualification
- Use of purchasing computerized systems
- Analysis of competitive quotations
- Use of single source selection
- Requirements for order pricing and analysis
- Procedures for cost analysis
- Acceptable cost reduction techniques and documentation
- Intracompany transactions
- Processing and handling of overshipments
- Supplier acknowledgment of purchase orders
- Disposition of nonconforming purchased material
- Removal of company-owned tooling from supplier

This is a small sample of the different operational topics that often require documented procedures. The topic of purchasing procedures is broad and sometimes mundane. However, an effective set of procedures can result in the efficient use of a purchasing professional's time. Procedures serve as a ready reference covering a host of questions. They also ensure that employees follow the same basic steps when performing similar tasks.

Good Practice Example — *Best Practices in Diverse Supplier Development*

The research on minority supplier development conducted by the Supply Chain Resource Cooperative (http://scrc.ncsu.edu) found that leadership was one of the critical success factors differentiating successful from unsuccessful diverse supplier programs.

Leadership support of diversity goals involves establishing specific strategic objectives and performance goals that ensure that the initiative is taken seriously. Leaders lead by example, and this applies to diversity goals as well. A number of best practices, identified through interviews with executives, are listed below. In each case, the company ensured that senior executives were motivated to include diverse suppliers in their sourcing decisions and that efforts were used to promote the policy across business functions. Consider the following:

- An executive diversity council was instituted in one company to review and guide the supplier diversity program. This council ensured that top management were involved and participated in the program. One of the pharmaceutical health care companies cited an example where the CFO took the lead as the program champion, with active sponsorship of the CEO. This sent a message to the organization that the leadership team was serious about diversity.
- The CEO and other higher-ranking officers should demonstrate personal commitment to the supplier diversity program through participating in SDP events, meeting with the diversity council members and with minority suppliers, and spreading success stories and personal commitment through formal communication with the organization.
- Supplier diversity goals should be included in executive performance plans. In one of the leading aerospace companies, implementing the plan has resulted in active executive leadership at the top and has triggered initiatives such as outreach events, support of advocacy groups, and travel around the country to find suppliers and make investments to help promote diverse suppliers.
- Performance reviews of managers involved in buying activities in various departments in the organization should include supplier diversity program goals. Developing the supplier diversity program should not be thought of as a responsibility of the procurement department or the supplier diversity advocates, but should be the responsibility of all buyers in the organization.

In view of the fact that every industry is unique and has its own challenges and opportunities, the best practices identified in the SCRC report may need to be synthesized as is appropriate on a case-by-case basis. The research points to the fact that supplier development is the weakest link in most companies' supplier diversity programs. Supply managers need to dedicate more time and resources toward helping minority suppliers grow and become more capable of serving the needs of the customers. It is also essential to form a critical mass with competitors and suppliers to support the supplier development efforts. The new mantra is quickly becoming "Help your partners to serve you better."

Questions

1. Why do you believe supply management leaders are not inherently motivated to pursue minority suppliers unless such measures are taken?
2. What are some specific ways that the CEO and other senior executives can demonstrate commitment to supplier diversity objectives?
3. What are the tangible benefits that differentiate the firms in Sourcing Snapshot: The Best Companies for Minority Supplier Contracting from others? How do they benefit from being on this list versus others that are not?

Source: R. Handfield and S. Edwards, "Best Practices in Minority Supplier Development," http://scrc.ncsu.edu.

CONCLUSION

Understanding policies and procedures is essential for understanding how organizations operate and work. Policy is based on the idea that guidelines are documented and applicable to all the internal and external relations of an organization. A policy prescribes methods of accomplishment in terms broad enough for decision makers to exercise discretion while allowing employees to render judgment on an issue. Well-formulated policies and procedures support efficient, effective, and consistent purchasing operations. On the other hand, policies and procedures that are out of date, require unnecessary actions, or do not address current issues or topics will not support effective purchasing operations. As organizations expand their global sourcing activity, they are increasingly revisiting their purchasing policies and procedures, to ensure that they are keeping up with the rapid set of changes their professional associates are facing in their work lives.

KEY TERMS

policy, 87 **procedures,** 103 **reciprocity,** 92

DISCUSSION QUESTIONS

1. Write a brief policy statement that presents a position on the need for utilizing more diverse suppliers. What are the features or characteristics that your policy statement should have?
2. Why is it important to include a policy that outlines the origin and scope of purchasing authority? What might happen if such a policy did not exist?
3. Why should management periodically review its purchasing policies and procedures? What are the potential consequences if management does not review policies and procedures? How often do you think it should go through a minor or major set of rewrites?
4. What are the benefits associated with a comprehensive policy and procedure manual? Is there a downside to the manual's being too comprehensive?
5. Discuss the concept of ethics. Why is the purchasing profession particularly sensitive to this topic?
6. Describe a potential ethical dilemma that a purchasing professional might encounter in day-to-day activities.
7. Describe a potential situation in which a purchasing professional might be guilty of conflict of interest.
8. What are the risks associated with backdoor (maverick) buying and selling? Why is purchasing interested in controlling this business practice?
9. Consider the elements of the code of conduct developed by Caterpillar in Sourcing Snapshot: Caterpillar's Code of Conduct. What are some specific examples of purchasing behavior that would violate elements of this code of conduct?
10. This chapter listed a number of different operational procedures. Describe and discuss three additional topic areas that might benefit from written procedures.

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Chapter 4

SUPPLY MANAGEMENT INTEGRATION FOR COMPETITIVE ADVANTAGE

Learning Objectives

After completing this chapter, you should be able to

- Understand why integration is important and the role that supply management plays in internal and external integration
- Understand the role of cross-functional teams in promoting integration
- Understand how supply management can work with engineering and suppliers to develop new products and services

Chapter Outline

The Critical Role of Purchasing at Manitowoc

Once lowly bureaucrats, purchasing managers are shifting onto the front lines. Robert Ward is one of them and is in charge of purchasing for Manitowoc Co., one of the world's biggest crane makers. His job is to ensure an unbroken flow of parts and materials from around the globe, hunting industrial tires in China and scouring the Midwest for giant bearings. And he has broad discretion over Manitowoc's operations to make sure critical supplies aren't held up.

"Buyers are the ones with the checkbook—and there's a huge power in that," says Mr. Ward. Recently, he was in France, agitated, and meeting with two Polish suppliers that weren't delivering all of the metal chassis they had promised to Manitowoc's big crane factory in Germany. No chassis means no cranes.

The president of one of the suppliers—who had just driven 16 hours from Poland to meet with Mr. Ward and other managers—announced unexpectedly that deliveries could actually slow further in coming months. "I have a lot of angry customers, because I have not been able to deliver cranes," said Mr. Ward, gazing at the Pole over the top of his half-glasses.

Mr. Ward is one of a new breed of purchasing gurus who have become a hot commodity in recent years. As more companies globalize and outsource production, they need a top-level point person who can manage these complex relationships, navigate various foreign cultures, and be willing to travel constantly.

Nothing is worse for a buyer's reputation than throwing business to a low-ball supplier that then has trouble delivering. Mr. Ward has had his share of problems. For example, he has been working recently with a new supplier in China to develop it as a low-cost alternative for a U.S.-made part used in Manitowoc's refrigeration equipment, called a "copper accumulator."

"The supplier told us he was UL qualified," says Mr. Ward, referring to the Underwriters Laboratories certification that is often required on manufactured goods. Manitowoc did its own due diligence, conducting engineering and quality studies of samples sent by the Chinese outfit and visiting the supplier's factory in China.

But on a recent trip, the supplier admitted to Mr. Ward he wasn't UL approved after all. "So now we're back to square one," he says. In another case, he thought he had found a good low-cost Chinese supplier for the electric horns used on cranes. Horns are a very basic item and finding a cheaper source than the company's current U.S. supplier seemed like it would be a no-brainer, he says. But, he has tested two shipments of samples thus far—and the horns keep failing Manitowoc's quality tests.

"The thing you have to realize is that if you're going to buy so much from outside the company, you'd better be very good at it," says Glen Tellock, Manitowoc's chief executive, noting that in the crane business alone the percentage of the total cost of products made up of outsourced components has doubled to 60% in the past decade. "If you're not good at buying in today's world, it's a big competitive disadvantage."

Mr. Tellock says it's crucial to have someone like Mr. Ward, who reports to him, guiding the system. And it helps, he adds, that he comes from outside the company—and the industry—because he brings new ideas. That was critical because the crane business is Manitowoc's most global and also the one that has faced the biggest problems with suppliers.

Mr. Ward has been through this situation before and finds that power is constantly shifting from buyers to sellers and back again. Last year it was tires. Manitowoc's factories kept running short of the large sizes of tires used on mobile cranes.

But no matter how many times Mr. Ward pressed his longtime suppliers, they refused to produce more for him. So he called an outside consulting firm, which sent him a list of 97 tire factories from Brazil to Bulgaria that could potentially make the tires. He eventually found one in China.

"And now, wouldn't you know it, my old tire suppliers are saying they can make more for me after all," says Mr. Ward. "It's amazing what a little competition can do."

Source: T. Aeppel, "Global Scramble for Goods Gives Corporate Buyers a Lift," *Wall Street Journal,* October 2, 2007, p. A1.

The opening vignette illustrates how important supply management is in determining firm performance. The area of supply delivery and availability is becoming an increasingly important element in the global supply chain. A single glitch in the supply chain, such as the earthquake described in Sourcing Snapshot: Apple's I-Pod Supply Chain at Risk, can shut down multiple assembly plants and impact customer delivery and sales around the globe. In this new environment of global sourcing, the need for supply management to work closely with businesses to drive cost savings, reduce disruptions and risk, and deliver innovation and value to customers becomes more important than ever.

Sourcing Snapshot — *Apple's I-Pod Supply Chain at Risk*

Could a typhoon in Manila affect what teenagers in Minneapolis find in their Christmas stockings?

A lot of high-tech gadgets are made in the Philippine Islands, including parts of Apple Computer's iPod music player. Apple depends on that Philippine link in its supply chain: In the third quarter of 2007 (July through September), Apple sold almost 9 million iPods, an average of just under 100,000 per day.

In September, researcher Nathaniel Forbes reviewed the contingency planning at a Philippines factory that assembles 1.8-inch disk drives that go into iPods. I'll call the factory "Pod Parts."

Pod Parts is located in Laguna Technopark (LTI), about 50 kilometers (30 miles) south of the capital city of Manila. Pod Parts ships 20,000+ disk drives each day from this factory. It employs 6,000 people and runs 24 hours a day. To give you a sense of the human logistics involved, Pod Parts contracts a fleet of 80 buses to bring those employees to and from work (most employees don't own cars).

In the review, it was discovered that Pod Parts has only one factory making iPod disk drives—this one in the Philippines. If it were destroyed, it would take months, and several hundred million dollars, to build a new assembly line from scratch for 1.8-inch drives.

Apple needs at least 50,000 drives a day to make iPods, and probably more, assuming that flash memory iPods don't need disk drives. What would be the business impact (on Apple, and on Pod Parts' relationship with Apple) if Pod Parts couldn't deliver those drives?

Sure they could—the other supplier is just down the street in Laguna Technopark—about 1 kilometer away. In fact, there are four other manufacturers in Laguna Technopark that supply Pod Parts with components for disk drives. For manufacturing efficiency, the proximity of these factories to one another is an obvious advantage. Their proximity is, however, a potential risk to the continuity of the supply chain. It's hard to imagine a natural catastrophe that would affect just one manufacturer in LTI; it's likely they'd all be affected at the same time.

Is a calamity likely? Pod Parts has a documented and tested emergency-response system, an active emergency team, and a visible and active security force. There is a municipal fire department in LTI. There are fire extinguishers all over the plant. Pod Parts is reasonably prepared for a fire or a plant-specific event. But what if a widespread national catastrophe occurred? Consider the following data:

1. The Taal volcano, 30 kilometers (18 miles) from Pod Parts, is one of 16 "Decade Volcanoes" identified as a serious potential hazard to population centers by the International Association of Volcanology and Chemistry of the Earth's Interior. (Manila is the sixth largest city in the world with a population of 10 million people.) The Taal volcano recorded 29 volcanic earthquakes in one day in September 2006, according to the Philippine Institute of Volcanology and Seismology (PHIVOLCS). The Philippine Islands are in the Pacific Ring of Fire, which includes 75% of the world's active volcanoes.
2. There were four earthquakes in the Philippines in one weekend in October 2006, one felt in Laguna that measured 4.7 on the Richter scale. The Philippines experiences up to 10 earthquakes a day, according to PHIVOLCS.
3. Tropical storms and typhoons are a regular occurrence in the Philippines. Just two weeks after Forbes visited, Typhoon Xangsane (means "elephant") killed 80 people in Manila, left as many missing, and blew over so many gigantic billboards that the government is changing regulations to prohibit them.

Typhoon Xangsane also went directly over Laguna. Another serious typhoon was also headed toward the Philippines in October.

The area around Laguna Technopark is subject to regular flooding from storm water, blocking logistics in and out of the area. Pod Parts even sends people home early when a serious storm is forecast, because of the risk that the roads will be impassable.

Pod Parts has about two days of finished product stored on-site, waiting for shipment. The drives are just too valuable to keep around in inventory. Construction of an alternative production line is excruciatingly expensive and would raise the cost of production, putting Pod Parts at a competitive disadvantage to its competitor.

A disruption at Pod Parts could have a direct and serious impact on Apple's ability to produce iPods; any effects would be felt within about 48 hours of its occurrence.

If that interruption happened in October, it could drastically reduce the supply of iPods available at retail for Christmas. Two years ago, in late October 2006, LTI experienced the most destructive typhoon in the last decade.

Source: N. Forbes, "Tuning Out Supply Chain Risk," October 28, 2006, http://www.zdnetasia.com/blog/bcp/0,39056819,61963177,00.htm.

Purchasing offices were once corporate backwaters, filled with people who didn't dream of advancing to the top rungs of their organizations. Many buyers saw themselves as industrial bureaucrats, filing purchase orders with the same short list of

familiar, mostly nearby suppliers. When possible, they avoided the complex process of assessing potential new suppliers, especially those overseas.

Top supply managers today need different skills and often have higher aspirations. Sometimes they're engineers or others with operating experience that gives them more intimate knowledge of how their company's products are made.

Today's transformation in buying was made possible by a technological breakthrough more than a decade ago, when companies began installing computer systems that record their every transaction. This often revealed startling weaknesses. For instance, many companies found that different divisions—or even different offices down the hall from one another—were sometimes paying different prices for the same product bought from outside suppliers.

Purchasing managers play a role as highly effective cost cutters, though that part of their job has some surprising nuance. To be sure, buyers save companies huge amounts by trolling the world for new, lower-cost sources, and this is certainly a big reason for their growing stature at many multinationals. But in an era of scarce commodities and the risks of disruptions to supply lines posed by terrorist attacks or striking dockworkers, they also have to make sure they pick dependable sources—which might mean choosing the more expensive source just to ensure no disruptions.

Different functions or groups within any organization must work together to achieve a wide range of common goals—from the reduction of product cost and improved product quality and delivery to the development of innovative new products. Supply management plays an active role in supporting such performance objectives, interacting with and supporting the needs of groups within the organization and outside of it. How does supply management achieve this? **Supply integration** involves professionally managing suppliers and developing close working relationships with different internal groups. The central theme of this chapter is that supply management must become closely integrated with other internal and external functions in order to develop the capabilities that will lead to improved competitive performance. Integration spans a number of areas, including finance, engineering, logistics, service operations, production, new-product development, and customer service.

The first section of the chapter defines what we mean by integration. Next we address supply management's critical internal and external linkages with various groups. The third section discusses the need to develop closer and more collaborative buyer-seller relationships to achieve improved external integration. The fourth section discusses the cross-functional sourcing team—an increasingly important approach taken to achieve supply management integration. The final section focuses on supply management's involvement in developing new products and order fulfillment.

Integration: What Is It?

Integration, a term often heard in the popular press, is in many cases not well defined. In this text, we define **integration** as "the process of incorporating or bringing together different groups, functions, or organizations, either formally or informally, physically or by information technology, to work jointly and often concurrently on a common business-related assignment or purpose." Although this is a very broad definition, it implies certain elements. First, that people are coming together to work together on a problem. It is no surprise that "two heads are better than one" when it comes to solving problems, but many enterprises do not apply the

idea of bringing together people with a different point of view to solve a common problem. This is especially true in a global environment, with team members located all over the world. Thus, another caveat to this definition involves doing so either formally or informally, through physical methods or by information technology. Finally, integration requires that people create a common understanding of the end goal or purpose; as we will see, this is an important aspect of the success of integration strategies.

A recent study of senior executives in the United States and Europe indicated that integration is at the top of these executives' minds, in terms of what will be required in the future.[1] Moreover, when asked about the most critical skills required for supply management managers in the year 2010, executives did not list some of the more common elements such as process focus, financial analysis, or efficiency. The single most important element that senior executives look for is **relationship management (RM) skills**, defined as the ability to act ethically, listen effectively, communicate, and use creative problem solving. The ability to drive relationships is critical for firms seeking to build strong integration with internal business functions, as well as with external suppliers.

Integration can occur in many forms. It can occur through functions, such as in sourcing or new-product development teams. It can also occur through cross-location teams, where people from different business units are brought together. Finally, the most difficult and challenging form is cross-organizational teams, which involves working with suppliers, customers, or even both concurrently! Bringing different people to the table to work on a problem can provide significant benefits. People will generally provide input in the form of the following:

- Information
  - About their markets
  - About their own plans and requirements
- Knowledge and expertise
  - Product and service knowledge and technology
  - Process knowledge and understanding of how to make it work
- Business advantages
  - Favorable cost structures that can benefit customers
  - Economies of scale, which can also help reduce costs
- Different perspective on an issue, which may drive a team to look at the problem from a new perspective that they hadn't thought of before

Some of the different methods that supply management will apply to achieve integration include the following:

- Cross-functional or cross-organizational committees and teams
- Information systems such as videoconferencing and webmail
- Integrated performance objectives and measures that drive a common goal
- Process-focused organizations that are dedicated to certain processes
- Co-location of suppliers and customers
- Buyer or supplier councils that provide input and guidance to a steering committee

Paradoxically, the very elements of sound supply chain business practice that are the cornerstones of mature spend management cultures—and a crucial foundation for supplier relationship management (SRM)—can also serve as an anchor holding back progression to the higher levels of success.

One part of breaking through is tied to the personal effectiveness of the supply chain professionals charged with doing the work. Supply management professionals must begin to work with their internal functions, not against them! This means that the key building blocks for integration (team-building, communication, and relationship management) will become more important than ever! Let's discuss the first of these integration elements: internal integration with the functional entities in their own enterprise!

Internal Integration

Supply management must maintain a number of communication flows and linkages. Exhibit 4.1 illustrates the two-way linkages between supply management and other key groups along with a sample of the information exchanged between these groups. The linkages between supply management and other groups will become even stronger and more important as the role of supply management continues to develop and evolve.

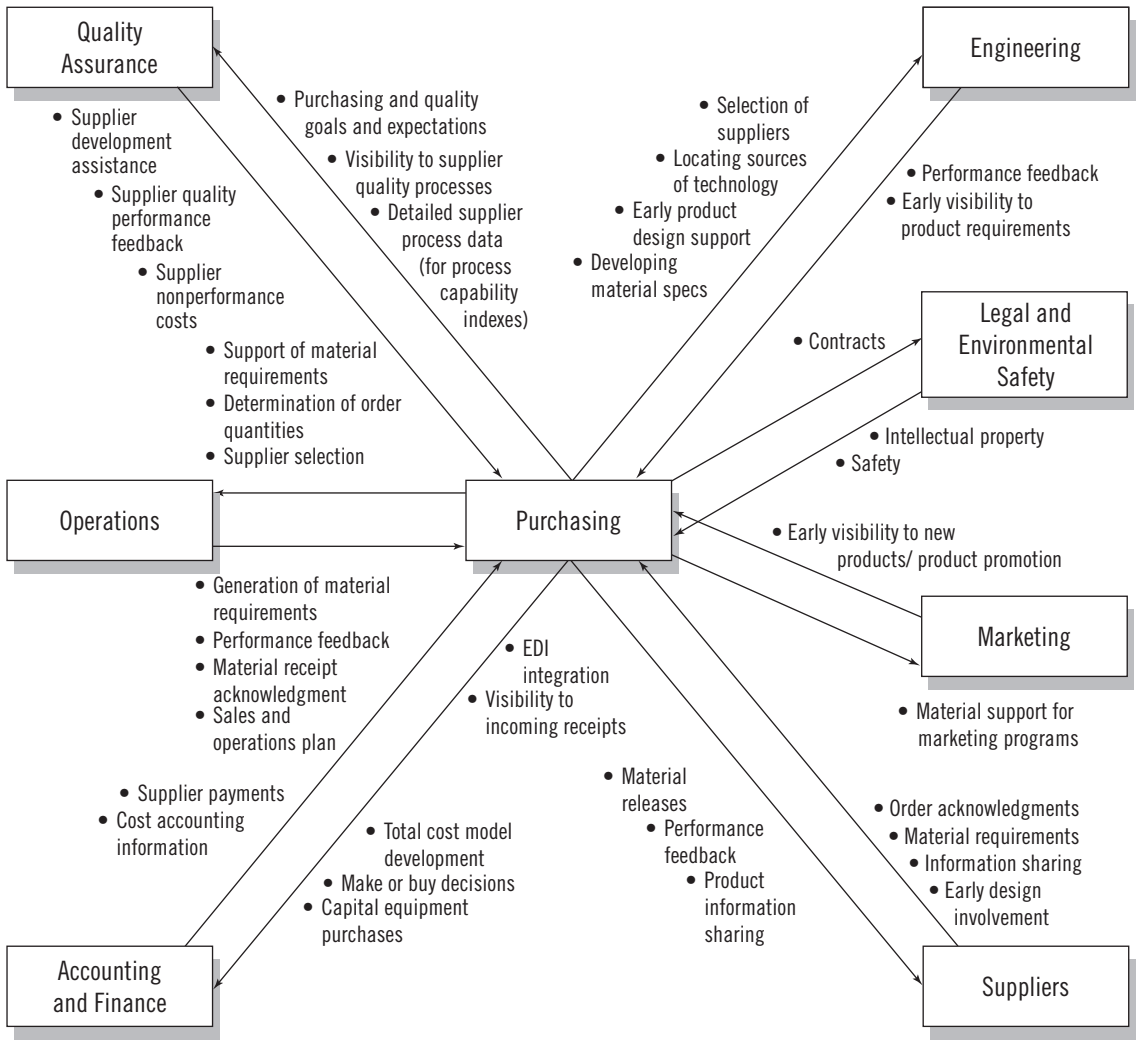
Supply Management's Internal Linkages

To facilitate integration with other internal functions, a number of critical communication linkages or interfaces have evolved between supply management and other departments. This need for internal integration has increased exponentially in the last five years. Many organizations have actively moved toward an outsourced environment, and in some cases are sourcing all products through low-cost-country sourcing environments or contract manufacturers. These environments are very different from North American buyer-seller situations, and supply management must play a critical role in establishing these agreements and identifying global requirements for success. Supply management must often work to become part of the global negotiations teams and become involved in supplier qualification, contract management, and logistics, working with multiple internal parties in the firm including finance, legal, logistics, marketing, and operations.

Operations

Supply management has always been a major supporter of the operations group. Because the links between operations and supply management have been so close, it has not been unusual for supply management to report directly to operations. A major link between operations and supply management is through the development of global operations strategy. Because supply management directly supports operations, it must develop insights into production or service strategic plans. One area in which supply management has critical input to operations (and marketing) is through the sales and operations plan, which identifies the level of production and sales for six months to one year, as well as the required input to execute the plan. Clearly, supply management's strategies and plans must be aligned with the sales and operations plan. For example, supply management must be aware of the components and services needed by operations as they plan to fulfill customer requirements for products

Exhibit 4.1 Purchasing's Communications Flows and Linkages



or services. This could include materials, software, services, travel, hotel, information technology, and outsourced labor. Because supply management is responsible for sourcing the inputs to support operation's plans, supply management managers must work with operations to coordinate the execution to plan.

Supply management and operations also maintain communication linkages through direct personnel contact. Many firms are now co-locating supply management personnel directly at operating locations so supply management can respond quickly to operation's needs. For example, in many financial institutions, supply managers are co-located within the strategic business units and provide supplier relationship managers to act as a primary single point of contact between suppliers and the organization. These managers can work to identify problems, create problem

resolution strategies, and act as a liaison for discussions of service management expectations.

Quality Assurance

The supply management–quality linkage has increased in importance during the last 10 years. As firms externally source a larger percentage of finished product requirements, supply management and quality assurance must work together closely to ensure that suppliers perform as expected. Joint projects involving these two groups include supplier quality training, process capability studies, and corrective action planning. This linkage has become so important that some firms have placed the responsibility for supplier quality management directly with supply management. Many firms now have a dedicated supplier quality management function with a dual reporting element to both quality and supply management.

Engineering

Perhaps the most important and challenging linkages exist between supply management and engineering. The need to develop quality products in less time has drawn supply management and engineering closer over time. There are still opportunities, however, to improve the level of interaction between these two groups.

Firms can create stronger communication linkages and flows between supply management and engineering in several ways. Engineers and buyers can develop open communication by working together on product development or supplier selection teams. Supply management can also co-locate a buyer within the engineering group. The buyer can maintain direct contact with product and process engineers to respond quickly to their needs. A firm can also appoint a liaison that coordinates interdepartmental communications and makes sure that each group is aware of the other group's activities. The two departments can hold regular meetings to report on items of mutual concern. Finally, many supply management groups are recruiting commodity managers with very strong technical backgrounds, who are able to talk the talk and walk the walk alongside their engineering counterparts. The key to a successful relationship between supply management and engineering is open and direct communication, which in turn should lead to increased teamwork and trust.

Engineering looks to supply management to perform certain tasks to support engineering's efforts. For example, engineering expects supply management to identify the most technically and financially capable supplier for an item and to make sure each supplier meets engineering's quality and delivery targets. In addition, engineering expects supply management to assess a supplier's production capabilities, actively involve suppliers early in the design process, and develop relationships that encourage a supplier to offer innovative ideas. Engineering also expects supply management to identify sources of new technology that can be integrated into new products and services. It is also important to note that supply and engineering must work closely together to deal with quality risks that may arise in new products, such as the example shown in Sourcing Snapshot: Ensuring Quality Requirements: Batteries from Sony.

Finally, manufacturing and process engineering will want to ensure ongoing technical support and service during product launch and ongoing customer order fulfillment, as problems inevitably arise during this phase of the product life cycle as well.

Sourcing Snapshot

Ensuring Quality Requirements: Batteries from Sony

Outsourcing has its risks. Suppliers may misstate their capabilities, their process technology may be obsolete, or their performance may not meet the buyer's expectations. In other cases, the supplier may not have the capability to produce the product at the level of quality required. The most obvious example of this is the Sony battery catastrophe. Major manufacturers such as Dell, Apple, and IBM outsourced the power supply for their laptops to Sony. However, it quickly became apparent that the batteries were defective. When the batteries were made, the metal case of the cell was crimped, and microscopic shards of metal could be released into the battery, causing a short circuit that triggered overheating and in some cases a fire! After several of these incidents, Dell recalled 4.1 million batteries and Apple recalled 1.9 million batteries. The supplier, in this case Sony, had to recall over 9.6 million laptop batteries, a problem that has rattled confidence in the company's image. Sony announced that the recalls of lithium-ion batteries will boost its costs by $429 million between July and September 2006, which doesn't include provisions for possible lawsuits!

Accounting and Finance

Supply management also maintains linkages with the accounting and finance department. These linkages are not as strong, however, as the linkages with operations, engineering, and quality control. In fact, much of the communication linkage between supply management and accounting today is electronic. For example, as supply management transmits material releases to suppliers, it also provides information concerning inbound material requirements to the accounting department. Upon receipt of the ordered material, the material control system updates the supply management files from on-order or in-transit to a received status. The accounts payable system then receives the receipt information and compares the amount received to the amount ordered for payment.

Supply management may require data from the cost accounting system. For example, supply management must know handling and material rework costs for an item resulting from poor supplier performance. Supply management usually does not maintain data about individual activity costs that can increase total cost. The supply management performance measurement system relies on input from cost accountants to help calculate the total cost of an item, which is also important in make-or-buy decisions. Finally, supply management must work closely with finance when making capital acquisition decisions.

Marketing/Sales

Supply management maintains indirect linkages with marketing. Many new-product ideas that supply management must support start with marketing personnel, who are the voice of a firm's end customers. Marketing also develops sales forecasts that convert into production plans. Supply management must select suppliers and request material to support both marketing and production plans.

Legal

Supply management often confers with the legal department to seek counsel on specific elements of contracts. Issues that may arise include patent ownership terms