

# Introduction to Purchasing and Supply Chain Management

**Chapter 1:** Purchasing and Supply Chain Management

**Chapter 2:** Purchasing Decisions and Business Strategy

**Chapter 3:** The Legal Aspects of Purchasing

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# Purchasing and Supply Chain Management

## LEARNING OBJECTIVES

Upon completion of this chapter, the reader should be able to:

- 1.1 Identify the role of the purchasing manager, buyer, and purchasing agent in an organization.
- 1.2 Describe the evolution of the purchasing and supply management function as organizations become more globalized.
- 1.3 Explain the relationship between the purchasing function and inventory, ordering, and transportation costs.
- 1.4 Explain the purchasing function's contribution to profitability.
- 1.5 Identify the relationship between the purchasing function and other functional areas.
- 1.6 Identify the advantages and disadvantages of various purchasing organizational designs.
- 1.7 Describe the reporting structures common in the purchasing profession.
- 1.8 Identify careers in purchasing and supply management.



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Asia Spruell, a junior at Abilene Christian University (ACU), is having a terrific college experience. She is an officer in her sorority and is a member of the marching band. But she still has no idea what she wants to do in 2 years. She figured she would go to graduate school so she could continue working with the band and sorority. Basically, she wanted to remain at ACU for at least 6 more years. However, recently her parents made it clear they would only support her (financially) for the next 2 years.

This fall Asia enrolled in a course titled Purchasing and Supply Chain Management. It wasn't long before a light came on—this is it! “If I have to work for a living it should be in a profession with both challenges and potential for great satisfaction . . . supply chain management. It's a perfect way to enhance my relationship management skills, and it's stimulating enough to provide the fulfillment I need!”

After this aha moment, Asia met with her councilor to change her major from accounting to purchasing and supply chain management.

She plans to take the other courses in the PSM curricular. She also joined the Purchasing and Supply Chain Association (PSMA) and applied for a purchasing internship.

Asia's parents are visiting for Parents Weekend. Although she is certain she will pursue a career in purchasing and supply chain management, she would like her parents' approval. Both of her parents are accountants, and they expected Asia to follow in their footsteps. If you were Asia, what arguments would you present in favor of your decision?

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## INTRODUCTION

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After millennia of unchallenged success, business and governments around the world entered a new era of unprecedented openness. Three powerful forces underlie this trend: economics, technology, and zeitgeist (the mood of the time period). Global economies have become tightly integrated, enabling faster economic growth; the World Trade Organization lists 295 regional trade agreements presently in force. Yet, a decade ago, the entire world experienced a deep recession, causing some to raise new questions on the value of these supranational ties. The Internet has revolutionized the speed and power of data analysis and dissemination. Yet the unique scale of data collection has also led to new concerns about privacy and data ownership.

In general, the business world has become increasingly interconnected. Financial crises in one region of the world now have profound effects on the economies of other continents.

Supply management professionals must learn to adapt to new sources of supply chain uncertainty. The European Union (EU) is just one example of global uncertainty that is now affecting U.S. firms. There is a high level of direct investment and trade between the EU and the world's two largest economies (i.e., the United States and China). Many American firms have subsidiaries and business partners located in the United Kingdom, and these companies served as portals into the European Single Market (within which there is free movement of goods, capital, services, and labor). In 2016, the United Kingdom voted to leave the EU, an event known as "Brexit" or British exit. How Brexit will unfold, and which firms will be affected, remains uncertain today. Journalists and commentators speculate that the United Kingdom's currency will fall dramatically, that firms will relocate from London to Frankfurt or Paris, and that tensions in Ireland might boil over again as they did in the past.

To manage supply chain risk, we must first determine specifically where the risk exists in the supply chain. Any companies with footprints in the United Kingdom must evaluate and adapt their supply management function based on the realities of Brexit. More generally, any company with a global footprint must evaluate and adapt its supply management function based on the global uncertainties to which it is exposed. An effective supply chain organization with critical and strategic suppliers and customers in a vulnerable or changing part of the world must devise plans for qualifying alternative strategic supply chain relationships. Keeping a watchful eye on inventory levels and conducting site visits is broadly recommended.

In certain industries, Asian manufacturers dominate the U.S. consumer market. Nations in Central and South America and Southeast Asia continue to attract U.S. manufacturers seeking low wages for laborious tasks. In the midst of this changing world, the United States

is a giant consumer base with an enormous command of technology, but one steadily losing the infrastructure needed to create jobs.

In addition to significant events that have impacted the world's business environment, individual firms have had to change radically in response to burgeoning technologies. Historically, the management of materials and component parts was the most neglected element in the production process. Only when the cost of materials and subassemblies increased did management attempt to investigate alternative methods to the planning and control of the acquisition and transformation functions in the organization. Instead, most firms emphasized minimizing the cost of capital and labor. The focus on labor was logical because the industrial revolution had generated many labor-intensive manufacturers. Producing large standardized batches represented the norm for some manufacturers. Some firms have embraced new technologies and invested in technology-driven manufacturing systems. Although these new systems are up and running, too frequently they are being operated just like the old models, thus defeating the very purpose the system was designed to achieve. The reality is that technology is rapidly displacing labor. During the next decade, the supply management function is likely to contribute to profits more than any other function in the company.

All of these—changing economic and political environments, emerging technology versus labor, and the changing nature of purchasing as a discipline—must influence the role of purchasing and supply management. To become a competitive strategic weapon, purchasing and supply management must abandon fragmented approaches. The same company that invests in a technology-based manufacturing system (hard technology) at the same time must invest in result-oriented training programs (soft technology). The purchasing function must become an integral part of transforming raw materials and component parts into finished goods by using materials, systems, information, and people. Innovative sourcing requires companywide strategies with strong executive engagement that is internally driven and customer focused.

**Purchasing managers** An individual buying goods and services for use by their business organization.

**Buyers** The buying staff negotiates and processes purchase orders, providing assistance to end users. Their mission is to support the departments in obtaining the best products for the best price. Their role in the procurement processes can include troubleshooting vendor, invoice, and payment problems where appropriate.

**Purchasing agents** An individual who implements the purchasing process by forwarding the orders to suppliers and monitoring the documentation for their business organization.

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## PURCHASING MANAGERS, BUYERS, AND PURCHASING AGENTS

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**LO 1.1** Identify the role of the purchasing manager, buyer, and purchasing agent in an organization.

Purchasing managers, buyers, and purchasing agents seek to obtain the highest-quality merchandise at the lowest possible purchase cost for their employers. In general, **purchasing managers** buy goods and services for use by their business organization. On the other hand, **buyers** typically buy items for resale. **Purchasing agents** implement the purchasing process by forwarding the orders to suppliers and monitoring the documentation for their business organization. In general, purchasing managers, purchasing agents, and buyers determine which commodities or services are best for the specific requirement, choose the suppliers of the product or service, negotiate the lowest price, and award contracts that ensure the correct amount of the product or service is received at the appropriate time. To accomplish these tasks successfully, purchasing managers, buyers, and purchasing agents identify foreign and domestic suppliers. Purchasing managers, buyers, and agents must become experts on the services, materials, and products they purchase.

Purchasing managers, buyers, and purchasing agents evaluate suppliers based on price, quality, service support, availability, reliability, and selection. To assist them in their search

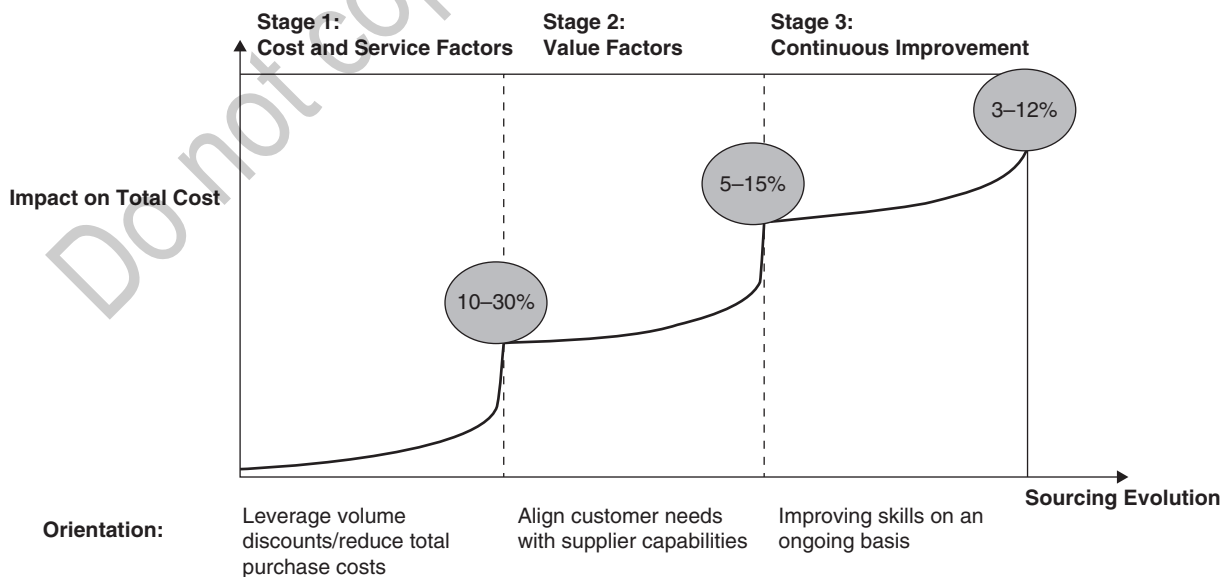
for the right suppliers, they review catalogs, industry and company publications, directories, and trade journals. Much of this information is now available on the Internet. They research the reputation and history of the suppliers and may advertise anticipated purchase actions to solicit bids. At meetings, trade shows, conferences, and suppliers' plants and distribution centers, they examine products and services, assess a supplier's production and distribution capabilities, and discuss other technical and business considerations that influence the purchasing decision. Once all of the necessary information on suppliers is gathered, orders are placed and contracts are awarded to those suppliers who meet the purchaser's needs.

## THE EVOLUTION OF THE PURCHASING AND SUPPLY MANAGEMENT FUNCTION

**LO 1.2** Describe the evolution of the purchasing and supply management function as organizations become more globalized.

To become a competitive organization in today's global economy, the purchasing and supply management function must become world class. The supply management function is the key to unlocking the value within the organization. Organizations must optimize sourcing assets. As can be seen in Figure 1.1, there are three stages in the optimization of an organization's sourcing assets. Stage 1 involves leveraging through volume discounts. It can easily lead to significant reductions in the total purchasing costs. Stage 2 involves focusing on the value proposition throughout the supply chain among customers and suppliers. Finally, Stage 3 is necessary for sustaining the successes in the previous two stages. Practice and high-quality feedback allow the purchasing professional the ability to make adjustments to Stages 1 and 2. The organizations that produce excellence are those that continuously improve. In general the purchasing and supply management function has evolved from a pure cost management function to a competitive advantage (see Figure 1.2).

**FIGURE 1.1**  
Most Business Organizations Can Unlock Significant Value



**FIGURE 1.2**

The Evolution of the Sourcing Function

Traditional Orientation	Current Thinking
1. Focus on prices	1. Focus on value
2. Total cost of ownership	2. Total contribution to ownership
3. Process-driver sourcing approach	3. Strategic intent-driver sourcing approach
4. Compatibility objectives	4. Differentiation objectives
5. Involvement in specification definition phase	5. Involvement in strategic decisions
6. Procurement skills	6. Business skills
7. Sourcing as adversarial zero-sum transaction	7. Sourcing aligned and intrinsically linked with business stakeholder

### THE SUPPLY MANAGEMENT PROCESS

**LO 1.3** Explain the relationship between the purchasing function and inventory, ordering, and transportation costs.

The primary focus of this text is integrated purchasing and supply management. As shown in Figure 1.3, this involves the coordination of five aspects of the process:

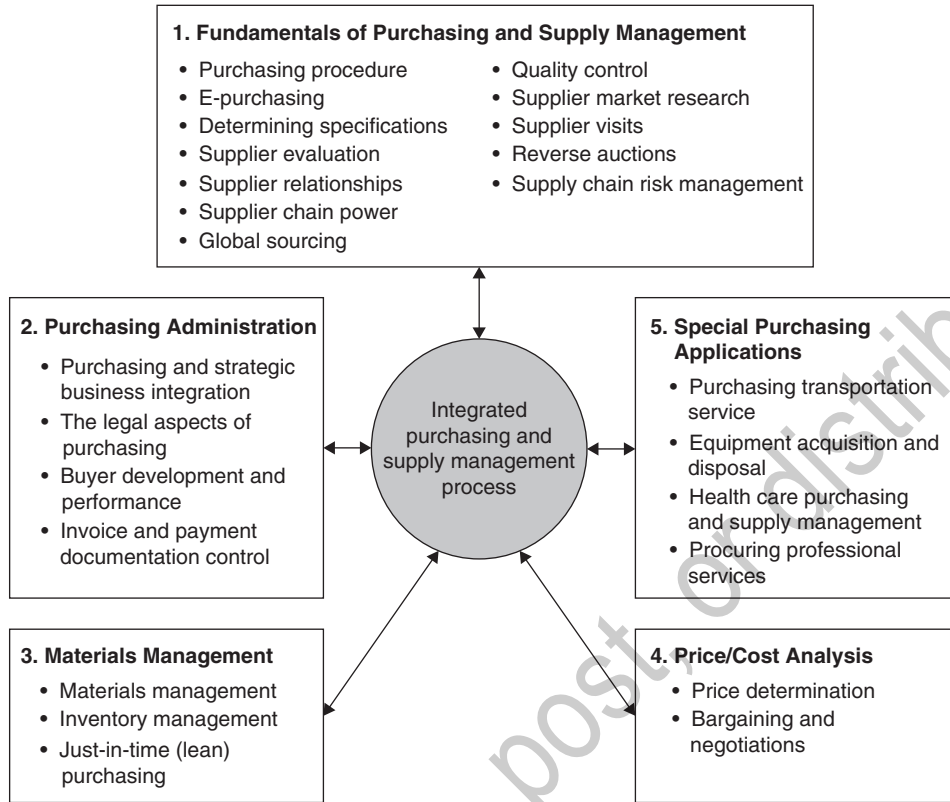
1. Purchasing Administration (see chapters in Part I)
2. Materials Management (see chapters in Part II)
3. Fundamentals of Purchasing and Supply Management (see chapters in Part III)
4. Price/Cost Analysis (see chapters in Part IV)
5. Special Purchasing Applications (see chapters in Part V)

In the past 25 years, the supply management function has grown from a tactical function of purchasing/procurement into a key strategic role within organizations. Supply management now

- contributes to the bottom line.
- serves as an information source.
- increases efficiency and productivity.
- enhances the continuous improvement process.
- improves competitive position and customer satisfaction.
- impacts the organization's image and social policy.
- develops the organization's future leaders.

**FIGURE 1.3**

Integrated Purchasing and Supply Management Process



**Supply management** involves a strategic approach to planning and acquiring organizational needs through effective management of suppliers. It exists to explore business opportunities and implement supply strategies that deliver the most value possible to the organization, its suppliers, and its customers. Strategic supply management is the organization's primary source for collecting market intelligence and developing cost-reduction programs. Given the strategic nature of the supply function, the top supply management professional is usually a member of the organization's senior management team. In this leadership role, supply management professionals must be knowledgeable and understand all areas of the business in order to develop strategies consistent with the organization's goals and successful business procedures.

With the increasing technology and demand for global operations, supply management is often involved in finding sources for products and/or services from international suppliers. An understanding of global business concepts is increasingly important for those in the profession.

In most firms, functional managers within each area make independent decisions using similar techniques. The approach introduced in this chapter proposes that the supply management decision should be integrated. **Integrative materials management** consists of the planning, acquisition, and conversion of raw materials and component parts into finished

**Supply management**  
A strategic approach to planning and acquiring organizational needs through effectively managing suppliers.

**Integrative materials management**  
The planning, acquisition, and conversion of raw materials and component parts into finished goods.

goods. In this scenario, each functional manager reports to the same superior. What's more, the managers should work for the overall purpose of delivering high-quality products to the customer on time. An important objective of this approach is to provide high-quality customer service while minimizing the cost of producing the service.

Integrative supply management is not related to the size of the firm. Realistically, the purchasing subfunctions must first be integrated before the supply function will be synergistic with other business functions.

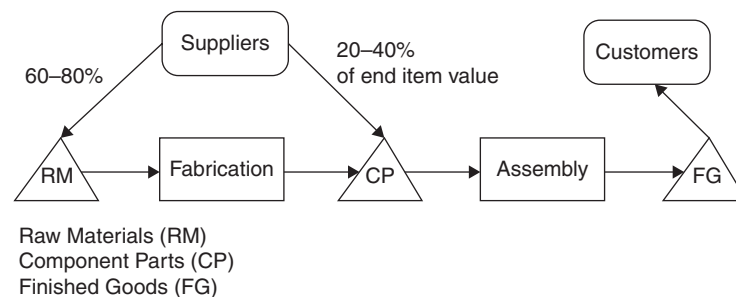
The purpose of supply management is to support the transformation of raw materials and component parts into shipped or inventory goods. The function of inventory in general is to decouple the entire transformation process. During the transformation process, materials are combined with labor, information, technology, and capital.

The supply planning system is central to the acquisition of part and component needs in an assemble-to-order environment. The material requirements planning (MRP) function is the most important input into a manufacturing planning and control system. Although many productive companies have embraced just-in-time (JIT) philosophies, they continue to use MRP concepts to enhance the effectiveness of the manufacturing mission. Perhaps the most significant change in the past decade has been in the purchasing function. During the time period 1960–1980, most American manufacturing firms fabricated 60% to 80% of the product's value (see Figure 1.4). On the other hand, in the past decade, a large number of manufacturing firms purchased from 60% to 80% of the product's value (see Figure 1.5). Since this impressive shift in percentages, the complexity of the manufacturing system has been greatly reduced. As can be seen in Figure 1.5, the complexity in the fabrication operation has been shifted upstream to the supplier. Under the traditional model, the firm transformed significantly more raw materials and labor into the end product. Today, since industrial firms are purchasing more and more subassemblies (component parts), the manufacturing focus is shifted downstream to the assembly operation. This significant shift has elevated the importance and profile of purchasing professionals.

A vice president of purchasing for a Fortune 500 company suggested that the *discount* acceptance decision cannot be made independently from the open order rescheduling decision. He went on to suggest that inventory record accuracy and open order rescheduling were key inputs into determining whether to accept or reject a specific discount schedule.

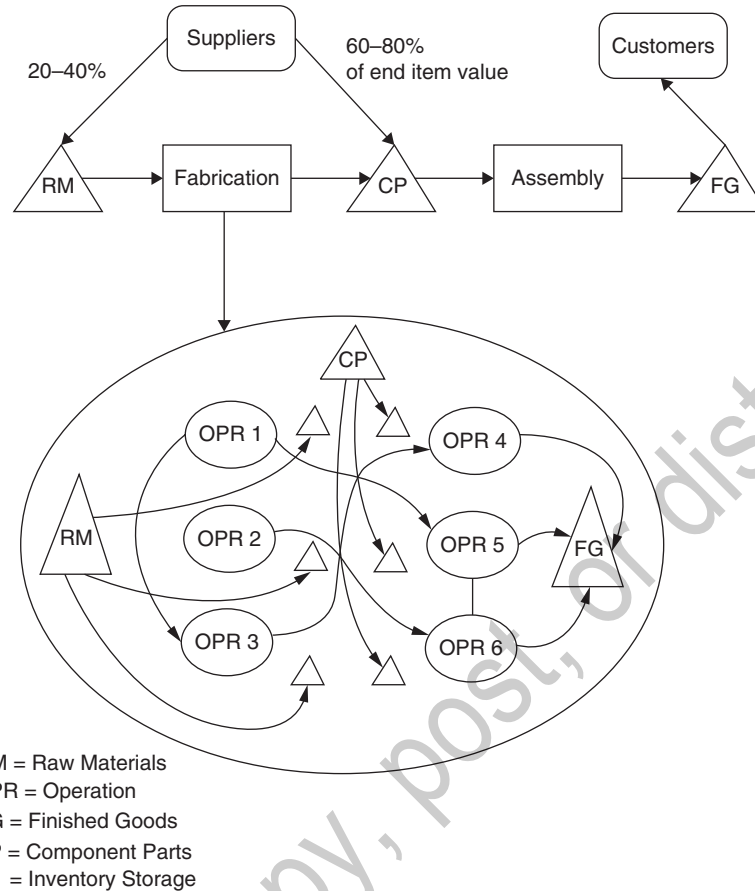
The expected economic benefit from the creation and continuous improvement of an integrated purchasing and supply management process is supply chain profit maximization (see Figure 1.5).

**FIGURE 1.4**  
Manufacturing Process (1960s–1980s)





**FIGURE 1.5**  
Manufacturing Process (1980s–Now)



The global economy has evolved from exclusively manufacturing to services. Thus, it is important to show how the lessons learned from manufacturing supply management can be applied to service systems purchasing. The differences between service supply management systems and the traditional supply management systems must be acknowledged. In service supply management systems, human capital forms a significant source of the value proposition. In addition, it is more challenging to measure value in service supply management. Chapter 18 focuses on service supply management.

## PURCHASING DOLLAR RESPONSIBILITY

**LO 1.4** Explain the purchasing function's contribution to profitability.

The cost of acquiring, storing, and moving materials is an increasingly large fraction of the **cost of goods sold**. To gain a different perspective about the importance of materials-related expenditures, consider the dollar responsibility of one General Motors materials management group:

1. Parts and materials                      10 times direct labor dollars
2. Supply management expenditures      \$100 billion

**Cost of goods sold**

Cost of materials in addition to the cost of labor input to create a product.

3. Transportation bill                      \$3 billion
4. Purchasing buys 97% of all component parts

The mission of the General Motors supply management group is to manage purchasing, planning, scheduling, and the transportation of material required for specific products in a manner that will provide a *significant competitive advantage* to the division in the production of quality trucks and cars. Integrative purchasing and supply management make possible the production of vehicles in terms of cost and quality that are competitive in the world.

Thus, we see that the dollar responsibility of supply management is very large in both relative and absolute terms. More importantly, supply management contributes to the competitive stance and long-run survival of the firm.

The following are ratios of materials-related costs that are typically cited in fabrication-assembly industries, for example, consumer durable goods.

Cost of purchase = 80% of sales

Cost of marketing (sales) = 10% of sales

Cost of transportation = 10% of sales

These ratios are increasing for various reasons: material shortages, increased use of synthetic materials, inflation, and thoroughly complex high-value products.

### Material Shortages

As natural resources are consumed, costlier methods of exploration, extraction, and processing are necessary. Shortages also result from political events. Former colonies of Western nations, once a low-cost and ready source of supply, have gained their independence. As autonomous nations, these new nations manage their resources to achieve economic, social, and nationalistic objectives.

In the early 1960s, nearly all the chrome in Rhodesia (Zimbabwe) was owned by U.S. firms. Rhodesia was described as a very comfortable, placid little British colony. The United States had almost no domestic sources of chromium, a material essential for manufacturing a wide range of products used in everyday life and military defense. Yet during the struggle for Rhodesian independence, the U.S. government placed an embargo on imports of chromium from Rhodesia. Prior to the second Gulf war and after the first Gulf war, there was a similar embargo on oil from Iraq.

Shortages can occur by depletion and by governments. In 1986, the U.S. government wrestled with the question of economic sanctions against the government of South Africa for its apartheid policy.

### Synthetic Materials

In our quest for lighter-weight products with sophisticated capabilities, we have turned more and more to man-made materials. These compounds, fabrics, and crystalline structures are the materials from which the marvels of high-tech products are made. For example, automobiles will soon boast rust-free outer skins made of laminates of ferrous and nonferrous materials. They will be powered by an engine built around a ceramic engine block. The design and production costs of such esoteric materials are reflected in their higher cost structure. There are, of course, offsets to higher purchase prices. The operating costs of the products are expected to be lower and their capabilities greater.

## Inflation

The materials buyer continues to experience periodic increases as material prices are adjusted upward in response to the rising costs of energy and labor. Managing materials during inflationary periods, or in developing countries with triple-digit inflation, results in decisions that would make little sense in stable environments.

## Complex, High-Value Products

Management in the auto industry frequently hears the complaint, “They don’t make them like they used to.” The industry’s response is, “If we did, you wouldn’t buy them.” Consumers demand ever more reliable and capable products. Our cars now have microprocessors to monitor the vehicle’s operation and tell us everything we would want to know about the state of the car. There are seat and steering wheel heaters. There’s an instrument that tells us how many miles we can travel with the gasoline inventory on board. Another device talks to us telling us to shut doors, buckle up, and so on. Recently, vehicles with a communications link that communicates with an Earth-orbiting satellite tell the driver exactly where they are. Maps are displayed on a computer monitor with a cursor showing instantaneously the location of the car. Not all products are so esoteric, but generally today’s products (and those of tomorrow) will use more complex materials and components in more configurations with higher degrees of customization. For all these reasons, you should expect no reversal in the trends of increased dollar responsibility and the strategic importance of supply management. Where else is the potential for cost reduction and competitive advantage so great?



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**PHOTO 1.1** Our cars have gotten more complex, requiring more high-quality components and materials to allow increased customization.

## Example 1.1

### POTENTIAL FOR PROFIT

All supply management activities have potential for cost reduction and, hence, increased profit. The purchase of raw materials is used to illustrate what is called the “profit

leverage” argument. We might just as easily have used the distribution or production activities. Suppose a firm has an income statement such as that illustrated in Figure 1.6.

**FIGURE 1.6**  
Income Statement

Sales (000s)	\$1,000
Direct materials	\$500
Direct labor	\$200
Gross profit	\$300
Selling and administrative expenses	\$250
Net profit	\$50

(Continued)

(Continued)

At this level of activity, direct materials are (500/1,000) 100, or 50% of sales. Direct labor is 20%. Suppose the purchasing manager is able to reduce the cost of materials by 2%. Perhaps the manager bargains more skillfully or substitutes standard materials for custom-made materials. Or perhaps a value analysis program resulted in the purchase

of functionally equivalent but less costly materials. Many opportunities exist to reduce the cost of purchases. If the firm's sales remained the same, the effect on profit, given the 2% reduction of material cost, would look like that in Figure 1.7. For each \$1 reduction of material cost, there is a \$1 increase in profit. The ratio is 1:1.

**FIGURE 1.7**  
Income Statement Example 2

Sales (000s)	\$1,000
Direct materials	\$490 (49% of sales)
Direct labor	<u>\$200</u>
Gross profit	\$310
Selling and administrative expenses	<u>\$250</u>
Net profit	\$60

What increase in sales would be necessary to increase profit by \$10,000 if material costs were not reduced?

Let  $x$  be the required sales; then  $0.5x$  is the cost of materials and  $0.2x$  is labor cost.

$$\begin{aligned} \text{Sales} &= \text{variable cost} + \text{fixed cost} \pm \text{profit} \\ x &= 0.5x + 0.2x + 250 + (10 + 50) \\ x &= \$1,033,333 \end{aligned}$$

Sales must be increased by \$33,333 to achieve the same \$10,000 increase in profit. The ratio is 3.3:1. Depending on the market, and the firm's competitive position, a sales increase of 3.3% may be possible only by exerting considerable effort. This is not to say that cost reductions in purchasing are achieved at no cost, but before trying to increase market share, we need to get our operating cost well in hand. Profit efficiency, not market share, should be our first concern.

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## INTEGRATED SUPPLY MANAGEMENT (ISM)

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**LO 1.5** Identify the relationship between the purchasing function and other functional areas.

Whatever the appeal and promise of integrated supply management, achieving integration is a challenge. In firms with conventionally organized subfunctions, supply managers are primarily concerned with satisfying their own subfunctional objective. Purchasing managers minimize purchasing costs; marketing managers minimize distribution costs; and so on. These objectives are local, not systemwide. The decisions of a production-inventory control (PIC) manager may maximize use of production equipment yet poorly serve the requirements of the marketing manager.

The decision of the purchasing manager affects not only the purchasing function but other materials functions. It is the objective of ISM to manage the related considerations. Purchasing should consider the nonpurchasing consequences of its decisions.

## Example 1.2

### DECISION-MAKING ON PURCHASING

Suppose a purchasing manager must decide the order quantity for a material with an annual requirement of 200,000 units. The material is consumed by manufacturing at a constant rate. The unit cost of the material is \$1. For transportation purposes, 50,000 units are considered a truckload (TL). Shipments fewer than 50,000 units are charged at a less-than-truckload (LTL) rate that is higher per unit. Asked to state their objectives, the subfunctional managers might respond by saying the following:

Purchasing manager: "Minimize annual ordering cost."

PIC manager: "Minimize work-in-process inventory."

Traffic manager: "Minimize transportation cost."

If the purchasing manager weighs only the purchasing objective, annual ordering cost is minimized when the annual requirement is ordered once a year. Order cost is the cost to place one order. It is incurred each time an order is placed or part of an order is scheduled for delivery. Placing a single order for 200,000 units minimizes annual order cost but results in an average inventory of \$100,000. We assume no safety stock, and receipt of the material is at the beginning of the year.

$$\begin{aligned} \text{Average inventory} &= (\text{beginning inventory} + \text{ending inventory})/2 \\ &= (200,000)/2 \\ &= 100,000 \text{ units @ } \$1 \text{ per unit, the average} \\ &\text{inventory value held is } \$100,000. \end{aligned}$$

The significance of average inventory is that inventory cost is a function of average inventory. Inventory is an asset. Working capital is tied up in material rather than an alternative asset. Opportunity costs as well as costs of

storing, insuring, and handling are incurred when inventory exists.

If the purchasing manager considered PIC's objective (minimize WIP inventory), the order quantities would be 4,000 units, with an order going to the supplier once a week. Assume there are 50 weeks in a year. Because manufacturing requires a uniform flow of material, its weekly requirement is 200,000/50, or 4,000 units per week. The reduction in average inventory when order quantity changes from 200,000 to 4,000 units is offset by the 50-fold increase in annual ordering cost.

To satisfy the traffic manager, the order quantity should be at least 50,000 units. With that quantity, the TL transportation rate applies and transportation costs are minimized. At 50,000 units, the average annual inventory is \$25,000, and 200,000/50,000, or 4 orders per year are placed.

Each manager can make a strong case for the order quantity selected. If the purchasing manager ignores the PIC and traffic manager, manufacturing will have to live with a year's supply of material in its stockroom. The purchasing manager should try to quantify the inventory and order costs and ask about other costs that might be relevant.

Suppose the cost of carrying one unit of material in inventory is \$1/year, and the order cost is \$100/order. Assume the transportation rates are \$20/CWT LTL and \$10/CWT TL. CWT means "hundred weight," that is, 100 pounds. The weight of the material is 1 pound. In tabular form, the annual costs of the order quantities of 200,000, 4,000, and 50,000 are shown in Figure 1.8.

At least in terms of the costs quantified, and assuming realistic estimates of inventory cost/unit/year, and cost to place an order, the order quantity of 50,000 units minimizes annual costs. A word of caution: There are often

**FIGURE 1.8**  
Integration Tradeoff Example

	Purchasing Cost	Order Quantity	Average Inventory	Orders/Year
Purchasing	\$100	200,000	\$100,000	1
PIC	\$5,000	4,000	\$2,000	50
Distribution	\$400	50,000	\$25,000	4

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costs that have not been identified. For that reason we should not label the sum of the three costs as “total annual cost.” Later we’ll learn that the criterion for decision-making in supply management is “total cost of ownership.”

Now, what effects if any does the decision in the preceding example have outside the supply management function? Let’s sample the reactions of other functional managers to the decision to order 50,000 units of the material in question.

Manufacturing manager: “Sounds good to me. I always feel good when I’ve got wall-to-wall inventory, but I don’t want to be charged with inventory in the raw material storeroom.”

The point illustrates the manufacturing manager’s knowledge that while he needs to worry about a

stock-out only four times a year, the cost of manufacturing’s security blanket (inventory) can be high.

Controller: “\$25,000 worth of inventory on the average is just too much. It ties up working capital, and money doesn’t grow on trees, you know.”

Plant engineer: “Where do you guys plan to store 50,000 units? We’re already renting warehouse space across town. Besides, this stuff gets liberated (stolen) if it gets out of our sight.”

Sales manager: “I really don’t have anything to say. Just don’t let manufacturing stock-out. Keep the stuff coming off the production line. We have backorders by the tons.”

So, you see that a rather routine decision about a purchased item’s order quantity affects a variety of nonmaterials management people. How can the *best* decision be made—one that provides the desired *customer service at minimum cost*? In this example, the customers are manufacturing, sales, distribution, the final consumer, and, of course, purchasing, which is the supplier’s customer. The costs of satisfactory customer service are only partly identifiable and quantifiable. Our knowledge of the opportunity costs of poor customer service is also incomplete. Yet decisions must be made while recognizing that systemwide decision criteria are

1. multiple,
2. complex, and
3. conflicting.

Supply management is a developing discipline and an area of management specialization. Measures of customer service are usually expressed in terms of the *availability* of material. Did the plant ship on time? Was the product on the shelf when the customer entered the shop? While important, availability is only one dimension of customer service.

Purchasing, inventory control, and distribution do not have detailed cost classification and accounting procedures. In manufacturing, we have a history of cost accounting going back to the turn of the century. Elaborate techniques are used to relate costs to output levels. Costs are segregated into variable and fixed portions. Budgeting for manufacturing is done with precision using resource standards produced by work measurement methods perfected many decades ago. Tell us what you want to produce and we’ll tell you exactly what amounts of resources you’ll need—direct materials, manufacturing supplies, tooling, machining time, setup, and so on.

Standard costs of production are the basis for operating budgets, product prices, and control of production costs. Such is not the case in purchasing, marketing, and transportation.

As these areas develop, purchasing and distribution cost accounting will become part of the accounting-information system. Standard costs to create the *time* and *place* utilities will be calculable. Budgeting for materials management activities will have the detail and reliability of budgeting in manufacturing. When supply management costs become more visible, their control becomes more feasible.

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## ORGANIZING FOR PURCHASING

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**LO 1.6** Identify the advantages and disadvantages of various purchasing organizational designs.

Supply coordination involves both structure and design of the organization. Purchasing organizational *structure* is the sum total of the ways in which an organization divides its labor into distinct tasks and then coordinates among them. Organizational *design* is concerned with bringing together a group of interrelated tasks for a common goal. However, organization design alone does not ensure effectiveness or efficiency. Most companies' organizational charts do not reflect true lines of authority and responsibility that flow through managers. Too much detail can lead to micromanagement. On the other hand, a loosely designed organizational structure can lead to a greater risk.

In any purchasing organization, two major problems must first be considered. The first issue: Where should the purchasing functions be located in the organization? Second, what level of authority should the purchasing function have? Given the evolution of outsourcing, the purchasing function is expected to gain more authority in the corporate hierarchy.

### Centralized Versus Decentralized Purchasing

The first issue deals with centralized purchasing of decentralized functions. **Centralized purchasing** involves coordinating all purchasing activities for the entire plant through one central location. That purchasing department is the only place in the firm where requisitions are processed and suppliers are selected. In **decentralized purchasing**, authority and responsibility for supply-related functions are dispersed throughout the organization.

**Centralized purchasing** The coordination of all purchasing activities for the entire plant through one central location.

### Advantages of Centralized Purchasing

In most cases, centralized purchasing results in lower costs because of the availability of purchase quantity discounts. If all material uses are coordinated into one major purchase, the supplier will work harder to service the buying firm. Large dollar purchase quantities equal buying power. Most manufacturing firms spend more than 70% of their total revenue on purchasing materials and component parts. Thus, the effectiveness of a centralized organizational design will have a significant impact on profit. As an example, consider a firm that has several departments that use similar components; they could actually compete against each other for scarce material, resulting in higher prices for each department.

**Decentralized purchasing** The authority and responsibility for supply-related functions are dispersed throughout the organization.

Centralized purchasing promotes the effective use of purchasing professionals because it allows the supply manager more authority and credibility. Each buyer can easily become an expert on associated buys (commodities and noncommodities). Expertise will be developed when there is a critical mass. GM, Dell, Walmart, and IBM all use centralized purchasing and have in-house expertise ranging from engine parts to rental cars to office equipment to pharmaceuticals.

Centralized purchasing enables the buying firm to do a better job of monitoring various changes throughout the industry. Centralized purchasing also lends itself to periodic

(1) reviews of purchasing activities, (2) evaluation of suppliers, and (3) development of purchasing training programs. In decentralized purchasing operations, these important strategic activities may not be accomplished.

Centralized purchasing is preferred from the suppliers' point of view. The selling firm can easily determine whom to call on. This will improve efficiency for both parties.

According to a recent Center for Advanced Procurement and Supply (CAPS) study, 59% of the firms used a combination centralized–decentralized structure, and 28% used centralized purchasing. Only 13% of the firms responding used decentralized purchasing.

### **Disadvantages of Centralized Purchasing**

There are several arguments against centralization. Most of the resistance is from companies where there are decentralized profit centers. The following three main arguments are given:

1. *High engineering involvement in procurement decision-making.* At the early stages of product development, engineering needs to be deeply involved with the design, which can be different with remotely located centralized purchasing.
2. *High need to coordinate purchased parts with production schedules.* This is especially applicable when small amounts are ordered frequently. The supplying firm must be within close geographical proximity or guarantee JIT deliveries. It may not be cost-effective to have centralized purchasing operations in some JIT situations.
3. *High need to buy from local community.* Sometimes it makes good political sense for firms to make purchases in the community where the plant is located.

Because of the profit-leveraging effect, profit center managers feel the need to control purchasing if they are to be held accountable for profits.

### **Advantages of Decentralized Purchasing**

Decentralized purchasing provides for a more streamlined procedure since the department manager's purchasing needs and thus decisions can be made immediately. As an example, if a manager needs to purchase 10 laptops for the business unit, the unit manager can easily make the purchase online or from a local computer store.

### **Disadvantages of Decentralized Purchasing**

The disadvantages of decentralized purchasing are duplication of effort in buying, receiving, inspection, and accounts payable. Decentralized purchasing also prevents the buying organization from taking advantage of volume discounts.

### **Centralized/Decentralized Hybrid Purchasing Systems**

Some organizations adopt a hybrid system that combines both centralized and decentralized purchasing. They use centralized purchasing for larger organization-wide contracts, but give individual business units autonomy to make small purchases for their departments or subsidiaries. Table 1.1 summarizes the three approaches.



**TABLE 1.1**

The Degree of Centralization Impacts on Purchasing Success

	<b>Decentralized Purchasing System</b>	<b>Hybrid Purchasing System</b>	<b>Centralized Purchasing System</b>
Advantages	Business responsiveness	Business responsive, increased leverage, some processes	Increased cost savings, enhanced talent management, consistent processes
Disadvantages	Loss of leverage, lack of consistent sourcing process	Priority given to business requirements, control and coordinate activities	Significant focus on cost savings, less focus on business requirements
Example organization	Heavy highway construction	Universities	Major retailer, automotive manufacturers, and technology

**FIGURE 1.9**

Example of Geographically Centralized Purchasing

A Fortune 500 appliance company is a good example of a company that has great difficulty in centralizing purchasing on a geographical basis. The company has many plants throughout the country. Although each plant makes electrical products, the product lines are diverse. As a result, the company has relatively few common suppliers, and those are widely separated geographically.

In some cases, national pricing contracts have been negotiated on a centralized basis for common items that can be used by the individual plants as they see fit, particularly where the vendor has several plants nationwide and can provide adequate delivery. Such items are relatively few, however, and are of a supply rather than a production nature. In no case are actual purchase orders placed from the central location in Cincinnati. At one time, machine tools were purchased in this manner. This practice was later abandoned because of objections by manufacturing.

Even when several plants are located in the same local geographical area, their requirements could be so specialized that they would often prefer to do their own purchasing. On the other hand, the Columbus, Ohio, plant operates with a centralized purchasing department handling the buying of all raw materials, fabricated component parts, and maintenance repair and operating (MRO) items for four product lines:

- Refrigerators and freezers
- Room air conditioners
- Specialty product (dishwashers)
- Compressors

Each division has its own manufacturing, engineering, and sales departments, all reporting to a general manager. Production control is reported to the manufacturing manager in each case. Purchasing is reported to the general manager.

## The Future Organization Concept

The outlook is that the majority of significant dollar-valued purchases will continue to be centralized. This trend also will be the result of increased computer-based management information systems. As firms become lean, centralized purchasing will become a major focus. Long-term agreements will be more frequently negotiated to stabilize prices. Honda of America is an excellent example of a firm that uses centralized procurement as a competitive weapon. Approximately 75% of the sales dollar for each automobile manufactured in Marysville, Ohio, is purchased from Japanese firms. Moreover, as multinational firms continue to expand and grow, the host government's national interest will increasingly become the focal point of a firm's procurement strategies. An example of geographically centralized purchasing is given in Figure 1.9.

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## REPORTING STRUCTURE

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**LO 1.7** Describe the reporting structures common in the purchasing profession.

The status of the purchasing professional in an organization is determined by the capacity structure. In the majority of Fortune 500 firms, the purchasing professional reports directly to the manufacturing vice president. This is also true for medium-sized firms. To be effective, the purchasing function should never report to another major line activity. If this occurs, the purchasing professional does not have the appropriate authority to make a difference. Of course, the reporting structure must be consistent with the capabilities of the specific person in each position. The purchasing organizational structure also should be different for service-based firms. Purchasing services are addressed in Chapter 18.

A recent Center for Strategic Supply Management (CAPS) study found that in 16% of the firms surveyed, purchasing managers report directly to the president. However, in the majority of the firms, the purchasing manager reports directly to the VP of manufacturing/operations. In smaller firms, more than one third of the purchasing professionals report to the VP of manufacturing. What's more, in firms with sales between \$5.1 and \$10 billion, 61% report to either the president or executive VP.

### The Organization Concept of Supply Management

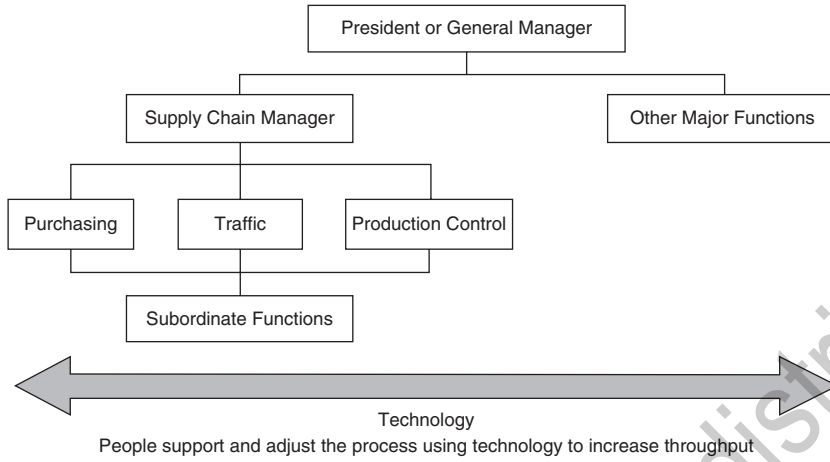
A formal organizational concept of supply management involves the flow of materials through a manufacturing firm. The functional areas involved in this flow include (1) purchasing, (2) inventory control, (3) traffic, (4) production control, and (5) stores, as shown in Figure 1.10. Approximately 70% of the firms surveyed follow this organizational concept. Figure 1.10 also shows some emerging organizational examples trending in supply chain management. The overwhelming acceptance of the supply management concept has created a need for more technical and managerial sophistication from the supply manager. A common feature of all the organizational examples is that people support and adjust the process using technology to increase throughput.

The examples in this section are by no means conclusive. In summary, designing an organizational structure depends on the following:

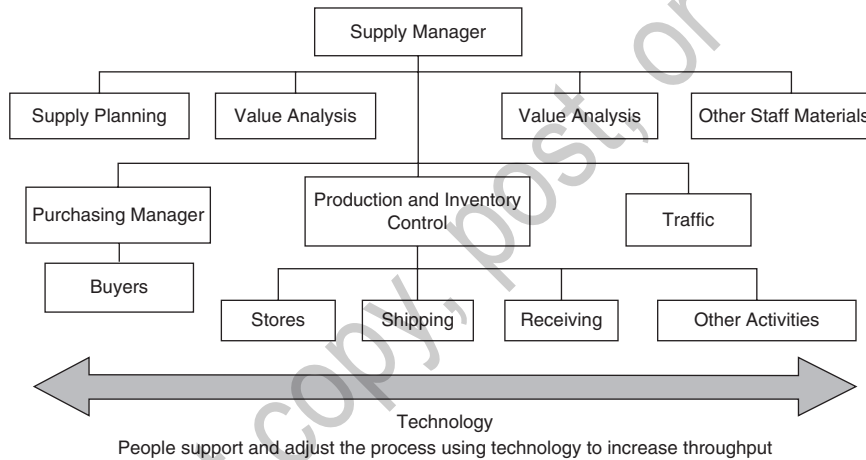
- The kind and quality of information it gathers from its customers, suppliers, and partners
- How the company gathers the information
- How it interacts with each of these constituents
- How this information flows through the organizational structures
- Who has access to it and who doesn't
- How the information is used in making decisions
- How the information is stored for ease of use and analyzed
- Whether both the organizational processes and systems reflect and mirror information flow

**FIGURE 1.10**  
Organizational Examples

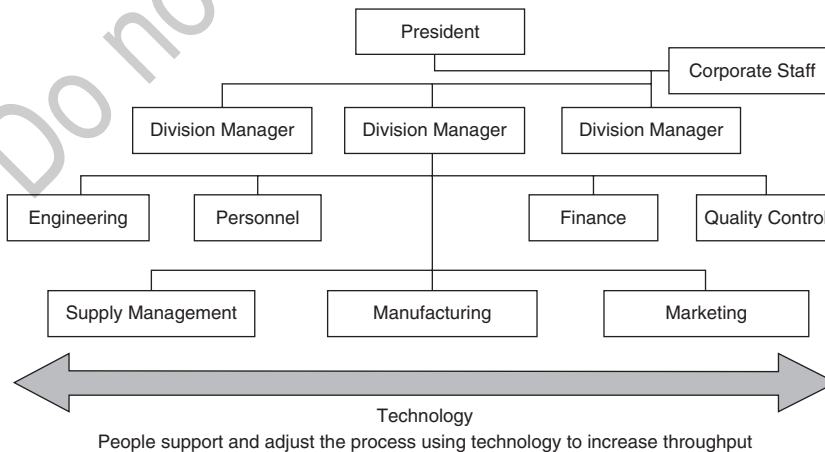
I. Basic Supply Management Organization



II. Supply Management with a Staff Operation



III. Divisional Supply Management



## PROFESSIONALISM WITHIN PURCHASING AND SUPPLY MANAGEMENT

**LO 1.8** Identify careers in purchasing and supply management.

As supply chains continue to grow globally, and as products become more complex, the supply chain professional must become more sophisticated. Supply management professionals across all industry sectors must become major players in the organization’s decision-making process.

The **Institute for Supply Management** offers two professional certifications. They are the Certified Professional in Supply Management (CPSM) and the Certified Professional in Supplier Diversity (CPSD). The knowledge base for CPSM focuses on effective decision-making in an integrated supply management operating environment. Specifically, the knowledge base includes financial analysis, strategic sourcing, and international regulations. More than 20,000 professionals have been certified as CPSMs. The CPSD was established in 2010. The primary purpose of the CPSD is to show that the organization is committed to diversity throughout the company’s supply chain. The 2019 ISM salary survey shows that the average salary for the CPSM credential was \$119,551, and the average salary for the CPSD credential was \$125,596, compared to \$114,348 for those with no certification. A summary of the two professional credentials is given in Table 1.2.

### Careers in Purchasing

Now is the best time for the next generation of managers to pursue a career in purchasing and supply management. Supply management professionals must possess a diverse skill set. First, the successful supply manager must have excellent technology, people, and negotiations skills in order to add value to his or her organization. Supply professionals must also be

#### Institute for Supply Management

A professional association with a mission to provide national and international leadership in purchasing and material management, particularly in the areas of education, research, and standards of excellence. Membership is individual, not institutional, with local affiliates in Southwest Michigan and Central Michigan. See <http://www.ism.ws>.

**TABLE 1.2**  
A Snapshot of Requirements for ISM’s Professional Credentials

	CPSM		CPSD	
	Bachelor’s degree from a regionally accredited institution or international equivalent	No degree	Bachelor’s degree from a regionally accredited institution or international equivalent	No degree
Education requirement	Bachelor’s degree from a regionally accredited institution or international equivalent	No degree	Bachelor’s degree from a regionally accredited institution or international equivalent	No degree
Experience requirement	Three years of full-time, professional supply management experience (nonclerical and nonsupport)	Five years of full-time, professional supply management experience (nonclerical and nonsupport)	Three years of full-time, professional supply management experience (nonclerical and nonsupport)	Five years of full-time, professional supply management experience (nonclerical and nonsupport)
Testing requirement	Pass three exams: “Supply Management Core,” “Supply Management Integration,” and “Leadership and Transformation in Supply Management”		Pass two exams: “Supply Management Core” and “Essentials in Supplier Diversity”	

analytical problem solvers. In today's global business arena, supply management professionals must be able to interact with potential sources of materials and services throughout the world.

The average salary for a supply management professional is \$119,271. One of the major factors affecting salary and professional achievement continues to be education. Those with a bachelor's degree earned an average of \$108,065, while the average for those with a master's degree was \$139,476. Professional certifications from ISM are also associated with higher wages, as is work experience.

An increasing number of supply management professionals are earning salaries that exceed \$100,000. More than half of the respondents to a 2019 ISM salary survey reported earning a six-figure salary. The median salary was \$102,352, while the top 5% of earners received an average of \$340,956. Entry-level (less than 5 years) supply management professionals reported an average of \$74,162. The purchasing and supply management salary drivers are job title, experience, education, credentials, annual spend, gender, and size of the organization. A summary of the results of the 2019 ISM salary survey is shown in Table 1.3.

For a more comprehensive discussion of purchasing and supply management career opportunities, see [www.ism.ws/CareerCenter](http://www.ism.ws/CareerCenter).

### The Institute for Supply Management: J. Shipman Gold Medal Award

Johnson Shipman was a pioneer member of the New York affiliate of the National Association of Purchasing Agents, now Institute for Supply Management, well-known for giving liberally of his time and counsel. The J. Shipman Gold Medal Award was created in 1931 and is presented to those individuals whose modest, unselfish, sincere, and persistent efforts have aided the advancement of the procurement and supply chain management field. Those chosen for the award have also assisted and guided members of the profession in their endeavor. Each year the ISM recognizes a procurement leader that exhibits achievements within the supply management profession.

On April 19, 2019, the Institute for Supply Management named Thomas K. Linton, chief procurement and supply chain officer at Flex, the 2019 J. Shipman Gold Medal Award winner in recognition of his distinguished service for the cause and advancement of the supply management profession.

Linton was honored during the 2019 Shipman Award ceremony at ISM2019, ISM's annual international supply management conference, taking place April 7–10 in Houston,

**TABLE 1.3**  
Summary of Salary From 2019 ISM Survey

	2019 Salary Survey
Overall average for supply management professionals	\$119,271
Average for those with 4 or fewer years of experience	\$74,162
Average for those with a bachelor's degree	\$108,065
Average for those with CPSM certification	\$119,551
Average for those with a master's degree	\$139,476

Source: Institute for Supply Management.

Texas. “Tom Linton is an inspiring leader at the pinnacle of his career,” said ISM CEO Tom Derry. “He has made a lasting impact in giving back to the profession and in driving transformational change through his leadership that spans the globe.”

In Linton’s 37-year career in procurement and supply chain, four times as chief procurement officer (CPO) over the last 16 years, he has earned the reputation as a visionary leader. Since joining Flex in 2011 after CPO roles at LG Electronics in Seoul, South Korea, as well as previous CPO roles at Freescale Semiconductor, and Agere Systems, he is now responsible for serving automotive, industrial, consumer, networking, energy, medical, and telco industries with more than US\$1B spend in each.

In a US\$25B global supply chain solutions company, he oversees execution of supply chain management, sourcing (direct and indirect), materials operations, logistics, and systems transformation. He assists in managing 9,000 employees in 30 countries and more than 100 factories and is a force for innovation and technological advancement. For example, he established an industry-leading real-time information platform called Flex Pulse, which drives asset velocity with supply chain visibility.

In his current and prior roles at Flex and LG, respectively, he implemented corporate-wide procurement policies that fundamentally improved their way of doing business while enhancing and driving all sourcing decisions into and through the procurement organization.

Tom leads with the objective to “drive the business, before the business drives you.” This philosophy has led to a career of innovations that drive cost savings, business process innovations, and the enhancement of the business reputation of the places he has worked. This has included a rigorous adherence to a code of ethics.

“It is an honor to be named as this year’s winner of the J. Shipman Gold Medal,” said Tom Linton, chief procurement and supply chain officer at Flex. “Over its 87-year history, the J. Shipman award has recognized many of the leaders and innovators in the supply chain and purchasing field, and I’m humbled to be included in their ranks.”

Beyond his full-time professional endeavors, Linton’s passion for procurement leads to extensive volunteering to help develop the industry. His ISM contributions include terms on the ISM global board of directors, including as chairman of the board (2013–2015), in addition to serving on multiple ISM committees, undertaking speaking engagements, serving as an R. Gene Richter Scholarship executive mentor, and volunteering as a member and leader in numerous other professional organizations.

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## SUMMARY

### **LO 1.1 Identify the role of the purchasing manager, buyer, and purchasing agent in an organization.**

Purchasing managers, buyers, and purchasing agents seek to obtain the highest-quality merchandise at the lowest possible purchase cost for their organization. In general, purchasing managers, purchasing agents, and buyers determine which commodities or services are best for the specific requirement, choose the suppliers

of the product or service, negotiate the lowest price, and award contracts that ensure the correct amount of the product or service is received at the appropriate time. To accomplish these tasks successfully, purchasing managers, buyers, and purchasing agents identify foreign and domestic suppliers. Purchasing managers, buyers, and agents must become experts on the services, materials, and products they purchase.

**LO 1.2 Describe the evolution of the purchasing and supply management function as organizations**

To become a competitive organization in today's global economy, the purchasing and supply management function must become world class. The supply management function is the key to unlocking the value within the organization. Organizations must optimize sourcing assets. The purchasing process involves leveraging through volume discounts. It can easily lead to significant reductions in the total purchasing costs. The organizations that produce excellence are those that continuously improve. In general, the purchasing and supply management function has evolved from a pure cost management function to a competitive advantage.

**LO 1.3 Explain the relationship between the purchasing function and inventory, ordering, and transportation costs.**

Supply management exists to explore business opportunities and implement supply strategies that deliver the most value possible to the organization, its suppliers, and its customers. Strategic supply management is the organization's primary source for collecting market intelligence and developing cost-reduction programs.

The mission of a successful organization's supply management process is to manage purchasing, planning, scheduling, and the transportation of material required for specific products in a manner that will provide a *significant competitive advantage* to the organization in the production of quality products or services. Integrative purchasing and supply management make possible production of goods and services in terms of cost and quality that are competitive in the world.

**LO 1.4 Explain the purchasing function's contribution to profitability.**

There are many opportunities to reduce the cost of purchases. If the firm's sales remained the same but materials costs decreased, the effect would be an increase on profit. For each \$1 reduction of material cost, there would be a \$1 increase in profit. The ratio is 1:1.

**LO 1.5 Identify the relationship between the purchasing function and other functional areas.**

Achieving an integrative purchasing model (IPM) is a challenge. In firms with conventionally organized

subfunctions, supply managers are primarily concerned with satisfying their own subfunctional objective. Purchasing managers minimize purchasing costs; marketing managers minimize distribution costs; and so on. These objectives are local, not systemwide. The decision of the purchasing manager affects not only the purchasing function but other materials functions. It is the objective of IPM to manage the related considerations. Purchasing should consider the nonpurchasing consequences of its decisions.

**LO 1.6 Identify the advantages and disadvantages of various purchasing organizational designs.**

Supply coordination involves both structure and design of the organization. Purchasing organizational *structure* is the sum total of the ways in which an organization divides its labor into distinct tasks and then coordinates among them. Organizational *design* is concerned with bringing together a group of interrelated tasks for a common goal. However, organization design alone does not ensure effectiveness or efficiency. Most companies' organizational charts do not reflect true lines of authority and responsibility that flow through managers. Too much detail can lead to micromanagement. On the other hand, a loosely designed organizational structure can lead to a greater risk.

The outlook is that the majority of significant dollar-valued purchases will continue to be centralized. This trend also will be the result of increased computer-based management information systems. As firms become lean, centralized purchasing will become a major focus. Long-term agreements will be more frequently negotiated to stabilize prices. Honda of America is an excellent example of a firm that uses centralized procurement as a competitive weapon.

**LO 1.7 Describe the reporting structures common in the purchasing profession.**

Given the strategic nature of the supply function, the top supply management professional is usually a member of the organization's senior management team. In this leadership role, supply management professionals must be knowledgeable and understand all areas of the business in order to develop strategies consistent with the organization's goals and successful business procedures.

**LO 1.8 Identify careers in purchasing and supply management.**

As supply chains continue to grow globally, and as products become more complex, the supply chain professional must become more sophisticated. Supply management professionals across all industry sectors must become major players in the organization's decision-making process.

The Institute for Supply Management offers two professional certifications. They are the Certified Professional in Supply Management (CPSM) and the Certified Professional in Supplier Diversity (CPSD). The knowledge base for CPSM focuses on effective decision-making in an integrated supply management operating environment.

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**KEY TERMS**

Buyers 4	Decentralized purchasing 15	Purchasing agents 4
Centralized purchasing 15	Institute for Supply Management 20	Purchasing managers 4
Cost of goods sold 9	Integrative materials management 7	Supply management 7

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**DISCUSSION QUESTIONS**

1. Compare the two unique types of purchasing categories in the business world.
2. The purchasing function can easily make a contribution to profitability. Please discuss this statement. What is the profit leverage effect of purchasing?
3. What is meant by "integrative materials management"?
4. What is meant by "supply management"?
5. Describe how purchasing interacts with other functional areas of the firm.
6. Discuss the issue of centralization versus decentralization as it applies to the purchasing function. What are the advantages of centralized purchasing organizations? What are the disadvantages of centralized purchasing?
7. Discuss the specific objectives of purchasing and supply management. Relate these to (1) the automobile industry, (2) a hospital, and (3) a pizza shop.
8. What are some careers in purchasing?
9. What are the most well-known professional purchasing associations?

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**SUGGESTED CASES**

Case 5: BSD at 777-Holdings  
Case 13: GRC Systems, Inc.

Case 28: Tom & Jerry (T&J) Construction, Inc.