

Global Purchasing and Supply Management

Fulfill the Vision—Second Edition



**Victor H. Pooler
David J. Pooler
Samuel D. Farney**

Kluwer Academic Publishers

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MANAGEMENT**
Fulfill The Vision – Second Edition

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Dedication

This book is dedicated to our wives, Anne Pooler, Nancy Pooler and Denise Farney, for their enduring support and patience during our work.

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Preface

Achieving the promise of e-business

Two divergent approaches exist in purchasing and supply management organizations today, which give at least the perception of conflicting direction:

1. Some organizations, counseled by consultants and e-procurement software suppliers, but without a clear understanding of current actual procurement processes, have implemented expensive systems with the expectations of tremendous savings and spectacular supply chain improvements. The results often haven't lived up to the claims.
2. Many buyers and purchasing managers, failing to grasp the potential benefits from e-procurement, have resisted change, and not given their full support to system improvements. Those who have delayed have missed the opportunities of vastly improved processes and supplier contributions.

Both have valid viewpoints, but neither has delivered on the true promise of supply chain improvements, so the lessons of this book should benefit both. Active supporters of e-procurement can benefit from understanding the “nuts and bolts” approach to the fundamental supply management processes in a global context. Moreover, buyers and their managers with a better vision of the future will be better prepared to adapt to and support the needed changes.

This work attempts to help those who understand the potential of automated e-procurement systems to *fulfill the vision* by adapting the e-commerce systems to integrate with and complement existing manual systems, processes and structures. Purchasing managers, particularly in small

or medium size organizations, are often not on board with their leaders' vision of possible system s, or with the technical changes needed to execute them. By seeing the linkage between current processes and the new systems, those with well-entrenched manual processes will be able to define worthwhile incremental improvements. While they may still choose not to "jump in with both feet" they can take advantage of at least some of the profound opportunities offered by e-procurement.

Senior management has come to recognize an effective supply chain as a distinct competitive advantage for any enterprise. The supply management profession has benefited directly from this leadership vision as more businesses seek to better satisfy demanding customers and owners. To gain competitive advantage, any enterprise must place more attention on customer needs. As a result, rapid response, quality and cost become paramount considerations in all aspects of the business' operations. Competition for the customer's spending is determined by the effectiveness of both the selling organization and its entire supporting supply chain, sometimes referred to as the extended enterprise.

In the first edition of this work, the authors sought to clarify the fundamental processes required when managing the acquisition of goods and services for the business. It expanded upon that core objective to include comprehensive documentation of the expanding global supply chain and a vision of the rapidly evolving role of the supply management profession. Since its initial publication in 1997, dramatic changes have taken place, primarily with the introduction of Internet-based software designed to streamline and automate these critical business processes.

Developing e-business is difficult work and is still in its relatively early stages. The trick is to wed the tried and true knowledge of many experienced procurement professionals with newer techniques and process improvements. Those that have met project expectations by satisfying project cost targets and timetables have done so by focusing on the processes involved and carefully executing changes in converting from manual to automated workflow. This second edition builds upon the content of the first edition by looking at recent trends in e-commerce, the Internet and information technology as they affect the job functions.

Like the first edition, the basic "how-to" for performing the purchasing and supply management tasks is covered. While many published works deal with contemporary issues in supply management, this book will treat them from the perspective of the basic processes that define the function. This provides the reader with a solid basis for analysis of his or her present supply chain performance and for possible process changes with the associated IT opportunities. Numerous examples explain how organizations have

succeeded in applying the new technologies to improve their performance and simplify or streamline the execution of the tasks.

To satisfy this objective and to bring recent industrial experience to this work, Samuel Farney is an additional author. Sam brings to the second edition his understanding of total quality management, lean manufacturing, process improvement and e-commerce, as well as financial analysis and supplier relationship development. As principal of *Advisors*, Sam's work is directed toward change management and process improvement in the supply management profession. *dolphin choir*

The vision the authors wish to present contains management philosophy, ideas, and opinions in an attempt to create a progressive and contemporary purchasing and supply management posture. This book has global vision while others have been primarily from a domestic outlook. The sound concepts presented are the product of clear understanding of the basic job of purchasing and supply management! Further, it is the only book to address the present conflict between management's vision of change and the frustration of practitioners to understand and satisfy that vision.

We believe this book will speak for itself. Hopefully, you will agree with several reviewers' comments that this is the most advanced, technically detailed, management book about purchasing and supply management written to date.

Victor H. Pooler

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Foreword

This book takes a unique approach to describing the extremely complex and rapidly changing field of purchasing and supply management. There have been and continue to be volumes written about supply chain strategies, business-to-business e-commerce, and supplier collaboration. In contrast to most of these, this work addresses the fundamental structure and tasks incumbent upon the supply management organization in meeting the global procurement needs of the enterprise. The authors have created the solid foundation upon which improvement must be built.

The fundamental processes and management principles inherent in performing the role of managing the organization's global supply chain are described. Using this platform, the authors have introduced some of the tools offered by the Internet and by constantly evolving software applications to simplify, streamline and automate many previously burdensome manual tasks necessary to achieve supply management's critical mission.

All three authors have extensive real world backgrounds in managing the essential processes to purchase goods and services and succeed in fulfilling customer and owner expectations. The text contains many lessons of what works, and what doesn't. Their experience is conveyed in a no-nonsense style that flows from the rapid growth of the profession as a profit contributor to the potential future of collaboration across the supply chain.

Those in the field of purchasing and supply management today are aware of the demands on them to cut costs, guarantee delivery, assure quality, buy globally, and do it all in a fraction of the time and with fewer people than the last quarter. Software suppliers are promoting solutions that "meet all your supply chain management needs" while sometimes having little first-hand knowledge of the basic processes which underlie those needs.

Global Purchasing and Supply Management: Fulfill the Vision serves to remind us of the importance of reflecting on the fundamental processes when seeking to improve. The most successful efforts to bridge the gap between theory and practice have been built upon the solid foundation of good purchasing organization and sound processes. Most failures can be attributed at least in part to a lack of focus on the basics. This book is a refreshing answer to how supply managers can shape the future of acquisition for their businesses.

Joseph Cavinato, Ph.D., C.P.M. -

Sr. Vice-President and director of the Center for Strategic Supply Leadership (CSSL), Institute for Supply Management

Acknowledgments

As with any major undertaking, success can be achieved only with extensive collaboration to create a comprehensive and quality result. This book is no exception, as a number of individuals were especially helpful and supportive in the completion of this work.

The authors acknowledge Professor Eugene L. Magad of William Rainey Harper College who persistently encouraged the writing of the first edition as part of the publisher's Materials Management/Logistics series that he developed as the Series Editor. Professor Magad is an author, teacher, and consultant with wide experience.

The authors also acknowledge the efforts and enthusiastic support of the following individuals, who served as an authoritative body of experts contributing to this work:

Joseph Cavinato, Senior Vice President, Institute for Supply Management, and ISM professor of supply management at Thunderbird, The American Graduate School of International Management in Glendale, AZ has offered unique insights into the exciting future for supply management. Professor Cavinato is a renowned educator in business logistics for many years at Pennsylvania State University, and was the publisher's official reviewer for this second edition. We sincerely appreciate his enthusiasm for the growth of the profession and his recognition of the need for this work to help many within the function to join and benefit from that growth. He has helped countless individuals and companies around the world to better understand and contribute to a new level of professional recognition. The authors appreciate his Foreword to this book.

Steven M. Pooler, Business Unit Manager, Cooper Industries/Crouse-Hinds Division, Syracuse, NY has updated his original Chapter 9 to be

consistent with current lean manufacturing practices based on his 25 years of experience in manufacturing and operations. He attended Clarkson University and Lemoyne College, and is certified by APICS in Material and Capacity Requirements Planning, Inventory Management, and Just-in-time Manufacturing. His on the job experience as a Shop Floor Supervisor, Production Planning Supervisor, Materials Planning and Procurement Supervisor, Manager of Production Scheduling, Manager of Manufacturing, and currently Business Unit Manager have given him an all around operations background. In these wide-ranging assignments, Steve has developed a reputation as a strong, energetic leader who leads with integrity and passion, and takes pride in having developed high performance teams committed to continuous improvement and excellence.

John Burlew, President, Hemstreet Tool & Die Co., Syracuse, NY, is a pioneer in the application of engineering techniques to purchasing. He has held positions as commodity purchasing manager, planning manager, material control manager, materials manager, and Director of Quality Assurance, Corporate Director of productivity and advanced manufacturing process. John has lectured with Pooler & Associates in seminars about purchasing engineering and quality.

Thanks to Allen Elliott of Carlyle Compressor Company, Div. of Carrier Corporation, Syracuse, NY, for his insightful and helpful charting and critiques for Chapter 8 on quality. Al, a quality control manager, teaches quality courses, and helped assure the quality issues are well and accurately covered. He contributed greatly to the quality management discussion and SPC and bell curve charts in cooperation with the authors.

All the above generously gave of their talents to make this book what it is. While we've used many, though not all, of their suggestions, the authors are solely responsible for the material.

Victor H. Pooler

I

FROM BUYING TO STRATEGIC CONTRIBUTOR

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Chapter 1

THE ROLE OF THE PURCHASING AND SUPPLY FUNCTIONS

Purchasing is indeed an unusual and multifaceted job. It operates at the vital intersection between buyer and seller, where supply and demand forces meet. As such, its scope is broad, encompassing both internal and external elements of supply interaction.

Purchasing is an exciting and challenging profession that is evolving rapidly. In small and newer businesses, historically the owners have almost always controlled the buying activity to keep control of the company's vital cash flow. As the businesses grew, one of the last duties to be delegated was buying—precisely because of its importance to the company's success. Delegation has accordingly become a necessary and inevitable result as management functions become more complex with positive business growth. With increasing size, it becomes necessary for the company to have someone pick up this responsibility.

The terminology used in the purchasing profession has witnessed a similar evolution. The term “buyer” has taken on a generic connotation today, but in fact, many types of buyers exist. For example, a buyer can be a wholesaler, a contractor or distribution buyer, an industrial buyer, a technical buyer, a commodity specialist for metals, or electronics, and so on. Whether purchases are solely for individuals, for a small family operation or for a large corporation, the underlying principles are the same. However, while the buying process can be viewed as quite simple from a perfunctory “paperwork” standpoint, quite the opposite is true with respect to the complexities of controlling the expenditure process itself. We will explore both of these aspects in detail in this book.

Another term that has undergone some revision is *vendor*. While some conjure up images of “vendors” tossing packages of peanuts in the ballpark, others are quite comfortable in retaining the term. Some prefer the term

“supplier”. Although the words *vendor* and *supplier* are essentially synonymous, in this book the word *supplier* is used more often, in keeping with the supply management theme. Also, the terms “purchasing” and “procurement” have become essentially synonymous in the profession, so these terms are used interchangeably in this book. In addition, we have generally denoted the person who heads up the purchasing department as the *purchasing manager* (PM) while the *chief procurement officer* (CPO) designates the top-level supply management executive.

Irrespective of the terminology used, it takes a seller and a buyer to reach an agreement. It has been said, “Nothing happens until someone makes a sale.” So true! But, consider that “No sale was ever made until a buying *decision* was reached!” Many top sales managers have repeatedly stressed, “Know your customers and *how* they buy!” Going further, Peter Drucker, noted management spokesperson, has said, “The key to efficient and effective industrial marketing is not the supplier but the buyer.”¹

The job of purchasing continues to receive increased recognition as a vital management function. Profit, basically the difference between a company’s income and outgo, is obviously dependent on either of these factors. Traditionally general management has given more emphasis to the revenue (incoming money) that changes with market conditions. And because competitive conditions make it difficult to increase prices automatically to cover increased costs, operations management interest has generally focused on the cost (outgo) aspect. Since purchases represent the largest single element of cost to a company (typically between 50 and 60 per cent of incoming sales dollars), this is quite naturally where more attention and effort will be directed.

In addition to the factors noted above, a number of historic factors have created renewed interest in purchasing and supply management. Purchasing evolved from an element of manufacturing or general management, and gained its independence as a financial contributor to a company’s success. Progressive CEOs and owners of businesses came to realize that management of the supply base is critical. To manage supply, the manager and buyers must know and use the full range of techniques and procedures available to the true professional.

Among the historic factors that generated awakened interest in purchasing and supply management are the following:

- World War II, and the post war booms that brought serious material shortages, along with new government requirements and priorities
- The cyclical swings of surpluses and shortages, with attendant fast-rising material costs

¹ Peter F. Drucker, “The Economy’s Dark Continent” *Fortune Magazine* April 1962, p. 265.

- The accelerating “profit-squeeze” necessitating use of the full resources of the company to ensure survival
- The brutal foreign competition encountered by U.S. products, and trade alliances such as NAFTA and ECC
- The increased complexity of technologically driven products, with digital devices and electronic controls as notable examples
- The emergence of truly global markets, with reduced tariffs and a freer flow of components between foreign and domestic companies
- Growth of government oversight and control with respect to company procedures and reporting in areas such as minority subcontracting, environmental issues, and various other sociological demands
- The growth of the Internet and the attendant ability to transmit information instantly worldwide
- The emergence of the concept of the *extended enterprise*, where the organization’s success is seen as resulting from not only it’s own efforts but also from the effectiveness of all participants in the supply chain
- Evolution of a business philosophy of manufacturing only items falling within the business’s *core competency*, and outsourcing virtually all else

Although all of the above factors have played a part in purchasing becoming a key area of management focus, probably the most significant issue relates to the last of these; that is, the effect on purchasing due to the recent trend of much of corporate America to “downsize” (or as some prefer to say, “right size”) as a means to reengineer the organization to improve competitive position. This effect can be viewed from two perspectives. First, consider that an organization that cuts its manpower usually suffers some reduction in workload capacity—unless, of course, the reduction is based on the achievement of a breakthrough that entirely removed the need for the human resources affected by the reduction. Second, as the reduction is made, purchasing is often called upon to buy certain goods and/or services that were previously manufactured or performed in-house.

Examples include:

- Payroll and employee benefits
- Cafeteria and food services
- Certain non-core manufacturing, such as fabrication and subassembly
- Facilities maintenance, and janitorial services
- Customer and field service and repair
- Information technologies
- Logistics and transportation services

In this case, increased outsourcing has put additional demands on the purchasing function. However, sometimes the paradoxical result has been a net reduction in overall procurement activity. As an example, let's consider the decision to henceforth outsource the cafeteria operations to a third-party supplier. Now the cafeteria services supplier buys the plates, the silverware, the mustard and the coffee! So the single (albeit substantially more complex) procurement award to the new supplier has eliminated perhaps hundreds of tedious procurement requirements from the buyer's direct responsibility. Note that the buyer for the company has now assumed responsibility for both materials and labor in a purchasing arrangement that is much more complex and involves a substantially higher expenditure than previously.

1. PURCHASING OBJECTIVES

For any function to be successful, it must establish clear and measurable objectives, and work diligently to achieve them. Purchasing, as the caretaker of the largest share of the company's revenue inflow, is no exception.

To maximize its contribution to the company's overall performance, purchasing must establish the following two overarching objectives:

1. Assure economic supply through the procurement of goods, supplies and services to keep the company in operation.
2. Contribute to profits by efficiently controlling the total cost to the operation.

While many business people think of the first function only, it is through the smart handling of the second point (after the first is assured) that defines the difference between an average and a world class purchasing organization.

In addition to the above overarching objectives, some specific purchasing objectives include:

- To get the *best* buy—suitable quality at minimum cost.
- To pay reasonably low prices, negotiating and executing all company commitments.
- To develop satisfactory sources of supply and maintain good relationships with them.
- To secure optimal supplier performance, sometimes by seeking process improvements across boundaries between trading partners.
- To locate new and better materials and products.

- To keep inventories throughout the supply chain as low as is consistent with company needs.
- To carry out programs to continually reduce total cost of purchases.
- To develop effective controls and procedures.
- To keep acquisition costs at the minimum compatible with optimal performance.

This list is far from all-inclusive; other objectives will become evident to the alert purchasing manager based on the specific nature of the procurement activity involved. Furthermore, although the above list is largely conceptual, it is important in practice that specific objectives be quantified to the maximum practical extent.

A company will have stated objectives, but the individual manager must interpret what company officials actually say and do. For example, chief executive officers (CEOs), backed by the law of the land, will usually stress their responsibility to the stockholders. But the company's objectives are usually composites of many decisions, resulting in various cross-functional compromises. So in actual practice the CEO's goal is to balance the objectives of a fair return on investment to stockholders, stable and satisfying employment for employees, satisfaction of customers and the community, and so forth.

In setting procurement's functional objectives, the PM must be aware of the CEO's (and accordingly, the company's) objectives, and ensure consistency in constructing the specific objectives for the purchasing department. With increased focus on meeting customer needs more effectively, many enterprises have begun to evaluate the results of the entire supply chain in satisfying these needs. This has given rise to the concept of competition between supply chains rather than merely between companies. Consequently, the importance of supplier contributions to enterprise results has further increased expectations of the supply management organization.

2. IMPACT ON PROFITABILITY

It is clear that since purchasing is responsible for controlling a dominant share of the company's revenue dollars, it directly impacts profitability and the financial success of the overall business enterprise. As a buyer, simply maintaining adequate sources of supply is not enough. Making sure that suppliers are the "right" suppliers, selling at the "right" price—and then seeing that they keep serving well, are important activities.

Let's look at purchasing's impact on profitability. The purchasing profit ratio shown in Figure 1-1 is based on an average company with a 7 percent

profit before tax. A \$1 reduction in the cost of purchased goods produces a profit of \$1, or a 1-1 ratio, whereas it takes \$14 of sales to produce the same amount of profit! A dollar saved in purchasing equals the profit from \$14 of sales: so, the profit leverage of the material cost reduction dollar is 14 times that of the sales dollar. The purchasing profit ratio can be computed for any company by dividing its annual sales volume by profit before tax.

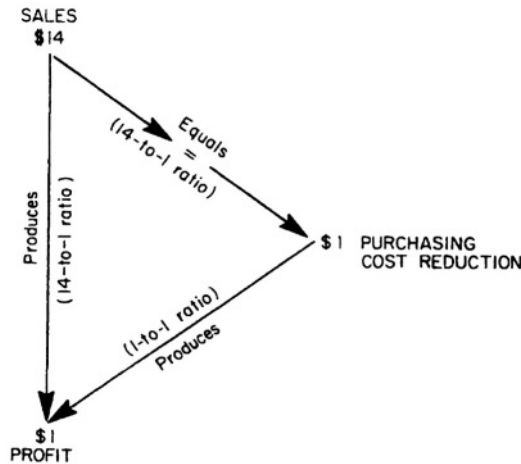


Figure 1-1. Purchasing Profit Ratio

Purchasing claims to be a profit-productive profession. Fine! But, where's the profit? As an example, a broom previously costing \$8 is now bought for \$7.00. A dollar is saved. We can agree on that, but where is that saved dollar? It's not itemized on the profit and loss statement, balance sheet, or "where-got-where-gone" cash flow comparison. Unfortunately, traditional accounting systems don't always take into account purchasing's contribution.

So where is the dollar savings? We know the savings for buying brooms has to be in the budget of the using department, but the issue isn't solely about the budget for brooms. In 2002, the *gross domestic product* (GDP) for the U.S. was \$10.45 trillion. That year the collective spending of about \$6 trillion by American buyers means that during any working day, over \$25 billion was spent throughout the U.S and the real question is, "How well was that money spent?"

Let's look at purchasing's impact on profit in further detail. The profit ratio shown in Figure 1-2 depicts a typical performance for a healthy \$20 million sales company. Purchases, in this case 53% of sales, are equal to \$10.6 million, and are part of company costs. The figures within the boxes are company results without purchasing's contribution. Starting at the lower

right box, a 2 1/2% savings reduces purchases to \$10.3 million, which causes a chain reaction as it flows through the cost accounting system; first by reducing total cost that increases profit, and then profit margin, and ultimately *return-on-investment* (ROI).

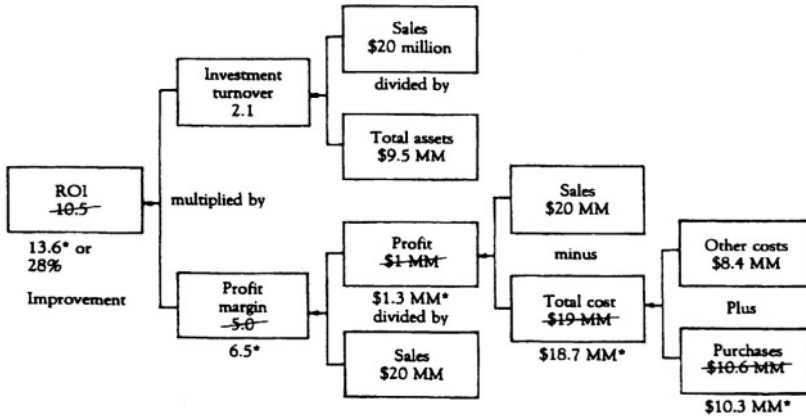


Figure 1-2. ROI Productivity Impact

The return on invested capital for the company has increased from 10.5 to 13.6, which is a 28% improvement because of purchasing's profit contribution. In addition, lower material prices will reduce inventory value, or assets. So, the final result is an even higher investment turnover than shown. This is a measure of purchasing's effect on the total company results. The management of successful companies is very aware of such results.

Here is an interesting exercise. To prove the strong impact of good or bad buying on any specific company, fill in a blank ROI chart using the company's performance as stated in the annual report. Then simply add 2% (or a figure you judge appropriate) to the cost of purchases and compute the new ROI compared to the original numbers. Also, drop the purchases by 2% and note the change in ROI. A 2% change in purchasing expenditures swings the return on invested capital dramatically! This is a clear example of purchasing's leverage on profitability.

Although the impact of purchasing on a company's profit is great, it is not easily achieved! It takes a skillful team of buyers under a competent manager who understands scientific purchasing techniques and methods. In marginal companies, the difference between operating at a profit or a loss may lie in the efficiency of the purchasing function.

If this purchasing function can make money, it can also lose money by poor performance that can reduce profits; so, purchasing is an heir to a

purchased at minimum cost. At the same time, the manager and buyers must keep inventories low to maintain or achieve high turnover ratios, yet always have material ready for production use. It takes a balancing of these often-conflicting requirements to achieve optimum performance.

4. THE BUYING JOB

Some say, “Anyone can buy!” Sure they can, provided they know: *where* to get goods; *how* and *why* the things they buy are used in their own company; how to *judge value*, how to *work with people*, and how to *control and follow through* on purchases. Further, they must be willing and able to use available purchasing techniques.

Today’s purchasing chief must be one of the most knowledgeable managers in the company. Unless the CPO understands the design, engineering, manufacturing, marketing, and related functions in sufficient detail, the buyers can’t possibly do their jobs effectively.

Purchasing Managers often see themselves as managers of materials and expenditures. But how do others see them? Professor Renato Tagiuri of the Harvard Graduate School of Business analyzed the role of a purchasing manager comparing it to that of a production manager. The production manager works within the center of the sphere defined as manufacturing. The purchasing man or woman is at the border of this production sphere, but also on the border of a sphere of many suppliers. The PM is in “conflict between two worlds!” It takes a high degree of statesmanship to operate in such an environment.

While progressive managements today accept Purchasing as a vital management function, there is still little understanding of purchasing’s role among many non-purchasing executives. One reason has been the inability of those performing purchasing to clearly explain their own roles.

What about the buying job itself? We need a bigger vision or “mental picture.” The buying job is indeed unusual and one of the least understood in industry. Because conflicts and disputes have to be settled with suppliers and contractors, friction is often an aspect of this job.

It is easy for any buyer to let details drift and become a “paper pusher,” but he or she will not survive in a highly competitive organization. Two buyers may be given identical purchase requisitions for a purchase valued at \$1 million dollars. One might buy the desired goods without sacrifice in quality for \$950,000, and the other buyer might spend the full \$1 million. Interestingly, the first buyer may not be as well liked as the second who is a real “good Joe.” In the office, “Joe” will seldom question a requirement,

rarely considers standardization to save money, and will simply buy it. Which of these two buyers is doing the best job for his employer?

Buyers must often raise questions about a purchase. Why is a “special” needed? How about a different, standardized and more readily available model? The ideal situation is the buyer who has the technical ability to buy greater value and has good interpersonal skills.

4.1 The Accountability Concept

In many specific purchases, the buyer must control and coordinate two or more requirements dictated by other functions such as engineering, quality, and manufacturing. Yet, in no instance does the buyer have any direct authority over the people or other departments involved. Numerous other jobs require coordination, but they usually have more direct authority.

“If only the boss would give me the authority, I’d sure straighten out this mess. I won’t be responsible unless I’m given complete authority to control this buy.” What buyer or manager hasn’t heard such a statement arising from occasional job frustrations? In the past, authority and responsibility supposedly went hand in hand. That seems a reasonable assertion—no authority, no responsibility—but it is a management myth that “dies hard.” Who in any company has all the authority he or she needs? It may be more accurate to say that almost no one has enough authority to completely control all activities under their responsibility. How many times do top executives state what they want done, yet it doesn’t seem to happen?

The threat of being fired or losing a job is a business reality, yet it is happening so often these days that it has lost much of the negative stigma. Authoritarianism has given way to what might be termed “situation authority.” Consider an analogy: when people drive by a serious traffic accident, they normally obey a citizen signaling traffic. That person has no authority over traffic, yet the situation demands compliance. So too, in buying, the situation often demands a similar response.

A high degree of interdependence among people in the company is a fact of life. The buyer is the shock trooper on the line, assuring supply, resolving quality and specification issues and controlling costs. Supply and demand still affects prices and the balance is maintained at the buyer’s desk. Buyers are often the only force combating the seller’s natural drive for higher prices.

4.2 Buying Influences

Confusion about the buying job frequently stems from failure to understand the many and varied buying influences. Buyers should be able

answer the question, "Who buys at this company?" Consider the major buying decision-making factors and who influences each of them.

Knowledgeable buyers know there are items for which they have absolute buying decision authority. They also know of other buys where they have very little control. Of course, they recognize that most buys are between those two extremes. Buying decisions reflect composite judgment. Depending on the situation, the buy can range from a one-person decision to group or committee decision where no one individual dominates. Many buying decisions may be shared, delegated, or coordinated, as seen in Table 1-1.

Table 1-1. Buying Influences

Decision Factor	Influences
Source and Price	Buyer Design Engineer Purchasing Engineer
Quality	Design Engineer Manufacturing Engineer Quality Assurance/Control Buyer/Purchasing Engineer
Quantity	Material Control Buyer
Timing	Sales Forecast/Order Scheduling Production Control Market Availability

Despite delegating authority to others, buyers must keep responsibility for the results, even in those cases when they have little say in what is bought. This is important even though it can be argued that the buyer controls little of what has been defined as "purchasing." Production tells the buyer how much to buy and when it's needed. Quality is determined by engineering specifications and quality standards. Price may be non-negotiable and controlled by supply and demand. Not too much "authority" here; yet, have a supplier deliver two weeks late, and who's held accountable—manufacturing, engineering, quality control? Not usually. Though it may be the supplier's fault for missed production, it is the buyer whose performance is questioned.

What makes a successful buyer? Two qualities are especially important—the ability to motivate and encourage others to perform, and the ability to find alternative solutions when under pressure. Flexibility, the ability to quickly shift mental gears, is key, as purchasing often occurs at a hectic pace beset by a variety of problems. Examples of buyer duties are:

cost studies, supplier negotiations, and “fire-fighting” to overcome quality or delivery problems as they arise.

Buying is a demanding job, requiring a dedication and commitment to serving the company’s best interests over the long run. How do you measure up?

The competent buyer will:

- Handle his or her share of the departmental workload.
- Perform work quickly and accurately.
- Accept that periodic assignment changes are sometimes required in a dynamic business environment.
- Accept some overtime work, with or without extra pay.
- Offer workable ideas for improving purchasing systems.
- Seek to continually improve process effectiveness.
- Know supplier capabilities and limitations.
- Foster long-term supplier relationships.
- Recognize that the suppliers’ success reflects on his or her individual performance.
- Keep up with market and technology developments.
- Stay abreast of his or her company’s products and services.
- Continue to add to personal knowledge of the job.
- Work within procedures and guidelines of the department.
- Maintain the highest personal ethical standards.
- Justify sourcing decisions based on total cost and the best interest of the company.
- Know how to tactfully challenge specifications and delivery dates that affect the ability to assure supply.
- Accept constructive criticism without becoming overly defensive.
- Pitch in to help other buyers during times where workloads become strained.
- Let the supervisor know when workload can be increased.
- Reasonably enjoy his or her work.
- Remain loyal to the supervisor, the department and the company!

The buyer should be firm and decisive, yet, when necessary, eloquent in pleading a case for special treatment. It’s all in the daily job; the individual that can’t make swift transitions will be unhappy as a buyer. Purchasing’s role will continually shift as supply and demand forces change. Scarcity of materials will cycle again. Higher prices are needed at times, to reduce consumption as the world’s resources are being depleted. The buyer will need to be knowledgeable about global supply!

Of course, the buyer can't, like the chameleon, change colors as every market changes. An effective buyer will avoid extreme positions, and be flexible enough to understand his or her cross-cultural environment.

Buyers can change many aspects of a purchase, while allowing others in the organization a say representing their sphere of interest and influence. Being knowledgeable about *what* is bought and *why* it is bought, plus this right to question, can affect profitable operation. Logically, purchasing personnel should: (1) understand buying influences, (2) be able to explain them to others, and (3) understand and accept that buyers do not make all buying decisions.

Does this influence detract from purchasing authority? Not at all, rather it emphasizes it! Who in any company other than the buyer can correlate the many decision factors in an organization engaged in a vital purchase? The more important the purchase, and the number of participants, the more urgent is the coordination role requiring the highest of competence. Purchasing must be of sufficient stature and position to handle these important situations.

Buying influence is a way of life. With absolute authority, the buyer would be the sole decision-maker. As it is, decisions must be made with involvement of others in the purchasing process. An understanding of buying influence emphasizes the *true managerial role* of the buyer.

Savvy purchasing leaders have learned that attempting to tightly control the various interactions between company representatives and supplier contacts is not only time-prohibitive, but is also unnecessary. Figure 1-4 shows how the buyer and supplier interface has changed from one of salesman-to-buyer, each attempting to represent all areas of his or her respective company, to a multi-function interface with buyer and seller representatives working with each other across a broad range of issues. The role of the buyer has become one of quarterbacking this team activity. This has far-reaching implications for the skills required by a supply manager, as distinct from a traditional buyer.

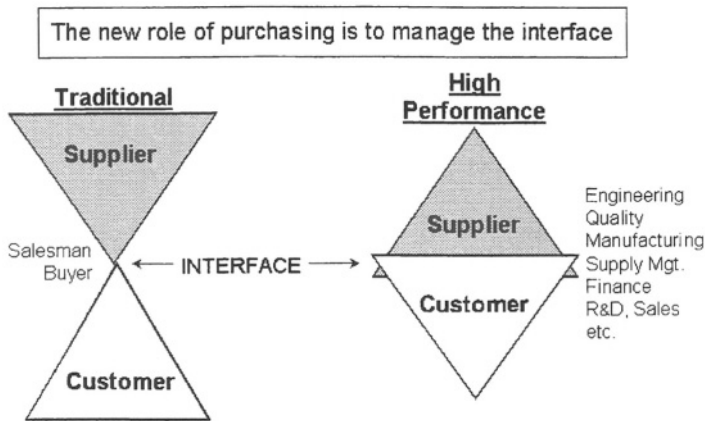


Figure 1-4. The Supplier-Customer Interface

The traditional approach shows that a supplier wishing to sell to a prospective customer sends out a salesperson. That person will probably come into contact with engineering, expediting, quality control, receiving and even management of the potential customer.

The buyer is in a position to coordinate the various functions within the buying company to present a united front to the salesperson. While this seems logical, there is just too much communication needed for everything to be processed through the buyer. It simply won't work. A buyer must work through others to get answers, guidance, and a coordinated decision to present to suppliers. There is a need to lead, but not funnel, the communication exchange.

In the high performance organization, communication lines may exist between the supplier and buyer's interested departments, as long as the buyer is leading the effort. This scenario allows free flow of vital information between the selling and buying companies. Here, purchasing is in position to maintain cost control over expenditures, as the buyer remains accountable for results. The skills required of the buyer have shifted from communicating and controlling to project management and influence. In short, the buyer needs to maintain a screen and not a communication wall within his supply chain.

5. CHANGING DEMANDS ON THE JOB

As purchasing has evolved over the past few decades, increasing demands have been placed on the profession. One study concluded that “several activity areas were indicated as ones in which purchasing has assumed an increased role or responsibility since 1980: strategic planning (43% of the firms), providing economic forecasts/indicators (41%), capital-equipment buys (37%), product development (31%), new product evaluation (26%), traffic/transportation (23%), personal travel (16%), countertrade/offset planning/execution (15%), and cash-flow planning (13%). Obviously, the purchasing function has assumed many increased responsibilities, requiring more-talented, better-trained personnel to perform the function.”²

5.1 Socioeconomic Programs

In the areas noted above, purchasing managers have to be alert to recognize shifts in not only the economic areas, but the total work environment comprising organizational, personnel, legal, systems, and government-driven factors. The expansion of the buying job also concerns new domestic requirements as companies bear some accountability to societal needs. Many customers impose contractual requirements to provide a portion of contract's value to small and disadvantaged businesses. The Defense Department itself has set minority and small business participation goals for their defense procurements, and these in some cases allow premium prices to be paid to meet the stated objectives.

Significant legislation has been put into place covering ecological issues. *Environmental Protection Agency (EPA) and Occupational Safety and Health Administration (OSHA)* regulations affect procurement of commodities such as chemicals and plating as well as contractors and temporary help, to name but a few.

Of course, these are all important regulations that require compliance. They all lead to increased demands on the supplier, which *must be enforced through the buyer*. The challenge lies in balancing these requirements, while striving to meet other important cost and supply goals.

Purchasing Managers as well as buyers need to understand their expanded management and social value roles. For centuries the astronomers made little headway in understanding the universe, believing the planets moved in odd gyrations, until they finally accepted the fact that the earth is

² Harold E. Fearon, William A. Ruch, C. David Wieters, Fundamentals of Production/Operations Management, 4th ed West Publishing Co. 1989. p. 126.

not the center of our solar system. So, buyers must see themselves as part of the whole company, contributing to its cost effectiveness and profitability.

6. PURCHASING REDEFINED

Purchasing has long been defined as, “Getting the right item, at the right price, at the right quality and quantity, and at the right time, from the right source. Although all this is true, that old definition doesn’t cover today’s more demanding world, and the multifaceted buying job. We first need to develop some theory to give us more vision and scope when we think creatively of purchasing.

We have great imagery for space launches from Earth. Our spaceships fly upside down after taking off, solely because the astronauts want to *see* the earth while orbiting! What image pops into your mind when you think of Earth? Some see their hometown, the state, or an aerial map of the country. One thing is certain: we can’t *think* of anything without creating a vision in our mind’s eye.

To help us to gain perspective on the buying job, let’s mentally go way out into the solar system and look back at the Earth. When our astronauts reached the moon, through TV camera’s eye we shared the experience of looking back to see an “Earthrise”. What a vision! Our solar system is so vast that we’re just beginning to explore it, much less the galaxy beyond. The point is that the earth itself never changed, but our outlook about it certainly has.

Now think about the buying job. Ask yourself, “What are the roles to play? “Where is the script?” The buyer and manager need to create the vision!

Consider this definition as an indication of the job’s scope:

“Purchasing represents internal and end-use consumers in the global buyer/seller supply relationship. Through authority to commit and control expenditures to suppliers, assurance of supply and profitable operation is secured. Supply management encompasses the effective application of external resources to meet organizational goals.”

Leading sales training sessions have made it clear that *buyers have enormous inherent power*, if they know how to use it! But sometimes that leverage isn’t used because the buying role is not understood. To create and use competition among sellers, a company must put into the hands of its buyers as much leverage as is possible. And the buyer must use it!

As we redefine purchasing in today’s complex and dynamic global environment, we will need to proceed with flexibility and creativity. Already there are numerous tools, many in the form of Internet-based information

technology, that make the job faster and easier. These offer tremendous potential, provided that the basic buying functions are enhanced, rather than subverted, by the implementation of software and procedural changes. Tomorrow with the continued growth of the *World-Wide-Web* and wireless communication, one can only imagine the possibilities. When Martin Luther King, said, "I have a dream..." this was a great example of creative leadership. He was providing the vision and the script. So too, the purchasing manager *must create the vision*. As the future is conceived, so it shall be channeled.

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Chapter 2

EVOLUTION OF PURCHASING AND SUPPLY MANAGEMENT

To trace the development of the organizational status of purchasing, let's consider the origins of the buying organization. An organizational challenge first emerges when a business expands beyond a single location. Establishment of a second site location does not necessarily affect the marketing operation; after all, it is possible to keep up sales and related activities just as though the company still had a single operation. However, buying isn't quite the same. Management has several organizational choices to consider with respect to optimizing the purchasing function.

Various organizational arrangements accompany business growth. Buying can be done (1) from the original site with existing people, (2) by new buyers at the second site reporting to that site manager, or (3) back to the purchasing manager at the original site, or (4) to other top management personnel.

There are four basic types of organization: (1) line, (2) line-and-staff, (3) functional, and (4) committee. In practice, purchasing departments are combinations of these four types. Though they seldom appear in pure form, it helps to distinguish them for analytical purposes.

A box chart usually depicts these organizational setups, but others such as a concentric or circular graph are occasionally useful. The concentric type has the advantage that no one is represented as inferior or of "lower rank" than anyone else. It is employed by at least one of the country's largest businesses and serves its purpose well.

The head of purchasing can use charts as a valuable management tool. They help in setting lines of authority and responsibility for both buyers and managers, and also in depicting formal communication lines. They show who has the right to hire, to promote and discharge, and to establish an orderly allocation of "jobs to be done." Deficiencies in an organization can

often be detected through the use of well-prepared charts. In cases where a chart has never before been attempted, channels of reporting, for instance, may be more clearly recognized.

Responsibilities and limits of authority should be spelled out as clearly as possible. This is where the use of job descriptions and a purchasing manual come into play. The chief purchasing officer (CPO), like most leaders, is constrained by tradition, practicality, requirements of teamwork, and other demands of the organization.

Authority derives from one's place in the organization, but it relies heavily upon the respect of others for the manager's competence. When that competence produces the trust of others, true authority will exist. Authority depends on the ability to enforce a reward or punishment. Two early examples of organizational enforcement were the church and the military. The church used excommunication, while the military Articles of War read, "... or punishable by death."

The four major types of organization are shown below, and are defined as follows:

1. *Line.* The concept of the line organization is, of course, borrowed from the military. The captain commands the lieutenant; who in turn commands the sergeant; and so on. This, in its pure form, may be practical in smaller and medium-size companies. (See Figure 2-1.)
2. *Line-and-staff.* The line-and-staff organization is the most prevalent in business and industry. A good example is the purchasing department of the typical large manufacturing concern. The "line" consists of those in command—the vice president, manager, senior buyers, and buyers. The "staff" is composed of vital specialists who collect and analyze data, recommend policy, work with the line to solve problems, and so relieve line management of much detail. Examples of staff functions in Figure 2-2 are those of purchase analyst, price/cost analyst, and purchasing engineer. Staff functions and personnel become involved when line managers cannot personally handle all their responsibilities. They cannot delegate management duties; so, a staff assistant is added to help extend the management function by overseeing specific areas of responsibility. Currently, there is a tendency in business practice to combine the line and staff into a "fused" organization. Under this setup, staff analysts, for example, because of their knowledge of a particular study, may give instructions to the buyer as needed, whereas that would not normally be expected.

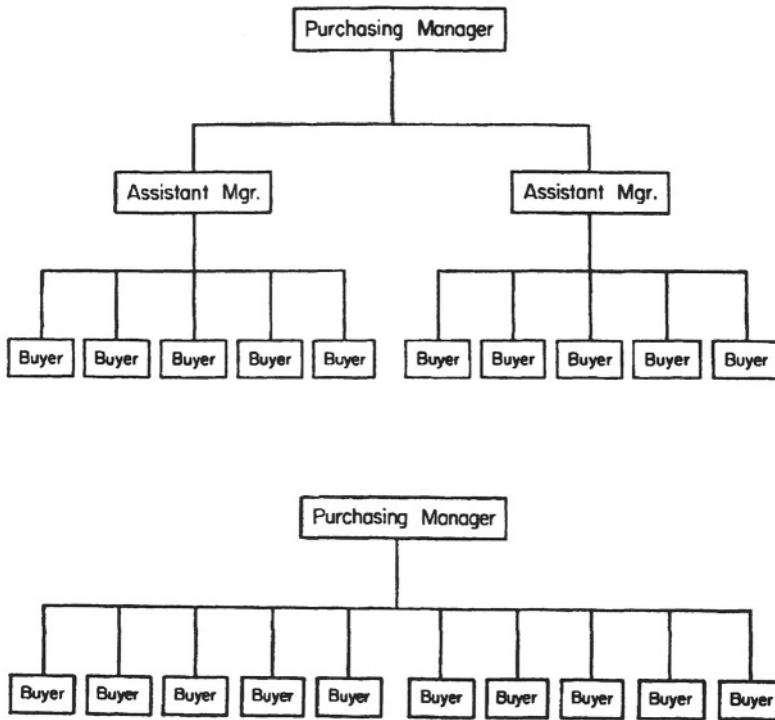


Figure 2-1. Line Organizations

3. *Functional.* Some companies—for example, those that manufacture a broadly diversified array of products or have important functions other than buying—feel that organization by function is better suited to their particular needs than the ordinary line-and-staff setup. A Functional Commodity Buying Organization is quite common, as it makes no sense to have two or three buyers all talking to say, motor manufacturers. Channeling buys for motors through one individual gives that buyer greater “economic voice” in dealings with suppliers. However, to do this in multi-plant operations is not simple.
4. A highly efficient organizational hybrid is the commodity manager arrangement (not shown). In this example, the central purchasing department does the buying, while the various plants are free to control their inventory, and release directly against the blanket orders. Each plant performs its own expediting, calling on the buyers only when they can’t get the required delivery. Figure 2-3 shows centralized functional control with decentralized buying.

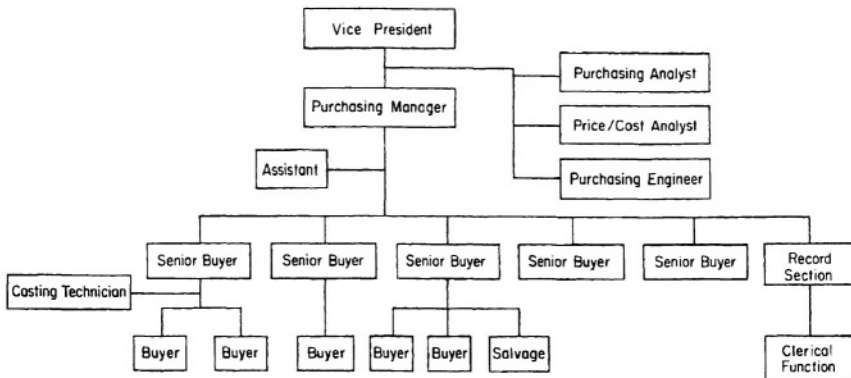


Figure 2-2. Line and Staff Organization

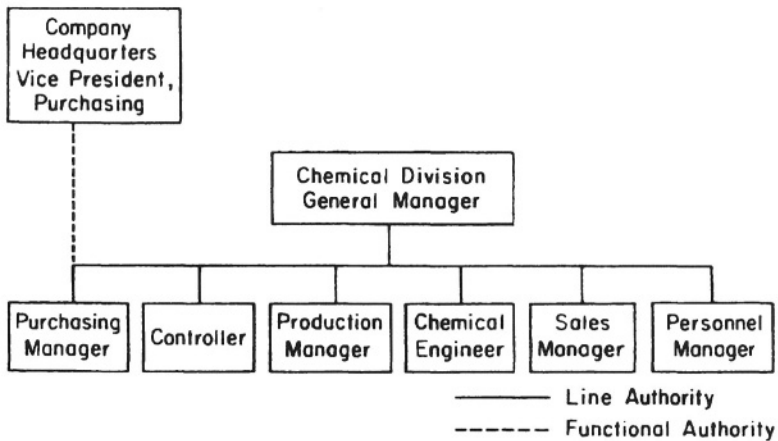


Figure 2-3. Centralized Functional Control with Decentralized Buying

5. *Committee.* A committee is usually grafted into an existing organization where a special function or project requires that the skills and efforts of several company areas be coordinated. In purchasing, such a function might be value analysis, which draws its members from purchasing, engineering, manufacturing, finance, and other areas as needed.

1. SPAN OF CONTROL

In a one-person department there is little or no need for supervision, since the person in charge handles all the duties and bears all the responsibility. However, adding a subordinate changes the situation. Duties must be assigned, and some delegation of responsibility must take place, thereby creating the need for control. This in turn has an effect on the organization structure.

The number of buyers or other personnel reporting directly to the purchasing manager determines his or her span of control. In a department of ten buyers, all reporting to the PM, the span of control is obviously broad; whereas, if this same department had two assistant managers and several senior buyers, the span would be quite narrow and have greater depth as shown in Figure 2-1.

Whether the PM has a wide or narrow span of control depends on his or her (or the company's) theory of management. The advantages of wide-span control include better morale, shorter lines of communication, and the likelihood that promising young buyers will be identified and rewarded sooner. On the other hand, there may be so many people under their supervision, that PMs are unable to devote much time to training each individual. Moreover, a successor may not be developed who has had direct supervisory responsibility.

The span of control should not be so great that it prevents giving adequate attention to each subordinate, yet it should be broad enough that the department operates well without long communication lines. Under some current theories of management, PMs may be assigned an organization much broader than they can properly control. The idea is that the buyers will have to develop initiative and grow in skill and competence. This is an effective plan if management wants to loosen the reins of a capable but overzealous manager who can't avoid interfering in subordinates' work.

The organization chart is a highly useful management-planning tool that all purchasing managers should be able to use in their quest for smoother operations. However, it has definite limitations. None has yet been devised to show completely the complex communication lines of the buying function. A chart is only a snapshot of the existing structure. Moreover, charts are unable to show the organization's most important dimension—the personalities and talents of those individuals represented by the boxes on the charts.

2. CENTRALIZED VERSUS DECENTRALIZED DEPARTMENT

Centralized as applied to purchasing has two connotations. The first concerns the concentration of buying authority for a single plant within the purchasing department. There are situations where a company official, even the president, may buy a vital item because of the serious leverage it could have on the survival of the business. Examples might be hides for a tannery, wood for a paper mill, or lumber for a furniture plant. There are fewer such exceptions today than in past years. In general, most single-plant companies have centralized control of the buying function.

The second, more common connotation of the term implies central purchasing control, usually at headquarters, even when there are several plants in different locations, run by division managers. Conversely, if there are several independent purchasing groups reporting to the individual plant managers and not to one purchasing head, purchasing is decentralized. Either form of organization can, and does, operate in similar industries; strong management personalities will sometimes influence the choices. There are, however, situations that usually will make one of them more appropriate.

2.1 Advantages of Centralization

Why is centralization desirable? Under this form of organization it is possible to maintain greater control over the total commitment of purchasing dollars. A buyer can offer the largest “buy package” to the seller, resulting in better buying agreements that take full advantage of company-wide usage.

Whether a department is centralized or decentralized may depend in the last analysis on such factors as top management preference, use of sophisticated information systems, the physical layout and location of the company’s plants, and the types of products manufactured, or the processes utilized.

Centralized purchasing more readily attains uniform procedures and maintains better control over them. It is easier to bring new people into the larger department and train them properly before they are put on the important buying job. Individuals can be assigned the tasks for which they are best suited. Those who have exceptional negotiation skills may be designated to handle the large-value items; those with the most ingratiating personalities may be designated to the touchier areas of trade relations; and those who are especially aggressive may become excellent expeditors and troubleshooters.

There is probably a point beyond which the purchasing operation cannot be centralized with a further increase in profitability. The fact remains,

however, that some of the finest and strongest purchasing departments are centralized.

2.2 Advantages of Decentralization

Compare a decentralized company whose three plants require a salesman to call on three buyers with the one in which centralized purchasing enables the salesman to service the three plants in one call. This saves buying as well as selling time.

Usually the decentralized purchasing department can react more quickly in emergencies than the centralized group. Also, central buyers who are physically distant from the point of use may be less in touch with materials problems and specifications.

The loss of a key person is not as serious as it might be in the strongly centralized group. And it is possible to keep responsibility and authority closer to the firing line to permit greater flexibility where decisions do not have to be referred to a remote head office.

Like centralization, decentralization can be overdone. Small, scattered buying groups may have little opportunity to be heard by top management and be so weak that they have little voice in company affairs. Buying decisions may then be dominated by other, more powerful departments that are not aware of the role of purchasing in achieving profitability.

Generally most companies start with centralized purchasing, frequently converting to a decentralized function as the company expands and grows into separate divisions. There are no strict rules to follow. Some large companies remain centralized even with many plants in different parts of the country; others are decentralized, having several departments in the same plant area.

In practice there are numerous variations on the organizational theme; however, they are usually combinations of the line and staff and functional types. They may be either centralized or decentralized. It is possible, for instance, to have centralized functional control along with decentralized buying as seen in Figure 2-3. This sort of structure allows the divisional manager to retain authority over buying, but it permits procedural and policy control to be retained by the central purchasing authority.

Many large corporations find it completely impractical to centralize many buying organizations throughout the world. The global corporation presents an organizational challenge about how to bring together buying actions. How can buying be centralized despite confusing organizational channels? In organizing to do the job, the classic question is, "Do we buy centralized or decentralized?" We can do both! In dealing with suppliers, a specific item can be bought solely by a plant, or centrally. To enhance

productivity, the challenge is to get over organizational barriers and form cross-functional teams.

Without question, the most popular organization is the central/decentralized organization. Purchasing is one area of materials management that a company can centralize, regardless of the organizational structure that exists. Whereas centralizing inventory may be difficult in a multi-plant environment, the buying activity can be controlled for maximum strategic and economic leverage, regardless of location of the buyers and suppliers. The challenge presented by these hybrid structures is to maintain strong communication between the centralized strategic people who are guiding the selection and oversight of key suppliers and the decentralized buying activity responsible for supplier delivery and quality performance on a day-to-day basis. Many organizations have found electronic tools such as e-mail and Internet based collaboration to be highly effective in meeting this need.

2.3 Titles Used in Purchasing

Purchasing uses a variety of titles, the most common today being purchasing manager, which replaced the title of purchasing agent used almost universally before 1960. If a company has several PMs, the person supervising them may be assigned the title chief purchasing officer (CPO), director of purchasing, director of procurement, general purchasing manager or sometimes materials manager or director of material or supply, the latter titles usually implying added materials responsibilities. In smaller organizations, PMs may report directly to a vice president with a title similar to the above.

According to a 1995 study by the Center for Advanced Purchasing Studies, "Data about the chief purchasing officer (CPO) showed: Title - Vice President (37%); Director (36%); Manager (21%); and 59 percent changed titles since 1988."³

The person doing the buying is, logically enough, referred to as the buyer. At one time the title "procurer" was strongly favored by the National Association of Purchasing Managers (NAPM), but it hasn't found popular acceptance. Senior buyers handle vital items of high dollar value, or are in charge of several buyers and assistant buyers; sometimes the term supervising buyer is used.

The title buyer/planner has gained favor by those plants that prefer to tie buying, expediting, releasing, and inventory responsibilities to the same person. Sometimes referred to as the "cell concept," this relationship works

³ <http://www.capsresearch.org/publications/pdfs-public/fearon1995.htm> page 2.

well for some, though managers wanting concentration of attention on costs of acquisition might question placing more detailed routine with those doing the purchasing.

The expeditor is, as the title implies, an individual who follows up the material bought to ensure delivery as required. In common usage are such additional titles as purchasing engineer and research analyst. These are the specialists who have proved valuable in ferreting out costs through special concentrated study.

Other titles used include: purchasing engineer, analyst, and group coordinator. The “purchasing and supply manager” title may become more popular. In practice, titles in purchasing are no different from other business titles; it is almost impossible to determine a person’s responsibilities from the title alone. In some companies a purchasing agent has more authority and responsibility than a vice president of purchasing elsewhere, while others may apply the PA title almost to the buying level.

2.4 Where Should Purchasing Report?

There is no universal agreement about where the function of purchasing belongs. It can be performed from almost any level, and can range from a purely clerical activity to that of a professional group reporting to the chief executive officer. *Purchasing Today* stated that CPOs report to senior executive vice presidents in 34% of all companies surveyed. That included 16% to presidents and CEOs and the balance to a VP. And, 66% changed to whom they reported since 1988.⁴

3. THE MATERIALS MANAGEMENT ORGANIZATION

The materials management (MM) and logistics management concepts have enjoyed popularity among many in the profession. Several interpretations of “materials management” exist, but the central point is that purchasing is a subsystem of the larger materials management process. Basically, the concept places all functions having to do with materials—including production scheduling, material control, inventory management, purchasing, traffic, and materials handling—under a materials manager.

Materials management came into being during World War II and was employed by large aircraft manufacturers who were operating under government contracts. With mostly cost-plus-fixed-fee contracts, the total

⁴ CAPS Research Summary, June 1996.

overall cost was not the driving concern. The prime objective was to get the planes and the guns out the door.

Originally this MM position was envisioned to be on the same level as the production manager, both reporting to a vice president, or to the president. Various other attached functions such as traffic, receiving, and inspection may or may not be included within the MM jurisdiction, depending on the particular operation or company. The main idea was to make one individual accountable for inventories and materials.

A typical MM organization chart, designed to provide the widest possible control over materials, is shown in Figure 2-4. Several variations of this concept are found in practice today, some placing purchasing on a par with “materials.” So, we witness a tendency to use the terms “purchasing” and “materials management” interchangeably, though they are not technically equivalent.

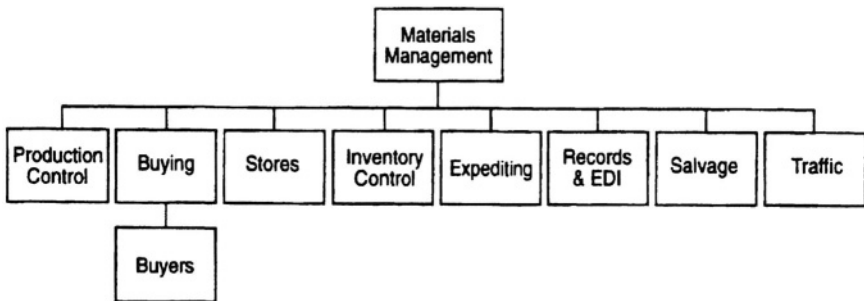


Figure 2-4. Typical Materials Management Organization

In most companies in-process inventory is handled by manufacturing (material control) or by purchasing, so conflicts may arise when this responsibility is split. A prime advantage of placing all materials functions under the supervision of one executive, the materials manager, is that much friction is eliminated and accountability is clear. For example, when a buyer tries to increase order quantities to reduce the prices paid per unit, inventory will be affected. If those responsible for inventory have no responsibility for product costs, they can easily override price advantages to keep their stocks low. Further, inventory can be cut by depleting stocks and forcing shorter-than-normal supplier leadtimes on purchasing, causing loss of negotiating time, supplier ill-will and irritation, and extra expediting expense.

There is potentially more danger in the materials concept when it includes production scheduling, which is integrally allied to manufacturing. Some proponents of the concept draw a sharp and abrupt halt, claiming that when it attempts to interfere or take over a shop's production scheduling,

MM is in danger of overstepping the purpose for which it was designed. And, they've learned that probably an eventual conflict with manufacturing is to be expected. The less radical form of organization that they favor is to leave production scheduling under manufacturing. Otherwise it is identical to the arrangement shown. These advocates define MM as the grouping under one manager of functions responsible for the flow of materials, including requisitioning, purchasing, expediting, and stores up to the point of introduction to the production line.

3.1 Why Do Some PMs Not Embrace MM?

Some purchasing executives believe that materials or logistics management is their ultimate destiny, while others have been vehement in denouncing it. Many top people in the field have rejected the concept. Some have tried MM and found it inadequate; many purchasing practitioners persist in believing that purchasing itself is where profit is made. This viewpoint has largely been muted—for how can a part be greater than the whole? Obviously, it can't be, so this seemingly reactionary, largely silent school persists. They believe the “part” that is purchasing is simply too important, too diverse, too externally oriented, and too allied with management and other functions outside the MM area itself to be subjugated within any such functional grouping. These are compelling arguments that should be considered.

One cannot refute the claim that there is need for a coordinating activity. Some assume that this coordination can best be effected through MM whereas advocates of modern purchasing believe an upgraded, aggressive, and intelligent purchasing department can achieve it at least as well. Discussion of MM is further confused by failure to distinguish between the headquarters and the plant organizations. MM at headquarters often entails perhaps 85% or more “purchasing” activity, and 15% functional inventory surveillance; at the plant level, it may involve 85% inventory control—delivery and quality oriented—with 15% of the effort devoted to “purchasing.” MM can be quite effective at the plant level. Yet it may not be possible to centralize the MM function, since primary inventory responsibility must remain with each specific plant.

Tending to push purchasing to the top of the management level is its vital impact on profitability through pooled buying and strategic management of the supply chain. So, the advantages claimed for MM are identical to those that should result when good purchasing people work in conjunction with a sound overall organization. Gaining an understanding of sales and manufacturing requirements, keeping an eye on suppliers' innovations, and watching the needs of the engineering department as it works to ready new

products for manufacturing and marketing is expected. This job of modern purchasing as a profit enhancer encompasses far more than just those functions that are generally considered to fall within MM.

Because buying decisions require conflict resolution and lateral negotiations within the company, an effective setup is when the CPO is on a par organizationally with the general managers of the operations for which they have purchasing responsibility. These managers report to a senior vice president or CEO. This arrangement provides an umbrella under which purchasing cannot be coerced or dominated by powerful influences outside the supply management function.

4. REENGINEERING THE PURCHASING ORGANIZATION

Centralization does bring strength to externally oriented functions. Yet, at the same time, there is a significant need for freedom to act at specific locations where the activity occurs.

Purchasing is not alone in its identity crises. Engineering, for example, has problems stemming from its splintered disciplines, but engineering stands on its own intrinsic value, as does accounting, marketing and sales, manufacturing, and management itself. If purchasing is to succeed professionally, it must identify its “raison d’etre,” then claim its rightful role to satisfy its technical, economic, and legal heritage.

Reengineering is fundamentally changing the way people do their work to achieve superior results. Process reengineering has eliminated duplication, avoided sub-optimization, and gained continuous improvement by thoughtful analysis of process details. Many people have what might be called “functional fixation.” For example, pass them a broom and they figure, logically, it’s for sweeping the floor. However, put a broom in the hands of imaginative youngsters. Perhaps they’ll sweep the floor, but it’s more likely they’ll pretend to hold it like a rifle, or ride it like a horse. Their instincts are not programmed to limit the broom’s usefulness.

The degree of organizational confusion about purchasing is indicative of a function still evolving. So, let’s depart from traditional organization ideas and creatively explore another perspective. Regardless of the type of organization, the basic functions must still be performed. It is doubtful whether any organization ever existed without an occasional healthy disagreement. There is seldom a single system that will work for everyone, although there is usually one that will work more efficiently when adapted to the specific need.

People try to “see” a corporation as a picture or symbol. Early management literature depicted the corporation as a pyramid. At the top is the president, down through the upper and middle management is where our purchasing chief resides, and finally the workers make up the base. This viewpoint spawned expressions such as the “pinnacle-of-success,” “reached the top,” “head-of-the-firm,” and the like.

As people achieve they want to share the pinnacle. You don’t like to be seen as inferior or below anyone, do you? Neither do others; so, circular organization charts have been developed, with the president as the hub and workers as the rim. And, these images change. Some management planners describe a corporation as “energy exchange systems.” Reflecting systems theorists, a corporation is seen as an open system engaged in constant transactions with its environment, which is seen as a system of systems. The transactions are said to take place in a field of force operating in space/time and made up of all the patterned but individual desires and aspirations of all the people who make up both internal and external environmental systems.

4.1 Organizational Structure and Relationships

We may hear, “It isn’t my job; someone else has that responsibility.” There has probably been more success in breaking purchasing job responsibility into component areas than in fitting the pieces together as a cohesive working unit. But organization is not simply a matter of breaking a function down into its components and depicting them in a chart. Rather, it is a means of bringing together people working in different spheres of interest and coordinating their abilities to achieve the common goals of the department and company.

More recent attempts have shown an organization as spheres of influence, with a variety of circles representing functions or people. The organization as seen in Figure 2-5 is not the oblong box chart of authority. The purchasing sphere will be larger in company A, and smaller in B, depending on capabilities to do the job.

Multitask teams calls for more flexible horizontal type organizations. Cross-functional teams working on projects or key commodities require innovators. As seen from this figure, supplying the in-between areas that do not neatly fit into any manager’s job scope will have to be done by the purchasing or supply chief of the future.

Look at these spheres of influence as eggshells within eggshells. If we punch through our shell, we either crack the one next to us, or we move into a void. In any company there are always those vacuums or voids that no one else appears interested in or knowledgeable enough to fill. The purchasing and supply chief needs to take the lead more often to fill these voids. The

important thing, as far as the good of the total organization, is to get the job done.

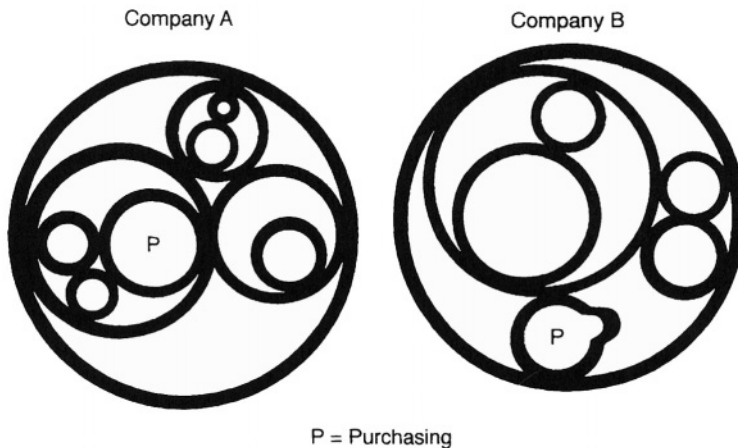


Figure 2-5. Circles Representing Spheres of Influence

4.2 Authority to Commit Independent of the Organization

Companies operate under the laws of the state, which provide each specific company with authority to conduct business. Statutory “powers” are conferred through incorporation, and one of these is “to purchase as required.” The owners, stockholders in a public corporation, technically have that authority and, in turn, invest the Board of Directors with authority to act in behalf of their corporation.

Figure 2-6 traces a complex chain of command to “commit the corporation,” depicting the derivation of authority of the buyer who legally is an “agent” of the company. While agency can exist verbally, most corporate charters require these authorizations to be in writing. Since the corporation is basically a “mental creation,” individuals must be empowered to act for it. This legally delegated authority explains the historic “purchasing agent” title.

Purchasing derives its authority within the law of agency. Purchasing alone has the formal authority to commit the corporation to expenditures. The concept of agency defines the manner in which an agent may bind the principal. An agent is “one who acts for and under the contract of a principal.” So, the agent/principal relationship is a fiduciary one. Acts of the agent result in the principal being bound to a third party. Both individual and

principal agree to the arrangement, which results in conditions binding on both.

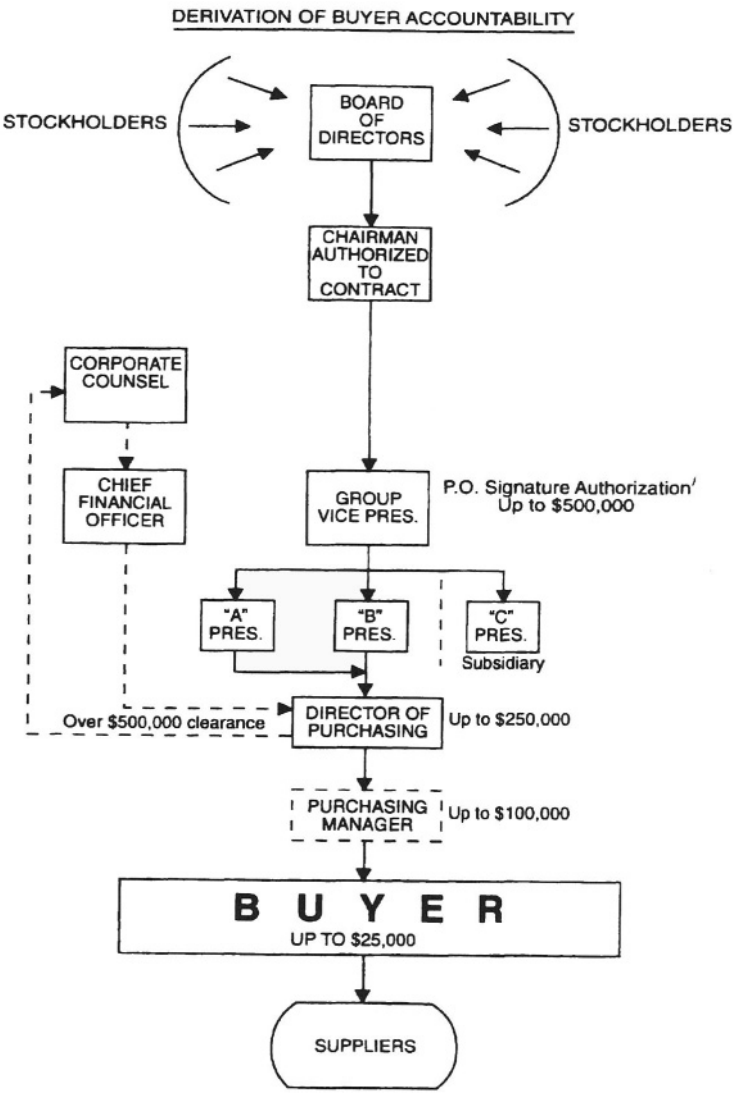


Figure 2-6. Chain of Command to "Commit the Corporation"

The buyer as a fiduciary agent accepts duties to the principal: to give loyalty, to obey instructions, to give notice of material facts, to use care and skill, and to account for property and money. In return, the principal has

duties to its agents: to adhere to the terms of agency, to pay for services rendered, and to reimburse the agent for expenditures incurred on the principal's behalf.

As seen in Figure 2-6, delegation of expressed "authority to commit" is passed down from the stockholders to the presidents. From the need to execute the responsibility, additional implied authority accrues. The commitment chain must be traceable so that ultimately this authority arrives at the buyer's desk, regardless of how simple or how complex an organization may be. Within the limitations placed on the buyer, he or she is formally empowered to commit and make binding arrangements with other corporations or individuals.

Confusion often arises concerning purchasing authority because of the normal tendency of people within any organization to think and act in terms of organization structure. A general lack of understanding of the authority/responsibility role of purchasing has affected it as a profession. The important point is that the "authority to commit" channel that defines purchasing responsibility may be, and usually is, quite independent of organization structure itself. So, it is not surprising that research has documented that "professional purchasing managers do not appear to use the organization as their reference source."⁵

PMs can make use of a "commitment channel" diagram in lieu of the organization chart. For example, a manufacturing cost center reporting to president [A] in Figure 2-6 does not have its own purchasing department. People within such a center may wish to work directly with suppliers, independently of buyers. However, the commitment channel shows that president A has delegated buying authority to the director of purchasing. Conversely, subsidiary president C has not delegated this authority since he operates with a separate buying organization overseas. While an organization chart may emphasize multidivisional complexity and independence with no clear organizational relationship to purchasing, the commitment channel diagram is explicit. By using the commitment channel concept in lieu of the organizational structure concept, purchasing managers determine when responsibility is clearly theirs, and, using implied authority, then discharge the responsibility to act! There is no need to have lengthy debate or to call meetings to determine "Who buys?"

Before dismissing the above as too abstract, the figure shown and operating mode was the role that the senior author's position required for many years. The same purchasing department reported to a variety of

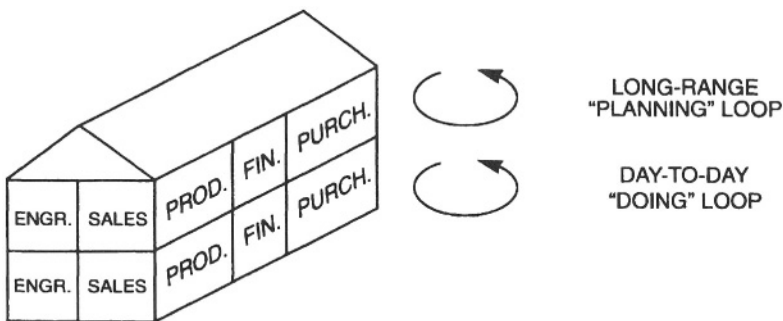
⁵R. M. Barth and P. S. Hagstad. "The Effects of Professionalism on Purchasing Managers," *Journal of Purchasing and Materials Management*, Spring 1979, p. 30.

executives as reorganizations altered the corporation, without affecting how the department itself worked.

Much confusion about purchasing could be dispelled if we recognize that purchasing operates in two different ways: (1) day-to-day, and (2) long-range. By thinking in this way, it can be seen that the more decentralized day-to-day activities (logistics) can be undertaken within the plant operations while the centralized management control can exist independently at headquarters. Long-range aspects of source of supply, contract negotiations, in-depth market studies, long-term contracts, and supplier relationship objectives must remain centralized unless a corporation wishes to be merely an accumulation of smaller companies.

5. DAY-TO-DAY VERSUS LONG-RANGE BUYING

To gain background about strategic “long-range” versus “day-to-day” buying, we might compare management to building a two-story building. The lower floor plan will contain the functions of the business; that is engineering, sales, manufacturing, finance, and purchasing. The second story will mirror the first, and contain the same functions as shown in Figure 2-7 that depicts how we’ll build our functional view.



THE FIRST AND SECOND FLOOR PLANS ARE SIMILAR

Figure 2-7. Two Story View of "Planning" and "Doing" Loops

Multilevel buying activities can be classified into two classes:

1. Strategic long range buying, or the “planning loop,” versus
2. Tactical day-to-day buying, or the “doing loop”

Multiple-level buying occurs when the “high and low” of buying approaches problems in the same way. The doing loop hits low and the planning loop high. This results in a multiple attack on the same job, but at different levels. An analogy would be a team of surgeons performing an important operation where all are consulted, voice opinions, and perform tests, but when it’s time for action, only the doctor holding the scalpel makes the incision. While the surgeon has the “line” responsibility, the others share a part of the planning; but that surgeon alone must be charged with the success or failure of the operation.

How does a practical manager use this philosophy? Here is an example. A manager explains to the planning loop that they are responsible to see that plants are supplied with certain goods at a six-sigma quality level. Similarly the doing loop at the plant are reminded that they must track and report supplier quality performance. The planning people will work with the supplier to change processes to achieve the six-sigma goals, while the doing people will monitor and report progress over time. So, we have a team effort. The planners monitor and help the doers, while the doers get the job done day-to-day. How this works is one of the strategies described in Chapter 3 that explains the down-to-earth way buying teams operate.

Table 2-1. Tactical Vs Strategic Purchasing

Factor	Tactical	Strategic
Time	Less than one year	Two to five years
Buying Channels	Best immediate solution	Strategic relationships
Resources	One of several combined activities	Highly skilled personnel – technical, financial, influential
Objective	Get goods when needed	Support organizational goals through supply chain action
New product source selection	Directed by engineering	Team with long-range view
Outlook	Local	Global

The long-range strategic buying is the “upper” or planning loop and is led by the division, headquarters, or corporate operation. The day-to-day doing loop is located at the plant or decentralized buying site(s). It doesn’t matter whether a company has two or 52 plants—it’s just more complex.

By thinking of multiple-level buying operations in this conceptual way, it is seen why the more day-to-day activities are done within each plant, or buying section. The longer ranged aspects of source of supply, pricing negotiations, and the higher goals may be centralized. Both loops cooperate and focus on the same area of operation, but in different ways. The planning loop decides *how* to do the job and makes plans. The doing loop carries out

those plans. Movement seems to be toward two distinct roles (1) strategic analysis, planning, and relationship building; and (2) tactical orders, execution, expediting, and so on. If these very distinct roles are not assigned to separate people, the strategic effort will likely fail. *The tactical will displace the strategic because the short-range activities will always be more urgent.*

Today, with divisions stacked on top of, or grouped with, other divisions often having little relationship to one another, purchasing finds itself structured quite differently in different companies. Figure 2-8 is the suggested vision we propose for a conglomerate, or skyscraper management. Divisions are acquired, sold, merged, or are closed. Like a stack of trays, they are rearranged. Can such groupings possibly control their purchasing activity? Of course they can!

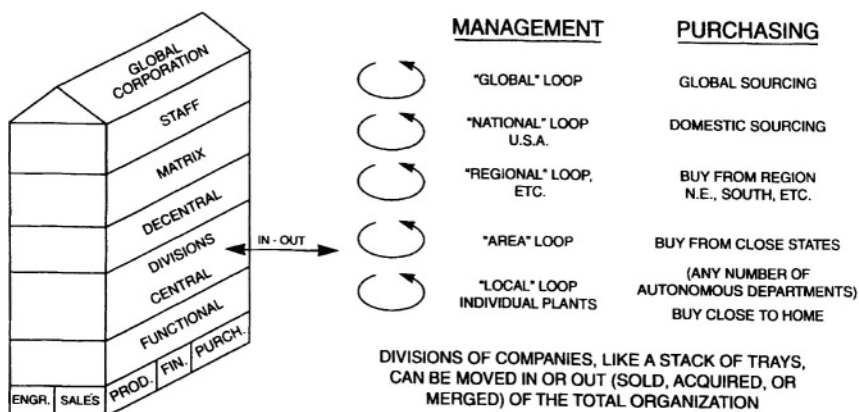


Figure 2-8. Conglomerate or "Skyscraper" Management Structure

6. "PURCHASING AND SUPPLY MANAGEMENT" COMES OF AGE

The preceding discussion paints a picture of an evolving and often meandering profession in search of its conceptual home. It appears the term "purchasing" is too restrictive to those who advocate a total materials or logistics approach. To those who see the act of acquisition and the allegiance to the financial and management goals, the function commonly called "purchasing" is not broad enough to encompass its profit impact. To many PMs, the term materials management relates to decentralized, plant-level activities.

The term “supply management” is gaining favor, as it conceptually implies control of the entire *supply* chain.

We can summarize the evolution of organizational concepts we have discussed to this point in the following matrix:

Table 2-2. Emphasis of Various Organizational Structures

Title Applied	Emphasis Placed On	Result
Purchasing	Buying, acquisition of goods and services	Multiple quotes, low price, narrow scope
Materials management	Internal material flow	Organizational alignment, meet schedule needs
Logistics management	Overall material flow, physical distribution, inbound transportation	Inward focus, not widely used
Supply management	Control of the supply chain	Stresses proactive management, rapidly gaining favor
Purchasing and supply management	Supply economics and acquisition linked, global scope	Company performance tied to supplier performance, manage the entire chain

There are substantial driving forces behind the growth of supply chain management, such as:

- Increased customer focus with strategic and global view
- Greater value of purchases as a percent of sales revenue
- Focus on total cost rather than on purchase price
- Movement to lean manufacturing and similar white-collar process reengineering
- Need to make process improvements among trading partners
- Outsourcing of all but the core competencies of the organization
- Consideration of lower tiers of supply as critical to success
- Increased interest in recycling of content at the end of the product life cycle
- View of supplier relationships as critical to achieving higher performance of the extended enterprise
- Information technology (the Web) enables more frequent and comprehensive information exchanges

Clearly these forces are strategic in nature, so it is not surprising that the role of the buying organization is becoming more long range and more closely aligned with enterprise objectives.

By combining the terms purchasing and supply management, can we perhaps maintain the focus on the importance of purchasing, yet include

expansion into a globally oriented management of the total supply chain? The concept of “purchasing *and* supply management” (P&SM) emphasizes buying while recognizing the expansion of the ancillary supply functions, which are often difficult to separate. Focus is on managing the supplier base. P&SM seeks to shift from a tactical to a strategic-based outlook. Strategic emphasis is placed on value-added activities and total cost savings. But beware; buyers must shed the “lowest price at any cost” mantle they have developed if the purchasing and supply management organization is to achieve its true potential.

The NAPM is endorsing the supply concept and in 2002 changed its own name to the Institute for Supply Management (ISM). This leading organization also established an Advanced Technology Center (ATC) that is dedicated to developing and executing computer-based education and training applications in “*purchasing and supply management*” functions. So, it appears sound to join the act of buying with the control of supply in all that these activities entail. Figure 2-9 shows how such an organization might be structured.



Figure 2-9. Purchasing and Supply Management Organization

Debate among managers about the *one* best form of organization may be fruitless. The question is how effectively will it add to the overall operation of the company? We believe that purchasing will contribute most when it is an independent, interdependent top management function. In this position the buying function will provide a total cost management approach, and this is vitally important to company survival. In the final analysis, management should place purchasing where it believes it can perform best. Each company must evaluate its own situation.

The Internet has changed the landscape of most professional endeavors, and paperless workflow may be a long-term possibility, but the reality is that

people will always play a vital role in successful work efforts. The continued push for supply chain productivity improvement is an area where everybody in the chain has a stake, from supplier to manufacturer to consumer. The supply management team is responsible for managing that vital activity. In the ensuing chapters, we will discuss strategies to optimize the process of purchasing and supply management, within a global context.

Chapter 3

STRATEGIC PURCHASING SUPPLY INITIATIVES

Experienced CPOs have had days that they thought were going to be easy, only to see them become extremely challenging. Other times, they've walked into the office in the morning knowing they were going to be busy with several major tasks—only to lean back in their chair that afternoon with everything done. “What’s next,” they’ve wondered and discovered that their busy day had somehow become routine. Why? Because they planned it better and they found their plan made the accomplishment of complex tasks much less daunting.

Before anyone can effectively implement strategic purchasing supply management, he or she must plan a program of broad personal development and success, in concordance with his or her company’s plans and objectives.

Here are a few questions to ask:

- What are the company’s basic characteristics, its strengths and its weaknesses?
- What is the future of the markets the company serves?
- How does the company rate when compared to its competitors?
- What are the company’s strategies, its plans, and goals?
- How can organization goals be met, and how can suppliers, and therefore buyers, assist in their fulfillment?
- Can we find ways to improve on any of the above?

Purchasing managers should occasionally ask themselves if they are doing the things expected of a manager. “Am I managing or being managed by my work?” “Am I living up to the proper ethical standard?” “Am I keeping management and the buyers informed of facts they should know?” “Do I support other departments such as engineering and quality control?”

When the managers have an idea that might improve the company's performance, do they speak up? Above all, they should implement the improvement within their own department when they have the opportunity. Far better that managers face up to shortcomings than to have others find them lacking.

Managers should set their strategies based on their unique situations. Purchasing managers should have a strategic plan, and then use effective buying tactics to carry it out. By definition a "strategy" is a plan to reach long-term goals that takes one year or longer to complete. Strategy gives direction. While tactics form the basis for handling the various battles of the day, "strategic planning" is *how* to win the war!

Strategic purchasing planning is inherently a high level approach that leaves the detailed action plans to follow.

Some examples will include:

- Selecting and evaluating suppliers to identify the *best* and providing them with the *incentives* to improve supply
- Tapping supplier technological innovation before competitors
- Reducing supplier lead time by guiding selected suppliers to adopt lean manufacturing methods
- Developing closer ties with suppliers' design capabilities through supplier/purchasing/engineering coordination
- Improving post-purchase liaison—cost reduction, process improvement and warranty coverage
- Negotiating inventory-reducing arrangements such as consigned stock to free up funds for growth requirements

Strategic purchasing planning seeks to identify critical long-range supply issues, and to foresee sourcing changes. This reduces uncertainty by formalizing analytical and creative thinking in cost reduction.

Strategic purchasing planning is a necessity for purchasing to become predictive and *proactive*, rather than *reactive* with short-term problem solving. Integrating market and supply strategies is a top management responsibility. The successful CEO will strive to strategically orient the company globally, not solely hi marketing but in procurement as well.

Interpreting the strategic implications of global supply assurance for the company is a purchasing management responsibility.

The chief purchasing officer (CPO) and the department should:

- Understand interlocking supply relationships such as joint ventures and licensees.

- Integrate with the company's other business strategies through better communications.
- Support company strategic purchasing supply objectives.
- Use cost control to achieve product price leadership.
- Coordinate efforts to achieve quality results from suppliers.

What can the purchasing department buy to support marketing's effort to sell both domestically and abroad? The PM needs to set up cooperative efforts with joint supplier/buyer goals from a supply management outlook to better compete in world markets.

A disturbing survey reported that while some academic literature advocates that purchasing should be significantly involved in major corporate activities *beyond supply*, research data do not show that this actually is taking place.⁶ But perhaps this should be of little concern, for in the scope of purchasing and supply management there is more than enough in the job to make major contributions to the company's welfare.

1. **SELECTION OF STRATEGIES LEADS TO ACTION**

There are many purchasing issues that can be developed by the manager of purchasing into overall strategies and specific initiatives. Because there are so many possibilities, we have divided them into five major groupings, (1) management, (2) sources, (3) prices, (4) inventory, and (5) methods. Some areas for a purchasing organization to contribute to a company's success might include the following:

Management

- Recruit and develop competent personnel.
- Analyze the purchasing functions to be performed, and eliminate unnecessary costs.
- Manage cost reduction and materials profit improvement programs.
- Maintain a strong *Toted Quality Management* (TQM or six-sigma) system to achieve and maintain quality requirements.
- Interpret the strategic implications of global supply (delivery, quality and cost risks) for the company.
- Search globally for new and alternative ideas, products, and materials to improve company profitability.

⁶ NAPM's 1996 CAPS inquiry of 556 U.S. and 46 Canadian firms

- Maintain current, comprehensive and accurate records, and develop information technology tools to maximize administrative efficiency.
- Assist in the integration of materials management policies.
- Develop relationships within the company itself, particularly with engineering, finance, and manufacturing.
- Manage performance-related strategies including control of department expenses.
- Evaluate and participate in decision-making and planning of major purchases.
- Promote work on special materials projects.

Suppliers

- Create an overall supply base management strategy.
- Initiate and maintain productive and mutually beneficial supplier relationships.
- Assist suppliers with quality and process improvements.
- Track major suppliers position in their marketplace and report the possible effect of trends on long-range availability and costs.
- Develop reliable alternative sources to ensure economic supply for vital materials and components.
- Construct and implement diversity (minority/small business) programs.

Prices

- Procure materials at the lowest total landed cost (often also referred to as “total cost of ownership”), consistent with the quality and service required.
- Conduct cost and price analyses, set target costs for key purchased items.
- Use available purchasing cost reduction techniques.
- Substitute less costly materials when possible and technically acceptable.
- Focus on the buyer’s intrinsic buying power—use leverage to improve the company’s competitive market position.
- Monitor price trends of major purchased items and provide management with long-range forecasts of cost trends and material availability.

Inventory

- Monitor assets in inventory to keep the minimum investment in materials inventory consistent with avoiding outages of critical supply items.
- Minimize inventory losses due to duplication, waste, and obsolescence of purchased materials.
- Set material cost standards for inventory and financial planning.
- Consider a proactive strategy for component obsolescence.

Methods

- Construct and implement key commodity plans.
- Track short- and long-range material supply availability.
- Search out new materials development and availability.
- Upgrade product quality through quality and reliability initiatives.
- Strive to source through the best buying channel.
- Understand the internal application of goods and services purchased.
- Integrate commodity-sourcing strategy with new product development projects.
- Promote standardization and simplification of components and products.
- Create material systems process improvements using information systems and simplification techniques.
- Conduct or take part in make-versus-buy studies.
- Evaluate consolidation of shipments, modes of transportation, and the like, in cooperation with the traffic function.
- Measure purchasing productivity and interpret results by implementing integrated materials measurements.
- Prioritize all program elements according to importance.

Often there will be substrategies. For example, a strategy to “maintain supply” may have contributing strategies such as (1) develop new sources, (2) develop supplier partnering, (3) contract long range, and so on. As another example, a strategy to import more low cost components might need a substrategy to maintain a domestic backup source.

Effective management seeks to look at future occurrences by projecting and interpreting trends. A long-range strategic approach of between three and five years is appropriate, as predicting further beyond becomes exponentially more difficult. A pronounced trend toward global purchasing makes this a top priority.

Using the comprehensive list above as a guide, here is a sample of a structured approach an organization might take to strategic procurement planning:

- Use procurement planning to control the major commodity families representing at least 80% of the total dollars spent.
- Each commodity procurement plan shall achieve maximum buying leverage through the use of buying teams in delineating the strategy.
- All commodity plans will make use of total landed cost of acquisition in supplier cost comparisons.
- Plans will outline methods to select, motivate, and evaluate suppliers.
- Plans will include, wherever feasible, methods to foster supplier/buyer partnering, such as:

- a) Joint cooperation on new products or projects.
- b) Shared process improvement initiatives.
- c) Collaborative use of suppliers' knowledge and capabilities.
- d) Assistance to suppliers in improving their performance through process analysis, quality improvement and cycle-time reduction.
- e) Reduce lead times and cycle times to decrease inventory and free funds for growth requirements.
- Teams will use the following methods in developing and executing commodity plans:
 - a) Apply cost reduction techniques such as lean manufacturing, six-sigma, value analysis, systems contracting, make versus buy, and the learning curve.
 - b) Establish corporate agreements to provide supply to multi-location purchasing.
 - c) Protect prices by a strategy of hedging or forward buying.

The field of supply management strategies is constantly evolving, and at a very rapid rate. The practitioner is challenged to keep up with the latest practices and methods. The advent of e-commerce has further accelerated the pace of innovation. Regular attendance at supply management forums, training from numerous sources, and Web searches will help keep the supply manager in touch with the latest thinking. A wide variety of timely supply literature is also available in professional journals and magazines. Just a couple of examples include: *Purchasing* magazine, and ISM's *Journal of Supply Chain Management* and *Inside Supply Management*.

2. SUPPLY BASE MANAGEMENT STRATEGY

Ensuring economic supply to fulfill business needs is the central objective of supply base management. To accomplish this noble objective it is necessary to have suppliers whose efforts are well aligned and integrated with the customer's goals. Then a high level of collaboration between buyer and seller can produce dramatic gains in quality, cost and delivery performance.

Before it's possible to create an improved supply base, it's necessary to clearly understand the present situation. Analysis of current spending patterns is the first step. Spending information has traditionally been obtained from accounts payable records from past periods, but new software offerings have made this information much more readily available. In cases of long established large businesses, such an analysis will most likely expose

the fact that hundreds, even thousands, of suppliers are currently included in the active supply base.

Further analysis will show a wide disparity of purchase dollar volume among active suppliers. The “80/20 Rule” will probably apply; 20% of the suppliers furnish 80% or more of the dollar volume, and vice-versa. A substantial effort will be required to achieve the high degree of integration to meet mutual buyer and seller objectives. Usually it will be clear there are too many suppliers to develop such close working relationships with all.

A detailed analysis of the active suppliers requires breaking the spending down into commodities or part families, and by delivery location. At this stage many large and medium businesses will notice they have no suitable source for the needed information, at least not at the desired level of detail. Manual data collection is possible, but is very time-consuming and subject to individual judgments as to what is or is not to be included. A broad-based *Enterprise Resource Planning* (ERP) system will provide such information, if purchasing, stores and payables records are all included. The potential value of detailed information on current overall spending has been a primary justification for some companies to implement an e-Procurement system.

The collection and analysis of spending information will expose opportunities to consolidate requirements with fewer suppliers, enabling the development of more productive relationships with them. This may appear a daunting task, but it can be greatly simplified when approached strategically.

Such an approach has three stages,

1. Supply base rationalization,
2. Supplier capability development, and
3. Collaborative initiatives.

The stages are sequential but one part family may be at stage 2 or 3 while another is beginning stage 1. Of course the central focus will be on continually reducing the supplier base to the best performers and the most valuable joint efforts.

Figure 3-1 depicts a typical supply base management strategy. This time line chart of supplier count shows how the first phase for most buyers will be to rationalize or systematically reduce the number of suppliers. The objective is not fewer suppliers; it is simply a necessary step in bringing the number to a more manageable level for developing a value-added relationship. The rationalization process should produce substantial savings, as business is concentrated with a few suppliers that offer the best prospects for future integration.

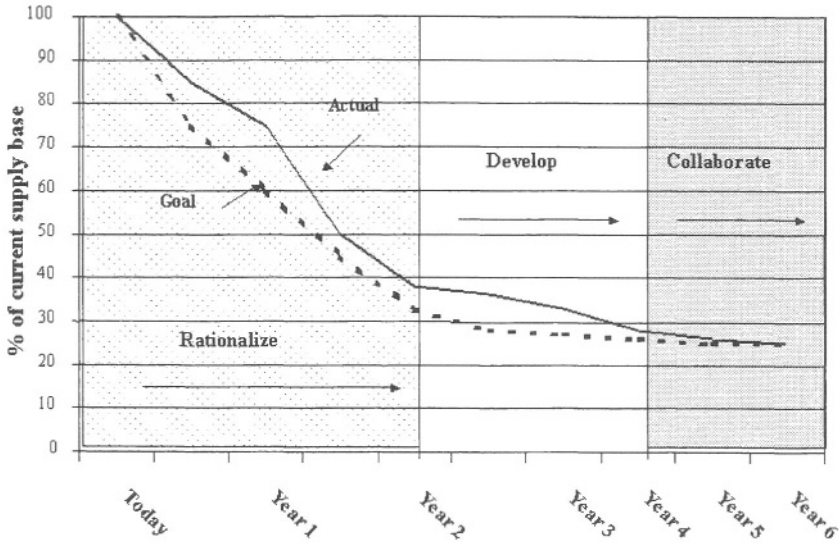


Figure 3-1. Supply Base Development Strategy

In the second phase, supplier capabilities are developed and refined through performance evaluation, joint improvement projects and performance tracking. Projects may include quality and lean manufacturing initiatives, leadtime reduction and *six-sigma* process improvements, all aimed at providing better service to the final customer. There may be further rationalization of the supply base as suppliers' willingness and ability to improve are tested.

Once it is evident that a particular supplier will be suitable to share long-term efforts and risks in a collaborative relationship, the final phase begins. This phase may be undertaken immediately with some suppliers and may never be reached by others; the strategy is based upon leading as many as possible to this level as early as possible. Don't try to work at this level with too many suppliers at the same time; a few truly productive relationships are more valuable than many that are faltering. These efforts are complex, time-consuming and require investment of resources and continual follow-up from both buyer and seller.

This section has discussed the overall strategy of managing the full range of suppliers, which many companies have not done. In some cases, particularly with a recent start-up, this may not apply because the supply base is still in the formative stages. The supply organization can accelerate its contribution to enterprise performance by careful analysis and strategy development in the structure of and rationale for both the number and

selection of suppliers. The next section on commodity plans will expand further upon this strategy.

3. SUPPLY PLANS TO CONTROL MAJOR COMMODITIES

Buyers in small companies can use planning as well as those in huge conglomerates, even though they may have little need to cooperate with other buyers. In that case the planning is still valid, but the buyer can ignore the interplay of others. To address the need for cooperative efforts in the case of purchases from several locations, the following section will clarify the difficult task of pooling volumes of purchases from several independent departments or divisions.

With knowledge of the needs and interests of the operating divisions, planning is made possible by a document in the form of a *Commodity Supply Plan* that is the basis for action. Each manager should decide how to approach the tasks by using the combined inputs of top management, finance, marketing, engineering, manufacturing, and purchasing. At a minimum, the plan should include (1) targets for the number of new buying or value analysis teams to add, (2) savings targets for each, (3) steps to be taken to coordinate with engineering, (4) efforts to manage suppliers, and (5) steps to improve make-versus-buy approaches.

Commodity supply plans maintain focus. They should be adjusted to the supply market and production systems, as well as marketing strategies and company objectives. Each manufacturing location can use the plan in the sourcing of its requirements.

The commodity supply plan is a written strategy, and is controlled by the lead buyer as agreed to by the team. The task of planning and nurturing the team is the job of the central headquarters commodity manager, or PM. Depending on organization, the “captain” who puts the plan into action, most logically, but not always, is the largest user. It should be noted that in practice the buyer who has the enthusiasm and talent to get the job done has led some of the most successful teams. Remember, sometimes the smallest user is the one with the most to gain by pooling with the other larger users, so selection of the “captain” should take into consideration this reality.

The roles of planning and team activities need to be defined enough for each participant to optimize results. There shouldn’t be excessive red tape! There is sometimes friction when a buyer from headquarters tries to coordinate buying with many decentralized buying operations, so the central buyer must have enough “statesmanship” to allow the team captains to perform their job. In a successful implementation, the team captain, who is

to negotiate for all, still must respect the headquarters manager's central interests.

Commodity supply plans are a means of combining enterprise-wide usage patterns for optimum negotiating leverage. Figure 3-2 shows the three parts of procurement planning for a commodity, namely: (1) History, (2) Commodity Overview, and (3) the Strategic Plan itself. The brief history is the volume by using location, suppliers and splits of business, prices over the last three years, and source evaluation. The latter includes supply issues, labor contract dates, delivery performance, quality, and cost performance.

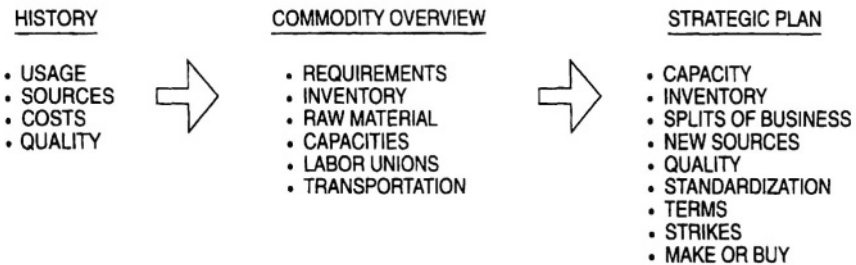


Figure 3-2. 3-Part Commodity Procurement Plan

The plan should include the manner of translating strategic goals into specific tactical actions to achieve desired results and to control progress. The objective is to foresee and eliminate supply problems before they occur. The important team members are identified and the documented plan becomes the blueprint used by each buying location as it sources its requirements.

To execute the plans, teams need to be formed. Once in place, these teams can be quickly activated by a phone call or e-mail notice to respond when there is an impending price increase, product quality or delivery problem, or whatever the need. However, teams will not be built without management support and direction. First we need to answer, "How do these teams work?"

4. SEEK LEVERAGE WITH BUYING TEAMS

To ensure that company buyers have leverage to exercise they must have options as to where to buy. The best of both worlds is to strengthen the autonomy of the decentralized buying unit while using combined "economic voice" as leverage in negotiations. Most companies achieve the former go-it-

alone approach, while the latter requires teamwork and more strategic planning, and a good “climate” is needed to achieve results.

We have previously made the case that the PM needs to build teamwork. Using a sports analogy, assume you’re on a football team that is playing in the Super Bowl on national TV. Which would you prefer...? Your team wins by four touchdowns, but you dropped four of five passes thrown to you? Or the team loses by two touchdowns, despite your catching a record 20 passes for 300 yards? The individual has excelled but the result is not that desired for the team. Obviously then, it is not easy for a manager to build a team if to some degree everyone is out for himself.

Teams are useful when buyers seek to have a say in controlling their marketplace. If a company consists of a single plant, or performs decentralized buying, then the seller often has more control of the marketplace. The supplier may strategically decide to be highly competitive in the East, but get higher prices out West where there may be little competition. In short, buyers buy in the market that *they* define. And, sellers will negotiate separately with each buyer in a company with multiple locations, that is, unless *the buyers* define their marketplace collectively.

It’s often a stated management objective that the corporation is going to use its combined volume leverage in making its purchases. There is no debate about the expected results, but the question is, “How do you do it?” One way is to mobilize buyers into task force teams to present a united front to suppliers. These teams may not follow organization structure. The team sets a variety of goals. This way, the buyer has more control of the marketing arena and in deciding when to negotiate. An important point is that whoever can define the global marketplace often can command the pricing situation. By redefining the marketplace to the buyer’s advantage by breaking down local, or regional selling, a much better result often ensues.

Of course everybody is for teamwork. However, if one believes teamwork means, “Others have to cooperate with me,” but not the reverse, then it’s not going to work! Therefore the roles of planning and teams need to be clearly defined and agreed upon by the team participants.

PMs should foster commitment from the team members, manage team conflicts, and help keep teams focused on reachable goals. They can help remove obstacles in the team’s way, and make sure team members know their- role. Giving support and constructive input helps the team know where it stands.

Moreover, practical experience has shown that:

- Teams have been highly successful.
- They are fragile.
- Communication suffers if leadership is not shared.

- Team leaders normally are the largest buyers of the item (but again, there are exceptions if smaller users have more to gain).
- Team members who endorse a plan will follow it.

Consensus brings strength to the team! When a team endorses a plan, each member is vested and has a commitment to carry out a specific negotiation with the objective of obtaining company-wide contracts. The result is the most advantageous material acquisition for all members of the team collectively.

The authors know many examples of successful teams covering such items as motors, valves, capacitors, semiconductors, fans, and even non-production MRO items as well as numerous other commodities common to multiple plant organizations. Based on Pareto's Principle, only about 20 teams are required for most companies to control more than 80% of their production purchases. These teams are often known as purchasing councils, and consist of a commodity expert from each purchasing location.

Table 3-1 shows how an actual team today controls its major motor purchases. This chart depicts the effect of combining purchase volumes for a typical buying team. At the top the using plants Nos. 1, 2, and so on, are listed. The suppliers are A, B, and so on. Analysis shows that 30 million dollars are spent on motors purchased from supplier A by buyers in all of the plants. Intuitively, it makes sense that negotiations of this magnitude should produce lower costs than each buyer could achieve alone.

If plant No. 1 centralized its motor buys, it could negotiate \$65 million. Plant No. 2 could negotiate \$35 million, and so on, while smaller plants may buy under \$1 million. But, what would be the result if all \$145 million were collectively negotiated?

If 25 buyers are all buying from the same set of suppliers, usually three or four buyers will spend the majority of the dollars. For optimal results then, the remaining buyers all need to have the same story and approach with the suppliers. The smaller slices of the purchase pie have much to gain so they usually will go along with those with greater leverage, but only *if their input is requested and valued*. The combination central/decentralized approach has proven effective, but takes a high degree of cooperation.

Table 3-1. Team Combines Purchase Volume [Millions of U.S. Dollars]

Supplier	Plant 1	Plant 2	Plant 3	Other Plants	Total
A	15	0	10	5	30
B	35	5	5	3	48
C	0	20	5	1	26
D	10	8	2	1	21
All Others	5	2	3	10	20
Total	65	35	25	20	145

Here is another real-life example of a successful purchasing team with purchases of \$5.5 million of fasteners. In this example, 14 individual buyers throughout the corporation buy these types of fasteners. Five major buying team members, with concurrence from the others, met before the supplier was invited to negotiate an announced price increase. Exercising leverage, the price increase was cut in half, resulting in a \$250,000 cost savings through use of combined buying power. And as a value-added bonus, prices stayed firm for several months while under negotiations.

If each buyer buys at the lowest price he or she can get, what more can be expected with a decentralized organization? What kind of negotiation leverage or power does the buying company have? How does anyone speak for a company in a decentralized environment? The answer is in the use of buying teams (or councils) that focus on the highly repetitive purchases where every company has potential high volume leverage, and many common items from major suppliers.

Summarizing how buying teams operate:

- All plant (or decentralized) buyers buy each item to the best unit price, using normal “day-to-day” purchasing practices.
- The commodity team, under guidance of its “captain,” uses a purchasing strategic supply plan to gather information, and form the negotiation team.
- All buyers carry out the negotiation strategy of the plan because they take part in setting it, realizing how their buying is strengthened.
- The buyer’s individual negotiations are enhanced by total volume leverage, which in turn reduces unit price and/or improves service at each plant location.

We have seen how consolidated buying can pay big dividends to participating locations in the multi-plant organization. A logical implementation vehicle for such arrangements is a *Corporate Purchasing Agreement (CPA)*, which may be issued from the headquarters or a designated major branch. Many major companies like to sell by such agreements. They can be used for most materials and components, provided the volume warrants it. All buyers may draw upon the better prices based upon their total spending volume.

CPAs can often cover as much as 80% of most companies’ purchases. They are most commonly used for metals, motors, hardware, chemicals, and the like for heavy equipment manufacturers. But commodities vary by type of business, the key being the degree of commonality of commodity usage across the enterprise. CPAs can have specific prices, but often have

purchased earned discounts (PED) that grant percentage reductions for volume over set target amounts. For example: 1% reduction in price for volume over \$1 million, 3% over \$3 million, and so on. Of course, there must be some justification for lower prices in the suppliers' costs, as benefits are a mutual win-win for the partners, with higher volume sales for lower priced purchases.

5. TACTICS TO CARRY OUT STRATEGIC PLANS

Tactical initiatives are short-range, day-to-day actions concluded usually in less than 1 year. Tactics are how to *win the battle*! Many experienced and successful managers each morning write down at least three tactical things to be done during the day, regardless of any interruptions.

Tactical planning has two key components, one that is quantifiable, while the other is not. The quantifiable part might be in a budgetary form that equates money or quantity with time. The portion not quantifiable includes such factors as the economics, operating assumptions, objectives, and means of doing the job.

Tactics are the actions buyers will take to carry out the strategic plans. In a sense they are the pillars that hold up the building. Buyers should set their tactics based on *their* strategic plans.

Some tactics the buyer might use include:

- Develop and implement supplier performance tracking reports.
- Perform cost and price analysis of materials, components, and services and contract for lowest total cost, consistent with maintaining both quality and service.
- Conduct reverse auctions to determine lowest prices available for highly competitive purchases.
- Spread purchases between two (or more?) suppliers, to avoid single source problems. (If one source makes sense, have a contingency plan for supply disruption.)
- Avoid frequent switching of supply back and forth between suppliers.
- Perform regular market searches on the Internet to identify potential sources.
- Stop buying from a supplier who doesn't do a good job. The supplier may be the best known, but if he doesn't serve you well, then his name recognition won't save you.
- Identify inter-company process improvement opportunities, using process mapping techniques and system integration software.

- Use collaboration tools such as Web conferences to encourage supplier technological innovation ahead of your company's competitors.
- Evaluate suppliers' performance and *motivate* them to improve quality, delivery and cost by developing specific targets, timetables and rewards for such gains.
- Consider offshore sourcing when economically justified.
- Promote standardization and simplification of components and products.

Long-term commitments should help, but beware! Unless there is an ongoing rapport with performance metrics in place, these "commitments" often fail to meet expectations and may even vanish when shortages occur.

Additional specific strategies and tactics will be presented in subsequent chapters, as they relate to specific aspects of the purchasing and supply management function. Many more strategies will be presented as we review, as an example, the components of good buying, as detailed in the chapters about quality or negotiations.

6. EMERGING STRATEGIC OPPORTUNITIES

Information technology and the explosive growth of the Internet have created many new ways to exploit strategic supply initiatives. Many of these possibilities are derived from information that is now available immediately rather than at the end of the month, or quarter, or year. Furthermore, most of the opportunities involve more accurate information from which more meaningful analyses may be conducted.

For example, in Table 3-1, the buying personnel at each location formerly gathered the information using accounts payable history files, usually from the prior year. Then someone would manually combine the data to form the chart in Table 3-1. Today it's possible to capture the spending information in a single file, directly from the ordering systems, as often as daily if necessary. The result, both the accuracy and the timeliness of the information are dramatically improved.

The information about current spending patterns provided by most e-procurement systems is of such value that, in some instances, it has been used to justify the large investment in such systems. The statistical detail provided by *point-of-sale* data capture—the use of computer terminals to record the transaction electronically—is of tremendous value in analysis of low-value transactions. In this case, the cost and time to manually record the detail would surely be prohibitive, but with automation, it is done when the transaction is executed. The information, held in files called a data warehouse, is available for analysis at any time.

Reverse auctions, held online and in real time, provide the opportunity to solicit bids simultaneously from anywhere in the world. This makes possible a single bidding event where all suppliers are continuously aware of the low price in the market, should they want to ensure making a competitive offering. These online auctions require a substantial amount of planning and communication with potential suppliers before the bidding event itself occurs. Be sure to fully understand and follow the correct process for these pre-event activities before undertaking such an effort.

The following Table 3-2 offers some potential benefits made available by these technologies.

Table 3-2. Strategic Technology Opportunities

Enabling Technology	Potential Strategic Supply Applications
Internet search capability	Locate sources globally with more complete information. Locate highly customized products and services.
Web-based reverse auctions	Bring opportunity to bid simultaneously to suppliers anywhere in the world.
Point-of-sale terminals	Capture and report consumption in real time.
E-Mail, video-conferences, teleconferences and instant messages	Enable virtual global meetings, global conferences and collaboration without travel expenses and simultaneous communication across multiple tiers of the supply chain.
Enterprise resource planning (ERP)	Synchronize events across the supply chain and identify savings opportunities between trading partners.
E-procurement	Automate purchasing transactions, data capture and reporting. Simplify workflow.
Spread sheet	Analyze quotations using weighted criteria. Analyze supplier cost structures.
Data warehouse	Analyze multi-location spending. Maintain and report supplier quality and delivery performance history.
Remote monitoring	Allow suppliers to monitor equipment performance and conduct preventive maintenance.
All of the above	Reduce cycle-time and transcription errors throughout the supply chain.

We will explore many of these strategies and practices in later chapters of this book. They are mentioned here to lay the foundation for their strategic importance as tools for process improvement and total cost reduction.

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II

CREATING THE VISION

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Chapter 4

THE PURCHASE ORDER PROCESS

Before getting into specific purchasing tasks, and ultimately considering how to improve the job, it is worthwhile to first review the purchasing process itself. The first portion may be a refresher for experienced purchasing managers, but is essential to understanding for non-purchasing personnel seeking insights into the profession. The latter sections provide an enlightening view of how e-commerce tools are redefining the fundamental procurement process.

This chapter will briefly outline the basic steps in the purchase order process, including some of the more common clauses used in purchase contracts. (The more detailed discussion of purchase order clauses will be covered in chapter 15.) The discussion will conclude with an overview of some of the information technology and Internet tools currently available to assist in this fundamental purchasing workflow.

Let's begin with the mechanics of the buying process (refer to Chapter 1, Figure 1-3) that is initiated by a requisition or other definition of need from within the organization. The buyer will analyze the requisition and ultimately complete it by adding the pertinent purchase data. To edit the requisition, buyers will also need their company's forms and records, supplier catalogue, purchase history records, and purchase order number file (unless forms are pre-numbered). Of course, if the department has become "paperless," then the ensuing information will relate to the electronic medium in use.

Much has been written about the basic records needed by the buyer. Buyers are urged to use as a desk reference, The Purchasing Handbook, Sixth Edition, by editors in chief Joseph Cavinato and Ralph Kauffman and published by McGraw Hill.

Several key items listed below need to be available to the buyer:

- Supplier identification records, containing source information and addresses.
- Supplier profiles for major suppliers, listing key contact people, phone numbers, e-mail addresses, Web sites and the like.
- Price history records that are essential, and which should include alternate suppliers and their current pricing information.

1. FUNDAMENTAL STEPS TO COMPLETE A PURCHASE

In the context of the overall process of completing a buy, editing the requisition is among the first administrative steps taken by a buyer.

The fundamental administrative steps to the purchase are:

1. Editing the requisition
2. Making purchase decisions (source(s), split of business, pricing and terms of purchase)
3. Issuing the purchase order (PO)
4. Issuing change notices (as required)
5. Receipt of order acknowledgment
6. Follow up and expediting
7. Receiving records
8. Invoice reconciliation and approval
9. Corrections or changes, if needed
10. Recording purchase transaction and closing the PO

1.1 Editing the Requisition

The first step in buying is always recognition of a need. It may be a request to replenish stock on a repetitive item, or it could be a special one-time buy of a less frequently ordered item. It may be for commodities, components, or services and it may be for a few dollars or millions of dollars. It is best to be in written form, usually a requisition (“req”) that represents an unfulfilled need. Today this data is frequently transmitted electronically over intra-company computer networks, or sometimes via facsimile.

The person providing internal authorization for repetitive purchases sends a “traveling req.,” usually in electronic form, to the buyer. A smaller firm may have the buyer order by review of the inventory records directly,

eliminating the req. Information typically identified on the req includes: authorization to acquire, account to be charged, description of what is needed, quantity, date wanted, ship-to information, and so on. The form may also contain vendor information, prices and part order history.

While buyers get lots of incoming mail, these reqs are actually “action orders,” and hence, take top priority. The buyer must first identify those items that must be acted on quickly. Upon making the purchase decisions, buyers add this information to the requisition that ultimately becomes the basis for the purchase order: supplier’s name, unit price, order dollar value, agreed delivery date, FOB shipping terms, shipment method, and terms and conditions including payment. In the case of electronic ordering systems, much of this information will be completed by default, usually from the past history for this item contained in the system. It is incumbent upon the buyer to be sure this default information is correct and intended for this specific requirement.

1.2 Issuing the Purchase Order (PO)

What determines the type of contract to be negotiated? Some buyers most often use a single type; however, it’s important to realize there are variations to suit special situations. Buyers should ask themselves the following questions:

Is more than one supplier willing or able to supply the product or service? How much money is involved, and how urgent are the deliveries? What risks are involved (delivery, quality and cost)? Has a similar item been supplied before? What is the financial status of the supplier? (An assessment of risk of failure to perform) Are cost and price analyses necessary?

There are more than 20 known types of contracts that can be divided into three major categories—fixed price, cost plus and blanket orders.

Fixed Price. This is most common type of contract, and can be used to buy anything. It has many variations, but the fundamental precept is that the price will not change during the term of the purchase order.

Cost Plus. For most work, a cost-plus contract is not the most desirable type of contractual instrument as there is generally no cost limit, so price is difficult to control. But sometimes it is the only way to get a contractor to handle the job where significant or unknown risks abound. These contracts are usually reserved for construction, complex defense contracting needs, service or special contracts, where the buyer is uncertain what will be required until the work is in progress. Naturally, suppliers are not going to tackle this type of work on a fixed price basis unless they get a high price to cover any eventuality.

Normal practice is to get detailed analyses on hours worked and expenses. With cost-reimbursement arrangements, always include the right of audit, including the hourly rates for various classes of labor! The supplier's profit is either a percentage of the costs or is a fixed fee that is set during negotiation. That amount is paid regardless of other costs. Be wary of agreeing to profit as a percentage of cost, as there will be absolutely no economic incentive to contain costs; to the contrary the incentive may be to raise costs to get a better return.

Another variation on the cost-plus theme is the cost plus incentive fee (CPIF) arrangement that has been increasingly utilized by the Department of Defense. These arrangements can include a value-engineering clause that allows any supplier to keep a portion of savings achieved. The idea is to reward superior performance and cost savings and to penalize substandard performance or cost overruns. An excellent example was the rebuilding of highways after an earthquake in California. The contractor worked night and day, bringing the job to completion months ahead of the experts' best judgment of time to complete. The incentive was large, but well worth it to return traffic flow patterns to normalcy.

1.3 Blanket Orders.

Blanket orders are generally based on fixed priced arrangements, but because they cover a period of time over which pricing is applicable, may also include price adjustment features. The blanket order will be reviewed in more detail, but first let's identify the types of documents used to make an acquisition.

Below are some different formats:

- Purchase Order
- Blanket Order
- Systems Contract
- Letter of Intent
- Letter Order, or Letter Contract
- Memorandum of Agreement (MOA) or Memorandum of Understanding (MOU)
- Cost/Price Agreement
- Corporate Purchase Agreement
- Legal Agreement document

Buyers may use a Letter of Intent to arrange early parts buys and plan their production schedule. Use this format with caution. Often the only legally enforceable content of the letter of intent is the commitment to

purchase. A Letter of Intent is a binding arrangement that obligates the buyer to complete a purchase if it causes the seller to start action.

A contract is usually more complex and detailed than a purchase order (PO), although a PO is actually a contract itself. A handshake may still work for some purchases, but for most buys a written agreement is needed to give proper documentation and to meet the legal requirements of the Uniform Commercial Code (UCC). For all but the most unusual circumstances, use a purchase order, and spell out anything that is important.

[illegible]

Figure 4-1. Sample Purchase Order Form

Purchase orders are issued considering the supplier's quoted prices and leadtime, and other specifics relevant to the purchase agreement. The forms

in use vary greatly, and an example is shown in Figure 4-1. An occasional review of the format and terms and conditions versus other available formats is helpful. Larger firms generally have good models because they created their forms using the guidance of legal staff.

The purchase order is the legal document by which buyers commit their company to pay for desired purchases. Problems are minimal if buyers plan and prepare a well-documented purchase order. Specific prices should always be defined in the fixed price purchase order. Buyers have to think defensively when preparing the purchase order. Although difficult to do, the objective is to try to consider all possible events that could go wrong.

A buyer's PO checklist of terms and conditions (T's & C's) may be useful to ensure that the basics get covered:

- If order is confirming agreement, with whom?
 - Exact quantity, and unit of measure—piece, gallon, keg, bale, bag, etc.
 - Accurate and complete description, or specification of goods or services ordered.
 - Unit price (identified by currency if other than U.S. dollars).
 - Date delivery is needed.
 - Invoice instructions: Invoice to be sent to: (name and address).
 - “Ship to” information: (name and address).
 - Type of packing and container to be specified.
 - Method of shipment, “FOB” INCOTERMS (denotes ownership transfer point and risk of loss).
 - Routing instructions.
 - Method of payment (i.e. prepaid, paid on delivery, cash discounts, and the like.)
 - Insurance details-- extent of coverage and whether to be paid by buyer or seller.
 - Any general or special conditions.
 - Any special documents required, such as:
 - a) Packing List
 - b) Commercial Invoice
 - c) Airway bill or Bill-of-Lading
- Also, for offshore buys look for the following:
- Letter of credit
 - Certificates of origin
 - Insurance certificates
 - Special instructions, or other documents required, such as special inspection, and condition.
 - Various technical clauses that should be included (A few are reviewed later in this chapter, though the detailed discussion is in chapter 15.)

- Signature(s) of authorized person committing the company.
- Any special transportation, insurance, marking or packaging requirements should be spelled out in separate clauses. Specific documents used break down into credit documents, commercial invoice, transport and insurance documents.

1.4 Use of Blanket Orders for Repetitive Purchases

A one-time buy means that a new purchase order is issued each time an item is bought. That can be costly. When an item is bought frequently (4 or 5 times per year), it will pay to consider an open, or blanket PO. Releases are made--sometimes by telephone or electronically--and this keeps the ordering costs down. Each buyer decides when to blanket order based on knowledge of the costs. By grouping items into larger packages that can be purchased more economically, there is the added bonus that administrative costs are greatly reduced as well.

A buyer can use a blanket order for these types of items (as examples):

- High dollar value items
- High volume items
- Repetitively purchased items
- Maintenance, repair and operating items (MRO)

Blanket POs are ideal for mill supplies, small tools, and office supplies, among other things. The objective is to combine small, relatively unattractive quantities into reasonably large packages to gain price and service advantages. So the result is that time and expense to buy are reduced. The person who is closest to the need to replenish stocks is often authorized to release the quantities needed without intervention from the buyer as long as the price does not change and total dollars committed are not exceeded. Also, the burden of stocking inventory is largely shifted to the supplier.

The advantages in using blanket orders can be summarized as follows:

- Saves repetition and time
- Simplifies paperwork by eliminating many reqs
- Allows expediting by using department
- Assures continuity and uniformity
- Decreases leadtime for buyer and seller
- Usually provides price advantage
- Terms and conditions of purchase are standardized

In addition to the “nuts and bolt” issues covered by the purchase document, such as prices, delivery dates and quality requirements, other terms and conditions specific to the purchase will usually need to be clearly worked out between buyer and seller. When workflow is automated as in the case of e-commerce, these terms are usually set at a default value. Buyers should be aware of these defaults and assure each is as desired for the particular transaction. The defaults can be overridden but the buyer must act to do so. Some common terms are described below.

2. TERMS OF PURCHASE

Cash discounts are part of the terms of purchase and should not be confused with quantity discounts, package discounts, or trade discounts that are reflected in the price of the items purchased. Cash discounts are an allowance extended to the buyer to encourage prompt payment of the seller's invoice before a stated time interval. Suppliers usually have standard discounts used for this purpose. Sometimes, these discounts can be negotiated higher as one of the considerations when buying. Usual discounts range from 1/2, 1, and 2%, while a 3% discount is usually tops. Any larger discount is a signal that something may be wrong, as the seller may be desperate for cash, or be in financial trouble.

As an example, a typical discount will be expressed as “2 percent 10/Net 30,” which means 2% of the value of the purchase may be deducted if the invoice is paid within 10 days of receipt. Otherwise, the invoice is to be paid “net” within 30 days. “Net” terms require that payment be upon receipt of invoice, while “Net 10” implies a 10 day grace period, and so on.

“Net 10 prox.” means payment of the entire invoice by the 10th of the month following the month of invoice. “1% e.o.m.” means that a 1% discount can be deducted if paid before the end of the month. While the term “or Net 30” is usually added, even if omitted it is customary that the invoice be paid 30 days after receipt.

Although ethically questionable, the truth is that many companies delay payment when they can get away with it. A good buying practice is to achieve the best terms possible in all other areas first, then negotiate payment terms as a stand-alone savings opportunity. Be sure to consult your finance department for your organization's cost of money. If your cost of money is less than the suppliers it should be possible to get advantageous payment terms.

Electronic forms of payment or Electronic Funds Transfer (EFT) offer buyers some new opportunities in payment discounts. Using EFT, payment can be made within the same day if necessary. Because of this ability to pay

precisely when you wish, it is possible to hold the funds until the last moment, pay on the day specified and accept payment discounts.

Use a Payment Terms Clause such as: “Payment terms shall be Net 30 (or as negotiated), per this PO covering this purchase.” Add if an international buy: “Payment shall be in U.S. dollar funds (or a foreign currency, if so negotiated). “Documents to accompany shipment shall include items as spelled out herein below, or in the Letter of Credit” (or other type of collection).

2.1 Shipment Terms

An “FOB” term spells out the division of responsibilities for transportation and passage of title. The goods are deemed to be legally delivered by the seller to the buyer at a point spelled out in this clause.

Based on identifying the transfer point for possession of goods, the term determines who will pay the costs and who assumes the risks. Called *INCOTERMS* (a contraction for “International Commercial Terms”), they spell out “What the buyer must do” and “What the seller must do.” Lacking mention to the contrary, a PO is assumed to be a “shipping point contract,” which means that the buyer is responsible when the seller has delivered the goods to the carrier.

Because these INCOTERMS are fully spelled out in detail under transportation chapter 17, they will not be repeated here. It is important to include these terms when the order is issued. As previously noted, many additional specific clauses also will be found in the legal chapter 15.

2.2 Change Notices

If important conditions of purchase change following the issuance of a purchase order, a formally numbered *Change Notice* should be issued to confirm the action being taken. Failure to formally document and issue a Change Notice can be cause for later dispute. With the advent of e-commerce, this has become a critical issue. Because the matching of order, invoice and receipt is now automated, the lack of a perfect match will create a system error. Therefore it becomes vital to be sure that all elements are correct at all times. The good news is that keeping the order record current is as simple as updating a record in the system.

3. COMPLETING THE PURCHASE

Although formal purchase order acknowledgments are still used by some, many companies have dropped these as unnecessary paperwork. Most suppliers insist on using their own acknowledgment forms anyway, and if the PO and acknowledgment disagree on terms of sale, the legal standing of the PO terms may be questioned. But the acknowledgment is mandatory for major purchases such as construction and equipment. A case is often made for their legal necessity. Although it may be said there is no contract without an acknowledgment, *shipment* can serve as a legally acceptable form of acknowledgment. Companies may prefer to use formal acknowledgments, but don't get caught up in an elaborate system of control for this document. Probably 50% of the major companies don't use one, and, of those that do, few insist on them in all circumstances.

3.1 Follow Up and Expediting

Even when the job of expediting is delegated, buyers are ultimately responsible for deliveries. Sometimes referred to as "follow up," it's still one of the most important tactical parts of the buying process to get the goods into the plant or office as needed. Expediting is a problem-solving function, and in fact, the term derives from Latin, meaning literally, "to free one caught by the foot."

Most PO forms have a page devoted to follow-up notations. Routine follow up can be a postcard, or special form that is readily checked-off for information requested. Boxes to be checked for such information as "Will Ship," "Freight car No.," "Pro-bill No.," and so on. Still, most information will be by telephone or e-mail. Electronic tracking systems such as *radio frequency identification (RFID)* now make it possible to know the precise location of a specific shipment at all times.

Today, trying to minimise inventories using Just-in-Time (J-I-T) and lean manufacturing practices, if anything goes wrong, the "customer" can be badly damaged. J-I-T, by design, is not tolerant of shortages and requires that goods be delivered on time. Stores or someone watching over the inventory can handle routine expediting tasks. Even then, when difficulties arise, the problem comes back to the buyer's desk. Avoid repeated expediting for the same supplier or the same part. This condition suggests an underlying problem that must be solved to ensure on-time deliveries. The supplier must perform a root cause analysis to determine the source of the problem. It is incumbent upon the buying organization to be sure this is done, even if it means intervening to assist. As a minimum the supplier should be required to submit a report of root cause investigation results for

any repeated delivery problem. This approach is covered in greater detail in Chapter 8.

Common delivery problems that occur include:

- Late shipments
- Delivery promises not made, or given and not reliable
- Shipments seldom complete, with many backorders
- Lost or delayed shipments due to incomplete or late shipping documents
- Delayed shipments due to insufficient or incorrect information in the bill-of-lading.
- Shipment by more expensive method than requested

There should be some ground rules for expeditors to follow. “Tickler” or follow-up files may be manual or electronic, but should serve as a reminder and specify what action to take. Using the Web can also provide very timely information. As an example, Federal Express maintains a web site that can be accessed to track any of its shipments. Go to <http://www.fedex.com>, and click on “Tracking,” and this displays a form to enter the airbill number. Upon entering the number, and clicking “Request Tracking Info” button, the delivery status is displayed.

When routine expediting fails, buyers must back up the activity by contacting whatever supplier management level is needed to get results. They must apply pressure for results that may include field expediting or buyer visits to the supplier’s facility. Having expeditors report to buyers clearly provides the message, “They speak for me.” But some companies do not segregate the expediting function, opting instead to leave it as a part of the buyer’s job. The underlying philosophy is that buyers are accountable for all supplier performance following placement of the purchase order. When the buyer calls attention to poor service, action should follow, because the supplier has a vital interest in receiving the next order.

3.2 Receiving and Price Checking

Packing lists are used to identify the merchandise received. These are documents prepared by the seller for use in receiving, to verify that what is received conforms to what was ordered. Information typically includes the purchase order number, part number, quantity shipped and any other data the buyer requests. Receiving Reports are usually matched against Invoices to authorize payment. Barcodes are used frequently to simplify and error-proof this process. When the goods are received, the barcode can be scanned, electronically matched with the purchase record on file and the receipt recorded, all at the same time. This method, in addition to being very fast,

avoids the possibility of transcription errors and updates the files immediately. Be sure that all order changes have been recorded in the system before receipt or the matching and recording process will fail, losing the advantages of automation. If the shipment is being imported, the packing list is required by customs officials at both the port of export and the port of import to check the cargo passing through.

Payment is normally handled by the Accounts Payable function, with price or quantity exceptions routed to buyers for approval or correction. The buyer verifies price, quantity and any terms that do not agree, and adjusts any discrepancies. Automated systems will minimize the need for this process step if the information is kept current at all times. In most cases, the need to check prices after receipt is the result of a price change that was authorized but not recorded earlier. Electronic systems do not tolerate discrepancies and require added discipline by anyone who enters or updates information. Most suppliers appreciate prompt payment, so buyers should work to avoid unnecessary delays in payment processing in the interest of maintaining positive supplier relationships.

4. ADDITIONAL CONSIDERATIONS FOR INTERNATIONAL PURCHASES

The foreign purchase contract can be a normal PO, but buyers must provide a level of detail not normally used for a domestic purchase. Documents include: (1) transport documents, (2) insurance documents, (3) credit documents, and (4) commercial invoices. Transportation and insurance documents are obtained by the seller and shipper and move as a packet along with the shipment. These documents are listed here, and covered in more detail in Chapter 6.

Figure 4-2 provides a summary of the specific documents used to complete an international purchase.

PRIMARY DOCUMENTS REQUIRED IN INTERNATIONAL TRADE

PRODUCT DESCRIPTION AND IDENTIFICATION ON ALL DOCUMENTS		USED BY: ✓ - YES				
DOCUMENT	PURPOSE	EXPORTER'S GOVERNMENT	EXPORTER	IMPORTER'S GOVERNMENT	IMPORTER	COMMON CARRIER
BILL OF LADING	RECEIPT FOR SHIPMENT BY SPECIFIED DATE, LINE OR SHIP		✓	✓	✓	✓
INSURANCE POLICY OR CERTIFICATE	COVER RISKS OF DAMAGE OR LOSS		✓		✓	✓
COMMERCIAL INVOICE	QUANTITY, PRICE, CURRENCY, PAYMENT DUE, CREDIT TERMS	✓	✓	TO DETERMINE APPLICABLE DUTY	✓	
SHIPPER'S EXPORT DECLARATION	SOURCE OF EXPORT STATISTICS IDENTITY OF EXPORTER, IMPORTER DESTINATION PORT, METHOD OF SHIPMENT, WEIGHT AND CLASSIFICATION	✓	✓			✓
EXPORT LICENSE	PERMISSION TO EXPORT	✓	✓			✓
IMPORT ENTRY	SOURCE OF IMPORT STATISTICS SAME AS SHIPPER'S DATA, BUT ADDS LOADING PORT AND COUNTRY OF ORIGIN			IMPORT STATISTICS	✓	
CERTIFICATES OF WEIGHT, CONDITION, MANUFACTURE, ETC.	PROOF PRODUCT MEETS SPECIFIED CHARACTERISTICS		✓	IF AFFECTS HEALTH OR SANITARY LAW	✓	
CERTIFICATE OF ORIGIN (FORM A)	ALLOWS IMPORT CONTROL, AND DETERMINES PROPER DUTY		✓	DETERMINE DUTY RATE & IMPORT CONTROL	✓	

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POOLER &
ASSOCIATES

Figure 4-2. Documents to Complete an International Buy

Shipper's Export Declaration lists identity of goods, quantity, weight, value, exporter and consignee, manner of transport, port of export and carrier, port of unloading and ultimate destination. It provides the shipper's local government with statistical information regarding goods being exported.

Import Declaration shows basically the same information as on Shipper's Declaration, and is provided for use at the point of importation.

Certificate of (various, special items, such as *Weight, Inspection, Manufacture, Sanitary condition*, and others) include various certificates that may be required or requested by the buyer to ensure satisfactory confirmation that what is received conforms to the buyer's requirements. An independent party normally prepares an inspection certificate that will attest to condition, quality or quantity of goods shipped. The buyer usually requests it to assure that goods are conforming.

Certificate of Insurance assures the buyer that the seller has insured the goods to cover loss or damage while en route.

Letter of Credit is a commonly used form to make payment for offshore buys.

Commercial Invoice is a must! It itemizes the items shipped and/or the services rendered, quantity, terms, and other data. Prepared by the seller, it is the bill from the seller and states the amount and the currency the seller expects the buyer to pay. The importer uses this invoice to clear merchandise through U.S. Customs.

With respect to the Certification Clause, consider something like the following:

"Seller will submit products for approval to (whatever agency applies, such as UL in USA, TUV in Germany, and CSA in Canada, depending on requirements). Seller must submit proper certificates that its products comply with DOE/FTC, OSHA, EPA, ASME, and other requirements and will meet published rated performance per Seller's submitted specifications."

A Certificate of Origin assures buyers of the country where the products or goods were manufactured as required by the U.S. government. The Certificate may show origin of any materials and labor used to produce goods. It may specify the percent of local content to secure reduced tariffs for goods produced in certain countries. To assure you get proper documentation, include a certification clause both in the Purchase order, and in any Letter of Credit, such as:

"Seller must submit a *Certificate of Origin Form A* (or Insurance, etc.) stating the percentage of Seller's product that is made or produced in the specified country. Submittal must be made on Form A."

The above is a brief overview of the documentation requirements for an international buy. Because of the dynamic nature and complexity of the documentation requirements for international buying, the buyer should read the much more detailed material in Global Purchasing: Reaching for the World⁷ or another reference of this nature.

5. ELECTRONIC PURCHASE ORDER PROCESS

One of the processes most significantly changed by the Internet and electronic commerce is the basic buying process covered in this chapter. Several major software companies and numerous consulting practices are focused almost exclusively on this process. Why? Because the purchasing process has been very labor intensive and because, as stressed throughout this work, there are much greater value-added activities for the use of the supply management professional's time. To review the many ways e-procurement has impacted the buyers' work, consider the analysis of a typical organization's indirect materials (expense and capital) spending transactions.

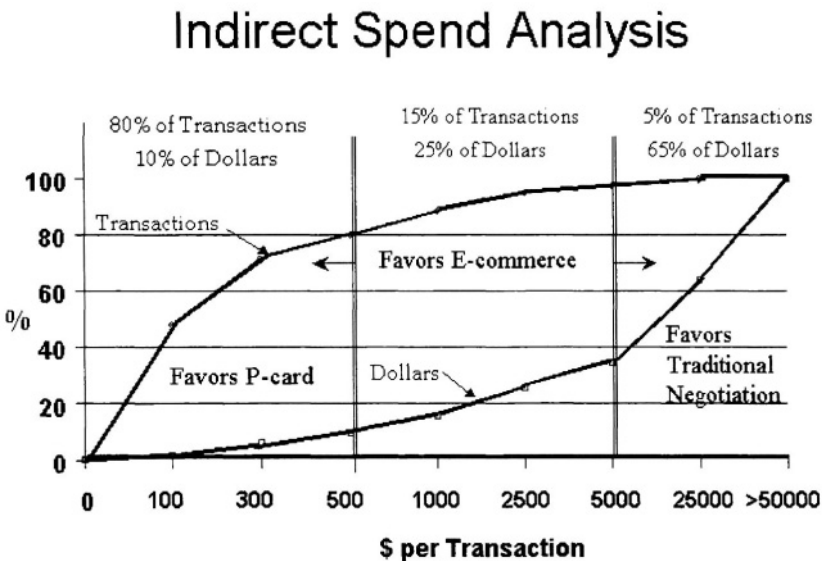


Figure 4-3. Typical Indirect Spend Analysis

⁷ Victor H. Pooler, 1991, Rutledge, Chapman & Hall, New York, 266 pages.

Figure 4-3 shows the cumulative total expenditures and the cumulative number of transactions, each plotted against the dollar value of the transactions. The chart demonstrates what most PMs have learned from experience, that the majority of the buying transactions are for very low value purchases. Conversely, a small number of transactions for high-value goods represent the majority of dollars spent by the organization. While the plots will vary from one company to another, the pattern will be very similar in most cases. Benchmark studies and Activity Based Costing (ABC) have shown traditional purchasing transaction costs are frequently in the range of \$90 to \$150 per transaction.

Is it any surprise that there is a substantial opportunity to automate purchasing transactions, at least on the low-value end of the dollar per transaction range, shown on the left portion of Figure 4-3? Note that the right side of the chart, where less than 10% of the transactions cover nearly 2/3 of the spending for items such as capital equipment and advertising services, is the area where face-to-face negotiation and hands-on buying expertise can have the greatest cost reduction impact. There are savings opportunities from electronic commerce applications for the balance of the spending, represented by the center portion of the chart.

5.1 Purchasing Cards/Procurement Cards

In practice, the left-hand portion of the chart (values per transaction below about \$500) is where companies have made effective use of *purchasing cards* (*p-cards*). A purchasing card is a credit card provided by the company to using department employees to commit for and acquire these small-value transactions on their own. This is very similar to the common practice of a company-provided credit card for employee travel expenses. The cards usually carry a maximum value per transaction and maximum total expenditure per month to be sure they are limited to their intended use. To provide additional control, card use can also be limited to the commodities that the cardholder is authorized to buy for his or her department. For example, cards issued to mailroom or print shop personnel could be limited to the purchase of postal or office supplies.

The issuing bank provides a statement to each cardholder at the end of the month, which the cardholder must reconcile and approve. The approved statement is authorization for finance to pay the bank for charges incurred. Strict rules, a signed employee pledge to proper use, and frequent audits will ensure that there are no abuses. If a cardholder violates the guidelines for card use, the card privilege should be terminated immediately, while more serious infractions could be cause for terminating the employee. These controls can make the use of purchasing cards a good way to reduce

transaction costs and to empower using departments to handle the small-value transactions themselves.

Supporters of this method point out that even if the buying is done poorly, the amount of premium paid is more than offset by the administrative savings in time and effort by the organization. In some cases the purchasing department has already negotiated preferred supplier agreements with reduced item pricing. The procurement cardholder is expected to use these suppliers first, while retaining the ability to go elsewhere if the item is out of stock. Another benefit frequently cited for use of procurement cards is the monthly accountability record of purchase activity they provide. Periodic analysis of this information collected from all p-card activity will highlight suppliers and commodities where activity is higher than expected. These purchases may warrant a new purchasing agreement to take advantage of the increased purchase volume.

5.2 E-Procurement or e-Commerce

The center portion of Figure 4-3 has a significant percentage of the total dollars with relatively few transactions. The expenses here are characterized by having a wide variety of items grouped into a dozen or so broadly defined commodities or part families, frequently purchased from distributors and catalog houses. Examples include Maintenance, Repair and Operating (MRO) supplies, office supplies, mill supplies, computer peripherals, office furniture, plumbing supplies and electrical supplies. Chapter 16 will address these unique purchases in more detail, so as to keep the current discussion focused on general procurement procedures.

Many astute purchasing departments have implemented e-procurement applications to deal with this portion of the indirect material spend. There is a broad spectrum of e-procurement software and systems available today and it is growing rapidly. No single supplier or approach is endorsed here, as the selected course must mirror the specific need. Therefore, the basic procurement process is described and the selection of application software is left to the practitioner.

The essential elements of an e-procurement solution include:

- Supplier agreements for an array of frequently used products (essentially a contract to buy from the supplier's catalog) usually with preferred pricing levels
- Supplier catalog management or aggregation software
- Internet portals to connect buyer and seller via the Web, supported by Internet browser capability for both
- Ordering and fulfillment processes (workflow) for buyer and seller

- Receiving and tracking systems
- Invoicing and payment systems
- Exception reporting and dispute resolution

Historically, electronic component distributors initiated the first e-commerce solutions to gain competitive advantage with their customers. As a means of creating a discriminating “funnel”, they would provide aggregation of their catalog, portals for connecting buyer to seller and ordering workflow software. Sometimes they could also offer receiving and payment systems, but usually this required a large amount of customization to suit different customers. There were two substantial limitations with these early efforts—(1) the buyer had to deal with a unique system interface (Web browser look and feel) from each supplier and (2) once in place, purchases could be made using the system only from the supplier whose catalog was installed.

Suppliers of e-procurement application software now offer standardized catalog aggregation, a single user interface (one look and feel for all suppliers), built-in rules-based workflow management, receiving, invoicing and exception reporting. All of this comes at a price, however, often more than a million dollars for a comprehensive system. The return on investment can be difficult to rationalize, unless the buying organization has the means to accurately measure and to reduce its transaction costs as a result of the e-procurement installation. This last area is particularly daunting because it involves displacing people to perform other work, or outright headcount reductions. Another concern when implementing an externally provided e-procurement solution is the required interface with legacy systems, such as Enterprise Resource Planning (ERP), accounts payable or inventory management systems. This discussion covered indirect spending, but when using e-procurement systems for direct, or product bill-of-material purchases, the interface with internal ordering and inventory management systems is critical to customer service.

Supply management organizations that have successfully implemented e-procurement systems cite the following advantages:

- Faster PO processing time
- Reduction of transaction costs to less than \$10 per transaction
- Reduced off-contract spending activity and increased buying volume leverage
- Faster catalog searches, availability checks and requisition processing times
- Ability to closely track progress of delivery, receipt and payment
- Improved supplier relations (regular orders and prompt payment)

- Reduced contract creation cycle time
- More detailed purchase history and more frequent reports
- Improved internal relations (primarily from end-user control and ease of use)
- Immediate availability of price quotes on first-time purchases
- Ability to track open order commitments
- Analytical tools to interpret spending patterns and manage future spending
- Enabling of comprehensive supplier performance tracking

With all these advantages, the question may rightly be asked, “Why hasn’t there been a stampede to implement e-procurement?” And the truth is there are many valid reasons to proceed with caution.

Those cited most frequently are:

- High cost of application software and questionable (i.e., not “bullet-proof”) ROI
- Difficulty of integration with existing legacy systems
- Disruption of existing processes (i.e., the need to re-engineer the process during implementation)
- Inherent complexity of supply chain management
- Suppliers not capable of transactions over the Internet (though this concern is evaporating rapidly as technical, cost and firewall issues have largely been resolved.)

These valid concerns are important when contemplating any e-commerce project. But there are many ways to mitigate the risks and undertake projects in an orderly way that will increase the likelihood of success.

Because of their impact on the entire purchasing process within an organization, all e-procurement efforts should be part of an overall business and e-commerce strategy. The procurement strategy should be long-range, typically from two to five years. Within this strategy there will likely be several stages and individual projects.

Work with the information systems staff to assess the organization’s overall readiness by looking at the number of employees with Web access and browsers.

- How familiar is the potential user base with dealing with others over the Internet?
- Are in-house systems in place that will facilitate buyer to supplier communication?

- Is the supplier base narrowed to preferred suppliers for families of similar items?

If the organization is Internet savvy already (and if not, this in itself should be a red flag!), build a list of desired features and evaluate the many suppliers of software and Internet services available to provide those features. It should be possible to find a supplier with excellent alignment to your specific needs from the large number of alternatives.

The following list contains some “nuts and bolts” suggestions for those with no experience to begin buying on the Web:

- Build upon an existing *Electronic Data Interchange (EDI)* ordering process, if such a system is in place, by moving the EDI transactions to the Internet using *Extensible Markup Language (XML)*.
- Take advantage of existing supplier e-commerce capabilities.
- Set up Web browsers in purchasing or in using departments to directly access suppliers’ sell sites.
- Connect to supplier sales site to conduct buying transactions.
- Arrange payment using a purchasing card.
- Expand legacy systems to include e-procurement applications.
- Add or activate an e-procurement module in the ERP package.
- Include ERP modules for Receiving and Accounts Payable.
- Record transactions electronically at the point of commitment, or order placement, to build a purchase history file.
- Collect and analyze spending patterns from order entry files.
- Set up an in-house catalog of similar items that are purchased frequently.
- Review current contracts for distributor type items.
- List similar items with contract pricing on a spreadsheet.
- Group the items by part family and by supplier.
- Create electronic requisition forms to be populated by using departments from the spreadsheet.
- Join a buyers’ online marketplace (*buyer-centric market*) where buyers, usually from a single industry, work together to offer their requirements for suppliers to post bids. An example of a buyer-centric marketplace is Covisint, in the automotive industry. Note, however, that Covisint currently appears to be changing its focus toward collaboration and away from simple trade facilitation.
- Use a net marketplace (*seller-centric market*) where sellers from a particular industry offer goods for sale via the Web. An example of this is the chemicals industry. Be aware that this is akin to the seller making an unsolicited offer and is probably not priced very competitively.

- Set up an on-line reverse auction for bidding a family of similar items together over the Internet. While it is possible to do this on your own, it is recommended that you consider contracting with an experienced facilitator.
- Attend a seminar on buying over the Internet. Many are available online, by Webcast and face-to-face, from such organizations as ISM.

Once the e-procurement process has become well established, it will probably make sense to expand its use to smaller value purchases, where the electronic system can displace the less controlled p-card transactions. The arrows in Figure 4-3 note the intention to increase usage of the e-procurement process in this way. Eventually it may make sense to apply the electronic process to larger value items as well, but don't overlook the need for close personal attention to these high impact transactions.

5.3 Direct Purchases and e-Commerce

The previous discussion was focused on the unique nature of indirect (often referred to as non-product) purchases. The acquisition of parts and materials to manufacture or assemble products is quite different. In this case the part is specified by engineering design and while sometimes a generic item is used, more often the item is custom made for the buyer. Here the part's conformance to the design requirement is paramount and the transaction cost is less an issue. So, the objective is to enable suppliers to consistently supply the items as needed with J-I-T delivery and six-sigma quality. The inherent capability of electronic media to shorten communication lines and enhance global information exchange has made possible vast improvements in the buying of direct materials as well.

Consider the following applications of electronic information systems in improving the purchasing processes for production materials:

- Material Requirements Planning (MRP) or Enterprise Resource Planning (ERP) systems can be linked directly to the suppliers' order entry systems to transmit actual consumption or changes in schedule as they occur, permitting the supplier to adjust without delay.
- Supplier deliveries can be sequenced to match the production schedule, minimizing hold times for parts entering production.
- Suppliers can post and maintain stock-on-hand balances on a site where buyers can check availability for themselves.
- Goods in transit can be tracked by on-line systems, giving the buyer up to the minute information on their expected arrival.

- Changes in specifications can be transmitted directly from engineering to the supplier, without the delays of printing and mailing revised drawings.
- Receipts can be recorded by scanning a barcode, allowing the inventory to be updated within seconds of the receipt and prompt payment.
- Supplier quality and delivery performance can be tracked and reported in real time, allowing faster response when problems arise.
- Suppliers' financial condition can be monitored as results are reported and published; exception alerts may be issued to note significant changes.
- Excess inventories may be posted to a Web site and offered for resale.
- Search the Web to locate potential suppliers anywhere in the world.
- Collaboration and process improvements among trading partners around the world can be facilitated by direct and immediate communication.

When implementing any of these approaches, whether for direct or indirect purchases, consider these recommendations. As mentioned under indirect purchases, develop an overall e-commerce strategy consistent with your business and information systems strategies. Technology can do phenomenal things, but to be cost effective it must be applied to those tasks and processes where you most need to make improvement.

To determine where the need to improve is greatest, benchmark other companies. Start with your competitors and peer companies but don't limit information gathering to only those. The Center for Advanced Purchasing Studies (CAPS), a joint undertaking by ISM and Arizona State University, has valuable benchmark information for purchasing.

The essential steps to achieving cost-effective automation of direct materials procurement are as follows:

1. Rationalize the supply base before undertaking a major automation initiative and again after the system is in place. Each additional supplier adds to the expense of implementation, so identify those where such an investment makes sense.
2. After implementation, the information on supplier performance available from the system should provide the basis for suppliers to improve. If they don't, it's time to look for a change.
3. Analyze the newly available data on both spending patterns and supplier performance to drive improvements in the supply chain. Initiate joint supplier-buyer improvement projects, changes in splits of business, and changes in sources.
4. Constantly reduce total cost by tracking not only part prices, but also inventories across the supply chain and transaction costs between trading partners.

Perhaps the greatest value coming from the process improvements enabled by the information technology revolution is the value derived from better supplier-buyer relationships. When the two begin to collaborate to solve problems and improve service, the customer wins. Software and Web-service suppliers already offer many tools under the heading of *CRM* (*Customer Relationship Management*) and *SRM* (*Supplier Relationship Management*).

The foregoing process and essential procurement tasks form the skeleton for this work. There are many acceptable methods of executing the process steps but each requires care and precision if it is to fulfill the needs of the organization for purchased goods and services, and to be cost-effective.

Automation can greatly enhance the process, provided there is a focus on the critical elements of completing the purchase as described here. Many of the tasks and methods will be described in more detail in chapters that follow.

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Chapter 5

BUYING FROM THE RIGHT SUPPLIER

The ability to select reliable suppliers is a mark of successful purchasing. To paraphrase an old saying, “Tell me who your suppliers are, and I’ll tell you what kind of a purchasing department you have.” It’s not always easy, however, to identify good suppliers. There is no substitute for an objective means of supplier appraisal.

What should buyers look for in a “world class” supplier? The term has come to mean those suppliers who can deliver their goods anywhere globally at competitive cost in all marketing arenas. In the case of manufactured products, the engineering design and manufacturing plans both have a major influence over the choice of suppliers for materials, components, and subassemblies. Some other considerations affecting source decisions are the buyer’s expectations, the seller’s experience with the product or service, the stage of economic development of the supplier, and preferences for geographical location. Bulky or heavy items can be costly to transport long distances.

1. SOURCE SELECTION

Sourcing breaks down into two categories: source selection (a tactical activity) and source development (a strategic initiative that will be covered later). Source selection can be day-to-day buying for items now available in the marketplace, or looking for lower cost suppliers.

Anyone can call a supplier and say, “Hey Joe, what’s it cost for 100 mops?” That’s why everyone figures they can buy—It’s easy! But evaluation of suppliers is relevant *before* the buyer buys. Anybody can start a business relationship and find out it doesn’t work. The trick is to verify the

supplier's capability to perform in advance, before the requisition hits the buyer's desk.

From the initial search, the buyer will attempt to identify several potential suppliers. The possible choices are reduced to a few of the best candidates and, after doing the homework, the selection process is completed with the negotiation, agreement, and issuing of the purchase order, possibly to more than one supplier.

1.1 Request for Quotation (RFQ)

When no established market prices are published, the first decision is to choose whom to invite to quote. Much wasted time is avoided by picking the most logical sources for inquiry, and this brings into play the experience of the buyer. For a major purchase, the buyer may choose to first issue a Request For Information (RFI) to determine both the capabilities and interest of several suppliers. Recognizing that this information is provided by the supplier and is likely to be presented in its most favorable light, this information kept in its context will be useful in both prescreening the suppliers and in determining questions to include in the ensuing Request for Quote (RFQ).

An RFQ may be prepared in either paper or electronic form, and typically includes date, control number, name of company and buyer, description of goods wanted, quantity sought, any special patterns or die requirements, any tooling now available from the buying company, delivery destination, special handling and shipment, packaging, delivery date for goods, and finally a deadline to receive a reply.

Buyers may want to include additional special requests, such as:

- How long prices hold firm
- Request for supplier's blueprints or other documents
- Request for alternate proposals (if they will be considered)
- Any special or buyer-supplied materials or supplies to be used
- Any special tests or quality standards required

The buyer may list potential order quantities, and ask for price breaks and quantity discounts. By indicating a willingness to consider substitute items, the seller is encouraged to make creative suggestions. Ideas to save money might include grouping of items into blanket orders, packaging, or design changes. But, the buyer must take the initiative to search the market, and not wait for a sales pitch.

International purchases require special attention. Unlike a domestic inquiry, additional details need to be provided in the RFQ. ASME, UL or

other codes may have to be spelled out, along with any special tests to which parts will be subjected. The buyer may have to provide the codes themselves, as the international supplier may not be familiar with them. Local suppliers know these things from experience, but foreign suppliers may be hesitant to admit they do not understand, since they want to please.

Comparing current quotes with past prices paid and to other competitors' pricing is a fundamental technique of buying value. In many cases there are factors, other than simply price, to be considered in the RFQ responses.

Purchase of foundry castings provides an example of a weighted comparison of prices and other factors. A chart is prepared showing all suppliers under consideration, price quoted by each, shipping costs, pattern charges, tool cost, and any other factors. Each factor is weighted in advance based upon its importance in making the source selection. The sum of the quoted values times the weighting factor for each will provide the buyer with a single number for each supplier for comparison. If all suppliers quoted to identical specifications, the decision is simple. But usually, there are differences of brands, quality, tooling, and so on. So, judgment is needed, and such analysis clarifies alternatives and provides valid evidence in making the right source selection.

Buyers are frequently criticized, sometimes legitimately, for considering only price when making a source decision. What factors might cause a buyer to discard a low quote and select a higher price source alternative? One survey ranked the reasons based on frequency as follows: quality 84%, delivery 84%, service 38%, past experience 32%, reputation 12%, facilities 11%, technical ability 11%, financial responsibility 8%, failure to meet specs 6%, and to keep multiple source of supply 3%.

It is important to be able to clearly state how a judgment to use other than the lowest price was reached. In government buying, the justification must be in the file and in writing. In addition, the buyer maintains credibility by telling the suppliers offering lower prices why they were not accepted. As stated earlier, source decisions should be made based upon the lowest total cost. Later in this chapter we will discuss the use of total landed cost and quality and delivery factors in determining lowest total cost.

1.2 Buyer's Checklist for Selecting New Suppliers

Before deciding on the "right" supplier, consider the specific supplier concerns below. This checklist provides questions that should be asked when considering selection of a supplier, and gives buyers some ideas to build upon. This same list can also be used for supplier evaluation that is reviewed in a later section.

Reliability

- Is the supplier reputable, with a proven track record?
- Have the supplier's ability and integrity been proved by past performance?
- Is the supplier giving me savings along with product improvements?
- Is the supplier's management team experienced and stable?
- What is the supplier's position in the industry? Is it a product leader?
- What is the supplier's previous delivery history with the company?

Financial and cost factors

- What is the *total cost* of using the supplier's product, considering quality, delivery and transportation?
- How is the product priced, and have past price changes been reasonable?
- How will transaction costs be affected by dealing with this supplier?
- What is the supplier's financial position and credit rating stability?
- Does pricing meet internal targets?
- How will inventory-carrying costs be affected by use of the supplier's product?
- Is the supplier willing to negotiate?
- What, if any, cash discounts are offered?

Technical capabilities

- Will the supplier provide application engineering or design assistance?
- Will the supplier provide analytical engineering that will help improve the efficiency of my basic processes?
- Can the supplier handle special needs and designs?
- Does the supplier contribute to general technical advancement through basic research?
- Does the supplier have special technical capability? What has been accomplished recently?
- What are the operating technology characteristics, such as manufacturing capacity, component design, and techniques used?
- Does use of this supplier's technology limit future source decisions?

Delivery and availability

- Will the supplier ensure on-time delivery?
- Are stocks available locally? On short notice?
- Does the supplier offer support services?
- Is the supplier's location an advantage to me?
- Does the supplier plan shipments to minimize my inventory?
- Can the supplier be depended upon to provide a steady flow of products or materials?

Buying convenience

- Does the supplier offer a full line of related products?
- Does the supplier package their product conveniently for my use?
- Does the supplier have a convenient sales contact?
- Are they qualified to help me? Can I call upon specialists for my difficult problems?
- Will the supplier help me cut acquisition costs such as qualifying visits, telephone calls, lab tests, incoming inspections, spoilage and waste, rejects, and complaints?
- Will the supplier respond promptly in answering queries?

Quality factors

- Quality—does it meet the specification? Are processes controlled to ensure it will do so consistently?
- Are the performance and life expectancy requirements satisfied?
- What quality methods and process controls are used?
- Is there an overall quality control system in place?

Sales assistance

- Will queries receive the appropriate personal attention of supplier representatives?
- Does the supplier help develop mutual markets? Will they recommend our products?
- Will the appearance of supplier's product enhance the value of my own product?

After-sale service

- Does the supplier have a service organization available to assist when and where I may need it?
- Is emergency service available?
- Will replacement components be available when I need them?
- Does the supplier provide training and education aids in the use of the product or services provided?

Customer service factors

- Will the supplier provide timely information on fulfillment of orders?
- What is the supplier's labor relations record? What is the history of strikes?
- Does the supplier value our business?
- What are the warranties and claims policies?

- Will the supplier respond promptly to rejected materials and provide credits, as appropriate?
- Will the supplier comply with customer policies and procedures?

2. TEAMWORK AND COOPERATION

PMs are unanimous in agreeing that teamwork and cooperation are essential to achieving effective source selection. It is becoming increasingly difficult for the buyer to personally represent the widely diverse interests of the organization. While engineering wants design assistance, perhaps manufacturing wants smaller lot sizes and shorter lead times, and quality wants process controls and six-sigma quality levels, and so on. Unless the buyer is so well versed in all the specific requirements that he or she can personally speak for each of them, a team is needed to make a sound source selection decision.

Some companies charter dedicated source selection teams to oversee the complex analysis required. As a minimum, these teams are normally made up of technical experts, manufacturing or user department personnel, quality systems professionals and financial experts as well as the purchasing professional. It is vital for the buyer to ultimately execute the purchase contract with a source acceptable to these various interests within the buying organization. That does not mean, however, that the buyer has abdicated responsibility for the performance of the chosen source. Therefore the buyer will want to assume a strong leadership role on the source selection team.

3. QUALIFICATION OF NEW SUPPLIERS

Qualification of suppliers is based on satisfactory assessments of selected criteria, such as those listed above that are essentially identical whether used when selecting new sources or evaluating current ones.

Before making a major buy from any new supplier, it makes sense to “qualify” the supplier, or to verify the supplier’s ability to perform as expected. When placing a trial order, it may be advisable to do a source inspection at the supplier’s facilities before the first shipment. Meeting with the supplier’s quality assurance personnel and other people who do the job helps gain confidence in their integrity and commitment to quality. Use a multi-function team and take a good look at the parts to be shipped, while also surveying the supplier’s processes, production methods and equipment. Using the same team approach, it pays to periodically visit and review events with key suppliers.

A major automobile manufacturer, known for its commitment to quality and low cost, stresses the word “*actual*” in qualifying or working with suppliers. This company emphasizes “the *actual* part, at the *actual* place of production, by the *actual* people doing the work.” The point is to avoid sitting in a conference room and taking the word of a staff person or salesman, but rather to witness the activity first-hand, to see what is *actually* being done. This approach is extremely effective in supplier qualification and in problem solving.

If the needed source simply does not yet exist, it may be necessary to implement a source development effort. Investing in or subsidizing the supplier’s cost of development and testing may make sense. Getting closer to a supplier’s product development processes is a key activity for the purchasing engineering function. Selection of the right source, along with negotiating the right price, are purchasing’s greatest challenges!

3.1 How Many Sources of Supply?

How do we spot check prices, or assure we are keeping up with current technology, or benchmark quality and delivery performance? The implication of these questions is that the purchasing manager should consider having a policy about using multiple sources of supply as a precedent to deciding from whom to buy.

Why have more than one source? If you split the business, how do you determine who gets what? Should you use two sources if one is more expensive? Are you concerned that a supplier may be unable to supply because it has suffered a catastrophic fire or flood? Whether to use single or multiple sources is a controversial subject. Some buyers argue that multiple sources reduce risk while increasing costs. At the same time, some companies today are using fewer sources based on the philosophy of developing a more productive relationship with a supplier through a mutual long-term commitment to work together.

Arguments for multiple (does not imply many!) suppliers are:

- Competitive supply provides leverage to ensure performance at reasonable price levels.
- Assurance of supply may be increased.
- Buyers have greater flexibility should a supplier’s quality slip, technology fall behind or they fail to maintain delivery performance.

Keeping multiple sources allows the buyer to become knowledgeable about competitive technical innovations. Unless the item is basic, how do buyers know which supplier will come up with technological innovation?

This is relevant when buying sophisticated electronics and tight tolerance mechanical items.

A major impetus to the movement toward single source has been quality legend W. Edwards Deming. One of Deming's 14 points about quality is to have a single supplier. He proclaimed you're lucky if you get one company who can make what you want. While recognizing his contribution to quality, Mr. Deming was probably not an expert on contracts. An acquaintance told how Deming refused to visit with General Motors until they agreed in advance to keep him on the job for a long time based on the assertion that the "transformation" would require a long-term commitment. The spokesperson mentioned that Deming didn't know what the PO read, but quoted him as saying, "I will bill you from time to time based on my belief of your commitment to my principles."⁸

Many have agreed with Deming's position on single sourcing, and some American automakers that single-sourced some items say the practice cuts down on component dimensional variability. They claim to be able to work more closely in meeting design and quality requirements if using fewer suppliers. They also claim it's easier to insist on a process for failure analysis when the supplier has total responsibility.

Believing the Japanese use only one source, some buyers jump on the bandwagon of the sole-source philosophy. But the truth is, the Japanese almost always have back-up suppliers. After 4 years of single sourcing with Inland Steel, Honda of America added both Armco and Bethlehem Steel as suppliers. As Honda's VP for Corporate Planning explained, "These new sources give us greater flexibility to meet our increased production and expanding operations."⁹

What are some practical arguments for a single source of supply? Consider the following:

- It's easier to work out delivery schedules as may be needed for just-in-time (JIT) delivery requirements.
- The supplier can be expected to share in continuous improvement efforts to provide savings and customer service benefits.
- Sometimes no one else is able or willing to supply.
- Concentrating purchases with one good supplier provides advantages of "economy of scale."
- Special dies, tools, molds or setup charges are often too expensive to duplicate.

⁸ "W. Edwards Deming: The Prophet of Quality," 1994 Wootton Productions' TV program.

⁹ *Purchasing*, April 10, 1986, p. 28B7.

- In the event of product defects or failures, corrective action can be taken sooner, as there is no delay in determining who supplied the defective parts.
- Requirements may not be large enough to warrant the added expense of testing and inventorying with another supplier.
- Suppliers who know they are solely responsible may be more accountable.

Yet, when only one source is used, competition is essentially eliminated after the initial point of partner selection. Single sourcing puts the burden of performance completely on the supplier partner, and in practice the supplying partner must step up to the challenge of true partnership. Some quality experts point out that if a backup source is available, each source will feel relief from responsibility.

A distinction can be made between sole versus single source. Sole source is said to mean there is no one else qualified or available, while single source means the buyer chooses to use only one of several available sources. So, it's usually beyond the ability of the buyer to overcome a sole source without a deliberate source development process.

Not all buyers have embraced the single source philosophy. Most experienced buyers prefer a backup. Typical reactions from buyers have been, "What if my supplier goes on strike, or burns down, or gets flooded out?" Those are good questions. Whether to have a backup source or use a single source depends largely on whether there is time to recover from delays or problems. Buying for a high-volume assembly line favors having an alternative. If buying for resale, or the buyer can wait for new shipments, perhaps a single source is enough.

When a single source does make sense, be sure to have the following provisions in place:

- A commitment from the supplier for disaster recovery and work stoppage contingency plans
- Cost-based formulas to determine in advance the basis for price increases or decreases
- A plan to deal with new technology development by competitors
- A joint improvement program, outlining specific cost and service improvement projects

Clearly a factor in determining a company's sourcing strategy is the degree of trust and the quality of the relationship with the supplier. If a buyer wants to use a single source, but still have backups, here's one way of achieving both objectives: Divide the business for the broader commodity

family, say castings, among two foundries. Give each supplier half the total purchase volume, *while sourcing all* of the volume of each pattern or of specific parts to a single supplier. This gives maximum item volume production to each supplier. Have an understanding that capacity will be made available for the parts that supplier does not currently supply, in case of an act of God or catastrophic problem. One automaker calls this approach, “single-source/dual-capability.” In many circumstances, this is a logical approach to this difficult buying dilemma.

A stated policy to use only one source limits the buyer’s options. Certain higher risk environments not only justify but also actually support a multiple sourcing strategy. Each commodity or item should be judged on its own. Wise PMs will decide upon and prepare a policy statement based on their specific situational needs.

4. SOURCES OF SUPPLIER INFORMATION

The buyer can find new sources for items that may be available primarily from (1) the Internet, (2) catalogues, (3) sales contacts, (4) other buyers, (5) trade journals, (6) trade directories, and sometimes (7) advertisements or timely literature.

Specific sources of information available to the buyer are:

- Internet Search Engines. Many search engines and sites are available to focus on specific commodities or topics. Three of the most widely used today for general searches are Google [<http://www.google.com/>], Yahoo [<http://www.yahoo.com/>] and Microsoft [<http://search.msn.com/>]
- Thomas’ Register of American Manufacturers by Thomas Publishing Co., 461 Eight Avenue, NY, NY 10001. Now also available on the Web. The paper version is issued each year and has long been the most comprehensive set of volumes available. It cross-references leading manufacturers, offices, and personnel, and the type of commodities manufactured. [<http://www.thomasregister.com/>]
- Regional Industrial Buying Guide. As an example, consult the Upstate New York Regional Guide issued by Thomas Regional Directory Co. Inc., 5 Penn Plaza, NY, NY 10117. Also available on the Internet at [<http://www.thomasregional.com/contacttrd.html>]
- Online Catalog (Library of Congress). The catalog information for many of these items has appeared in a number of traditional card catalogs located in the Library. [<http://catalog.loc.gov/>]

- Dun and Bradstreet, 99 Church St., NY, NY 10007. Phone: (212) 349-3300. D&B offers free information on economic trends. [<http://www.dbisna.com>]
- Sweet's Catalogs, F.W. Dodge Division of McGraw-Hill, 330 W. 42nd Street, NY, NY 10036. This comprises several complete sets of catalogs, published annually. For example, for the construction industry see [<http://sweets.construction.com/topic/swprod.htm>].
- MacRae's Blue Book, which indexes addresses, trade names, and advertisers. [<http://www.macraesbluebook.com/>]
- U.S. Office of Small Business, Washington, D.C. 20523. Identifies small and minority and women-owned businesses registered with the U.S. Small Business Administration (SBA). [<http://www.sba.gov/index.html>]

ISM's *Inside Supply Management* (formerly NAPM's *Purchasing Today*) includes its Economic Survey and commodity reports on various markets such as aluminum, foods, and paper. These are short overviews provided by experts within its Commodity Survey groups. Also listed are items in short supply, and those that are trending up or down in price. Another feature is a regional business survey report that breaks down the economy around key U.S. cities. Similar information is also available on the Web in the form of regular newsletters from such organizations as ISM, *Purchasing* magazine and *Industry Week* magazine, to name just a few.

Sales contacts are another excellent source of information and provide much of the information needed to keep buyers posted on new items, features, and so on. In addition, buyers from other companies are good sources of information on capable sources. ISM [<http://www.ism.ws/>] offers Groups and Forums, where buyers with common interests can exchange information and ideas.

For the global buyer, the following sources of information are also available:

- Chamber of Commerce of the U.S., U.S. Customs Service, 1301 Constitution Ave. N.W., Washington, D.C. 20229. (202) 566-8195. Details about trade are available from [www.traderoots.org].
- 2003 Canadian Trade Index, which is of particular use to buyers dealing with Canada. This is a database of more than 13,000 manufacturers, their products, trademarks, and brands. The cost is approximately \$112.00, available from Canadian Trade Index, One Yonge St., Suite 1400, Toronto, Ontario M5E 1J9, Canada. (416) 353-7261. Easier to try specific products at www.ctidirectory.com.
- 1997 (or most recent) U.S. Custom House Guide, by North American Publishing Company, 401 N. Broad Street, Philadelphia, PA 19108-9988.

The cost is approximately \$300. Contains Harmonized code, customs regulations, port cargo-handling capabilities, and other data.

- International Chamber of Commerce, U.S. Council, 1212 Avenue of the Americas, NY, NY 10026. (212) 354-4480. Available internationally at [www.iccwbo.org], or domestically at [www.uschamber.com/international].
- Sourcing Guide for Importers, UNZ & Co., P.O. Box 308, Jersey City, NJ 07303. This is a “how to” guide available free upon request.
- Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. (202) 512-1800. [http://www.access.gpo.gov]
- U.S. Superintendent of Commerce, Industry and Trade Administration, Bureau of East West Trade, Washington, D.C. 20230. (202) 377-5500.
- U.S. Department of Commerce, Maritime Administration, Office of Public Affairs, Room 3895 Washington, D.C. 20230. (202) 377-2746.
- U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.
- International Yellow Pages, sorted by country, city, and product. An 800 number found in the local phone directory can get Yellow Pages and White Pages from anywhere around the world. An example is the Italian Yellow Pages for the U.S. directory that is issued annually in English, and free upon request from AT&T, 412 Mt. Kemble Ave., Morristown, NJ 07960-1995.
- SBA Office of International Trade, 1441 L Street, N.W., Washington, D.C. 20416. (202) 653-6543. [www.sba.gov/oit/]

5. SUPPLIER FINANCIAL STABILITY

Let's suppose that a supplier not known to the buyer quotes a favorable price for a vital component. However, extensive tooling must be funded before production begins. If the supplier is under financial strain, delivery problems might arise and shipment of the end item to the customer could be delayed; as a result, promotion and marketing of the using company's product are delayed and customers who have placed orders are dissatisfied. Quality and engineering personnel may concur in judging the company a good source, but it is still the purchasing managers' job to ensure that the supplier can perform as promised. And, until satisfied with the company's financial stability as well as its technical ability, the buyer cannot be confident that the source will be reliable.

Unfortunately, in dealing with small or start-up companies, the amount of financial information available is usually inversely proportionate to the need. Consider that data from Standard & Poors, Dun & Bradstreet, and from

stockholder reports are available for large, established companies, but often little is available about the smaller firm—where the need to be cautious may be greatest! This is a concern, as about 90% of all U.S. corporations have assets less than \$1 million, according to the Department of Commerce. Yet these smaller companies are often excellent sources of supply, usually being highly flexible and eager to make items that larger corporations may have no interest in producing.

If a potential supplier refuses to provide a financial statement, it does not necessarily mean there is a situation being hidden from the purchasing manager. However, it would be questionable buying practice to place \$1 million worth of business with a company having a sales volume of \$50,000, or with one that doesn't give assurances of its stability. A shaky supplier faced with business failure may have to increase its prices sharply or allow lower quality by using cheap substitutes when confronted with the only other alternative, which may be to close shop. The supplier's financial problems may make the owner desperate to accept an order even at too low a price, hoping to fulfill it—only to find the company in deeper trouble leading to inevitable collapse. Hence, the PM must be alert to the financial stability of his or her suppliers.

The annual 10-K report, required of publicly held companies by the SEC, is another excellent source of financial and operating information. These reports are often available from the company's Website and are required to disclose significantly more information than the Annual Report to stockholders. A careful review of the 10-K report can uncover issues with management, pending legal actions, significant shifts in customer base, factory closings and many other areas of possible interest. While this document may not contain the answers to all the buyer's questions, it does provide a comprehensive view of financial and operational issues for further discussion with the supplier.

5.1 Credit Rating Reports

Many small companies, especially when privately held, do not issue financial statements. In such cases, a Dun & Bradstreet ("D&B") credit report can help by advising:

- General information on the supplier's facilities. If the report is clearly unfavorable, this can save the time and expense of a personal visit.
- The company's credit rating.
- Information on the company's ownership and management team, offering possible insight into their direction and stability.

- Description of the company's major products. If the company is already making something similar to what you propose to buy, it's less likely that you will have quality or delivery problems.
- Data on financial strength and profitability. A company with a healthy profit in a competitive industry is generally an efficient one. Conversely, the company with a record of losses is to be suspect for future business transactions.

Internal finance executives, too, can help the PM just as they help the sales manager—and in many of the same ways. They can:

- Classify suppliers according to their volume of sales, reputation, dependability, and performance.
- Help handle the problem supplier who, for one reason or other, must remain on the active list, even after financial problems are known.
- Analyze any suspect current supplier in relation to size and help buyers assist questionable suppliers who are worth doing business with, but who have special internal financial problems.
- Give objective operational information that the PM can use to better understand the supplier's finances and performance capabilities.
- Reduce supplier turnover and help eliminate unsatisfactory one-time purchases.
- Advise on new prospective global sources' trade practices and offshore reputation from banking connections.

It should be recognized that D&B ratings often report data given them by the supplier itself. Similarly, vital information can be withheld; and, while the practice is fortunately not too common, information may be falsified. The PM should recognize the potential weakness that either situation implies. If a D&B report is suspect, the PM can ask the supplier for bank references, or for the sources of money supplied to them, and follow through in contacting these sources for their advice. Customer references can also be of value in analyzing a supplier's condition.

5.2 Financial Statements

A typical balance sheet and a simple income statement as seen in Figure 5-1 A & B, both common financial statements, are used to describe a company's financial condition.

<i>A. Balance sheet December 31, 20xx</i>		Hypothetical and Simplified	
Assets		Liabilities	
Cash	\$ 2,000,000	Accounts payable	\$ 1,800,000
Government bonds	4,000,000	Accrued taxes	1,700,000
Accounts receivable	1,675,000	Total current liabilities	3,500,000
Inventories	4,500,000	Long-term liabilities	5,300,000
Total current assets	\$12,175,000	Total liabilities	\$ 8,800,000
Property, plant and equipment (net)	\$6,500,000	Net worth	
Goodwill and patents	1	Preferred stock	\$ 1,000,000
		Common stock	2,575,000
		Retained earnings	6,300,001
Total assets	\$18,675,001	Total liabilities plus net worth	\$18,675,001

<i>B. Profit & loss (or income) statement</i>		% of Sales
Net sales	\$13,000,000	100
Less		
Cost of goods sold:		
Material	6,450,000	49.6
Direct labor	1,400,000	10.7
Plant overhead	650,000	5.0
Selling and administrative expense	1,200,000	9.2
Depreciation	1,700,000	13.0
Total COGS	\$ 11,400,000	87.7
Operating profit	1,600,000	12.3
Other income (dividends and interest)	275,000	2.1
Total income	\$ 1,875,000	14.4
Less interest on bonds	290,000	2.2
Profit before Federal taxes	\$ 1,585,000	12.2
Less income taxes	824,000	6.3
Net profit (or income)	\$ 761,000	5.9

Figure 5-1. Typical Balance Sheet and Income Statement

The balance sheet shows the value of what the company owns (assets) versus what it owes (liabilities) and the owners equity (net worth) as of a particular date, normally the end of the accounting period. On the left side of the balance sheet is the assets column, listing all goods, owned property, and any expected receipts. On the right-hand side are the liabilities—those debts that are owed, some payable soon (current liabilities) and others over the longer term (such as bonds to be redeemed). Net worth includes stockholders' equity, which is the money put in by the owners of the business, as well as the earned surplus retained by the business to permit

growth. The total assets must equal (or balance) total liabilities plus net worth.

By reviewing the balance sheets for several years, significant changes can be detected. For example, new loans may have been necessary, or old loans may have been paid off. Inventories may have been increased to take care of increased sales, or reduced to show better performance.

The profit and loss (income) statement shown in Figure 5-1 B summarizes the financial transactions of a company over a specific period of time, normally a fiscal year. It shows the receipts from selling goods and from other income, such as interest on bank deposits or stocks and bonds. This statement matches these incoming funds against the costs of goods and other expenses in operating the company; the net profit after tax is what is left for the year. Of course, it is also possible to show a net loss, which would be a prime concern to any buyer.

5.3 Ratios as Guides

Ratios that show the relationships of various financial data help provide a clearer picture of a company's financial position.

Some of the ratios used in determining a supplier's financial strength are:

Working capital ratio: Current assets divided by current liabilities. Indicating the amount invested in current assets compared with the amount of current liabilities at a particular time, this is a general measure of a company's liquidity.

Acid test ratio: Cash and receivables divided by current liabilities. Comparing the amount of cash and receivables with the total current liabilities, this measure is more exacting than the current ratio in determining the firm's ability to meet its obligations with funds easily converted to cash.

Return on investment ratio: Net profit before taxes divided by fixed debt and equity; this measures the rate at which capital investment is producing profits.

Profit ratio: Net income after taxes divided by net annual sales, this shows the rate of earnings, after taxes, on net sales. Low profit may worry stockholders; what is more important to the buyer is the regularity with which a company has made a profit—evidence that it can stay in business.

Inventory turnover: Cost of goods sold divided by average inventory. Showing the number of times a company turns over, or receives and sells, its average inventory, this is a measure of how well the investment in inventory is being utilized to support production.

Debt to equity ratio: This compares the capital obtained by borrowing with the capital invested by owners. When this ratio is greater than one, it

shows that the amount owed to creditors is greater than the amount owners have invested. Any downturn in profits, such as unexpected loss of sales volume, rapid cost increases, or catastrophe puts a strain on management and may force the company to take undue risks to maintain operations.

Applying some of these ratios can provide some interesting information. How can the PM tell if the implications are positive or negative? Let's apply some of the above ratios to a hypothetical company, Amanda Kay Products (AKP), whose P&L statement and balance sheet were already shown in Figure 5-1.

As previously stated, the supplier's strength can be judged by a study of its balance sheet, together with its profit and loss statement. In this case, the working capital ratio—which shows the company's ability to meet its obligations and still provide for future growth—is 3.48, which compares favorably with an old rule of thumb that says the minimum safety requires current assets to be at least twice the value of current liabilities.

The acid test ratio for AKP, cash and receivables divided by current liabilities, shows a ratio of 1.05. This means the company has the financial strength to meet all obligations presently due. The profit ratio is $761,000/13,000,000 = 5.85\%$, which is quite healthy when compared to 3.64 for others in the field.

Inventory turnover is $8,500,000/4,500,000 =$ approximately 1.9, which raises a question about the company's inventory position. The size of the inventory appears high when we compare the other favorable ratios—but perhaps there is good reason for high inventory this year. Remember, inventory turnover will depend on the type of business and time of the year for cyclical businesses. Large inventories are dangerous because price drops can cause losses; they may also indicate a high percentage of finished goods that can't be sold.

Other ratios should also be checked. A trend of several years is more significant than a single year's report, since strikes or such other one-time problems as fire, flood, or debt repayment can make the one-year misleading. Year to year changes also show whether management is being made to "look good" for a short period of time. A company can show a profit yet be borrowing money, deferring payment of bills, or postponing purchases of needed equipment; or it may show a small loss in order to clear out a high-interest debt or provide improvements designed to place the company in a better long-range competitive position. Because of the complexities involved in interpreting financial data, it would be wise to check with your financial officer to ensure accurate conclusions are reached!

6. SEARCH FOR LOW-COST SUPPLIERS

Purchasing managers and buyers have to use their knowledge of the “ins and outs” of sourcing, both domestic and offshore. While material costs are often nearly the same in various countries, it is the labor content that makes the major difference in manufacturing costs. To demonstrate this fact, let’s look at the hourly compensation in various countries.

Table 5-1 Hourly compensation costs in various nations

Manufacturing Production Workers						
	1994			2002		
	\$/Hour	Percent	Rank	\$/Hour	Percent	Rank
United States	17.10	100%	4	23.15	100%	2
Canada	15.68	92	7	16.17	70	7
Mexico	2.61	15	9	3.47	15	9
Japan	21.42	125	2	20.18	87	4
Germany	27.31	160	1	27.72	120	1
United Kingdom	13.62	80	8	18.07	78	5
France	17.04	100	5	16.84	73	6
Italy	16.16	95	6	16.14	70	8
Sweden	18.81	110	3	20.94	91	3
Special Interest						
China	0.37	2	--	Est. 2.60	--	--

Source: 1994 Copyright DRI/McGraw-Hill, and reprinted with permission. The 2002 Data results from updating 1994 compensation using U.S. Department of Labor, Bureau of Labor Statistics issued September 2003.

Warning! Do not use the information in Table 5-1 to make sourcing decisions. Consider that changes between 1994 and 2002 in labor rates, stated in U.S. dollars, are based not only on wage escalation, but are also affected by fluctuation in foreign currency exchange rates. Therefore buyers should get the latest labor rate information *at the time of making the sourcing decision for each major purchase.*

The data in Table 5-1 may be helpful in analyzing these offshore suppliers costs, as comparisons can be made. As indicated in this table,

Germany in 2002 retains its #1 ranking, while #2 changed from Japan to the U. S., Sweden remained #3, and Japan moved to #4.

In the Western Hemisphere, average U.S. hourly pay in manufacturing rose from \$17.10 in 1994 to \$23.15 in 2002. NAFTA partner Canada remained at #7. While an overall increase in Mexico of nearly 33 percent in was the highest increase of all countries listed, they remained the lowest as in 1994. Mexico's advantage as allied within NAFTA continues with labor rates far lower than the others listed.

Newcomer China is listed because it is in a rapid growth stage. Motivated by competitive pressures, the purchasing function has pushed aggressively to attain "world-wide cost leadership." Awareness of relative labor costs is therefore pertinent and should be considered when making strategic sourcing decisions.

6.1 Computing Total Landed Cost of Acquisition

A key criterion to consider in making any source selection relates to total landed cost of acquisition. Following are several examples that demonstrate the importance of considering *total* costs:

1. Cost of Quality - Two suppliers who have comparable prices furnish an engine crankcase. However, Supplier B has experienced a higher rejection rate and as such appears inferior to Supplier A on the company's quality report. It might cost an extra \$5 each to cover inspection, which should be accounted for in Supplier B's total cost. However, on the production line, Supplier A's crankcases require sorting, and extra machine time to overcome machining difficulties because of "hard spots," which again enters the total cost equation for Supplier A. So, when the total cost of quality alone is included, it's possible supplier B's casting may actually be more economical than A's.
2. Lifecycle Cost - Lifecycle costs should be considered as another factor in total landed cost. If Brand A wears out in an average of 5 years, and the alternate Brand B lasts 15, three Brand A's will be needed in the course of the lifetime of one Brand B. So if the product will be needed for that span of time, A's lifecycle cost will be three times its acquisition cost, which should be compared to the original cost of B.

The professional buyer knows the price of the item alone is not all that must be analyzed, but also the costs associated with acquiring the product as well. The following checklist may be helpful to the buyer in identifying, analyzing, and quantifying total landed cost, assuming an offshore buy.

Many of the items will be relevant to a domestic purchase as well:

- Price in U.S. dollars
- Packaging, marking, and container costs
- Commissions to Customs broker/freight forwarder
- Fees for consultants or inspectors
- Terms of payment costs and finance charges
- Letter of Credit fee
- Translation costs
- Exchange rate differentials
- Insurance premiums
- Customs or other documentation charges
- Import duties
- Transportation costs
- Taxes imposed, such as foreign VAT
- Added inventory carrying costs if the purchase requires safety stock
- Extra man-hours needed based on greater documentation
- Costs of overseas business travel, international postage, telex, FAX, and telephone charges
- Miscellaneous and hidden costs: obsolescence, spoilage, damage and theft, and longer delivery time

Consider the following example in Table 5-2 that indicates total landed cost for a foreign purchase of a single power generator:

Table 5-2. Total Landed Cost Example

Item Description	Cost
Generator price	\$5,000.00
5% Buying commission	250.00
Insurance	98.00
Freight forwarder/broker	125.00
International freight	1,880.00
Domestic freight	<u>540.00</u>
Invoice total	\$7,893.00
Plus Customs duty	<u>150.00</u>
Total landed cost	\$8,043.00
Original item price	<u>5,000.00</u>
Extra charges	<u>\$3,043.00</u>

In this example, the “extra” cost equals 38% of total!

U.S. companies keep buying offshore to good advantage. However, the pendulum of costs has shifted. Any decision to source overseas should be made based on the best ultimate value since, as shown in the example above,

in many cases the “extra” cost can range from 25% to 40% of the quoted price.

6.2 Post-Selection Supplier Evaluation

How do buyers manage their supply sources? Assume a company has sales of \$1.00, and purchases of \$.53, thereby indicating a productive value-added of \$.47. In such a case, if a company doesn’t manage its suppliers, it is managing only about half of the cost of products sold, and this won’t hack it in a competitive environment. Throughout the performance period, buyers must tell suppliers what is expected. How high is high?

A buyer can manage suppliers by using a variety of day-to-day options, such as:

- Increasing or decreasing purchase volume
- Getting local stocking of items, for faster shipments and lower inventory
- Using competition to get the best package of price, leadtime, and quality
- Giving incentives for better supplier performance
- Dropping a supplier for poor service
- Taking legal action—as a last resort, hopefully (rather drastic)
- Reporting performance—quality, delivery, and other performance data

The term “managing suppliers” may bother some in the purchasing profession. Management may be defined as, “the art of making things go right” to properly address this concern.

With good job performance, the following desirable results are signs of effective supplier management:

- Near-zero rejection rates—at receipt and forward through the life of the end item delivered (today some buyers seek six-sigma quality levels, equivalent to a defect rate of only 3.4 defects per million pieces)
- Lowest total cost incurred
- Good supplier relations, with ongoing joint productivity improvement efforts
- Reputation of “Firm but fair!” with suppliers anxious to expand the business relationship
- The ultimate test—high customer satisfaction level

Some people resist the tracking of supplier post-award performance on the grounds that it’s the supplier’s job to perform, and they therefore only list the suppliers they plan to eliminate. Underlying this approach is often the concern that an elaborate system is needed, but this need not be the case.

There is value in knowing a supplier's performance throughout the performance period, and with the ability of the Internet to quickly transmit information around the world, this has become much easier and less expensive to achieve.

If buyers are to award business based on performance there has to be some standard of judgment. We are interested in a moderate, reasonable way to identify those suppliers that perform well and those that perform poorly. How we use the system is key. The focus is not on punishment, initially, but on communication to improve performance for the benefit of both parties.

Let's take the case of a supplier who has performed poorly, yet makes a commitment to get back on track. Surely, there is nothing more discouraging to such a supplier upon inquiry to be told, "We *still* think you're doing poorly." Conversely, nothing is more gratifying than to have the buyer formally acknowledge a positive turnaround. The emphasis, then, is a positive approach that can bring about improvement. Good suppliers can be superior ones, but for this to happen both the buyer and the supplier have to *know* how they're doing to help them to achieve superior results.

The following list was compiled from a survey of those who used a supplier rating system¹⁰ Purchasing managers rated in priority, on a scale of 1 to 10, the importance they attached to various aspects of supplier performance:

Quality of product	9.7
Competitive prices	9.4
Delivery dependability	9.0
Services offered: technical and other	8.0
Total cost reduction assistance	7.7
New product and R&D ideas	6.2

Some of the information analyzed by companies, but not used in then-supplier measurements, were:

Financial strength	5.2
Geographical location	4.3
Reputation	4.2
Other factors	2.0

¹⁰ Results of surveys from seminars by Pooler and Associates at the World Trade Institute, New York, Chicago, and Los Angeles, 1987–1993.

6.2.1 A Sample Rating Exercise

One supplier measurement system that continues to offer value is the purchase performance index. This index attempts to reduce all basic factors into one numerical rating, or "Ideal Index."

QUALITY RATING												
KIND & CLASS-IRON-CL2 PERIOD REPORTED 1st QUARTER												
VENDORS	3	16	21	27	35							
FACTORS	X	X	X	X	X	X	X	X	X	X	X	X
RECEIVED	126	243	132	98	57							
REC. INSP. REJ.	10	28	31	36	2							
LINE REJ.	5	12	3	4	1							
TOTAL REJ.	15	40	34	40	3							
% ACCEPT	88.1	83.5	74.2	59.2	94.7							
RATING (% ACC. x 40)	35.2	33.4	29.7	23.7	37.9							

COST RATING												
KIND & CLASS-IRON CL2 PERIOD REPORTED 1st QUARTER												
VENDORS	3	16	21	27	35							
FACTORS	X	X	X	X	X	X	X	X	X	X	X	X
PRICE 1 LB.	.19	.18	.16	.16	.20							
+DISCOUNT (10%)	.019	.018	.016	.016	.020							
+TRANS.	.171	.162	.144	.144	.180							
+VARIANCE CHGS	.021	.046	.051	.039	.032							
NET	.235	.264	.318	.325	.223							
RATING	33.2	29.6	24.5	24.0	35.0							

SERVICE RATING												
KIND & CLASS-IRON-CL2 PERIOD REPORTED 1st QUARTER												
VENDORS	3	16	21	27	35							
FACTORS	X	X	X	X	X	X	X	X	X	X	X	X
PROMISES KEPT	97	93	89	86	1000							
RATING	24.3	23.3	22.3	21.5	25							

VENDOR RATINGS (CONSOLIDATED)												
KIND & CLASS-IRON CL2 PERIOD RATED 1st QUARTER												
VENDORS	3	16	21	27	35							
FACTORS	X	X	X	X	X	X	X	X	X	X	X	X
QUALITY	352	334	297	237	379							
COST	332	296	245	240	350							
SERVICE	243	233	223	215	250							
CONSOLIDATED RATING	92.7	86.3	75.5	69.2	97.9							

Figure 5-2. Supplier Rating Example

A typical rating is composed of the traditional supplier performance areas of quality (assigned 40 points), price (35), and service (25). The percentages will vary according to the importance given each area in relation to the whole. Any such rating is composed of both subjective and objective factors. Figure 5-2 shows an example of an “Ideal Index” for supplier ratings for quality, delivery and price, then combining the three performance ratings to determine an overall rating as shown in the last box.

Let’s actually rate our fictitious company from earlier in this chapter. The Amanda Kay Products Co. (AKP) supplies controls for air conditioners. If all their shipments were acceptable over a period of time, a value of 40 points (maximum) would be assigned to quality, which indicates optimum performance. If some lots were not acceptable, the 40 points would be reduced proportionately. During one quarter, AKP supplied 2000 acceptable valves out of 2500 shipped. The quality rating therefore would be 2000 divided by 2500 times 40, which is 32 points.

The price rating is based on a maximum of 35 points. A list is compiled of all unit prices from each major supplier of *similar* interchangeable controls. To the list, transportation cost and the cost of nonrecoverable defective purchased material is added. While AKP will replace the 500 rejected controls, they usually will not make up the loss (assume \$500) that resulted from removing defective controls from units that had been assembled before the defect showed up. The new unit cost for each supplier is then determined. The lowest ultimate cost always will be given the full 35-point value. Since the price factor for AKP is 35, to determine a competitive supplier’s rating, the lowest cost is divided in turn by each of the other higher costs. The resultant ratio times the full 35 is the rating for each of the other suppliers.

The final rating is for service, which is usually a percentage of delivery promises met. The *delivery promise date* from the supplier is the standard for measurement, and not the requested delivery date. If a supplier never missed a delivery, the full 25 points are awarded. This rating may be adjusted based on such factors as outstanding sales help or expert engineering advice. As an example, the buyer applies this subjective factor to adjust the 25 points. Since AKP has delivered all lots on time, but has failed to take prompt corrective action on a leaky washer, 22 points are awarded based on the buyer’s judgment.

The composite rating, 100 points for perfection, is the total for the three measured areas. AKP scores 89, made up of quality 32, price 35, and service 22 points. A rating of 90 to 100 is excellent, 80 to 89 is good, 70 to 79 is fair, and below 70 is not acceptable. So, AKP is considered to have a rating of “Good.”

As previously noted, variations on the areas and points awarded can suit the specific company and its situation. For example, for some companies a designation of 50 might be more appropriate for quality, while the delivery weights a 20, cost competitiveness a 20, and service and reliability a 10. The data necessary to maintain this rating may seem daunting at first, but to put it to the test, first select a part family of major importance. Then gather the information only for the suppliers of that part family, monthly for 3 months. Remote locations can provide monthly data by e-mail or over the Web. Enter the information into a simple spreadsheet as in Figure 5-1, and run the “Ideal Index” calculations. How does this match with intuitive ratings? Have any opportunities to improve emerged from the analysis? Now the cost-effectiveness of the rating effort can be evaluated fairly.

6.3 How Valid Are These Ratings?

On the plus side of the ledger, ratings are useful in assisting suppliers to maintain required quality levels. Discussing ratings with a supplier will make them aware that their performance is watched. Again, communication has its mutual rewards! In most cases, and this is key—they will try to conform more closely to requirements if the ratings are *valid*. Moreover, reviewing the findings at the supplier’s plant is one good way to know that company’s management. Further, why not ask the supplier what they think of you as a customer? This often leads to some honest talk about problems that may have been causing needless friction!

A high rating to the superior supplier becomes a source of pride, while a lower rating can motivate the supplier to meet or better the competition to avoid a failure that could cost business. It is important to point out specific areas where suppliers are not up to standard; how can there be expected improvement without knowing the shortcomings? Unexplained ratings will seldom result in corrective action.

Price is probably the most difficult attribute to quantify. Some advocates of the system suggest awarding all points to the low-price supplier and none to the others. There is serious question about the wisdom of including data on price, although some do just that and believe it works for them.

Salespeople usually promote service, but it is difficult to assign a relative value, with the possible exception being broken shipping promises. Many intangibles exist in this area, such as the type of supplier help given, research and development facilities made available for tests, and the like. At best, service is subject—at least partially—to personal buyer judgment.

Trouble often occurs when trying to consolidate the individual ratings into a composite Ideal Index. In doing so, both subjective opinions and objective facts are combined. Who has the authority to say that quality is

worth 40, 45, or 50 points? Is it worth anything to buy a worthless item at a low price? What happens if a buyer gets an excellent item at a good price, but receives it too late to meet the customer's need?

One might consider using ratings based only on statistically measurable criteria. However, what about other factors such as assurance of supply? Also, a delivery in time to avoid a cost penalty might increase the value of the delivery service versus quality or price. Professional buyers will always try to avoid the method shown in Figure 5-3 below.¹¹



Figure 5-3. Not the Best Way to Select Suppliers

This chapter has focused on the process of selecting the right supplier for the job, followed by in-process evaluation of performance. But truly world-class performance cannot be achieved without building a world-class relationship with your suppliers—and this implies a long-term commitment as will be discussed in detail in Chapter 7.

¹¹ V. H. Pooler, "A Total Approach to Measuring Purchasing Performance – TREND," *Purchasing*, May 19, 1966.

Chapter 6

CREATING A GLOBAL VISION

The short-term goal of profitability, prevalent among American businesses today, encourages the option of either buying offshore or producing there to take advantage of lower labor costs. Some domestic companies have found themselves unable to compete in world markets. Companies have been caught in the squeeze of trying to stay competitive while satisfying customers who are themselves striving to meet the challenge of foreign competition. Global buying is perhaps the single most important development in purchasing today that helps keep the company's operation competitive.

Throughout this book purchasing is portrayed from a global outlook, but that does not imply that buyers should set their strategies or goals simply to *buy* offshore. Rather, the buying process is broadened and improved by a global buying perspective. Even if a buyer never buys, or has the chance to buy offshore, having a global outlook will give him or her greater insights to better handle domestic buying. Buyers don't know they've got the best buy unless they are looking at all options, including those from offshore. Because competitive advantage exists when a company makes products efficiently, and they buy what others can make more economically, it's not enough to make goods in the native country alone. If these products are sold elsewhere, they must be globally competitive.

By definition, world trade is, "To buy and sell worldwide." If a company sells worldwide, can it buy solely from domestic sources? Not likely. The political reality is that foreign trade is important as sovereign countries promote policies to protect their economic growth, increase employment, and maintain price stability.

The following summarizes some developments affecting trade:

- World markets are more complex, but provide new source opportunities
- Increased worldwide competition is a reality
- Bilateral trade agreements have emerged that aim to improve world supply by reducing trade barriers
- Countertrade (purchases in conjunction with sales) has become a necessity in many markets
- Many enterprises are redeploying capital and human resources on a global scale
- Companies worldwide continue to reorganize, to create greater flexibility with fewer people

There are advantages and disadvantages in worldwide buying and selling that need to be both understood and adapted into an integrated worldwide purchasing and supply management strategy. International competition can be healthy! Be aware of what's going on out there. The challenge is to put your buying leverage on the global bargaining table.

1. THE UNITED STATES AND WORLD TRADE

Let's begin with a look at some economic data pertaining to the United States and its trading partners. Table 6-1 shows the United States has the world's largest national economy.¹² With a gross domestic product (GDP) at \$10.42 trillion in 2002, the U.S. ranks 1st, and its foreign trade alone ranks as the world's fifth largest economy. Even California by itself, with a GDP of \$1.72 trillion ranks number 5.¹³ Japan and Germany rank second and third, respectively. Noteworthy is that the United Kingdom has advanced to #4 while several other the European countries have grown little. France is #5. Also significant is the rise of China to become #6. Canada is #8, and Mexico has risen sharply to #10. The GDP is the annualized commerce, adjusted for seasonal change and inflation. In 2003 the second quarter GDP was +2.4%, and includes many items such as the value of new homes built, capital investments, and consumer buys such as cars and food. However, stocks and bonds, welfare spending, social security payments, and Medicare are not included. Any unreported economic activities are not measurable and are also not included.

¹² *Data source:* GDP data from World Development Indicators, World Bank database, July 2003. Export data from WTO, "World Trade in 2001 – Overview"

¹³ U.S. Department of Commerce, Bureau of Economic Analysis, May 22, 2003 news release.

Note that the GDP data is for 2002 while the latest available data for merchandise exports is 2001. Europe, the United States, and Japan make up about 70% of the free world's gross national product.

Table 6-1. GDP and World Trade for Major Nations

Country	GDP 2002	Merchandise Exports 2001	Percent of Export Trade
USA	10,417	731	11.9
Canada	716	260	4.2
Mexico	637	159	2.6
NAFTA Total (3 countries)	11,770	1,149	18.7
Japan	3,979	404	6.7
Germany	1,976	571	9.3
United Kingdom	1,552	273	4.4
France	1,410	322	5.2
China	1,237	266	4.3
Italy	1,181	241	3.9
Spain	650	230	3.7
Russian Fed.	347	103	1.7
World Totals	32,252	6,155	100.0

1.1 The U.S. Trade Deficit

As the economic leader of the free world, Americans champion “free trade.” An analysis of the U.S. international merchandise trade deficit shows ebbs and tides. From a deficit of \$167.1 billion in 1986, the deficit was reduced to about \$100 billion in 1991. But, as of May 2003 with exports at \$974 billion (includes merchandise and services), and imports at \$1,342 billion, the result is an annual deficit of \$368 billion, a drastic increase from 1995's \$162 billion. The Congressional Budget Office now is expecting a rise to about \$500 billion in 2005. The largest deficit with a single country is \$103 billion in 2002 with China. Regardless, the U.S. destiny is global, with its sphere of influence greatest under the North American Free Trade Agreement (NAFTA) begun in 1993.

1.2 North American Free Trade Agreement

NAFTA puts under one grouping the GDP of Canada, Mexico, and the U.S. Think of it—416 million people with a productive output of close to \$12 trillion. The president's Enterprise for the Americas initiative seeks to

expand the NAFTA type agreement throughout North, Central, and now South America. The Free Trade of the Americas (FTAA) was agreed to in November 2002 for an expansion of NAFTA (Cuba not included) that is planned for 2005. This expansion was initiated by 34 countries at the Summit of the Americas in 1994, and will encompass a population of about 800 million people.

Negotiations are to include tariffs on goods and services throughout the Western Hemisphere. This is expected to benefit the Latin countries, but roadblocks occur. For example, Brazil wants the U.S. to stop subsidizing nearly \$180 billion over 10 years to grow wheat, corn, soybeans, rice and cotton, as these U.S. exports are in competition with Brazil, a leading agricultural exporter. The U.S. response has been that until Europe drops its high subsidies, ours must stay in force. But progress comes slowly. The first accord since FTAA was blessed occurred when Chile signed the U.S.- Chile free trade agreement in July 2003. Chile immediately eliminated tariffs on 85% of goods traded between the two countries.¹⁴

Key provisions of NAFTA originally called for:

- Tariffs on farm produce are eliminated over 15 years.
- After 8 years at least 62.5% of autos must be produced in North America to remain duty-free.
- Limits on bank ownership were to be eliminated by the year 2000, but have been delayed.
- Environment, health, and safety laws cannot be overruled.
- Professionals and executives can cross borders freely, but limits to Mexican emigration will remain.
- "Rule of origin" requires that all garments be made from yarn or fabric made in North America.
- Free access of trucks to cross borders will be phased in, but again there has been some delay.

The objectives are now focused on eliminating barriers to trade, and promotion of conditions of fair competition. Special emphasis is on protection of intellectual property rights, and encouragement for further mutual cooperation to enhance this agreement.

Although much has been written recently regarding our trade partners south of the border, Americans often underestimate the extent of our trade with our northern partner in Canada, which accounts for approximately \$210 billion of trade between our countries. The U.S.- Canada trade partnership has prospered, with the two countries making up the largest single trading

¹⁴ International Outlook, *Business Week*, June 16, 2003, page 53.

partnership in the world. Japan is the United States' second largest partner and closing rapidly.

Total Canadian nominal exports of goods exclusive of services were \$260 billion in 2001. Exports to the United States make up about 80% of all Canada's exports, and the cross-border movement of goods continues to grow.

Among America's trading partners, Mexico is third, following Japan. Mexican reforms have made their economy attractive for American trade and investment. And, recent financial data indicate Mexican growth has more than doubled since 1995. Seventy percent of Mexican trade is with the U.S. as Mexico, because of low labor rates, relatively minor bureaucratic regulation, and gradual reduction of corporate taxes, has been an attractive alternative to buying from the Pacific Rim. Also, customs duties have been substantially reduced or eliminated. However this rosy picture is changing rapidly. China is gaining quickly and making strong inroads as is explained when the Mexican maquiladora operations are reviewed later in this chapter.

2. BILATERAL AND MULTILATERAL TRADE AGREEMENTS

The most famous of the multinational treaties is the Geneva Accord on Trade and Tariff (GATT), which extended the same customs and tariff treatment given to the most favored nations (MFN). When buying from a country with MFN status, a favorably low duty, usually less than 4%, is levied.

Eight rounds of negotiation has shaped the GATT, most notably the Tokyo and Uruguay Rounds. The leaders of the free world attended these rounds. At the Uruguay meeting on January 1, 1995, the World Trade Organization (WTO) was created. The WTO with 146 countries in agreement was founded on the principle that trade should be as free as possible, and that a country should treat all trading partners equally. A legal system for settling disputes, and a surveillance mechanism to review each country's trade policy was established. The U.S. use of the "fast-track authority" for the President is credited with success in recent rounds. Fast track requires that Congress cast a "yes or no" vote within 90 days without amendments. Fast track was rescinded in 1998 and reinstated recently.

As the WTO widely expanded the rounds, their meetings have produced protestors opposed to expansion of free trade. Not everyone agrees about the definition of "free trade." They see it as putting the interest of big business

and the U.S. and E.U. ahead of poorer countries.¹⁵ The demonstrators contributed to the collapse of WTO talks in Seattle in 1999. The latest round launched in 2001 that is supposed to last until 2004, has more than 4,700 delegates meeting at Cancun, Mexico. A reported 15,000 protestors gathered to show objection to the delegates who are trying to break an impasse over subsidies and market protection especially around agricultural products. The point is clear: trade negotiations are contentious.

Often subject to political changes, MFN tilts buying decisions away from nations without that status by having duties levied of 25% to 45%. MFN status for a given country changes with the times. As an example, Congress often debates taking MFN status away from China, unless they change their human rights position. Now, Russia also has MFN status since they espouse a more open market approach.

2.1 Regional Trade Agreements

The World Trade Organization Website reported in 2003 that the vast majority of WTO members are party to one or more regional trade agreements (RTAs). Some 250 RTAs have been notified to the GATT/WTO up to December 2002. The WTO reported on its Website that “over 170 RTAs are currently in force; an additional 70 are estimated to be operational although not yet notified. By the end of 2005, if RTAs reportedly planned or already under negotiation are concluded, the total number of RTAs in force might well approach 300.”

Other examples of multinational treaties are the free trade associations that foster unrestricted trade among its members. Among well-known associations are those countries in the Pacific Rim that formed the Association of South East Asian Nations (ASEAN). Members include Indonesia, Malaysia, the Philippines, Thailand, and Singapore.

The European Free Trade Association (EFTA) includes Austria, Denmark, Norway, Sweden, Portugal, Switzerland, and the United Kingdom. The Latin American Free Trade Association (LAFTA) includes Argentina, Bolivia, Brazil, Chile, Columbia, Ecuador, Mexico, Paraguay, Peru, Uruguay, and Venezuela. The Caribbean Free Trade Association (CARIFTA) members are the United Kingdom's Cook Islands and include Guyana, South America.

The Caribbean Basin Economic Recovery Act, known as Caribbean Basin Initiative Act (CBI), was designed to help 22 smaller nations by eliminating duties on U.S. buys. Most products from the area are eligible, but must meet a 35% of appraised value requirement.

¹⁵ *Syracuse Post Standard*, September 10, 2003, page A5.

These agreements are intended to strengthen and benefit the U.S. and our friendly neighbors to promote productivity, full employment, and friendship. Further, they are expected to contribute to expansion of world trade.

Quotas and trade agreements try to balance trade, though they're not doing the job very well because conflicting national interests are at work. Foreign trade, viewed as an engine of growth, is often subjected to too much political influence. All governments, including that of the U.S., try to provide favorable conditions to win jobs and greater exports. So, we have summarized the complex and constantly changing scope of global trade that is affected by many trade agreements. The American buyer must make sourcing decisions with consideration of the global trade situation.

3. THE PURCHASING ROLE

Some buyers hesitate to buy overseas, believing it is too complicated. After all, many buyers are inclined to buy locally, in state, or in the U.S. rather than internationally. Others mistakenly conclude that global buying is little different from buying locally, and that procedures for doing business abroad are much the same as doing business in the U.S. Look at it this way: If a buyer is located in New York, buying from Los Angeles isn't quite as easy as buying locally. And when buying offshore, the sourcing complications can become greatly magnified.

The task of developing global supply alternatives is a part of the procurement planning process. To begin to understand the process, talk with other buyers who now buy internationally. Go to a seminar on this subject, and attend meetings sponsored by purchasing groups such as the Institute for Supply Management (ISM). Buying guides for most major foreign trading countries are available, and there are many sources of country-specific guides to doing business available on the Internet.

There are advantages and disadvantages in worldwide buying and selling. What's wrong with local buying? Nothing-- provided you get good results, but, as noted previously, the buyer won't know this without also testing global markets.

3.1 The Expanded Role into Global Purchasing

When buying offshore, the overall objectives of purchasing process are the same! But, the scope of the job expands greatly. Buyers today must conscientiously seek to expand their outlook toward global sources. When a child picks up a lump of coal he sees a rock to throw, while in the same lump of coal the engineer sees a source of heat energy, the BTUs to cook a meal.

Yet, the nuclear scientist sees enough pent-up power, if released by nuclear fission, to propel a ship across the Atlantic.

Likewise, the buying job may look the same to some, but global purchasing is an expansion of an already complex job. There are few limits to the variety and type of global buying arrangements that buyers can carry out. It's a matter of outlook. What do you *see* when you think of global purchasing? The purchasing manager's and the buyer's vision can no longer stop at the nation's borders. Purchasing should be viewed within its global environment.

3.2 Emergence of the Global Corporation

Joint ventures and the quest for world trade growth have led to the emergence of the "global corporation." A *joint venture* may involve a co-production arrangement to manufacture in a host country that might provide the land, raw materials, buildings, and labor. The other partner could provide technology, some production machinery, and perhaps financing. The partners share the production output.

Other countries, particularly developing countries, often want part of the trading action. Trade from state-controlled economies has also been increasing, and in these managed economies, American buyers often must deal directly with governments, as well as with the trading partner.

3.3 Expansion of Countertrade

Far Eastern countries seek access to America's technology, but they often lack hard currency to purchase it outright. So, in effect they have said, "We'll buy from you, but you should buy from us. Of course, you (the buyer) must pay us in dollars." To make sales, the seller must go by then-rules because they've built it into their contracts! This is known as countertrade and it is found in perhaps as much as 20% of today's world trade.

Countertrade can be defined as, "Any transaction involving exchange of goods or services for something of equal value." Sometimes cash is used to pay for any value differences. There are a variety of types of countertrade including barter, counterpurchase/buyback, and offset.

"Barter" is a direct swap of materials or goods without funds. An example would be an exchange of Russian oil for American wheat.

"Counterpurchase," or "buy-back," is when the seller agrees to buy a portion of the value of the sale from the buyer. About twenty-six percent of countertrade volume is of this type, in which the sale of a company's product

is tied into a separate agreement whereby the seller agrees to buy from within the country to which the sale was made.

“Offset” is the most common form of countertrade, making up more than one third of countertrade volume. The term comes from the activity in which a seller is obliged to “offset” the sale, usually by purchasing a set percentage of the sales value in goods, materials, or services produced in the buyer’s country. In a *direct offset*, for example, in the sale of military aircraft the seller may agree to buy the tail section or some other subsystem from the buying partner. Similarly, an indirect offset may take place that entails a transaction not directly linked to the sale. This can become truly creative! Examples of actual *indirect offset* purchases have included panty hose, vacation excursions, and wine!

It is clear why countertrade activities impact the purchasing function. Enlightened U.S. companies will embrace countertrade to help ensure future sales of their products overseas. They can meet foreigners’ demands that sales be matched by purchases from them in some way. And, sometimes this is the only way to make sales to developing countries, which essentially use countertrade to finance their major foreign procurements.

These trade tactics affect the buying job in a significant way. Over half of those responding to a survey in Pooler & Associates seminars said their company made such deals in the past year. Another survey showed that 83% of buyer respondents are partners in countertrade activities. In 34% of the responses, the purchasing function is responsible for finding internal uses for countertrade goods. Fifty percent reported they could use 100% of accepted goods within their firms, while the other half had to search for distribution channels for disposal of goods and services acquired through countertrade.

3.4 Offshore Sourcing Issues

In the author’s seminars, managers doing offshore sourcing often report 15% to 30% lower prices than buying domestically. As a general rule, material cost savings of less than 15% may not offset the added costs to buy internationally. As always, purchasing’s aim should be to buy the right quality at the lowest total landed cost.

As we begin to consider constructing a global program, the buyer should review the following foreign sourcing issues:

- Incentives to consider foreign sources
- How to begin buying offshore
- The foreign purchase contract and documents used
- Customs regulations
- Cultural and business differences

What incentives exist to consider offshore sourcing in worldwide markets? When surveyed about reasons for offshore buys, managers reported as follows: Price (74%) was the major reason for going offshore with price advantages in a few cases approaching 40%. Quality (46%) was second, and uniqueness (41%) third. Following were the increased number of suppliers (35%) where there was inadequate domestic supply (better deliveries), increased exposure to worldwide technology (23%), the need to become globally competitive (21%), and the need to meet supplier's offset requirements (5%).

Foreign sourcing keeps domestic sources competitive! Often, the mere threat of buying internationally brings price reductions and service improvements from domestic sources.

4. HOW TO CONDUCT A GLOBAL BUYING EFFORT

Let's assume you're just starting to source overseas. The following steps provide a useful checklist:

1. Sell yourself on the concept by testing the marketplace.
2. Decide what you want to buy. Start with simple, non-critical items, as early efforts need to be successful.
3. Gather all information relative to your purchase requirements: specifications, drawings, and samples.
4. Determine quantity and timing required. Unlike a domestic supplier where ground shipment time is a few days, a foreign supplier usually requires a considerably longer delivery time. Decide what proportion of annual usage to source abroad, and consider having a domestic backup source allowing for occasional shipping problems.
5. Define quality requirements, including packaging. Don't underestimate the importance of knowing exactly what's needed. Consider that packaging that is satisfactory for a domestic truck shipment won't necessarily hold up on a freighter in rough seas.
6. Communicate with others who have experience with international buys. Don't go it alone as other buyers may have solved similar difficulties. The first new barrier to communication is language. Find and develop contacts abroad carefully.
7. Set a target price. To be advantageous, and as a general guideline, price should be 15% to 20% under current cost, including freight. In practice, some companies won't source overseas unless there is at least a 20%

improvement, while others will settle for 10%. A total dollar volume target is also needed.

8. Decide how you will buy:
 - Direct from the foreign company
 - Through local representatives
 - Through trading companies
 - Through specialized independent agents or brokers
 - Through affiliate companies or another in-house division with contacts or experience in various international markets
9. Prepare yourself for discussions and negotiations as a team, allowing adequate time to fully explore all details. Experienced overseas buyers tell of how many a deal was botched because someone assumed something would be done and it was not done.
10. Visit suppliers only when your volume is sufficient to justify the transaction, and you have firm leads or quotes and are ready to buy. Supplier visits may not be needed for all buys, but if they are, be well prepared.

When buying globally, it is important to consider the differences that affect buying offshore. Examples of procedures required for international but not for domestic purchases are routing of shipments through foreign countries, clearing through Customs and paying the proper duty. International purchasing is additionally more complex because of transportation distance, language, terminology, fluctuating currency exchange rates, customs duties, methods of payments, and general business practices. Also, legalities differ between two contracting parties operating across national boundaries. Do your homework! Study literature, foreign business methods, and culture.

The following compares the major purchasing issues and activities between offshore and domestic suppliers. Put another way, experience has shown some disincentives or roadblocks to successful offshore sourcing are:

- Language barriers
- Nationalism and attendant local source preference
- Lack of knowledge of the foreign supplier's culture
- Customs regulations and duties
- Currency exchange rates
- Lack of detailed planning

The following Table 6-2 compares domestic and international buying across numerous dimensions:

Table 6-2. Purchasing Activity Comparison - Domestic Vs International

Purchasing activity	Domestic	International
Political/government	Seldom involved	Often exert direct control
Business environment	Stable rules	Unfamiliar rules, diverse and changing
Sourcing	Relatively homogeneous market	Fragmented markets, much more complex
Legal oversight	State laws, UCC	GATT/WTO, and trade treaties
Scope of buying job	Broad	Far more expansive
Supplier relationships	Important	Fragile, demanding, time consuming
Countertrade	Illegal	Part of sales requirement
Determine need	Actual sales, manufacturing schedule	Required to forecast
Inventory impact	Cover immediate needs	Longer term needs; longer supply lines
Specifications	Technical and quality	Technical, quality, packaging, handling, financing and import/export
Source information	Comprehensive data	Incomplete and not standardized (Web is improving)
Communication	Single language	Multiple languages require translation
Dispute settlement	Negotiations and litigation	Often arbitration
Negotiation	Common ground rules	Cultural differences complicate process
Placing the PO	Standard procedure	Added complexity and clauses
Documentation	Standardized	Unique forms to execute
Payment	Open account	Letters of Credit, and documentary drafts
Exchange restrictions	Single currency	Currency risks, varied value and stability
Tariffs	None	Variable and sometimes substantial
Distribution	Air, rail, truck	Often multi-modal including ocean transport
Insurance	Blanket coverage	Include marine, if applicable

In addition to the added complexities, there are many hidden costs in foreign sourcing. Ordering and administrative costs are generally higher than

those relating to domestic purchases, as more purchase documentation and extra paperwork are required. Increased costs additionally result from overseas business travel, international postage, FAX, and telephone rates.

As can be seen from the foregoing, the cost and complexity differences between domestic and international sourcing would appear to be significant and daunting! But there are also rewards if the buyer is willing to invest the time to master the challenges of global buying.

Within their own companies, buyers are exposed to every other department to some degree. They work with different people with varying temperaments both within and outside of their companies. But who has the need for broader outlook more than global buyers who deal with other cultures and business practices? They encounter different technologies, varied products, and ways of conducting business, as well as the complexity of global transportation systems and the unique legalities of international business.

In the ideal example of global buying, a company that has divisions in 15 countries seeks to get maximum value at all locations. Buyers use not only the other divisions' purchase volumes to enhance their own division's purchases, but truly global buyers use their knowledge of global markets to gain competitive advantage to get the minimum total landed cost for all buying operations, worldwide.

Using the global marketplace, the buyer gains leverage to keep domestic suppliers' prices competitive. Exports provide capital and jobs for the local economy, while imports provide capital and jobs for offshore suppliers. Buying goods abroad at a lower price and better quality increases U.S. consumers' collective buying power. As a result, real income rises, thereby providing a higher standard of living.

5. ENTRY STEPS TO CLEAR CUSTOMS

One of the complexities in global buying not encountered in the domestic case is the Customs clearance process. This section identifies the steps and specifics involved. There are five customs clearance steps: (1) entry, (2) valuation, (3) examination, (4) appraisement, and (5) liquidation. Entry can be made through almost 300 ports of entry into the U.S. Imported goods are not legally entered until the entry process is completed. Entry for consumption consists of filing documents to determine whether merchandise may be released from Customs custody, and to allow duty assessment and the gathering of government statistics.

Delivery of the merchandise has to be authorized and estimated duties paid. Within 5 days after the cargo has become available, an entry permit,

Customs Form CF 7501 obtained from the U.S. Government Printing office or commercial printers, must be filed with the inspector at the incoming pier or airline terminal, along with the estimated duty payment. A commercial invoice is also needed to compute the amount of duty owed. The owner, buyer, or licensed customs broker may enter goods.

A bill of lading, airway bill, or carrier's certificate identifies the consignee and gives evidence of shipment and the right of the consignee to make entry. Original bills are needed to get the Steamship Company Release. Usually a shipment is consigned to a specific company, individual, or "To Order" (to the bank or to shipper), depending on the method of payment. If consigned "To Order," the bill of lading properly endorsed shows the right to make entry.

Details on the invoice are prepared according to Section 141.86 of Customs Regulations, and commercial practice. Customs wants the Harmonized code number shown on the left-hand side of the invoice, close to the item's name. Any discounts, rebates, commissions, and royalties must be shown on the invoice. While the invoice may state quantities in weights and measures used in the United States, the Customs entry must state quantity in metrics.

5.1 Immediate Delivery (I.D.) Entry

An article for urgent display at a trade show, or perhaps delicate equipment susceptible to damage, can be immediately released by using special permit Entry/Immediate Delivery Customs CF 3461. I.D. Entry certifies that a bond is current, and requirements for entry have been met. Upon approval, the buyer is free to take over the shipment, but within 10 days of arrival you must still file an Entry Summary CF 7501.

"Demurrage" is the payment for holding of goods beyond the allowed time. Goods not cleared within the prescribed period are considered unclaimed, and Customs sends unclaimed merchandise "into General Order," which is the storage warehouse. The cost to reclaim merchandise can be quite high, and if left unclaimed for one year, goods may be sold at auction.

Mail Entry is useful for smaller, low-valued parcels. The Post Office delivers the goods to the consignee, and if the value is less than \$1,250, collects any duty at that time, and makes the entry for a \$5 fee. The packages must have a customs declaration attached, and this form is available at post offices worldwide. The package must contain a statement of value and be marked, "Invoice enclosed." Personal shipments up to \$1,250 and duty-free merchandise need not be cleared. If the value is more than \$1,250 a formal Customs entry must be filed with the nearest Customs port.

5.2 Types of Transportation Entries

Customs routinely advises carriers that goods are subject to inspection by “Transportation Entry and Manifest of Goods Subject to Customs Inspection and Permit” CF 7512.

A short serial numbered card, Transportation Entry and Manifest of Goods CF 7512-C, is checked to show the type of entries listed below:

- Immediate Transportation Entry
- Transportation and Exportation
- Warehouse Withdrawal for Transportation
- Immediate Exportation

This same form is also a permit to move goods to a duty-free zone. To clear Customs at a different port than arrival, the merchandise may be transferred “in bond” to that other Customs area. An example would be unloading goods in the Port of New York, and delivering part of the shipment by bonded carrier to Canada.

A Customs bond is a signed contract that ensures performance imposed by law. The bond may be in negotiable or non-negotiable form. There are usually three parties to a Customs bond: (1) the principal (your company), (2) surety, and (3) the beneficiary (the U.S. Customs Service). Surety is a third party who agrees to pay if the conditions of bond are not met; in the event the principal can’t or won’t pay.

An Immediate Exportation or I. E. Entry is prepared when merchandise is exported immediately from the same port of entry. These special type entries are indicative of the arrangements that can be worked out.

5.3 Customs Duty Valuation

A tariff is a “list of duties,” a schedule or system of fees. Duties are determined by Customs, usually at an “ad valorem” (according to value) rate, and are a percentage of the dutiable transaction value. Transaction value is defined as “the price the buyer actually pays the seller,” which includes packaging costs and the value of any “Assists” that are not included in the price itself.

“Assists” includes any materials or items that are part of the finished imported item, as well as any supplied tools, equipment, dies, or molds that were used in production.

5.4 Examination

Before the goods are released, the Customs district or port director may choose to examine the merchandise. Examination may be made on the docks for bulk shipments, at container stations, cargo terminal, or on your premises.

Examination is to determine:

- The value of the goods and their dutiable status
- Whether goods are those that are invoiced
- Whether the goods were marked with the country of origin or require special marking or labeling and if done properly
- If any articles are prohibited
- Whether the goods are properly invoiced or are more or less than ordered

Perhaps 5% of goods are physically inspected. This undoubtedly will increase as a direct result of the 9/11 attacks, and the growing fears that terrorists might smuggle explosives in with other goods.

5.5 Country of Origin Marking

Section 304 of the Tariff Act states that each imported article is to be marked in “a conspicuous place as legibly, indelibly, and permanently as the nature of the article permits, with the English name of the country of origin, to indicate to the ultimate consumer in the United States the country in which the article was manufactured or produced.” This marking must be permanent, and it must be large and legible enough to “be read easily by a person of normal vision.” The supplier must use the words, “Made in ...” or “Product of ...”. Adhesive labels aren’t recommended, but are acceptable if approved. CF434 Certificate of Origin is used.

Articles that: (1) can’t be marked, (2) would be damaged if marked, (3) would be excessively expensive to mark, or (4) are to be entered into warehouse for immediate export, are exempted from individual marking of country of origin.

5.6 Certificate of Origin

A United Nations Conference on Trade and Development (UNCTAD) Certificate of Origin Form A is often needed for goods more than \$2,500 in value. This certificate permits buyers to gain duty-free or reduced rate status under the GSP provision (to be covered later in this chapter) or other trade arrangement. To secure reduced tariffs, a minimum of 35% of local content

is usually required, along with proof of the origin of any materials and labor used to produce the goods.

The Exporter's Certificate Of Origin, Customs Form 434, used by Americans and a similar bilingual form B-232 for Canadians is important. While it does not have to be used for entry, it must be produced upon Customs request. One of the Rules of Origin requires that 50% of the value of the goods must be either U.S., Canadian, or Mexican origin to be duty-free or receive special duty under the NAFTA agreement. As these are elaborate rules detailing phased tariff reductions of specific items, the buyer will want to get a copy of this agreement published by Customs.

Usually, the Certificate of Origin is issued or approved by the Chamber of Commerce from the shipping country. Consulates and trade association officials sometimes sign them.

5.7 Appraisalment

The Customs Service finalizes its appraisal decision after entry is made, but before liquidation. To compute value of shipment for Customs declaration purposes, any foreign currency denoted must be converted to a U.S. dollar amount by using Customs conversion rates. Conversion is per provision 31 U.S.C. 5151. The *date of exportation* is used to certify a rate regardless of time of payment for the goods themselves. These rates are set by Customs and must be used. For estimation purposes, they are close to the exchange rates published in the *New York Times* or the *Wall Street Journal*.

5.8 Liquidation

Duties are not official until "liquidated" (meaning completed) after several weeks or months. Customs has one year from date of entry to liquidate, or tell the importer that the entry is to remain open. Any under or overpayment is rectified.

5.9 Methods of Payment

The "open account" method of payment, normally used in U.S. domestic trade, means the goods are sold on credit. In such case, buyers pay after they receive the goods, and payment is made without any documents other than perhaps an invoice. Delays in processing payments across borders tie up suppliers' capital, so the open account method usually isn't allowed by most offshore sources, and is prohibited by law in many countries.

Most European and some South American suppliers don't wait for buyers to pay by invoice. Instead, they present a draft to a bank that triggers payment against the buyer's funds. A draft is simply a check-like form drawn on a bank. Known as "payment by collection," this method is less expensive than a formal Letter of Credit.

Although the offshore supplier typically prefers payment before shipping (and preferably in cash), most buyers prefer to pay after they use or sell the goods. Credit worthiness becomes a dominant issue in offshore buys. Several credit payment methods built on the concept of "constructive delivery" are used to break any standoff between buyer and seller. Banks give their assurance of payment provided the supplier presents certain documents as stipulated in the buyer's conditions.

Documentary Credits and Letters of Credit, often termed simply "Credits," means any arrangement by which the payment stalemate is broken. Banks in more than 160 countries subscribe to agreed rules for documentary credit banking procedures. The International Chamber of Commerce spells out the details in its UCP 500, or "The Uniform Customs and Practices for Documentary Credits" that became effective in 1994. Changes were made in 1995, and continue to be made to adapt to practices.

All credits must clearly state whether they are available by sight payment, by deferred payment, by acceptance, or by negotiation. For most offshore buys, we can place payment methods into three major groups used by businessmen for international trade: (1) Collections, (2) Letters of Credit, and (3) Banker's Acceptances.

Collection consists of payment upon tendering to banks of the proper documents associated with a purchase. The financial document is the sight or time draft. This collection method is easier than the formal Letter of Credit procedure and costs less.

The draft method is either:

1. A clean collection, meaning no other documents are required beyond the draft.
2. Part of the documentary collection explained above, consisting of the financial document, plus specified commercial documents such as a bill of lading, invoices, and certificates of origin. Sometimes other certificates such as inspection and insurance are needed as well.

The draft cannot be canceled without agreement between the parties. It resembles a bank check, and two types are used. The first is called *Documents Against Payment (D/P)*, where the documents are released to the buyer upon payment of the draft. The other is called *Documents Against*

Acceptance (D/A), where payment is made when the buyer accepts the goods.

The draft will be either a (1) sight draft, or (2) a time draft, with the former being the more commonly used. It means payment will be made upon presenting, or on “sight” of the draft. A “time draft” is a payment to be made within a stipulated time after being presented. *Tenor* is a term applying to the time delay in payment, normally 30 or 60 days. An “arrival draft” is a special type of sight draft that is payable only after goods arrive at a named port.

About 35% of all world trade use some form of Documentary Draft Collection as the means of payment when there is a trusting relationship. The Letter of Credit, more fully explained in the section to follow, is more binding and preferred by some suppliers. However in some countries such as Russia the Letter of Credit is generally not available, even in 2003.

5.10 Letter of Credit

Many offshore suppliers want an alternative payment method called a “Letter of Credit” (L/C). While the L/C is primarily for the protection of suppliers, sometimes buyers can negotiate to have the supplier waive the credit. However, certain governments require a L/C by law, and the parties have no choice but to comply. Buyers should know how to make the L/C work for them. The Uniform Commercial Code, Article 5 is the authority covering L/Cs. The International Chamber of Commerce’s UC500 publication, issued in 1994, spells out the details.

At the request of the applicant, the buyer’s issuing bank arranges to make payment to a third party beneficiary. The supplier’s “advising bank” actually makes the payment to them after receipt of the funds from the buyers’ “issuing bank.”

The supplier will be paid if contract conditions are met. This protects the supplier as the bank assumes the obligation to pay against presentation of required documents. There are many variations of such credit arrangements that are essentially separate transactions from the sale of goods. Credits may be either (1) revocable or (2) irrevocable, but most credits are issued as an “Irrevocable L/C,” which means they cannot be canceled without consent of the supplier.

Letters of Credit must be arranged by the importing buyer, and executed by the “issuing bank” that guarantees payment. Before they will make or ship, many foreign suppliers require this bank commitment, as this protects their payment risk and transfers it to the bank. It is estimated that about one third of all offshore payments use this method.

Now, let's look at the L/C process. The buyer fills in data on the bank's application form and forwards it to the bank for execution.

Figure 6-1 shows the Letter of Credit sequence of events required as explained in the following sequence:

1. Supplier and buyer agree on the purchase.
2. The buyer applies to his "issuing bank" for a L/C.
3. The issuing bank prepares the letter and forwards it to the supplier through supplier's foreign "advising bank."
4. The advising bank forwards the letter to the supplier.
5. The supplier prepares shipment and presents goods to the carrier.
6. Supplier then sends the draft for payment to their advising bank.
7. Supplier forwards documents to the buyer or buyer's broker to clear customs in advance.
8. Advising bank forwards draft and documents to the issuing bank.
9. Issuing bank reviews documents and honors the supplier's draft by making payment.
10. Issuing bank gives shipping document packet to the buyer, who is free to take possession of the goods (if not already cleared). The cost to the buyer is a fraction of 1% of the invoice price, with a minimum charge that varies with the bank involved, usually less than \$100.

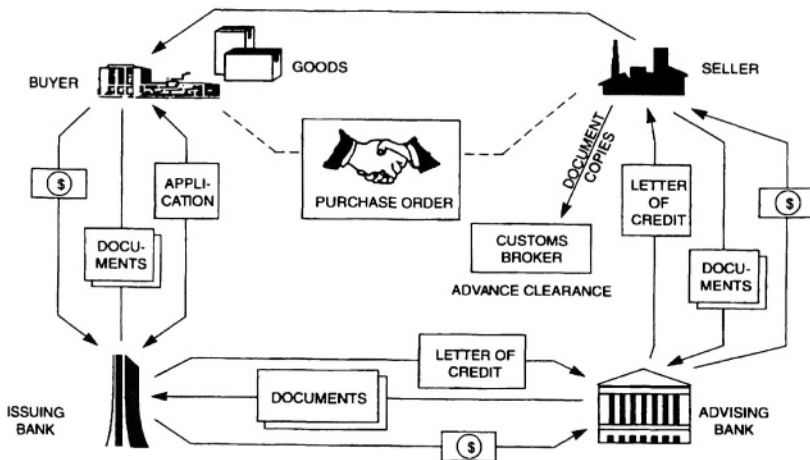


Figure 6-1. Letter of Credit Process

A Standby Letter of Credit because of its deferred payment, from a banker's point of view, is an unsecured loan. In force since 1999 the ICC publication ISP98 spells out when the standby form is used and the

procedure to be followed by the issuing bank that accepts it. Standbys differ in that neither party expects to draw against the credit, yet both buyer and seller know that the bank will honor a legitimate payment request by the seller.

The Standby L/C means the bank will pay, but will take title until the merchandise is paid for. An actual example will serve to illustrate the point. A U.S. firm needed a major purchase from Japan to be shipped to its Brazilian plant. However, the Japanese refused to accept a Brazilian purchase order, mindful of a then-poor credit rating for Brazil, where the government dictated a delay of payments. The solution was the Standby L/C. If for any reason, the Brazilian division did not make a payment on time per its contract, the U.S. parent company guaranteed payment within 24 hours by wire to the Bank of Tokyo. This broke the impasse and allowed the buy to proceed.

Another alternate is a “revolving L/C” that permits flexibility for payment of any shipment up to a certain value, say \$5,000. As payment is made, the amount of credit returns to the original amount.

5.11 Banker’s Acceptance

Banker’s acceptance is the term brokers use to indicate approval of financing by the bank that promises to pay the face amount of the draft to any holder who presents it at maturity. Acceptance is created from either a L/C or time draft drawn independently, and shows a willingness to pay a time draft or bill of exchange. The bank has the importer/buyer simply write the word “accepted” on the time draft or bill, and sign it.

6. GENERALIZED SYSTEM OF PREFERENCES

Under the Generalized System of Preferences (GSP), duty-free entry is allowed for more than 3800 tariff schedule subheadings, from over 130 “Beneficiary Developing Countries” (BDCs). Industrialized countries are encouraged to import from the emerging nations by benefiting from their duty-free treatment. The United Nations Conference on Trade and Development (UNCTAD) formally approved GSP in 1968. Startup required a waiver in 1971 of GATT’s Most Favored Nation clause that forbade discriminatory international trade. Today, about 30 countries grant GSP benefits to help developing nations improve their economic status through more exports. It should be noted that GSP is a privilege extended at the discretion of the sponsoring company. It is not legally protected right, and must be renewed frequently by the Congress and signed into law by the

President. As expected, its use of trade preferences is a tool of leverage in trade negotiations.

6.1 Harmonized Tariff Schedule of the U.S. Annotated (HTSUSA)

The U. S. International Trade Commission’s Office of Tariff Affairs and Trade Agreements publishes the *Harmonized Tariff Schedule of the United States Annotated* that provides the applicable tariff rates and statistical categories for all merchandise imported into the United States. It is based on the international *Harmonized System*, the global classification system that is used to describe most world trade in goods. The U.S. Customs Service administers the tariff and processes import entries. Buyers should learn if their commodities could be brought into the U.S. duty-free or with special lower tariffs. Buying from a country with “Most Favored Nation” (MFN) status, as defined by the Trade Act of 1974, means that U.S. buyers may be relieved from paying most, if not all tariffs. Buyers can determine the benefits specific to their situation based on a review of the HTSUSA.

Figure 6-2 shows an example of the information provided in the HTSUSA that spells out differing duties for various classes of goods from various countries. U.S. Customs Schedule A determines and identifies those countries and items getting favorable duty rates. For example, under the “Rates of Duty” column are sub listings 1 and 2. Column 1 divides into “General” and “Special.” The General column shows the percentage duty as used for countries with MFN status. The Special column is used for countries with special agreements. In this column, A denotes duty-free entry under GSP (General System of Preferences) for developing nations. E is Caribbean initiative, CA is Canada, and IL is Israel.

In the table shown, a chest freezer imported from the United Kingdom would take a 2.9% MFN duty rate, while the same item from Israel is free. But from Bulgaria (column 2), a 35% duty is charged! Buyers are influenced by the political realities to buy from those countries friendly to the United States. Customs advises that buyers should contact the closest Customs office about how their imports should be classified.

Harmonized Tariff Schedule of the United States (annotated for statistical reporting purposes)

Heading/ subheading	Stat. Suf. & cd	Article description	Units of quantity	Rates of duty		2
				1		
				General	Special	
8418		Refrigerators, freezers and other refrigerating or freezing equipment, electric or other; heat pumps, other than the air conditioning machines of heading 8415; parts thereof (con.):				
8418.30.00	00 3	Freezers of the chest type,	No.	2.9%	Free (A, C, E, IL) 2% (CA)	35%
8418.40.00	00 1	Freezers of the upright type,	No.	2.9%	Free (A, C, E, IL) 2% (CA)	35%
8418.61.00		Other refrigerating or freezing equipment; heat pumps; Compression type units whose condensers are heat exchangers		2.9%	Free (A, B, C, E, IL) 2% (CA)	35%
8419		Machinery, plant or laboratory equipment, whether or not electrically heated, for the treatment of materials by a process involving a change of temperature such as heating, cooking, roasting, distilling, etc.				
8419.11.00	00 5	Instantaneous gas water heaters	No.	4%	Free (A, E, IL) 3.6% (CA)	45%
8419.50.00	00 6	Heat exchange units		4.2%	Free (A, C, E, IL) 3.3% (CA)	35%

Figure 6-2. Harmonized Tariff Schedule United States Annotated

7. PROGRAMS BENEFITING THE IMPORTING BUYER

Trade policies affect rates of duty charged. Penalties imposed on exporting nations take the form of higher duties that hurt the buyer. In similar fashion, benefits may be given to other nations that give buyers reduced costs. The result is that buying decisions enforce the intended aim to encourage or discourage imports. Let's focus on U.S. Programs benefiting the importing buyer, as buyers should be aware of these benefits, and take advantage of them.

Customs regulations that benefit buyers include Bonded Warehouse Entry, Duty-free Reentry Of Goods Sent For Repairs Or Replacement, and Partial Duty Exemption Section 807 of the HTSUSA. In addition, the United States has created a number of incentives to encourage companies, both foreign and local, to manufacture in the U.S. Unfortunately, sometimes it is a foreign competitor that has learned best how to work the system of incentives. We might learn from Japan where: (1) Japanese management and labor are not openly confrontational, and (2) they take advantage of tax breaks, use of duty-free zones, and other concessions designed to encourage development of business within the U.S.

The case of typewriter manufacturer Smith Corona shows the strange twists of global competition. Smith Corona (SC) got relief in 1974 when it charged rival Japanese manufacturers with dumping typewriters in the U.S. market. Since moving manufacturing to Singapore, SC changed from the U.S.'s largest typewriter manufacturer to its largest importer. Meanwhile, the Japanese assembled typewriters in Tennessee.

In 1991, Japan's Brother Industries filed charges under U.S. law alleging Smith Corona dumps its Asian-made products in America. Claiming prices were cut below costs, the Japanese said, "While we've been investing in the United States and creating jobs, they've been migrating to Singapore, taking jobs with them."

7.1 Benefits from Foreign Governments

Benefits provided to offshore suppliers by their native governments to encourage exports often benefit American buyers with reduced costs. Ask if your supplier has access to subsidies or reduced taxes. Or, does the supplier's country offer insurance covering exchange rate risks? Another example is Mexico's "maquiladora," foreign-owned plants. Mexican workers now earn just about \$2.60/hr. The Mexican maquiladora approach has benefited the supply system of many American companies. Components and subassemblies that are made in the U.S. using sophisticated technology

can be shipped into Mexico duty-free for final assembly. Upon completion, the products are returned to the U.S. for sale. Any duty charged applies only to the “value added” labor.

Times change, and Mexico now is going through the pains of losing production to other low labor cost countries, such as China with its newly granted MFN status. From January 2001 through June 2002, Mexico lost nearly 600 maquiladoras out of an active roster of 3,200 export assembly plants, mostly in electronics and ready-made clothing.¹⁶ Fifteen percent, or 250,000 jobs were lost and 1.9 plants closed every workday according to Mexican Labour Secretarial calculations. Most production was lost to China, but some was to other low-wage Caribbean countries. China’s extremely low labor rate is difficult to match, undercutting even Mexico’s low rates in many cases.

7.2 Foreign “Free Trade” Zones and Sub zones

Buyers can use trade zones to improve their company’s cash flow and reduce costs too. Technically, a FTZ (foreign trade zone) is a secured site legally considered outside a nation’s customs territory. Goods can be brought into the zone without duty. Goods within a U.S. FTZ, for business purposes, remain within the International Zone of Commerce. There is no time limit with respect to the time you may keep goods in a zone. The *primary aim is to create American jobs*.

There are about 256 FTZs as of August 2003 in use within the U.S., with still more applications being processed. In these trade zones, goods may be stored, exhibited, assembled, processed, sorted, manufactured, repaired or altered, and repackaged, all without paying duties or taxes, until the goods are moved into a country’s Customs territory. Any duty then due is assessed only on the import value.

Every port of entry may have a zone within which any state and local inventory taxes are waived. Typical is Onondaga County’s zone, in the vicinity of Syracuse, New York. The Greater Syracuse Foreign Trade Zone, Ltd. has 90 General Purpose Zones, and 23 acres of space in 12 warehouses. Zones can be segregated in an independent warehouse. Sub zones are smaller locations that may be owned by a city or a specific company.

7.3 Duty Drawback Savings

A benefit that results only *after duty has been previously paid* is termed Drawback. Drawback is an old concept going back to the U.S. Tariff Act of

¹⁶ “Maquila Meltdown Plants Flee Mexican Wages,” *NOW* online edition, Nov 28, 2002

1789 that was enacted by the First Congress. Its purpose has always been to encourage American commerce and manufacturing. Duty drawback helps a manufacturer to compete in foreign markets without having duty as part of product costs.

Drawback is covered under Section 1313, Title 19 of the HTSUSA Code. Drawback is a refund of U.S. Customs duties paid upon importing materials or goods that are sold abroad at a later date. Ninety-nine percent of the amount of duty paid can be recovered under drawback, while the remaining one percent is retained by Customs to defray their costs. Interestingly, government statistics show that drawback rebates are often about 10% of what U.S. companies could claim. Customs form CF7553 contains instructions. How much profit is your company giving up in missed drawback opportunities?

8. THE INTERNET AND GLOBAL INFORMATION NETWORKS

When referring to the Internet, many say, “This changes everything!” While this may be a bit overstated, the impact on worldwide communications is profound. With the ability to send text messages or data to anywhere in the world with access to a phone or cable connection, new possibilities to manage supply chain transactions are constantly being developed. Consider the impact of e-mail alone. In the past for a buyer in North America to communicate with a supplier in Asia, he or she was forced to use mail, facsimile or telephone. The fastest of these was the telephone, but it required one or the other to be working outside normal business hours because of time-zone differences. This resulted in significant delays or in leaving a message to call back, with the resultant telephone game of “tag”. E-mail makes it possible to send the message when the sender is ready and the recipient can receive it at his or her convenience and issue an immediate response. The usefulness of this global network is being further expanded by connection to the Internet via wireless media such as cellular phones and by satellite transmission.

Today, requests for bid may be sent electronically to suppliers anywhere. Suppliers can likewise respond in minutes rather than days or weeks as with conventional mail services. An even faster method of soliciting supplier bids that has been enabled by the Web is for the buyer to post a requirement to which anyone with access to the Web may respond. To use this method, the buyer usually posts the specifications for the potential buy to a website or portal and alerts all potential suppliers where to locate and respond to the offering. Using this portal it's possible for the buyer to update requirements

data, extend the response date, add items to the bid package, and respond to sellers questions, all without initiating new correspondence with each potential bidder. There is the additional benefit that bidders are uniformly advised of requirements changes and the buyer needs only to enter the information at a single place.

While the ability to request bids from suppliers anywhere in the world is perhaps the most obvious use of the Internet for buyer-seller communications, there are many other uses for this high-speed global communications medium, including:

- Transmission of forecasts and schedules or MRP (Material Requirements Planning) data from production scheduling to suppliers
- Suppliers sending shipping notices, and transporters providing regular updates on the location of the shipment and expected arrival date
- Acknowledging receipt of goods and authorizing payment
- Suppliers sending invoices electronically
- Electronic funds transfers for payment of invoices
- Suppliers providing immediate notification of changes in capacity or delivery leadtime
- Reporting supplier quality and delivery performance information
- Tracking supplier and customer inventory levels
- Design collaboration, either by sending preliminary documents for supplier review and comment or by on-line meetings where buyer and supplier engineers exchange information back and forth in real-time, much like a personal “chat” session

Virtually all of the tasks described in this chapter may be enhanced by the use of the Internet. For example, the author needed updated GDP statistics. For this edition, within 5 minutes the worldwide GDP data was on his computer’s “desktop”. Also consider the communications requirements of the letter of credit shown in Figure 6-1. The transmission of all documents among buyer, seller, issuing bank, advising bank and customs broker may be performed over the Web. Time saving and error reduction are frequently cited as the major benefits of these Web-based communications, though the security of such financial transactions over the open Internet has slowed progress in this area. However, improvements are continually being made in the security of Web-based transactions and electronic signatures are now becoming acceptable to most participants in such transactions.

A remaining obstacle to widespread use of the Internet in global transactions is the lack of global standards for the application software being developed. This need is being addressed however; examples include the UNSPSC (United Nations Standard Products and Services Code), a global

electronic commerce standard for the classification of goods and services (often called commodity codes). This standardization will have a profound effect on systems used to analyze the enterprise's spending patterns.

Other important standards include the use of XML (eXtensible Markup Language) for Internet transactions and an initiative called the Universal Description, Discovery and Integration Project (UDDI). UDDI is designed to create a platform-neutral standard based on XML to make transactions possible between differing legacy systems. Fortunately, the current lack of standards will likely disappear soon as a real deterrent to global Internet communications.

Well into the future there will be further evolution of the buyer dealing in global markets with economic acumen. So, we need a global outlook since the marketplace, customers, and competitions are global. Chapter 7 will look in detail at how we can evolve the supplier relationship to top-level status. We will explore the natural frictions that exist in the buyer/seller interface, and further explore ways to smooth those frictions for mutual benefit.

Chapter 7

BUILDING RAPPORT WITH SUPPLIERS

Transition from Supplier to Business Partner

Relationships with key supplier personnel deserve special consideration. It is tempting to play “hard ball” with a supplier, especially one who wants to maintain business. The experienced buyer learns that every so often, a special favor or extra help is needed in the long-range interest of both parties. So, being unreasonable or discourteous often hurts the buyer in the long run.

The increasing use of partnerships and alliances requires a strategic purchasing orientation. Increasing complexity in doing the materials job will require buyers to become ever more knowledgeable about their source’s business interests. The challenge is to keep competitive leverage while maximizing mutual goals.

Purchasing magazine publisher Jack Connor has said,

“The growing complexity of buy-sell relationships demands ever more intensive partnering, both internal and external. Here’s what’s happening: Smart buyers are transforming buyer/seller dealings into multi-level, multi-disciplined relationships. They’re opening the proverbial and much-maligned ‘backdoor’, the side doors, the front door, and any other passageway they can find to facilitate the flow of ideas and information between the buyer and the selling company.”¹⁷

Consider what suppliers want and expect from buyers. Buyers have both a need and the right to get cooperation, but to get it *they have to offer something in return*. Goodwill has long been recognized as a business asset, and tact is a necessity! Openness and fairness cost little, and will pay off in maintaining a sound relationship. As one experienced purchasing manager said, “Suppliers only offers deals to those they like!”

¹⁷“Purchasing Outlook,” *Purchasing*, Feb. 12, 1987, p. 43

This is an era of extreme cost competition with relatively low inflation. Buyers have long-range concern about the quality and availability of materials. Partnerships have been formed for long-term survival, as there can be no question that a strong joint effort to meet customers' requirements is worth the effort. American companies have forged new business partnerships and formed joint ventures and other international arrangements to share the costs and growth opportunities. Making it possible are rapid communication, digitized information, and better transportation along with international business acumen.

Author Jordan Lewis says, "The kinds of massive changes—and substantial benefits—that customer-supplier alliances bring must be seen as the fruits of a long-term process. While early gains are available and should be sought in order to fortify the effort, the greatest value comes from a persistent commitment to an endeavor that yields more benefits as long as it is nourished."¹⁸

The development of effective supplier-customer relationships works to the advantage of both sides of the effort. A survey of 162 North American executives conducted by NerveWire, a management consulting and systems integration firm, found that companies considering themselves "very highly integrated" with their trading partners had increased revenues 40 percent, reduced costs 30 percent, and raised customer retention rates 35 percent as a result of collaborative initiatives.¹⁹

In manufacturing particularly, cost structures have changed dramatically over the past three decades, with labor costs shrinking as a fraction of the total while materials (and subcontract) costs have increased. The lower labor costs have caused overhead as a percent of labor to skyrocket. Selling, General and Administrative (SG&A) costs are more constant, but also have become a greater part of the total. This shift has made the control of overhead and SG&A costs a large savings opportunity for customer and supplier alike.

In Figure 7-1 "Typical Supply Chain Cost Structure," we have demonstrated how total costs in the simple supply chain relationship between the buyer and first tier supplier may have become dependent upon SG&A and overhead to the extent of more than 62%. The example shown uses the same percentage cost breakdown for buyer and supplier, except that the supplier cost also includes profit. The supplier's total cost plus profit becomes the buyer's material cost.

¹⁸ Jordan D. Lewis, *The Connected Corporation*. The Free Press, 1995, page 36

¹⁹ Demir Barlas, "Collaboration Pays," *Line 56* on-line newsletter, April 15, 2002

Typical Supply Chain Cost Structure

Buyer [Customer] Cost			Seller [Supplier] Cost	
Material	(50)	← ←	Material	(45)
Labor	(7)		Labor	(6)
Overhead	(30)	↑	Overhead	(27)
<u>SG&A</u>	(13)	↓ (43)	<u>SG&A</u>	(12)
Total Cost	(100%)		<u>Profit</u>	(10)
			Total Cost	(100%)

In just 1 tier of supply chain
> 62% of TOTAL COST is in Overhead & SG&A

Figure 7-1. Typical Supply Chain Cost Structure

The insidious nature of overhead costs is that normal accounting systems do not easily identify the sources of the cost, often referred to as cost drivers. This in turn makes reduction of overhead costs very difficult to achieve within a single company, much less across a trading relationship. There are many aspects of the transactions between buyer and seller that are drivers of SG&A or overhead costs. For example, if the buyer insists that the supplier receives all orders on a particular software platform, which the supplier does not currently use, the supplier must add overhead or SG&A cost to install the software. The cost of the relationship has been increased but the buyer may not even be aware this has occurred.

The point is that if customer and supplier costs are to be reduced, buyer and seller must work closely together to identify cost drivers and to reduce costs that are often buried deeply in the complex overhead and SG&A cost categories in both companies. One tool for uncovering these costs is called *Activity-Based-Costing* (ABC). In ABC, the focus is on a particular process. The costs of all involved individual's time are tracked across the process and summed with any materials input to reveal the total cost of the process. ABC will be covered further in Chapter 14.

1. SUPPLIER PARTNERING RELATIONSHIPS

Surveys indicate that suppliers are judged to be more important today than just a decade ago. In a recent survey, 90% of purchasing managers agree with this statement and 70% of design engineers also agree. Also 60% of engineers view purchasing's role on their design team as more important. While in times of extreme cost competitiveness, there may be a temptation for some buyers to force suppliers into unreasonable concessions, genuine long-range concern about materials availability should balance any such tendency. Improvement is needed, not simply in good supplier relationships, but also in the broader "supplier partnering" concept—a shared responsibility of the buying and selling companies to meet the final customer's needs.

"Supplier partnering" is the term being used today to indicate closer cooperation between buying and selling companies to achieve joint benefits. In this context, the suppliers are viewed as an integral part of the product or service delivery process. Partnering is not just meeting a buyer's stated immediate requirement. It is also providing new products, new methods, and new materials to improve quality and keep costs low. The competent buyer will use the suppliers' manufacturing processes, product development and research to improve supplier productivity. One proven approach is to invite key suppliers to scrutinize competitive parts or items, where the aim will be to mutually identify cost reductions or quality improvements.

A type of partnering agreement used primarily for maintenance, repair and operating (MRO) items is the systems contract explained in Chapter 16. This is an agreement to supply all of a family of goods, at a specific level of price or discount. The goal is to save purchasing time and paperwork, reduce inventory throughout the system, improve the flow of goods, and still achieve best pricing. The relationship should include performance measurements, improvement targets and regular progress reviews.

Many in the field have asserted the advantages of partnering. Several companies with successful experience have indicated the following benefits to the trading partners from such arrangements²⁰:

- Ongoing cost reductions
- Quality improvements
- Shorter design cycle times of 50-75%
- Increased operating flexibility
- Greater value for the end customer – including faster response to changing needs

²⁰Jordan D. Lewis, The Connected Corporation The Free Press, 1995, page 3

- Greater leverage of new technologies
- Increased competitiveness by combining strategies of supplier and customer

Strategic supplier partnering provides a competitive edge to improve not simply supplier relationships, but also the broader shared responsibility to meet your company's needs. As expected, there are some problem areas that both partners report. One is the failure to treat partnering type agreements any different from other deals. Another is failure to study the needs of the other party, and how each will change to help the partner.

As previously stated, partnering is not just meeting a buyer's requirements. There should be projects to improve quality, reduce cycle time (and therefore lead time) and reduce cost. There should also be joint design efforts between the engineers of both buyer and seller, looking for cost reduction or quality improvements. What's in it for suppliers? Benefits sought by suppliers are higher production volume, long-term contracts, and access to better information on changes to production plans.

About half those who practice partnering bring suppliers into their product planning process early on. This practice is consistent with concurrent engineering emphases, and often focuses on projects aimed at value analysis (VA) improvements.

A "certified supplier" is a supplier that meets or exceeds your company's accreditation standards. This may be based on the company's rating system defined earlier. Reward consistent outstanding performance with certified supplier status along with increased business volume if suppliers continue to perform well! Certified suppliers should feel confident to invest to keep up with the "state-of-the-art" as they have assurance they have a partnership that will not lead to being dropped without good grounds.

These services could be provided as rewards by the buying company to its suppliers who achieve certified status:

- Long-term contracts
- Manufacturing engineering support
- Quality control assistance
- Productivity gains in support of other sales
- Forecasts to aid in capacity and staff planning
- Investment in facilities and equipment
- Access to favorable terms with raw material suppliers

Many astute supply management organizations have taken certification to the next level and have attempted to identify the attributes of a *preferred supplier*, that is a supplier that has earned the right to be considered first

when new business opportunities arise. A summary of the most commonly mentioned of these attributes follows:

- Offers the products and services needed
- Meets quality and delivery requirements
- Acknowledges the need for continual improvement (CI)
- Demonstrates an ability to make improvements
- Is willing to share gains with customers

Similarly, sellers have discussed the merits of selling to customers who are interested in building a production long-term relationship. They have identified certain attributes of the *preferred customer*:

- Has significant requirements for the products or services supplier offers
- Is demanding, but realistic in quality and delivery expectations
- Expects continual improvement and is willing to participate in CI project work
- Provides resources and support for CI efforts
- Provides benefits to the supplier from the relationship

By working with suppliers to correct deficiencies all the way back to their operation and production processes, the buyer can assist in improving production yield. In turn, this should provide cost savings to the buyer.

1.1 Implications to the supply organization

Good supplier relationships are of paramount importance to every purchasing manager. Those suppliers are also potential buyers of the buying company's products, so it makes good sense to keep relationships with any supplier as cordial as possible even if the company has never made any purchase whatsoever. People who are friendly toward a buyer will often go to bat for her, perhaps by taking steps to help meet a tough but necessary delivery date or by locating a source for hard-to-get material. As a contact point and showcase for a company, purchasing definitely affects the corporate image; that corporate image will depend on the image created by the buyers, and no amount of public relations will overcome any bad impression they may make.

There are certain areas of the purchasing function that should be given special attention—those friction areas where no hard-and-fast rules can be applied. Tact and goodwill often are the only tools available to management in its constant efforts to promote cordial and effective supplier and trade relationships, especially in cases where public criticism and controversy hit hard at purchasing policies.

There is a natural friction and stress in the buyer/seller relationship based on the inherent nature of the acquisition process. Consider these very real opposing forces that lead to such friction.

Table 7-1. Buyer and Seller Conflict

Issue	Sellers want	Buyers want
Price	Higher prices to increase margin	Lower prices to reduce cost
Time for Commitment	The order as soon as possible	To review all the alternatives before committing the order
Split of Business	100% of the available business	To split the business for assurance of supply.
Schedules	Long time horizon and minimum variability	Minimum time horizon and variability to suit customer
Length of Commitment	A long term commitment to buy	A short term commitment to test supplier reliability
Design Criteria	To guide design toward unique supplier capabilities	To create generic designs with maximum choice of source
Information Systems	To increase use of the systems already in place at the seller	To use system elements already in place at the buyer
Competitor Information	To stress superiority over competitors' offerings and to protect own information	To understand all pros and cons of competitors offerings
Trust	To be trusted implicitly	To gain experience with the seller's trustworthiness

Achieving good relationships isn't simply a matter of avoiding conflicts. While it is mandatory that buyers follow the law, we cannot dictate the world's moral or ethical posture. (We can, however, set a good example.) The idea is to use the inherent power in the buying job tactfully and ethically.

Some lost sales may be traced to something that happened to upset the buyer/seller relationship. Some salesmen claim they are shut out of a certain company because the buyer is a friend of a competitor. A friendly, intelligent salesman is of great value to any company, but a buyer cannot afford to buy on friendship alone. In exchange for the money spent on behalf of the company, buyers should expect to receive products or services with a commensurate value. Both parties must profit.

Behavioral scientists have shown that strength and weakness are mirror images. As such, the qualities that make buyers valuable in some situations are often their greatest obstacle in others. A buyer doggedly persists in a cost reduction, and may be successful, but if not, may stubbornly persist and antagonize valuable suppliers. Another senior buyer's quiet confidence in troubled times may make him the choice to run the department. Then he turns out to be a poor manager because of failure to communicate effectively.

Many buyers allow salespeople to call repeatedly without the slightest possibility that they will be interested in their products based on the company's needs. It is only fair to advise the salesperson at the earliest moment. Honesty pays off in the long run! Give the reasons why, rather than let them believe that without a change in circumstances they can one day be of service.

An opportunity to explain your company's needs, product requirements, and specific applications arises when a new salesperson visits. This will open a door through purchasing, and the salesperson will soon sense what channels of communication are likely to be most profitable. This is the time to advise what is expected and how the company buys. It is also an excellent occasion to begin cultivating good supplier relationships.

2. CHANGE "BACKDOOR" SELLING TO "FRONTOFFICE" COLLABORATION

Purchasing people have long complained about backdoor sellers—the salesperson that sells to others outside purchasing without maintaining contact with the buyer. While it does exist, it is questionable whether this complaint is justifiable in many cases.

The authors have frequently discussed with salespeople their complaints about buyers to better understand the persistent use of backdoor selling. Here is an example of a specific complaint: A circuit breaker is obsolete and superseded by another, but the buyer doesn't know what that means technically, and the sales engineer (SE) doesn't know whom to contact. The buyer takes information over the phone, but is not able to translate the technical information to communicate effectively with engineering. Sometimes, "It's like talking to a brick wall."

Typical complaints mentioned by sales engineers concerning buyers have been that they are: (1) disorganized, (2) intimidating, and (3) unable (or unwilling?) to act. Perhaps the most common complaint is, "They don't really know *what* they're buying." So, the sales response is to bypass such buyers.

As an example, consider the sales engineer who noted that some buyers “don’t know anything” and won’t let him talk to engineering. After several attempts, the SE decides to wait enough time so the buyer forgets him, and then call on the engineer directly. He recounts a case where he broke into a new account while a buyer was in the process of changing jobs and had not yet been replaced. After telling the engineer he had no one to talk to, the sympathetic engineer tested samples that were approved. The new buyer requested prices for his product and awarded him the account.

Another SE advises that when he backdoor sells, 9 of 10 buyers go along with it, because it didn’t put them out. He contends, “Some are lazy.” This is not to suggest that this behavior is common, but it does exist. The salesperson is trained to identify the buying decision-maker. If the buyer abdicates this role, the salesperson will attempt to locate another individual to make the decision.

An unmistakable trend is that the buyer, under pressure to combat the growing profit squeeze, and with top management support, is making more final decisions about what is bought than ever before. The buyer, who knows what his or her company needs, and what the supplier must do to meet those needs, holds the key to a given company’s purchasing power. If the job is handled competently, buyers are the ones who control, or at minimum approve, what the company buys. The buyer should be in sales’ corner if they have something to offer that will do a given job better or more economically.

There can be strong temptations for the buyer to backdoor buy just as for the salesman to backdoor sell. Both exist because to some extent the acknowledged proper channels are not producing the desired results. Many buyers “backdoor buy” continuously, because of the complexities and speed with which information must be secured and passed on; that is, the buyer is often forced to go around the salesperson to get information from suppliers. In a mirror image of the salesperson’s complaint, buyers say the salespeople could care less since they get usually get credit for the sales gain anyway.

Dealing with salespeople is a part of life for buyers. Though usually proficient and a valued member of the partnership, not all sales representatives are perfect either.

On the “lighter side,” let’s look at some facetious categories compiled on types of salespeople.²¹ We’ve added ways to handle some of them:

- The *windbag*. This is the back-slapper, joke-teller, or the time-waster. He tends to drop in, as he “just happened to be in the neighborhood.” Simply

²¹ Somerby Dowst, “Basics for Buyers,” Professional Procurement Co., Mohegan Lake, NY 10547, 1987, p. 139.

stand up, shake hands, and while talking, walk him out the door. Some have an assistant say, “They’re waiting for you in the meeting, Ms. Jones.” (The authors don’t condone this practice).

- The *technocrat*. Thinks of himself or herself as a “marketing engineer.” Uses lots of engineering jargon to impress you with his or her knowledge. If he doesn’t have a simple answer ready, ask him to put it in writing and send it in.
- The *namedropper*. Just talked to your Mr. Jones (your president). “He and I are planning some fishing this summer, you know.”
- The *silent type*. Just sits there and waits for your lead. Lay your problems on him.
- The “*newsboy*.” Typically arrives with attaché case loaded with brochures, catalogues, and bulletins. Ninety percent of what he offers you is of no interest.
- The “*know-nothing*”. Arrives totally unprepared. This often happens with newer salespeople. Suggest they visit only with specific items to present.
- The “*order taker*.” Unlike the know-nothing, is familiar with what you need and simply wants to write up the order. He’s often good at this, but can’t answer status of any orders received last week, or month, and is not interested in any follow through.
- Ms. or Mr. “*Peepers*.” Learned to read upside down at an early age. One solution is to have a large blueprint handy to quickly cover your entire desk before she or he is admitted. Of course, you’ll not leave any written prices exposed.

Again, the majority of salespeople are proficient, but recognizing the poor ones and dealing with them appropriately does companies a favor!

2.1 Overcoming “Backdoor” Behavior

As noted earlier, most backdoor behavior, whether on the selling or buying side, is due to lack of knowledge or due to the inability to serve as facilitator or team leader. Therefore it is no surprise that to avoid backdoor activity requires the application of leadership and project management skills. As the complexity of customer-supplier relationships increases, the need to build effective communication links between the organizations at several functional levels becomes paramount (see Chapter 1, Figure 1-4). It is important, for example, for the quality engineer at the supplier to be able to contact his or her counterpart at the customer to report a quality problem and to mutually determine steps to resolve the issue quickly and at minimum disruption to the end customer.

Supply management personnel responsible for the critical interface between supplier and customer should be formally trained in facilitation skills if these have not already been mastered. A dictionary definition of “facilitate” is “to make easy, to lessen the difficulty of.” And this is precisely the role of the purchasing professional in managing the supplier-buyer relationship. A good facilitator will guide without the authority to direct, using the organization structure to provide role definition for team members. He or she will help to discover alternatives from the team members, and to bring action through consensus rather than by edict.

Good facilitation behaviors include the following:

- Active listening and confirmation
- Clarifying and summarizing
- Encouraging and guiding (looking for each member’s WIIFM – What’s In It For Me?)
- Managing time
- Assessing and redirecting the process as needed
- Accepting responsibility (and even taking blame if necessary) for the teams’ actions

3. CONFLICT RESOLUTION: WORKING WITH OTHERS

The Boy Scout rule is that the campgrounds are always left in the same or better condition than they are found. This is a positive example to follow! Likewise, generations of Maine woodsmen, upon arriving at a shelter station, chop wood as fuel for heating for the next arrival. As applied to our profession, when a manager vacates his role in purchasing, will the profession have been somewhat enriched by his or her contribution?

As purchasing is a conflict-producing job, there is a need for statesmanship—both with supplier’s representatives and fellow employees. Take the example of a salesperson that has worked hard to get his products specified by an engineer. Sooner or later, most PMs one day will get a phone call along the lines of, “I just asked your buyer about the status of the expected go ahead, and he told me he gave the order to my competitor who quoted a lower price. I’ve put a lot of time and effort and cost into this job. Your company owes me. You’ve treated us poorly. You’ve got to make good on this.” Does this salesman have a legitimate beef? What is your best course of action, if any?

One of the secrets of dealing with difficult people is to be able to keep your emotions under control. Dealing with issues and not personalities is

sound advice, and it helps to recognize the basic style of those with whom we work. Understanding the type of personality can help buyers and managers to make some assumptions that are likely to be correct when you don't know the individual you're dealing with well.

Always go to visit the highly dominant person. Confront him or her directly. It is sound advice not to attack a person's basic values, but to follow this advice you first need to understand those values.

Conflict management varies with the different types of personalities we may encounter. Some of these might be characterized as follows:

- *Passive*: They may offer a weak handshake, deadpan face, and blank stare. They avoid any controversy and never let you know where you stand.
- *Dictatorial*: They are bullies who intimidate and are blunt, constantly demanding their way. They can be brutally frank and critical.
- *Yes-people*: These are the opposite of the bully. They agree with any proposition or commitment, but rarely perform. Always sorry for this, and pleasant, but you can't always rely on them.
- *No-People*: They take an opposite position as a reflex action. Inflexible, resistant to change, they're quick to prove why something can't possibly work.
- *Complainers*: Negative and nit picking, they turn others off. They almost never do anything about things they love to complain about.
- *Know-it-alls*: They come to a seminar and know far more than the instructor. They let everyone know during the meeting, and especially the breaks, how little the instructor knows! Arrogant, this type has a ready opinion on any subject. Yet, when wrong they blame others or are defensive.

You may recognize some, if not all of the above characters in the people you buy from!

3.1 Taking positive action

When someone is upset, let them know you are too, but don't feed into that pattern. Stay calm! You have to disagree sometime. Doing so does not require that you prove the other party is wrong. Direct the discussion toward why you need to accomplish your goal.

The challenge is to learn to deal with difficult people. How to handle complaints and anger might be found from these steps to diffuse the situation:

- Summarize what has been said on both sides without arguing for or against either.
- Use questions to diffuse anger from disagreement.
- Buy time to allow emotions to subside.

In addition to the above areas of friction relating to personality, areas of friction between buyer and seller include the following: specifications and tolerances that are unnecessarily difficult to meet, specifications changed without warning, late payments, cash discounts taken but not earned, unreasonable delivery demands, and excessive “bureaucracy.” Also burdensome are lack of technical knowledge on the part of purchasing personnel, an absence of loyalty to the supplier, ignorance of small supplier problems, frequent changes in personnel, and attempts by buyers to get free technical and engineering services as well as ideas from suppliers while intending to buy elsewhere.

The small supplier, in short, cannot work effectively with the large company buyer unless that buyer is able to represent his company fully and properly. Rather than make contact with others within the company directly, the lenient or easy-going buyer may leave this to the salesperson, who may have neither the time nor the ability to get a decision from them,

Conversely, there are some buyers who go overboard on what they term “good relations,” often finding themselves more interested in protecting the suppliers’ interest than their own company’s. This type of individual may be constantly battling the production and engineering departments, urging them to accept what the supplier furnishes even if it isn’t quite what they want. In situations where there is a discrepancy in goods furnished, and where considerable unraveling is needed to determine what corrective measures are necessary and who will pay the costs of faulty supplier performance or poor engineering specifications, the buyer sometimes appears to his company colleagues to be in the supplier’s corner. This is proper when the buyer is aware of facts that support that position and is acting in good faith to settle a dispute through negotiation—but he or she had better be able to explain his or her reasoning.

Buyers frequently must defend the supplier against unwarranted criticism and rejection of materials, since the buyer is often the only one in a position to have heard both the company’s and the supplier’s interpretations. In any such situation “firm but fair” should be the guide. There is a time to tell what needs to be done, a time to seek advice on what should be done, and a time to solve the problem in a cooperative manner.

3.2 A Time to Do Nothing!

A Rube Goldberg is the term for doing with great complexity what could and should be done simply. It is often as important in our business world to know what *not* to do, as it is to know what to do.

President Eisenhower told how Churchill notified Ike of his intent to be with the first troops setting foot in Normandy in the invasion of Europe during World War II. Ike tried to persuade him this was out of the question, as he was too valuable to the cause.²² Churchill felt it was his prerogative, and he asked Ike if he had complete authority over the entire invasion. When told that was true, Churchill stated that since the British Navy was a part, he had a right to be on a ship as a member of the crew.

Rather than confront the situation directly, Ike got word to King George, who promptly sent a note to Churchill. Churchill wasn't ordered not to go, but the king wrote, "Splendid idea Winnie. I intend to be at your side when we step together on the soil of France." Churchill saw at once the danger of losing his king, and said not another word to Ike about crossing with the troops. This is a good example of handling a conflict without directly challenging the person causing it.

4. ETHICAL ISSUES IN BUYING

Ethical issues continually affect buyer/supplier relationships. Because buyers are custodians of their company's reputation, they need to resist any impropriety. The buyer must distinguish between what is considered acceptable and what is not.

Is any other position so suspect? Yet fewer lapses of honesty probably occur in purchasing than in other positions. But the buying function is always under close scrutiny primarily because of the flow of the company funds through a supply management department. Buyers spend others' money to buy products, materials, and services to benefit the organization as a whole. So, is it any wonder the buyer is under scrutiny of the boss, subordinates, suppliers, and those who seek to supply, as well as the consumer of what they buy?

High personal integrity and strong moral convictions are, for the most part, typical of purchasing professionals. Most, but unfortunately not all, people in purchasing live up to the professional norms. This can cause them

²² Several versions exist, but this is how Eisenhower himself described it in a TV interview January 26, 1967 with Alistair Cooke.

serious trouble, and further erode confidence in the profession for the rest of us.

Many ethical questions center on distinguishing between legitimate sales promotion and inducements meant to unduly influence buying decisions. Like it or not, this is a potential problem area for anyone engaged in the buying profession. Ideally, decisions should be made on price, value, and service considerations, with freedom from outside influences.

In sports, if you don't play by the rules, you're penalized. In football, if you clip you're assessed 15 yards; if you strike a low blow in boxing it may cost you the round; so too, in business the rules of the game must be adhered to. In the supply game the rules are not always clearly defined or well known, as they should be.

4.1 Where to Draw the Line

Ethics, simply put, is a standard of how you will act in certain circumstances—"basic principles of right action!" One's actions in dealing with others create an impression, whether accurate or not. Obviously, a person will be judged by the ethical standards of the person doing the judging, and what appears proper for one person may be quite offensive to another. This is why gray areas exist.

An auditor, asked for an opinion of purchasing, once said, "You have to find out who's getting the graft." When questioned, he admitted that he didn't quite mean this—at least there was nothing specific in mind. The answer is typical of the emotional response when some business people think of purchasing. A former salesman, after becoming a top manager, may recall "wining and dining" the buyers he used to deal with. So, if there is any area where the "Simon Pure" should prevail, it is purchasing. There might be less of a double standard in business ethics if everyone remembered that they must answer for their behavior not only to the company, but also to themselves.

In creating a positive atmosphere conducive to a successful supplier partnership, here are a few questions that the PM should consider. Does this department subscribe to and display the "Principles and Standards of Ethical Supply Management Conduct" as adopted by the ISM in 2002 and shown below?²³ Is the ethical policy of the company given in writing? Do the buyers and purchasing people feel free to discuss ethical conduct among themselves and with those with whom they come in contact? Does the department notify suppliers, in writing, of its policy on acceptance of gifts?

²³From the ISM Website at www.ism.ws

ISM Principles and Standards of Ethical Supply Management Conduct:

*Loyalty to your organization**Justice to those with whom you deal**Faith in your profession*

From these principles are derived the ISM standards of supply management conduct (Global) shown in Table 7-2 below.

Table 7-2. ISM standards of supply management conduct (Global)

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1. Avoid the intent and appearance of unethical or compromising practice in relationships, actions, and communications.
 2. Demonstrate loyalty to the employer by diligently following the lawful instructions of the employer, using reasonable care and granted authority.
 3. Avoid any personal business or professional activity that would create a conflict between personal interests and the interests of the employer.
 4. Avoid soliciting or accepting money, loans, credits, or preferential discounts, and the acceptance of gifts, entertainment, favors, or services from present or potential suppliers that might influence, or appear to influence, supply management decisions.
 5. Handle confidential or proprietary information with due care and proper consideration of ethical and legal ramifications and governmental regulations.
 6. Promote positive supplier relationships through courtesy and impartiality.
 7. Avoid improper reciprocal agreements.
 8. Know and obey the letter and spirit of laws applicable to supply management.
 9. Encourage support for small, disadvantaged, and minority-owned businesses.
 10. Acquire and maintain professional competence.
 11. Conduct supply management activities in accordance with national and international laws, customs, and practices, your organization's policies, and these ethical principles and standards of conduct.
 12. Enhance the stature of the supply management profession.
-

Probably the most important factors that determine ethical practices within a company are the traditions of the industry, one's personal convictions and values, the behavior of the individual's superiors, and the behavior of one's equals. Everyone leans on the boss to some extent in finding out what is expected in this regard. Unless senior management shows a good example, how can others be expected to do so? Buyers are prone to pick up the group's ethics; if most buyers do not accept gifts, newcomers are likely to follow the lead.

A newspaper editor wrote that much could be said in favor of politicians publicly announcing any favors or gifts. Then there is a minimum of gossip, a minimum of suspicion. "Having a complete fill-in, we ask no questions. The fellows who get into trouble are those who try to sneak out of town on a

yachting trip and conceal the source of their vicuna coats and Oriental rugs.” Perhaps a good guide is for the PM to act as if everything he or she does will be reported in the local newspaper.

A conflict of interest is not always easy to define, but the following are possible conflicts:

- Investing personal money in a supplier’s business
- Borrowing from or lending money to a supplier
- Accepting more than incidental gifts and entertainment
- Misuse of privileged information
- Having outside work that affects effort provided your employer
- Trading in the commodities market for materials you buy
- Divulging company proprietary pricing or other data in a group setting where non-company personnel are present (as at an industry association meeting)

Whatever the form, attempted supplier influence on employees is as difficult to eliminate, as it is to locate. Purchasing people are by no means the only recipients of such attention; superintendents, foremen, engineers, management, inspectors, and rank-and-file manufacturing employees who are in a position to influence sources of supply may also become involved.

Where lack of control enables the minority of unscrupulous suppliers to approach factory employees directly, they may, through small inducements such as an occasional fifth of whiskey, persuade employees, who might not realize it, to find fault with competitors’ products so that a particular one will be favored. For example, a large foundry had to discharge a foreman because even nominal gifts, such as cigars and pencils, influenced his judgment. The seller was asked not to call again.

4.2 Buying Practices

Response to bidders - Failure to give unsuccessful bidders an honest reason why they have not been awarded a purchase order is one factor contributing to an unethical purchasing image. There can be no excuse for not supplying such information, except in the most unusual of circumstances. It may be in the interest of the PM’s company to withhold certain facts; however, the PM should never willfully mislead a supplier in cases where business has been placed elsewhere.

Price disclosure - From the PM’s standpoint, putting specific price information in the hands of the supplier is poor buying, even if no ethical consideration is involved. There may be special instances where setting “ballpark” prices may be acceptable practice, especially when a fair amount

of investigation and development is necessary before quoting. A better approach is to provide a target price derived either from a cost and margin calculation or from an analysis of alternative solution costs. If it makes sense to use a second source of supply, certain facts may have to be provided to induce a new potential supplier to put real effort into their quotation. Practically speaking, however, only in an exceptional few cases should ballpark prices be given, and in no case should the actual prices paid be divulged to a competitor.

Serious intentions - As noted earlier, requesting price quotations from suppliers with whom there is no serious intention to place an order is another questionable practice. Such requests for price imply that if quality and price are acceptable, an order will be forthcoming. Failure to adhere to this expectation often invites suspicion; salespeople want to know why they lost out. They may blame bad ethics—and they could be right. Remember, for every satisfied supplier in a three-bid situation, there are two who may find cause to complain.

Misleading information - The practice of supplying misleading information with inquiries also should be avoided. Overstating the volume of business that may be forthcoming simply to get a lower price is one example, as is giving misleading information regarding the ultimate end use of a product. For instance, a buyer, faced with the problem of a rubber product that has been causing him trouble for some time, goes to a new supplier. But the supplier isn't told about previous rejections blamed on the partner's design. First the supplier quotes an attractive price, and then is hit with the magnitude of the problem during the production process.

Design assistance - A troublesome conflict arises when a supplier invests in a new product design with engineering, only to find that the buyer has placed the order with a competitor. Company policy should ensure against such occurrences. Some companies make it a policy to explain to the supplier that their product will be used until the investment is recouped. After that time, others will be allowed to bid in free competition. Or the buyer may choose to reimburse the supplier that contributed to the design, as an integral part of the decision to buy from another source.

Adequate notice - Any supplier about to be dropped from being an active source deserves adequate notice, as they will have schedules, manpower and tooling to adjust. The need for such adequate notice is greatest when the supplier is small and the purchases are large. Depending on the circumstances, the buyer may be morally responsible for working out a reasonable cut-off date, even if no legal obligation exists. Be wary of a short-term profit at the expense of the long run. Shifting purchases from a faithful supplier to an untried one should occur only after there is valid evidence of

the new supplier's ability to perform in superior fashion to the current supplier.

4.3 Gifts from Suppliers

As a practical matter, a buyer can't meet with foreign visitors without being given an occasional small gift. It is difficult to refuse, and often would be an affront to the supplier based on local custom. In such a case, make sure it's of minimal value, and reciprocate. Unlike Americans, many cultures around the world like to give and get small token gifts and these are not bribes! In fact, an occasional token gift can enhance the business relationship.

Lack of knowledge of the international supplier's culture has long been a weakness of American buyers, who too often are seen as too direct and impersonal and in a hurry to conclude an agreement. Though clearly not the intended result, this often offends the sensitivities of foreign business people.

Christmas gift giving, once common in the United States, is down considerably in recent years. Not only have tough economic times tended to make people reduce these types of expenditures, but professional associations have discouraged the practice as well. Often, management will exhibit a double standard—offering gifts to their own customers, while looking with a questioning eye at anything received by their buyers. Unfortunately, this is not unusual; management needs to reconcile these inconsistent behaviors!

It is debatable whether business gifts are illegal or unethical. If gifts can be tax-deductible (as they are), they're legal. Presumably they influence or affect new business—and, if this is so, it should be unethical to give and accept them. Some feel the practice should be made both illegal and non-tax-deductible, believing that this would eliminate the gift problem. Yet people who give gifts have every right to spend their money as they see fit. Most assert that their purpose is to show goodwill and appreciation for business received. From the purchasing manager's viewpoint, the chief harm they do in making these gifts is to create suspicion (and jealousy)—to the detriment to the buyer's company. Suspicion, then, is really the heart of the problem, and, if the PM's ethical image is to be improved, suspicion should be eliminated.

Legally, any payment, gift, favor, or gratuity received by the agent, without the knowledge and consent of the principal, belongs to the principal. This is the rule under the general law of agency. Therefore one approach is to turn all gifts received by the purchasing representative over to the company. This may cause the supplier to reconsider the practice of giving gifts.

Lucky is the buyer whose management states an outright policy against giving and receiving gifts, for it's no longer an issue. If this is not the case, the buyer's best interest is to adopt this as policy, regardless. Note that buyers for the U.S. Government are forbidden from receiving anything of value from the contractor. However, as previously noted, the buyer will find there will be international practices that run contrary to domestic ethical norms—and these differences may need to be acknowledged and accommodated.

4.4 Lunches and Entertainment

There is nothing inherently wrong with a business lunch and occasional modest entertainment when a buyer visits a supplier. Sometimes a business lunch can be most productive as a way to smooth relationships and get better acquainted. Only the abuse of such courtesies should be questioned. Excesses, such as time away from work, and a too cozy relationship with favored suppliers are obviously objectionable.

What may be a legitimate business lunch for the buyer and seller may not be viewed as such by the competitor, who assumes the seller is influencing the buyer. The competitor may see this luncheon as the reason for losing the order to the incumbent supplier. Some companies avoid such incidents by having rules against lunches at suppliers' expense and substituting invitations to dine with the buyer in the company plant; when an outside lunch is necessary, the buyer picks up the check. In fact, one of the surest ways to help the buyer keep his position with suppliers is to provide an expense allowance. This allows the buyer to reciprocate where luncheons and the like are deemed appropriate.

Another approach gaining favor is to simply not combine business and social activities. There is no rule that business discussions must be conducted at lunch or with entertainment. And usually the business is better conducted in the shop or wherever the item being purchased is made. The less opportunity there is for abuse, the less likely there will be abuse.

4.5 The Ethical Double Standard

A meatpacking company sent out a friendly letter to its supplier list, asking for cooperation with its no-gift policy. Two weeks later, a sales letter was sent to the same list of suppliers to advertise its products as suitable gifts to give customers.

Another company's lunch policy was made to look ridiculous when the buyers heard that a supplier's president annually took their own chief executive on a boat trip to Florida. Can the president of a company, its vice

president, or its chief purchasing officer be entertained freely when the buyer is reprimanded or fired for accepting the same courtesies?

It is difficult for any PM to convince buyers that they should accept no luncheons or gifts when their own sales department makes a regular practice of handing out gifts and has an authorized budget to cover the expense. Here is an indication that the company does not want those who spend its money to be approachable but, at the same time, considers it good business to foster its own relationships with its customers' buying people. There is something hypocritical about this common way of thinking, which is explained by some as "business logic."

It has been said that you can't make a rule that will cover every situation; it takes careful weighing of specifics and circumstances. Issuance of a company policy against gratuities and gifts is like writing the rule, "Thou shalt not sin." This rule is unenforceable, yet it exists to set a necessary example.

5. DO'S AND DON'TS OF DEALING WITH SUPPLIERS

In this chapter we have attempted to provide real-life examples to support recommended action. Perhaps we can summarize this section with a list that will provoke further thought in our quest to improve this vital relationship between supplier and buyer.

There are many actions that can be taken to improve the relationship between buyer and salesperson, and that are consistent with concepts of common courtesy. On the other hand, there are actions and behaviors that should be avoided.

The following is a list of practical "Do's" and "Don'ts" that have proven worthwhile. They should assist the buyer in his or her dealings with supplier sales representatives:

DO

- See salespeople promptly.
- Advise unsuccessful bidders why they lost the business.
- Respect any confidential data given to you.
- Introduce salespeople to anyone in your company who may help.
- Suggest other companies in your vicinity that might be able to use their product.

- Keep salespeople apprised on your assessment of how well you believe they're performing for you.
- Explain your policies, procedures, and buying methods.
- Take the salesperson on tour of your plant or inventory facilities. They will be pleased to see where their products fit into yours, and may offer suggestions to benefit your organization.
- Explain your quality standards and expectations.
- Share expenses—reciprocate in picking up the check if there are business luncheons.
- Let salespeople use you as reference, if approved by your management.

DON'T

- Let phone calls or visitors interrupt your meetings.
- Be overzealous of your buying prerogatives. As appropriate, encourage the salesperson to meet with your technical people or others who can assist.
- Play favorites based on personality.
- Readily go over the local salesman's head. Keep the salesman posted on developments relevant to his company's performance.
- Threaten a company with punitive action unless you absolutely intend to take it.
- Keep salespeople in the dark on new products you need.
- Expect or induce entertainment or gifts of any kind.
- Let any salesperson be so successful that his or her company becomes too dependent on you for most of their business.

Personal visits to key suppliers are often well worth the investment in time and money, as there is no substitute for first-hand knowledge of the supplier's capabilities. Conduct an on-site evaluation both prior to making the award and perhaps again, midstream in the manufacturing performance period. Consider the interests of other functional areas and seek representatives to join the visit if appropriate. A visit is a wonderful way to strengthen the bonds of partnership!

Timing the visit is important, so plan it carefully. The supplier should know the reason for the visit, and why they should be interested in seeing you. Meetings should include different functional areas and several levels of the supplier's management so they can all share an understanding of the relationship.

It's timely that we now take a fresh look at the issue of quality as a total cost driver in the next chapter.

Chapter 8

QUALITY AS A COST IMPROVEMENT TECHNIQUE

Purchased materials, components, and assemblies directly affect the quality of a company's products sold to its customers. Robert Galvin, CEO of Motorola Corporation in the late 1980s, noted that even if everything done by the Motorola employees was perfect, the customer could not benefit from the results if suppliers provided less than perfect goods to Motorola. So he made it a priority to improve supplier quality purely to benefit the Motorola customer. Doing this was of course strongly in Motorola's self-interest. To achieve acceptable quality, a program of continual quality improvements is needed. This requires close working relationships and communications that benefit both the supplier and the buyer.

Everyone is for quality, but how would most of us define it? Survey responses given by many top practitioners in purchasing, and sales suggested including:²⁴ reliability, function, customer needs, consistency, meeting engineering specifications, changing engineering specs, process control, transferable variability, cost savings, and cost control. This highlights that quality has many dimensions and needs to be defined specifically in terms of each item bought.

Perhaps no person has had more influence on current quality management thinking than the late W. Edwards Deming, whom the Japanese memorialized with the prestigious Deming Award. Deming said in essence that the key is to "think differently and break our patterns of thinking...making what the customer wants. Each gets more for less...the heart of the Deming philosophy." He went on to conclude, "People must

²⁴ Pooler & Associates' Seminars 1985–1993, World Trade Institute.

visualize and understand why they're doing something. They should ask themselves, 'What are we doing, and why are we doing it?'"²⁵

1. QUALITY DEFINED

Let's review and summarize what we've learned about the elusive nature of "quality." People have tried to explain quality for many years, and some have tried to reduce it to a formula, such as:

$$\text{Value} = \text{Function} / \text{Cost}$$

While the above calculation cannot be proven mathematically, it is clear that improving functionality or decreasing cost can increase value. "Suitability for a purpose" is frequently used as a description for economic quality. "Suitability" means that quality alone cannot be isolated. Contrary to espousals of "quality at all costs," quality cannot be divorced from the intended *end-use* and *cost*! Consider the example of a beautiful gold tie clip versus a paper clip. They both will do the intended job of holding a tie in place, but one is much more attractive yet far more expensive than the other. In this case some people might opt for the more expensive gold clasp for its prestige or visual value, but if quality refers only to the function of holding the tie in place, clearly the paper clip delivers greater value.

Another authority on quality, J. M. Juran, has given 13 meanings for quality. The importance of knowing exactly what's needed can't be underestimated, and we have to define quality requirements in terms meaningful to us. Quality today has come to mean "compliance with requirements." Suppliers have an obligation to meet the standards, and the buyer has the obligation to see that they do!

"Quality Circles" became popular as American firms studied Japanese quality successes. Small groups or "circles" with various functions as members, not unlike Value Analysis teams, work on problem areas to find solutions. Circles are effective at tackling problems between two or more functions that require a cooperative solution. These circles are usually formed to solve a specific problem and then are dissolved. Due to the teachings of Deming and many others, together with studies of how Japanese manufacturers improved quality, most organizations have changed their approach to quality.

The chart below compares the former approach with the new and widely accepted approach of today:

²⁵ "W. Edwards Deming: The Prophet of Quality," 1994 Wootton Productions.

Table 8-1. Changes in Quality Viewpoint

Traditional thinking	Newer thinking
Within specification	Uniformity around target, constantly narrowing range
Inspect, sort, and rework	Quality and error proofing built into designs and processes
Zero defects	Six-sigma methods to reduce defects to near zero
Go/no-go tolerance	Reduced process variability around nominal dimension
Inventory "Just-in-case" there are defects	Just-in-time inventory, with rapid response to defects
Status quo "Don't fix it if it isn't broken"	Constant improvement, never satisfied

2. SIX-SIGMA AND TOTAL QUALITY MANAGEMENT

Total Quality Management (TQM) is a concept developed in the 1980s as the United States became enlightened to the need for improved quality as a competitive initiative. Total Quality starts with management commitment to formal goal setting, quality system analysis, and a measurement system.

Six-Sigma is a refinement of TQM offering proven methods for achieving customer-centric process and quality improvements. The term "six-sigma" is derived from the statistical variability of processes and equates to a quality level of 3.4 defects per one million pieces (ppm), or 99.99966% conforming. By contrast, 2% defective is the equivalent of 20,000 ppm. Application of six-sigma methods involves statistical analysis of systems, process flows and equipment capabilities. These are combined with techniques for error proofing, redefining staffing requirements and conducting top-down training. Several major companies became known for their customer focused quality efforts using the six-sigma approach. These include, among others, Motorola, Allied Signal (now Honeywell) and General Electric.

The discipline is all about eliminating errors and reducing variability from the customer's viewpoint. Jack Welch, former CEO of General Electric, says six-sigma is a lot more than quality control and statistics; it is an idea that can turn a company inside out, focusing the company outward on the customer. He adds that ultimately it drives leadership to be better by

providing tools to think through tough issues.²⁶ It is critical for supply management people to understand and call for the application of six-sigma because it saves money, reduces response time, increases flexibility and improves customer (buyer) satisfaction.

Some specific quality strategies used by professional purchasing departments are as follows:

- Establish supplier continuous improvement projects.
- Assure top management support.
- Map process flow.
- Use six-sigma methods, such as root-cause analysis and error proofing.
- Measure and track progress regularly.
- Expect suppliers to apply Statistical Process Control (SPC).
- Reduce variability.
- Narrow and center the band of acceptance (more on this shortly).
- Know the elements of your company's cost of quality and manage quality to reduce the total cost of quality from all sources.
- Ensure that all quality and process improvement efforts focus on satisfying the final customer.

2.1 Cost of Quality

Many will agree the definition of quality is “conformance to requirements,” or “meeting the specification.” The quality system is “prevention,” and the performance standard is “Do it right the first time.” The measurement is Cost of Quality (COQ).

Costs associated with quality are traditionally buried in various departments' budgets. Assembling these data allows managing the costs through a multifunctional team approach. COQ becomes a tool used to improve quality of both products and services provided to customers.

The various costs of quality can be broken down into appraisal, prevention, external, and internal failures costs. Further, they can be broken into those quality costs tracked by accounting systems and those costs not normally visible from the system.

Traditional accounting systems report: warranty, scrap/repair, and inspection or testing. Those costs not normally reported by accounting include: lost sales, switching customers, retrofit field trips, time lost, higher inventory, obsolete materials, and expediting costs, as well as excess labor costs. Lengthy design cycle time, engineering redesigns, down time, high

26 Jack Welch, Jack, Straight from the Gut, Warner Books, 2001, page 330.

setup time, queue time, and poor plant layouts all contribute to higher costs of quality, and are not easily tracked.

The COQ draws attention to the opportunities to reduce costs. With this knowledge, measurements can be established, goals set and progress charted. The COQ report is normally under the guidance of finance.

The report should be compiled using costs from:

1. *Prevention costs*: Expense of running a system to ensure that products conform to the customers' requirements, including: writing specifications, procedures to hold dimensional tolerances and training costs for quality purposes.
2. *Appraisal costs*: Cost of testing, sampling, and audits to detect errors, including staff related to quality improvements, measurements and control.
3. *Internal failure costs*: Cost connected with a rejected or failed product, including extra inventory carrying costs, labor, materials, scrap, and wastes.
4. *External failure costs*: Warranty claims costs, transportation and handling of returned products, costs of rework or "doing it over," and costs of engineers' trips to customers to trouble shoot and solve problems.

Note that many of these costs are associated with activities performed by indirect and salaried personnel whose time, unlike that of direct labor, is not tracked by accounting. As a result, it may be necessary to use Activity Based Costing to get the cost details required. This is another important example of how, in order to effectively manage cost, it has become necessary to take a detailed look at the processes being performed to find the improvement opportunities.

Process analysis and subsequent process reengineering have proven to be essential in the effective management of the cost of quality. The process is mapped using TQM and six-sigma methods to define all pertinent operations, transportation, handoffs, approvals and delays. The process map includes all individuals involved in the process, the length of time each spends and the approximate cost of that time and total elapsed time for each step. With this information, the team charged with process improvement can identify ways to reduce cycle time, minimize errors, and reduce process total costs. Major improvement opportunities are almost always identified because, prior to this effort, most processes will have evolved over a period of time with changes made by one function without the benefit of a total process overview or consulting others involved.

Use of a process-focused approach to quality improvement has several advantages:

- Attention is directed toward a possible flaw in the process.
- Analysis is of the root cause of the error, not the person who erred.
- The process can be made error-proof, instead of asking the person to stop making mistakes.
- Management can remove barriers to good process flow, rather than criticize poor performance.
- Everyone, including supplier and buyer, is interested in the same outcome: fewer errors and lower costs.
- The interests of the final customer guide process improvement in the supply chain.

3. STATISTICAL PROCESS CONTROL

Statistical Process Control (SPC) is the application of statistical methods for charting key dimensional measurements to determine the process capability and condition of the process at any time relative to its inherent variability and mean performance. Use of SPC by a supplier is a possible indicator of potential for world-class performance.

Let's further define SPC by the individual components of the acronym:

“Statistical” relates to the science of drawing inferences and making decisions from variable data.

“Process” is any combination of machines, tools, methods, materials, and people used to get the qualities desired for products or services.

“Control” is a managerial process of setting and meeting standards.

SPC might be likened to the game of chess. The rules are simple, but the strategy for developing a control for a given process can be quite complex. If buyers are not familiar with the fundamentals of SPC, a supplier can easily present great looking control charts that have little real meaning.

Figure 8-1 shows the X-bar portion of a mean and range chart. Averages from small samples of consecutive units of production are plotted on the chart. As long as these means fall between the statistically derived control limits and do not exhibit significant trends, it can be assumed that the process average has not changed. Control limits are not specification limits, as they are a function of the process capability, not the specification. A point that falls beyond the control limit does not necessarily mean that defective product has been produced. A properly designed control chart for a capable process allows the operator to take action when an out of control point

occurs but before the specification is violated. If you never get an out-of-control point, maybe you don't need the control chart!

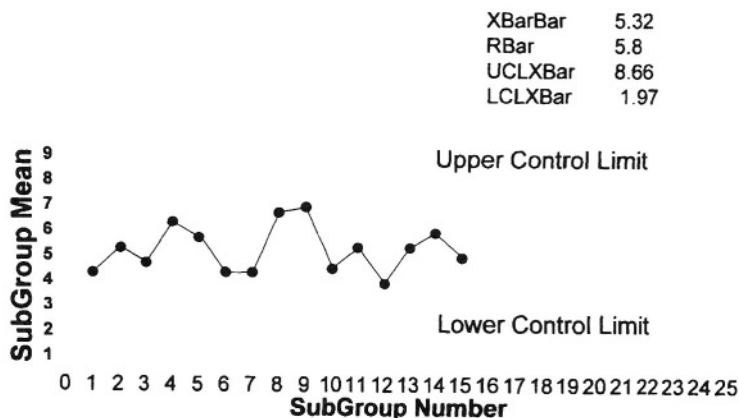


Figure 8-1. X-Bar Control Chart

The distribution of individual measurements produced by an in-control process frequently takes on the shape of the classic normal distribution or bell curve.

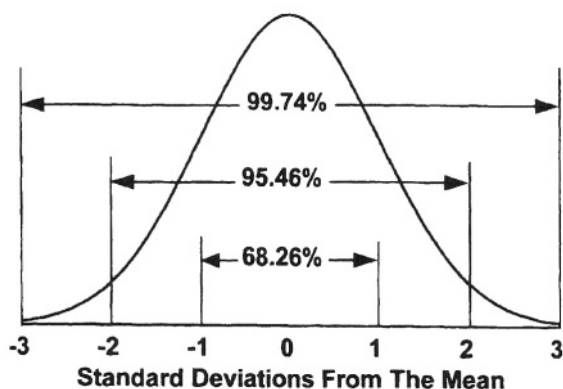


Figure 8-2. Normal Curve with Standard Deviations

See Figure 8-2. Two numbers or parameters describe the shape of the distribution. The mean (or average) is the midpoint or center of gravity on the horizontal axis. The other parameter is the standard deviation. As the standard deviation increases, the normal curve gets wider, indicating more variation in the measurements relative to the mean value. The height of the

curve at any point on the horizontal axis is a function of how often specific dimensions are expected to occur. Most observations in the normal distribution fall fairly close to the mean. Note in the previous figure that more than two-thirds of all dimensions in a normal distributed process fall within plus or minus one standard deviation from the mean. More than 95% will fall within plus or minus two standard deviations, and essentially all (99.74%) are contained within plus or minus three standard deviations.

Table 8-2 below outlines the steps and methods used in implementing statistical process controls.

Table 8-2. Steps in Using SPC

Activities	Methods
Define problem and set priorities.	1. Charts and graphs 2. Pareto analysis
Understand process.	1. Histograms 2. Run charts 3. Diagnostic use of control charts
Determine causes of process behavior.	1. Cause-and-effect diagrams 2. Scatter diagrams 3. Regression analysis 4. Analysis of variance 5. Design of experiments
Identify alternate solutions.	1. Brainstorming 2. Teamwork
Implement solution.	1. Who, what, and when 2. Measure results
Test solution.	1. Data collection 2. Before and after comparison 3. Statistical methods
Defect prevention.	1. Process control charts 2. Permanent solutions 3. Help people do it right

The use of statistical analysis and the normal distribution allows buyers to make a factual assessment of a supplier's capability and performance. Figure 8-3 shows three different normal distributions and how they relate to a dimensional specification. The curve titled "Desired Process" shows the process is perfectly centered. The mean is coincident with the midpoint of the specification. The range of dimensions within plus and minus three

standard deviations of the mean is using up only about 70% of the available tolerance. (In SPC jargon, this is a process with a 70% Capability Ratio, or a Cpk of 1.43.) Should the process begin to drift in one direction or another, a properly designed control chart will alert the operator to make an adjustment before the specification is violated.

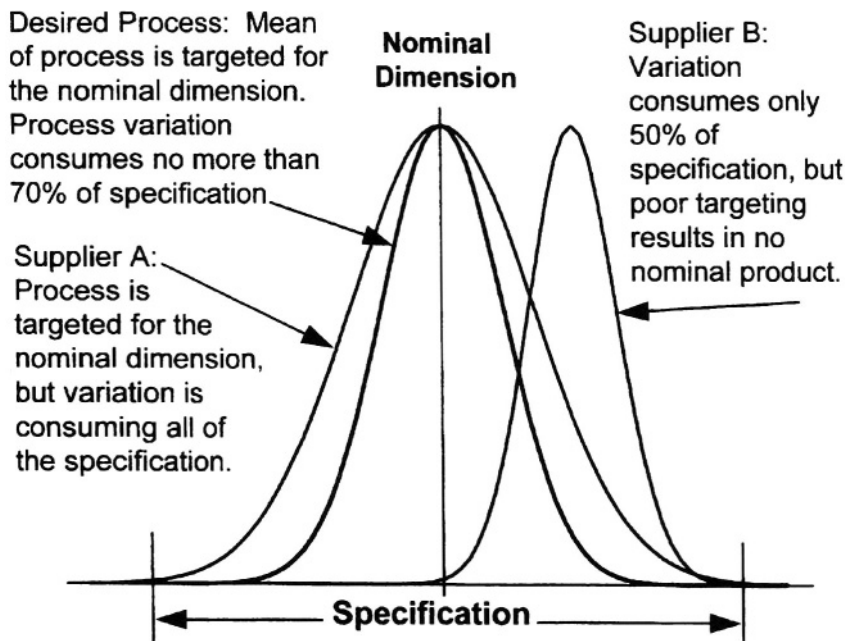


Figure 8-3. Typical SPC Bell Curve Charting of Key Dimensional Tolerances

Supplier A's process is properly centered, but by having a larger standard deviation, this supplier is using up all of the tolerance. This kind of supplier should make buyers nervous since any change in mean performance will yield defective material.

Supplier B, on the other hand, has very little process variation. The entire six standard deviation spread uses up only about half of the total tolerance allowed. However, the mean value for their process is well above the midpoint of the specification, so poor targeting is evident. Their entire product meets the specification, but almost none of the dimensions are near the optimum midpoint of the specification. Left as it is, buyers should again be concerned about this process. Having Supplier B retarget the process average to the midpoint of the specification will put this supplier in an enviable position relative to the other two curves. Supplier B has the

potential of being the superior source as they have shown an ability to closely control production tolerances.

The senior author, responsible for the purchase of large quantities of motors, recalls how his company cooperated with several American motor companies to check the relative merits of Japanese motors. The bell curves for American shaft diameters were within tolerance similar to supplier A's. The bell curves for the Japanese suppliers were consistently narrow, similar to that shown for supplier B, except the curve was properly targeted. This was the only detectable difference between Japanese and American electric motors at that time, which helps explain the superior reliability of the Japanese product.

State-of-the-art quality producers use standard deviations from the ideal as reviewed earlier. Individual machining centers maintain online charts that track and record results as parts are produced. Using SPC allows suppliers to monitor and control measurable characteristics. Prompt detection, improvement, or degradation allows knowledge about quality. The results of using SPC are increased conformance to requirements and decreased costs of getting them.

4. SPECIFYING WHAT TO BUY

Buyers must have some standard, or specification to buy. Lacking this specification the buyer will find it difficult to shop for comparable quality from alternate suppliers. Ideally, the "spec" will be as generic as possible to allow more than one supplier to be considered.

A specification is simply a description of the item wanted. It can be a written description, detailed drawing, or picture of what is wanted. Quality can be described in a number of ways in the purchase order, such as by: (1) brand, (2) grade, (3) sample, (4) physical and chemical constituents, (5) method of manufacture or production, (6) materials used, and (7) performance. It is important to remind the person creating the specification to be careful not to be unwittingly drawn into the supplier's trap of specifying what only that supplier can offer. Most suppliers are more than willing to help the customer write the specification, because the supplier knows how their offering is unique. If that unique feature becomes part of the final specification, the supplier is "locked in" and is able to price accordingly.

Buying by brand name places all the trust in the supplier. Some brand products are widely advertised and have a wide market appeal, and product quality acceptance is already present. Brand preferences do not last indefinitely so even when a brand is specified it is wise to include in the spec

those particular attributes or features that make the brand appealing. Then it becomes possible to provide an alternative if necessary.

Some companies buy by sample. Their spec reads, “as per engineering approved sample.” But this is rarely a good idea and often creates a problem. As with the brand name, the important information is the attributes that make the sample acceptable, not the sample itself. But because this is most often done as a shortcut to considering what the desired features really are, this is not a wise practice.

A contrasting approach to customer-defined detailed specifications is “specification by performance” that holds the supplier responsible for the purchased item functioning correctly. This type of specification probably should be used more often, but sometimes it can be difficult to enforce. This is sometimes referred to as buying a “black box” because there is a specification of the external dimensions and of the input and output features, without concern for what is inside the box. Buying a black box specification shifts the burden of specification from defining the physical attributes to defining the performance parameters, which can be more complex.

While there is a need for a complete and accurate spec, even this can be overdone. Consider an actual situation where a conscientious engineer was supervising the move of his testing equipment from an old to a newer nearby plant. While driving to work, this engineer noticed his equipment on a parked truck with the driver inside a coffeehouse. The next day a new spec was received by the buyer amending instructions to include the clause, “All moves are to be continuous, and drivers are not to take coffee breaks while transporting equipment between plants.” This spec change was unnecessary, as a phone call would have sufficed to solve this problem!

The spec should describe the requirement as precisely as possible, and at the same time should be as brief and as simple as possible. Most importantly, the specification should allow the receiving department to check that what was received was precisely of the quality intended. Companies should avoid using “accept as is” approvals for off-spec goods that have been rejected. If the specification causes goods that are acceptable to be rejected, the spec should be corrected. If, on the other hand, the spec is correct, then the goods should not be accepted.

The goal is to maintain *adequate* standards of quality. There is a cost associated with quality. Advertisements often suggest that the more expensive a product, the better the quality must be. You get what you pay for, right? Wrong! Many studies confirm what many consumers have long suspected, that high price and high quality don’t necessarily go hand in hand.

4.1 Efforts to Ensure Quality Through International Standards (ISO 9000 Series)

Buyers' use of quality standards gives confidence that recognized quality procedures and standards are being met. The American National Standards Institute, Inc. (ANSI) issues standards that are based on a "consensus of those substantially concerned with its scope and provisions." The standard is a guide to help manufacturers, consumers, and the general public to achieve quality assurance. Cooperating with this effort, the American Society for Quality Control (ASQC) set their quality assurance standards ANSI/ASQC Q90-94 series *Guidelines for Selection and Use*. In the interest of harmonizing global standards, they've achieved "technical equivalence" with Europe's ISO 9000-9004 series. This has been adopted within the U.S. as the ANSI/ASQC Q90-94 series that uses English language terms and denotes the practices used. A cross-reference points out where differences may exist.

Buyers need to be familiar with the ISO standards. The International Organization for Standardization (ISO), Geneva, Switzerland, governs all standards [<http://www.iso9000.org/>]. The International Quality Systems Directory offers a detailed listing on their site of quality certified organizations. The ISO 9000 series was created to define minimum requirements for a quality management and assurance system. More than 125,000 organizations have been certified or registered by ISO. Since the standards have been adopted within the U.S. as the ANSI/ASQC Q90 series, the number of U.S. companies that hold ISO 9000 registrations has increased rapidly. As an indication of the pervasiveness of the standard, consider that even UPS' Air Letter envelope states "ISO 9001 Quality registered".

Following are the international ISO 9000 series standards for quality management and assurance:

- ISO 9001—quality assurance systems for organizations that do design and development of their products or services as well as the production and delivery of them.
- ISO 9002—quality assurance systems in production and installation, the same as 9001 except it does not contain the design and development requirements.
- ISO 9003—quality assurance in final inspection and test, for organizations that do not participate in design and development, purchasing or have production controls. It is designed for organizations that only require final inspection and testing of their products and services to ensure that they have met the specified requirements.

A company meeting the ISO 9000 quality standard is better positioned to sell to all firms that recognize the standards. In the Greek language, ISO means “equal.” The objective is to achieve equality in the effectiveness of a wide variety of approaches to quality management through these worldwide standards.

Once registered, a company must pass periodic inspections that are determined by the third party agency selected. The four steps to begin are:

1. Set policy with a management commitment.
2. Develop a work manual—how to do the job.
3. Develop Standard Operating Procedures, by departments—how they are to do things.
4. Develop individual work instructions—details on doing the job.

4.2 Cooperation with the Quality Function Pays Off

Sometimes, purchasing managers think of the quality assurance (or control) function as interfering or impinging on their authority in dealing with suppliers. However, a progressive purchasing manager recognizes the important role of the quality control people and cooperates fully with them. They can be among the best allies in the business world.

Purchasing and quality control working together can improve acquisition by concentrating on (1) design, (2) manufacture, and (3) purchase. Control of the “cost of quality” begins in the design phase by choosing suppliers who can meet the required quality levels. Quality improvements often reduce scrap and rework and will ultimately lower the customer’s costs. Quality can’t be inspected into any product, but must be inherent in the design, and care must be used when it was crafted.

Let us recall the four basic responsibilities usually assigned to quality control: (1) to assist engineering in establishing quality standards; (2) to measure how well these standards are met; (3) to see that corrective action is taken when necessary; and (4) to plan improvements in quality when substandard quality is evident.

Let’s look at each of these areas in some detail:

1. *Assist engineering in establishing quality standards.* The engineering department sets quality standards, in the form of drawings and other specifications. However, some factors—such as cleanliness, surface finish, run-out, alignment, and the like—may not be clearly specified. These important details are worked out as the organization develops the specific processes for manufacturing their parts. An important role for the procurement professional is to bring the supplier’s knowledge into the

process of determining the quality requirements. This can be done informally, but in cases where the supplier plays a significant role in the design of the item, they should be included in formal design reviews. The Quality function generally has the responsibility of specifying sampling plans and indicating the degree of protection against failures these plans will provide. When inspection is called for, Quality advises the inspection people how to perform the work. By detailing all critical, major, and minor characteristics, inspectors can spend their time most effectively.

2. *Measure how well these standards are being met.* In measuring supplier performance against standards, Quality uses statistical tools, such as control charts, standard deviation, and the audit process. They may use an independent reliability test laboratory to check both purchased and manufactured components for longevity. They may random sample for overall control of quality. In the course of their work they will often uncover supplier problems. If so, Quality asks the supplier for corrective action. But if too many individuals are speaking to the supplier, confusion can result, so here the buyer's coordination role comes into play. From time to time, buyers may need to mediate disputes between the Quality organization and the supplier. It's very easy to say the supplier is wrong, but there may need to be an impartial review to determine the best resolution. In this manner, buyers will retain the respect, support, and cooperation they must have to remain credible in their work.
3. *See that corrective action is taken as necessary.* Corrective action is required of both the using and the producing companies if problems are not to recur. Here, again, Quality can be a good partner in straightening out the "kinks" that are an inevitable part of all operations.
4. *Plan improvements in quality.* Whereas corrective action is a tactical approach of "putting out fires," the planning of improvements is more analogous to strategic "fire prevention." Generally, investments in prevention will be more cost effective than the money spent on solving problems after the fact.

Poor supplier quality has many repercussions. It disrupts the production schedule and ties up floor space and inventory while units are awaiting the repair or replacement of defective parts or materials. Often, too, the cost of such repair or replacement is a substantial cost penalty to both the supplier and the buyer. Purchasing is primarily responsible for keeping losses in this area to a minimum.

5. WORKING WITH SUPPLIERS TO MANAGE QUALITY

Purchase order clauses are an integral part of managing supplier quality. They should be used to specify those requirements imposed by the final customer for conformance to various safety codes and government requirements. Examples of such customer requirements may include established standards of the Underwriters Laboratories (UL), American Society of Mechanical Engineers (ASME), American Society of Testing and Materials (ASTM), Society of Automotive Engineers (SAE), Canadian Standards Association (CSA) and others.

5.1 Certification Clause

A buyer must assure his or her source's products and components meet code criteria. Therefore a clause such as the following should be stated in the purchase order:

"Purchaser will submit their products to obtain UL, CSA, (or other agency) approval. Seller must submit proper certificate that its products comply with these (or other applicable) requirements and achieve published performance criteria per Seller's submitted specifications."

Sometimes customers impose quality standards or procedures that force purchasing to take special steps with suppliers. For example, the buyer's company may have to keep records tracking quality from its sources. For military projects, this is essential. The original manufacturer is required to be able to trace quality through the manufacturing process.

All suppliers should be urged to maintain a first class quality management program. The use of statistical methods of documenting quality should be requested when appropriate.

5.2 Quality and Reliability Clause

Use a Quality and Reliability clause in the purchase order. These key clauses should be considered specifically for major technical or foreign buys. Those that follow are representative examples only and suggested as a training aid.

The buying company is responsible for its own proper wording, based on negotiations with the supplier and the specifics of the goods being acquired. Sample wording might be something like the following:

“Seller shall use effective quality and reliability control techniques in monitoring its processes and products. Seller shall provide and maintain a quality control system that will, as a minimum:

- List all critical and major characteristics
- Specify details for quality audits, including characteristics to be verified
- Tender only supplies that conform with the requirements of this agreement
- Provide for qualification of new and revised products, and re-qualification in case of major product deficiencies
- Provide for disposition of defective items”

Also consider stating the following option:

“Surveillance may be by appointed representatives of Buyer at Seller’s plant. Buyer or its representative may choose to inspect products and processes at any reasonable time during business hours. (Each company will specify details consistent with their purchases here.) Buyer has the right either to reject or to require correction of non-conforming products. The Buyer shall accept or reject products as promptly as practical after delivery.”

“Seller’s compliance with this paragraph shall in no way relieve it of its responsibility and obligations otherwise assumed under the terms and conditions of this Agreement.”

Among items that may be checked for quality are the processes being used, the techniques and controls on the finished product, plus test methods and test data that support the product ratings. Any allowances for deviations or substitutions should be clarified. Any penalties for failure to meet quality standards should be spelled out.

5.3 Early Supplier Involvement

About 70% of production savings occur from improvement in design. Begin by using some of these steps:

1. Coordinate engineering/purchasing/supplier meetings.
2. Include suppliers in design reviews where appropriate. Ensure that product development and supplier representatives concur on the suitability of the supplier’s part for the intended application.
3. Closely follow product development projects and planned initial production.
4. Study test procedures to analyze supplier failures. Encourage process controls that will allow elimination of incoming inspection.

5.4 Qualification and Pre-qualification

Though qualification of components or materials for both existing and new products is the direct responsibility of design engineering, the economic and supply considerations should be introduced by purchasing before the final source selection. This information should be available to the design team early in the development process. In most circumstances, procurement should be an active participant in the design reviews and should lead a formal source selection team to provide this vital supply input to the design team.

Source qualification can range from a simple review of supplier capabilities to a very complex system in the case of hi-tech state-of-the-art hardware. When placing the first order, it is wise to perform an inspection at the supplier's facility before the first major shipment. Meeting with a supplier's quality department and others who do the job helps gain confidence in their integrity and a commitment to quality.

Buyers must represent supplier input, such as pricing, availability, and so on. Buyers are responsible to search out globally and screen new potential world-class suppliers. The mission is to have available such information in advance, so it can be quickly fed to engineering as needed. Purchasing should provide a window to new components and materials suppliers. Buyers must participate as far upstream as possible in the source decision-making process.

For all but the most menial items, it makes sense to qualify any new supplier before anything is bought. Buyers can spearhead a "pre-qualification" effort to identify new sources, and also new processes or methods of production. One often-overlooked step in pre-qualifying suppliers is the use of reference checks. Ask the prospective supplier for several current customers; then contact them to get input on their experience with the supplier's quality and delivery. Recognizing that the supplier will provide names of those customers most likely to speak favorably, it's important to check other sources of customer information, such as a Dun & Bradstreet report.

Pre-qualification of suppliers provides an escape valve to reduce risk, so changes can be made without a drastic effect on quality. The buyer who has pre-qualified suppliers is prepared to handle emergencies on a proactive basis.

Assurance of the quality of products and services provided by suppliers may be the most critical of all supply management responsibilities. The company is accountable to customers for the quality of its products and an essential component of assuring the desired result is the management of supplier quality. Furthermore, when quality and defect prevention are the

primary objective of both supplier and buyer, the benefits of lower total cost and greater customer satisfaction will likely accrue to both.

Chapter 9

PURCHASING'S STRATEGIC APPROACH TO INVENTORY MANAGEMENT

Steven M. Pooler *

While most companies understand the inherent value of inventory in meeting customer demand for products, management is generally dissatisfied with how this critical balance sheet asset is controlled. Whether inventory is viewed as an asset used to achieve the objectives of an organization, or viewed as a liability as an underutilized asset, depends on how it is managed. It is safe to conclude that there is a large gap between sophisticated inventory control concepts and actual practices. Few managers are satisfied with the inventory results presently being achieved.

1. DRIVERS OF INVENTORY

There are strong forces that drive the need for inventory and equally strong opposing forces that seek to eliminate it. Management will always closely scrutinize the process of controlling inventory because of the high impact of inventory cost on profitability.

Among the forces that tend to increase inventory are:

- Customer service goals—trying to deliver on time, every time
- Guarding against market uncertainty, and the inability to accurately forecast requirements
- Taking advantage of lower prices for larger quantities
- Longer production runs to spread non-value-added set-up costs over more units of production

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- Inventory build plans in anticipation of seasonal demands or possible labor contract problems
- Supplier lead time longer than customer fulfillment leadtime requiring build to forecast
- Safety or buffer stock to hide factory inefficiencies, quality problems, and poor supplier performance
- Transportation time, especially for Customs delays and offshore supply
- Less than optimal planning and scheduling controls, and ineffective techniques to control inventory
- Traditional “push” systems where items are manufactured or purchased in anticipation of future sales
- Suppliers’ inefficiencies and process times require larger lot sizes to meet customer demands

Financial managers will want to decrease investment in inventory for the following reasons:

- Desire to improve return-on-investment
- Need to reduce investment in assets or to release working capital
- Efforts to reduce inventory carrying charges
- Anxiety over obsolescence, spoilage, deterioration and taxes
- Storage space limitations

Some of the actions and efforts that will help to reduce inventories are:

- Implementing demand “pull” systems that trigger material movement to a work center only when that work center is ready to work on it
- “Kaizen” initiatives—the Japanese term for continuing improvement, involving everyone from managers to workers to eliminate waste in machining, labor, and manufacturing processes
- Set-up time reductions coupled with programming and tooling optimizations
- Management programs such as JIT to reduce leadtimes and achieve high-velocity manufacturing

To keep these conflicting pressures in balance and to control inventory effectively, the following questions may be considered by the astute purchasing manager to minimize the adverse effects of carrying inventories beyond the minimum requirements:

- What is the “true” or actual demand, not the forecasted demand?
- What is required on the basis of the production plan?
- What is the item’s leadtime, including time to process internal workflow?
- What will the demand be during the leadtime to replenish?
- How many are currently on hand?

- How many are on open purchase order?
- What is the inventory policy?

The simple truth is that inventory is the equivalent of “cash” and expensive to hold. Today, most high-level managers strive to have none, but that’s seldom possible. However, the benefits of a properly managed inventory far outweigh the cost of maintaining it. From an idealized control of inventory, a company would get material from a single source located nearby, and have it delivered exactly as requested. The supplier is totally dedicated to the buyer’s wants. But, in the real world the PM is continually challenged with finding the lowest cost to remain globally competitive.

Generally, purchased items fall into three major categories: (1) capital equipment and services, (2) maintenance, repair, and operating supplies, and (3) materials and components used to produce a final product. In most manufacturing environments, planning and control systems drive requisitions for purchased items. It is the role of purchasing to communicate this information to suppliers in a timely manner, and verify that the suppliers have the capacity to supply as scheduled.

Management of these three categories directly affects the goals of the organization concerning production efficiency, inventory costs, quality, cash flow, and return on investment. So, the relationship of purchasing and operations planning is key in supporting and achieving these objectives. Current thinking emphasizes *pull systems* (respond to actual customer demand), minimum lot sizes, and shorter leadtimes as *essential to better inventory management!*

This chapter focuses on providing a conceptual understanding of planning and control activities that drive the need for inventory and the role the PM plays in supporting the inventory objectives set down by management.

1.1 Types of Inventory

There are four basic divisions of inventory for the materials, components and supplies used throughout the production process:

1. *Raw materials.* Any material or part required from outside the company for use in the manufacturing process. Rates of consumption vary and will generally dictate a sufficient acquisition of material to last over some period of time.
2. *Work-in-process.* WIP consists of components, subassemblies and raw materials that are being worked on, or in various stages of completion in the factory. WIP also includes the value of any labor already expended to

produce or assemble the materials and components. Levels of WIP will vary greatly from company to company depending on their planning policies, manufacturing cycle times and process complexity.

3. *Finished goods*. Products and goods that are completed and ready for delivery to distribution centers or directly to customers.
4. *Maintenance, repair, and operating supplies*. The materials and parts needed to maintain production equipment or complete the production processes.

Managing the inventory levels of these four inventory groups is vital. In most manufacturing organizations purchased inventory represents 30% to 60% of the cost of goods sold; the percentage is even greater in retail businesses.

1.2 Who controls inventory?

The type of business, the inventory type, or company policy will usually define who controls inventory. In larger companies the Production Planning department or Materials department will typically control WIP and finished goods. Some companies may tend to hold Sales and Marketing responsible for finished goods inventory, as it is available for delivery to customers.

Management of distribution inventories is handled separately and usually falls under the umbrella of Marketing or Sales. Decisions regarding levels and number of distribution centers have to be settled with marketing or sales. *Distribution Resource Planning* (DRP) seeks to locate facilities closest to customers to be serviced. Should distribution centers be company owned, private or public warehouses? Considerations include alternate modes of transport, and so on. DRP develops a schedule of requirements that translates to production needs from manufacturing.

Regardless of who controls inventory, Purchasing can have a major impact on many inventory decisions. The PM, at a minimum, needs to understand the strategies, goals, and objectives of adequate inventory control. There is no escaping the inventory challenge. Once the PM commits cash to order materials, they become an important part of managing the assets of the enterprise.

2. GOALS OF INVENTORY CONTROL

The basic goals of inventory control are measured in terms of customer service and inventory investment. The task is to *meet customer needs* while maintaining the greatest possible *return on inventory investment*. The

primary function of inventory management is to have items available and to maintain the flow of goods through the production process to the customer, while minimizing the costs to achieve this service.

One of the most successful distributors, Hughes Supply of Orlando, Florida, uses their founder's statement, "You can't do business out of an empty wagon." That says it all! There must be enough materials or goods to sell. The challenge is not to have too much. There has to be a balance, while maintaining maximum flexibility. Inventory flexibility is greatest when the inventory is in raw materials and the least when it is in finished goods.

In addition to maximizing return on investment, inventory goals attempt to achieve the following:

- Meet customer delivery schedules, and satisfy sales goals
- Reduce manufacturing leadtimes for standard and custom products
- Achieve an acceptable inventory dollar investment, based on annual sales or planning forecasts
- Minimize production delays because of stock-outs, to keep production lines operative, and to maintain employment stability
- Develop simple management tools that will allow proactive responses to market changes and fluctuating sales

Sound inventory control requires knowledge of future requirements, not merely information about past sales. For this reason many manufacturers are using the latest tools from lean manufacturing and e-commerce to reduce cycle-times and get better customer order information.

3. ASSET MANAGEMENT (CONTROL OF INVENTORY COST)

Management attention has shifted from traditional "P&L" management to "balance sheet" or asset management because many companies cannot generate sufficient return on invested capital to survive. Inventory is reflected on a company's balance sheet as an asset, and is usually the largest single entry, so management attention naturally focuses on it.

Because inventory ties up capital, has to be stored, needs to be handled, can spoil or become obsolete, is taxed, and sometimes lost, it can be considered a huge liability. Furthermore, inventory often exists to compensate for poor forecasting, poor supplier quality, poor delivery performance, and poor ordering practices. If the wrong items are in inventory, the problem is magnified.

Raw materials, WIP, and finished goods inventory are considered short-term assets as they are consumed or sold in a short period of time. MRO supplies are generally written off against income as an expense at the time they are acquired. Equipment purchases are usually capitalized when acquired. Therefore MRO expenses and capital items are not normally included in inventory balances.

The average U.S. manufacturing company has about 30% of the firm's working capital tied up in inventory, which represents a large portion of the total costs of goods sold. The same percentage holds true for most distributor inventories. Inventory has a multiple effect on company results since it is a factor in both the rate of investment turnover and in the profit margin. Since ROI is determined from the profit margin and the level of investment in assets, including inventory, *controlling inventory value has a double-barreled effect on company performance.*

3.1 Record Keeping Systems

Successful inventory management requires administrative, physical, and financial controls. These controls are achieved through record-keeping systems, inventory valuation methods, and warehouse practices. The most widely used methods of control are:

- Many manufacturers track inventory at regular time intervals, perhaps weekly, monthly, quarterly, or annually, using *periodic inventory systems*. This system is most often used for MRO supply items, or “C” category inexpensive production components.
- *Perpetual inventory systems* keep records current, and are used by retail stores, wholesale distributors, and some manufacturing companies. Electronic data files and bar codes have made this method much more practical and are rapidly gaining favor, particularly among high tech manufacturers.
- Manufacturers use *four-wall inventory systems* where there is little or no storage time. Items are recorded as received, and not subtracted from inventory until they leave in finished goods. Bar codes and electronic files also have facilitated this method.
- *Visual inventory systems* may be informal, and require users to reorder as needed, based upon actual observation of stock levels. Visual systems are used to manage “C” items such as fasteners, and other inexpensive supplies.

3.2 Methods of Inventory Valuation

The costs of inventory items must be valued for financial reporting and various control functions such as “ABC” inventory analysis, discussed later in this chapter.

The most common methods for determining the cost of inventory are:

- *First in, first out (FIFO)*. This method assumes that the oldest items in the inventory will be used first. Using the FIFO method in periods of rising prices would tend to keep the inventory costs on the balance sheet closer to current market value, but the cost of goods sold would be at the earlier and lower cost, providing greater profit margins on sales.
- *Last in, first out (LIFO)*. This method assumes that the last items received into inventory will be consumed first. Inventory value is based on the oldest quantity in inventory. Using LIFO in periods of rising material prices tends to understate the inventory value on the balance sheet. However, the cost of goods sold is closer to current market values. Cost of goods sold is at lower cost than the item's replacement cost.
- *Average cost*. This method determines the average of the earliest and the latest receipts for the inventory value. This provides a compromise between the balance sheet and the income statement effects caused by inventory value.
- *Standard cost*. This method assigns a single value for an item throughout the year. Like the average cost method, standard costs seek to provide an average of the actual costs during the period, with the difference between standard and actual cost tracked as a cost variance. Standard cost may need to be adjusted to actual cost for IRS reporting.
- *Replacement cost*. This method assigns inventory value based on the cost of the next receipt. This is important if items stay in inventory for long periods of time, so the inventory will be valued at the current cost of the items sold.
- *Actual cost*. This is most desirable, but has been seldom used in the past. Electronic tracking systems are making actual cost easier to manage and large projects or government procurement may require it.

Once an accounting decision to determine inventory value has been established, the IRS does not allow shifting back and forth to take advantage of current economic conditions.

3.3 Financial Analysis of Inventory

Inventories are one of the principal barometers the economist uses in determining the health of the economy. As an economic cycle progresses, sales may drop, while inventory accumulation is not cut back accordingly. Watching the ratio of sales to inventories provides a signal to adjust inventory policies in response to changing sales levels.

The value of a company's inventory depends not only on sales volume but also on the type of business and the time of year. If a car dealer has a large stock at the height of the buying season, he is said to be in a strong inventory position. Yet, the same inventory during August places the dealership in a vulnerable position, because the new models will come out soon. A large inventory can be vulnerable to valuation losses due to sharp price drops for the outdated models.

In short, correct inventory size depends on many factors. Without a measure of the appropriateness of inventory investment, companies are operating in the dark. For this reason, turnover rates, or "turns," is widely used to measure inventory investment relative to the cost of goods sold or to sales revenues.

3.4 Inventory Turnover

Manufacturing inventory turns are calculated by dividing cost of sales (COS) or cost of goods sold (COGS), for the period (usually month, quarter or year) by the inventory value at the end of the period. For example, if (COS) is \$1,000,000 for the quarter and inventory at the end of the quarter is \$250,000, the turnover is 4 turns. If sales, and therefore (COS) are doubled while holding the same inventory level, turns become 8. If the original \$1,000,000 in sales is conducted with \$400,000 in inventory, turns are 2.5.

Comparison of one company's turns to another is meaningful only if they are in similar businesses and you are comparing similar inventory categories. For example one report gives the following median *total inventory turns* for various industries—aerospace 4.5, automotive 13.0, high tech 6.0 and printing and publishing 8.4.²⁷ The same report provides the following corresponding median turnover rates for *work-in-process* inventories—aerospace 7.0, automotive 21.6, high tech 10.0 and printing and publishing 15.5.

Normally products with long manufacturing cycle times, such as industrial machinery, will have lower total inventory turnover, maybe between 5 and 10 turns. In contrast, PC manufacturer Dell reports *work-in-*

²⁷ Census of Manufacturers, Industry Week Magazine, November 2001, page 37

process inventory turns of 455.²⁸ Note that while that number is a remarkable achievement (some might say impossible), it is computed by dividing total sales dollars by *only the work-in-process portion* of inventory. Dell's build-to-order sales model and very precisely managed pull-manufacturing system allow it to achieve an extremely low level of materials actually in process at any moment of time.

So it is evident that one must be very clear what category of inventory is being included and which industry is being compared. It is also interesting to note from the Census of Manufacturers study above that the best performers (75th percentile, or top 25%) far outperform their competitors. For example, in the aerospace category the 75th percentile reported *total inventory turns* of 10.0 compared to the median of 4.5.

High inventory turnover is desirable, and many companies today are so concerned with cash flow, they will actually calculate turns daily. But, at some point the lack of needed inventories could cause production problems or loss of sales, and that in turn will reduce profit and return on investment.

Therefore, inventory policy decisions must be made on how much stock to carry. While the goal is to have just sufficient inventory to meet demand, it's impossible to always be that precise. An inventory budget may be prepared for a plant or for various work centers. Typically, the budget will display allowable dollars that can be held in inventory based on production output.

A monthly inventory budget value may be determined by the formula:

$$\text{Inventory \$} = \frac{\text{Monthly Production (\$)} \times 12}{\text{Desired Inventory Turnover}}$$

The desired turns for each work center can be determined from past performance or set jointly by management and those held directly accountable for inventories.

Some other commonly used financial inventory ratios are:

- *Committed (against sales orders) inventory to total inventory* is a measure of how much inventory is stocked for specific customer needs.
- *\$ Inventory to \$ monthly shipments* (or production) defines available-for-sale inventory to completed orders.

²⁸ John Teresko, *Industry Week*, October 2001, page 44.

- *\$ Inventory to net working capital*, indicates the portion of working capital being consumed to finance inventories.
- *Current debt to inventory* is an indication of how much the business relies on funds from short-term debt financing to pay for inventories.

In some cases, other standards might be more suitable. By themselves these ratios are not always meaningful. Comparison over time, or against benchmarks, is essential for complete understanding. Again, ratios are meaningful only if similar companies and circumstances are compared.

3.5 Physical Control of Inventory

Inventory control may be considered on two levels, the dollar level and the unit level. Financial officers are primarily interested in the dollar level, because money tied up in inventory is not available for other uses. Naturally, they want as low a dollar value of inventory as possible. Manufacturing is more interested in having the units of goods in inventory to meet production requirements. The goals for the business are to balance these interests and maintain sufficient stock to keep manufacturing supplied and keep stock-outs to a minimum.

Planning and replenishment systems rely on accurate inventory records, and on their continued maintenance. It is critical that on-hand balances are verified as often as possible. Verification should include item identification, physical storage and location of materials, storeroom management, and physical inventory counting practices. Interestingly, the faster the turnover, the easier it is to accurately track the levels of inventory on hand.

The consequences of poor inventory records include unplanned shortages, surpluses, productivity losses, high inventory levels, excessive expediting, and most importantly, lost sales and missed customer promises. The goal of any verification system is 100% accuracy, but more importantly it is to detect discrepancies between record data and what is physically available.

Finance normally will require at least an annual physical inventory review, but the preferred method of control is regular cycle counting. Cycle counting uses full-time specialist(s) or electronic tracking systems and allows early detection of errors and correction of the cause, resulting in continually improving records.

The most common criterion for triggering a cycle count is the “ABC” classification reviewed below. High-value (A) items are counted more often than lower value (B) and (C) items. To accelerate the updating of inventory records, the trend is toward automated systems to display database information in real time. Bar-coding, magnetic stripes, optical reading devices, and automatic counting devices are some of the tools currently

being used by many organizations. These tools have made inventory record keeping much faster and easier and have dramatically increased accuracy.

3.5.1 **ABC Inventory System**

Usually a small number of inventoried items account for the largest portion of total inventory value. This fact has led to the use of the “ABC” system, whereby inventory is classified into groups of high value (A items), medium value (B items), and low value (C items). Items can be divided into “ABC” categories as seen in Figure 9-1. Different authorities use different percentages. It's the concept that matters, and company's percentages vary.

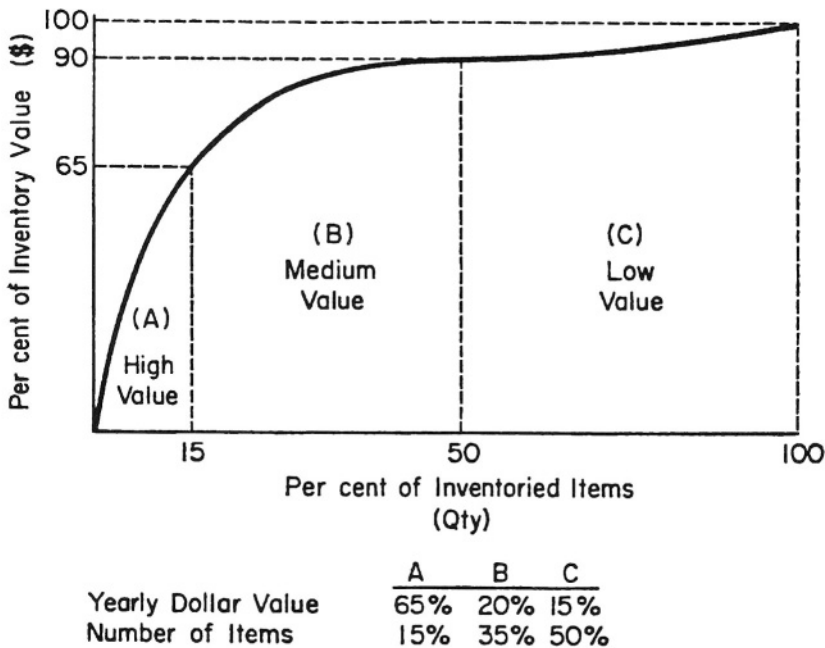


Figure 9-1. "ABC" Method of Inventory Analysis

- What control should the company get through using the “ABC” system?
- Close control is required for high-value A items (buy minimum quantity, or only order as customers request), which are about 10% to 20% of items but 65% to 80% of the cost.

- Buy on demand or on an economic purchase quantity for medium value B items, which are about 20% to 35% of the items and 20% to 30% of the cost.
- Carry larger quantities of low value C items, which are 50% to 70% of the items, but only 10% to 15% of the cost.
- For the ABC analysis, some companies use a Days-of-Supply measurement rather than specify a certain quantity.

4. DECIDING WHEN AND HOW MUCH TO BUY

The question of how much to order has been the subject of planning and inventory control debate for many years. Still, there are different options that can be applied to this important issue. A company may purchase an item for different reasons—in response to receiving a requirement for an item (make to order) or in anticipation of customer orders (make to stock). In a make-to-order environment, the buyer usually purchases only the quantity needed by the customer. For make-to-stock, the order quantity is determined primarily by the item's forecasted demand.

Money tied up in other than bare essential inventory should be justified just as fully as any new investment.

General considerations about buying the “right” quantity are as follows, in random order:

- Knowledge of customer requirements
- Company policy on inventory
- Cost of carrying inventory
- Knowledge of market conditions
- Supplier's economical manufacturing quantity
- Economical shipping quantity
- Standard unit of supply or shipment (barrel, pail, carton, etc.)
- Manufacturing leadtime
- Transit time
- Cost of issuing replenishment orders
- Quantity price differentials
- Storage facilities available
- Interest cost on investment
- Insurance premiums to protect the inventory
- Depreciation and obsolescence
- Turnover target, and balance of product mix

Buying the right amount is usually a compromise of many of the above considerations. When you come right down to it, there are just two basic buying decisions that must be made: (1) how much to buy and (2) when to buy?

4.1 Economic Order Quantity

A traditional method to determine how much to buy was the economic order quantity (EOQ), which was used for items with level and continuous demand. When forecasted demands are uneven or discontinuous, the EOQ formula doesn't provide the best estimate of the quantity to buy.

The EOQ formula had been widely used since its introduction in 1915. Currently, with the advent of lean manufacturing and the demand for better cash flow, the EOQ concept has fallen into disfavor. The authors discourage use of EOQ because it assumes that quantity price breaks are valid and counters the more important point that suppliers should focus on continually improving their set-up times and cycle times in order to reduce their own internal costs. A supplier's manufacturing inefficiencies should not be passed on to the buyer. However, the EOQ concept is presented here because some operations continue to use EOQ, and no reference work would be complete without a short summation.

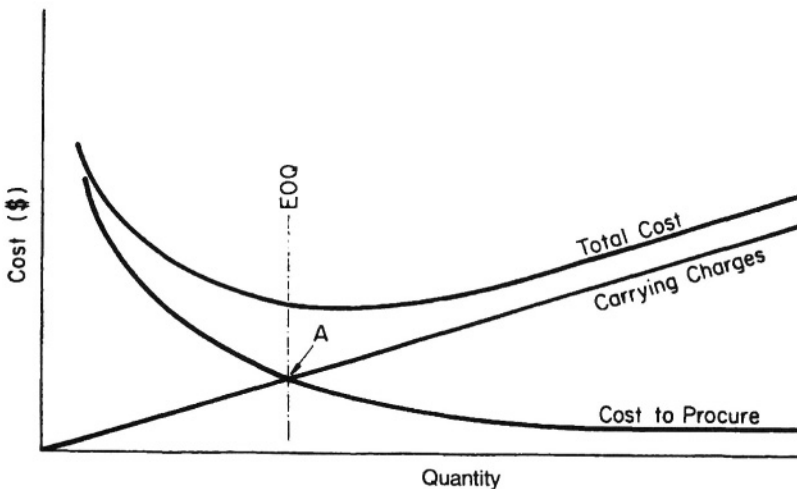


Figure 9-2. When EOQ occurs

EOQ says the quantity of an item that should be purchased at one time can be determined by balancing (1) the cost of carrying the inventory and (2) the cost of completing a purchase. The result is the lowest total cost for the order transaction. This economic order quantity, or EOQ, occurs when the total cost is at a minimum as shown in Figure 9-2.

Inventory carrying costs are normally provided and updated often by the finance organization, because of the frequent changes in the value of some cost elements. Whether EOQ is used or not, it is helpful for the buyer to understand what elements of cost go into carrying costs. Table 9-1 shows a typical carrying cost breakdown.

Table 9-1 Elements of Inventory Carrying Cost

Cost Element	Range in % per Year
1. Interest of investment	5 to 6
2. Space charge	0.25
3. Handling charges	1 to 3
4. Supplies	0.25
5. Insurance	0.25
6. Taxes	0.25-0.5
7. Obsolescence	5 to 10
8. Depreciation	5
9. Deterioration	3
10. Use of money elsewhere	4.5 to 8
Total in Pct. per year	12 to 24.5

4.2 Order Quantity Methods

Planning and control systems provide order requirements based on forecasts or production schedules. Many different replenishment systems are available and combinations are appropriate under different conditions.

There are four basic methods of deciding when to buy:

1. Statistical reorder point (ROP)
2. Time-phased order point (TPOP)
3. Material Requirements Planning (MRP), and
4. Visual pull systems and Demand-based signals such as Kanban.

The method a company will adopt depends on the demand characteristics of their products. Independent demand (finished goods or distribution inventory) is usually planned and controlled with conventional methods such as ROP and TPOP, whereas inventories subject to dependent demand (raw materials and components) are usually planned and controlled through MRP.

4.3 Statistical Reorder Point

The statistical reorder point (ROP) system is one of the oldest methods known for determining when to replenish or buy. It can be described as the sum of the demand through the leadtime, and is an effective replenishment tool if the demand is fairly constant and predictable. For items with fluctuating demands that exceed the leadtime, some safety stock is usually added to the equation to prevent stock outs or lost sales. The final ROP formula becomes demand over the leadtime, plus safety stock, and is expressed as $ROP = DOLT + SS$. The purchase quantity is usually a fixed order quantity or lot size, derived from past usage, to meet production demands.

The ROP method requires the use of perpetual inventory data, displaying current on hand balances and quantities already on order. The saw-toothed graph shown in Figure 9-3 is a classic depiction of a Statistical Reorder Point where inventory usage is constant over a relatively fixed period of time. The diagram shows when to order to ensure the arrival of new shipment before the minimum stock level is reached.

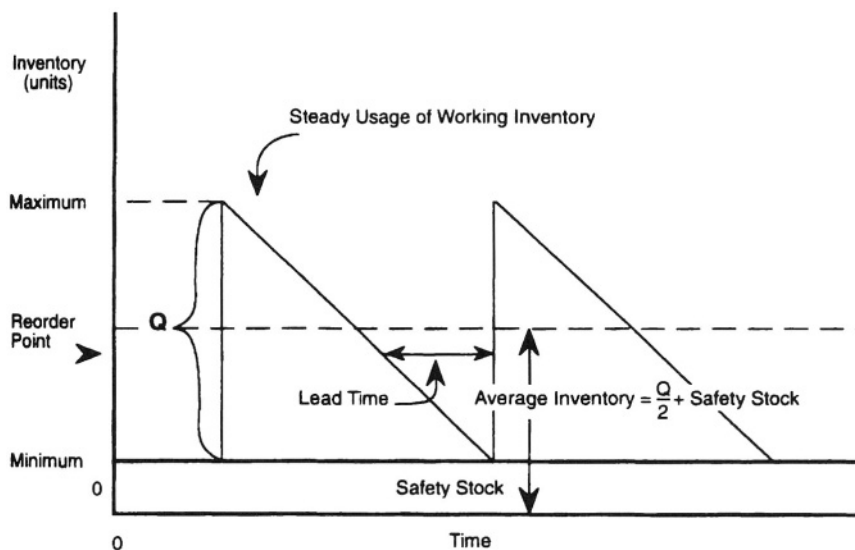


Figure 9-3. Saw Tooth Diagram

Two mechanisms commonly used to trigger a ROP order are perpetual inventory records and visual review systems. The two-bin system or visual

pull system is generally the most common. How does it work? When the first bin is emptied, it triggers a replenishment order to refill the bin. The second bin represents the demand over the leadtime plus safety stock, and is consumed until new material arrives. When new material arrives, the first bin is refilled and the process starts all over again.

Two bin systems are generally used for the management of low-value C items with short leadtimes, such as office supplies or hardware. Recently, many buyers have turned over C item replenishment to the supplier. This is usually referred to as *supplier managed inventory*. Under provisions of a contract to supply all requirements for specific items, the supplier assumes the responsibility for maintaining the stock levels. They are charged with maintaining the availability, along with whatever visual or trigger system they choose. Payment is made when an invoice is received for the replenished quantity.

4.4 Time-Phased Order Point

Time-phased order point (TPOP) is a method for determining when to buy based on the time-phased grid used in MRP. The purchase quantity is usually a fixed lot size, but TPOP does allow for buying discretely, in response to actual demand.

The data that drives TPOP includes a forecast, the leadtime of the item, and the order quantity. Forecasted demands, scheduled receipts, and on-hand quantities are time phased, usually by week, over the planning horizon (usually 3 to 6 months). In each period the quantity available, minus the forecast, plus the scheduled receipts, for the period equals the projected quantity available. When the projected available inventory becomes negative, the need for a replenishment order is triggered.

There are a number of advantages in the use of TPOP. It enables the planning and procuring of material for future requirements based on a sales forecast rather than past sales history. It provides future visibility for the releasing of purchased or production orders and most importantly forecasts can be adjusted for seasonality, trends, or discontinuous demand.

In lean, cellular or flexible manufacturing environments, some have found that MRP driven TPOP is best for planning the anticipated material requirements and supplier capacity, but pull systems are best to actually execute the release of a purchase order. Demand-pull will be discussed later in the chapter.

4.5 Materials Requirement Planning

The Master Production Schedule (MPS) drives materials requirement planning (MRP). It forecasts the products the organization plans to manufacture or buy each period. Production Control and Inventory Planning use the Bill of Material (BOM) in conjunction with the MPS to compute demands and identify requisitions and production orders that must be released.

MRP is normally automated and computes many of the formulas using rules for inventory management such as ROP or TPOP and the ABC priority system. It is a time-phased technique to determine the timing of when to buy to meet the MPS. Planned order releases are issued to cover calculated requirements for both in-house manufacture and externally purchased components.

The flaw with early MRP was that it assumed infinite capacity. This was addressed by the creation of *capacity requirement planning* (CRP). CRP enabled the evaluation of the production plan to determine if the current supply of resources was adequate to achieve the plan. How does it work? CRP creates a facilities database derived from the number of machines, the number of workers, and the planned working hours per week. It uses routing and leadtime data to develop work center profiles to aid in identifying bottlenecks and underutilization. Planners were able to determine if corrective action was needed and in turn developed countermeasures to smooth out the workloads across work centers. This helped eliminate bottlenecks and control leadtimes to support the Master Production Schedule.

Several years ago, a more sophisticated version of MRP was developed called *manufacturing resource planning*, or *MRP II*. MRP II is a formal manufacturing information system that links Marketing, Finance, Operations, and Purchasing. It converts resource demands, such as equipment, manpower, and material into financial requirements and converts product output into monetary terms. The major benefit of MRP II is that it can evaluate an organization's ability to execute the plan financially, and evaluate the merits of the plan in terms of return on investment (ROI), and profit.

Manufacturing resource planning (MRP II) ties in with capacity requirement planning (CRP). CRP compares the timing when the units are required on the production floor; considers machine hours, rate, and labor hours by work centers; and facilities usage for shop-floor control.

In recent years a more sophisticated electronic information system called *enterprise resource planning* (ERP) has taken these calculations to an even

higher level. ERP includes not only the manufacturing activity but also provides for coordination and financial reporting for most of the support activities to operate the business.

5. LEAN MANUFACTURING AND JUST-IN TIME

The conventional approach of when to buy had historically centered on demand-push systems such as ROP, TPOP and MRP as described earlier. Today, many companies are shifting to demand-pull, also referred to as lean, cellular or flexible manufacturing. In *Lean manufacturing*, actual consumption of materials signals the need to buy. The procurement of goods or movement of material to a work center is triggered only when they are required by actual demand. Demand-pull systems such as Kanban respond more directly to actual customer requirements and can be highly variable.

Lean manufacturing and six sigma process improvements (refer to Chapters 8 and 14) have caused a change in the way inventory is managed, but they do not replace ROP and MRP, rather they emphasize error proof execution and the purchase or manufacture of only what is needed.

The Japanese “*Kanban*” or card system was pioneered by Toyota Motor Co. Visitors to Japan in the 1970s learned how the Kanban card triggers, or signals, the need for replenishment, when it is passed upstream from the consuming operation. It is a true pull system since the customer, or downstream operation, signals the need.

In the 1980s, many American managers believed a primary reason for Japan’s success was a concept termed “*just-in-time*” (JIT). Early on, a common misconception held by many managers was that JIT, in a narrow sense, was another planning tool that simply required suppliers to ship components exactly as needed and on time. The result was many early failures until the realization that JIT is a broad-based philosophy of management directed at process improvement.

A successful JIT program involves six-sigma problem-solving, lean manufacturing techniques, top management buy-in and the involvement of the people engaged in the process. The philosophy is customer driven and focuses on documenting the processes, so that all waste can be identified and eliminated. As a result of continually searching out waste and inefficiencies and developing countermeasures for improvement, customer satisfaction is increased and total costs are reduced.

Reports have been glowing about the success of JIT and lean manufacturing. In many companies, inventory levels have been reduced by more than half, throughput times have been shortened by two-thirds, WIP has been reduced to one-day supply or less, downtime was eliminated, and

scheduling flexibility and productivity were improved. Who can quarrel with such results?

JIT goals are consistent with normal inventory control goals, but require the removal of the drivers of excess inventory. For example, if the customer consistently experiences a 5% scrap rate, conventional controls suggest an extra 5% be ordered to cover the expected loss. The JIT approach asks, "Why is there a 5% scrap rate and what can be done to reduce or eliminate it?" The target is to meet the customer demand with precisely the correct quantity of materials and 100% reliability of the process.

In summary, an order to replenish inventory can be initiated in several ways: by an item reaching its order point, the arrival of a planned order release date from an MRP system, or a demand-pull or Kanban trigger.

6. PROCESS IMPROVEMENT AND INVENTORY

Why have practices such as lean manufacturing and six-sigma process improvement tools had such a profound impact on inventories? And how does e-commerce enable even more exploitation of these advances? The basic idea of these practices is to continuously reduce all the waste and non-value-added elements of a process, leaving only those that actually provide value to the customer.

Inventory is greatly affected by these processes and by the improvements companies have made. To understand this phenomenon, consider the source of demand for production and therefore the source of inventory requirements, the final customer.

6.1 Leadtime as an Inventory Driver

Determining what the customer will want, before there is a commitment to buy, varies greatly from industry to industry. It would be easy to manage a business if we knew exactly what, when and how much the customer will purchase. When this occurs, supply and demand are in balance. But the reality is that in most circumstances, we do not know far enough in advance to be able to convert raw material to finished goods within the time frame the customer would like.

For example, suppose the customer leadtime for ordering a piece of industrial machinery is 90 days from order to shipment. The supplier of the gear assembly needed to produce the machinery has a leadtime of 120 days to produce and assemble the gear set. To ensure gear supply, orders are placed 120 days in advance, based upon the forecast of machinery sales.

Then the customer orders a configuration not in the forecast. The gear sets ordered earlier are received but have no use, adding to inventory. The correct gear set is ordered in less than supplier leadtime and must be expedited to meet customer needs, possibly with added cost.

The manufacturer that can reduce the time between customer commitment to buy, and time of delivery, will have a distinct advantage in the marketplace, as in Dell's build-to-order system for personal computers. All the processes required to create the final product potentially contribute to this time interval. These include the mining and refining of raw materials, ordering and receiving of materials, shipping of materials and manufacturing processes themselves. Whenever one of these processes is performed in anticipation of demand rather than in response to actual demand, inventory is created that may or may not ultimately prove to be of value.

The farther we are downstream in the manufacturing cycle, the less flexibility there is to make what the customer will want. In the case of a personal computer, a microprocessor may be usable in any number of configurations to suit the customer, but once that microprocessor is assembled into a circuit board and is installed in a laptop case, it can no longer be used to make a desktop machine. So, the objective is to convert the raw material inventory to a specific configuration no sooner than absolutely necessary, maintaining the most options to meet future customer needs.

Lean manufacturing and JIT attempt to deal with the unusable inventory dilemma, and are based upon the principle of making only that for which there is a known demand. The lean manufacturing and six-sigma methods not only seek to eliminate production of unwanted goods leading to excess inventory; they also are intolerant of errors, forcing the identification and removal of the root cause of the error.

6.2 Quality and Lot Size as Inventory Drivers

The lean and six-sigma methods require sound discipline to implement, but once deployed, they are powerful cost reduction tools. An important aspect of the pull or on-demand approach is the elimination of quality problems, document errors and forecast inaccuracies as sources of excess inventory.

The following example demonstrates how a bill-of-material error leads to inventory build-up. The design bill-of-material entered into the MRP system indicates that 25 fasteners are required for the assembly, but the assembler has learned to accomplish the task using only 22. Each assembly scheduled triggers an order for 3 extra fasteners. Unless the bill-of-material is corrected, over a period of time there will be a large excess inventory of fasteners, and no one will understand why.

In another actual example of quality adversely impacting inventory, the ordering system for a supplier of steel sheet to a manufacturing operation requires the identification of nearly 200 parameters to complete the order. The supplier's experience shows that because of the large number of data fields, 81% of the orders have at least one error. Only 19% of the inventory delivered to the customer was exactly as ordered. This condition causes inventory to be present that was not required by MRP and at the same time will show balances on hand are short of actual MRP requirements. These will again cause an excess of the wrong material and a shortage of the correct material in inventory. Correcting the condition requires that the order entry process be made error-proof and will probably be aided by reducing the number of order variables.

The "pull" approach, besides requiring near perfect quality, demands smaller lot sizes, approaching one piece. The primary determinant of lot size is set-up time and cost. In order to absorb the cost of setting up a particular operation (plating and heat-treating are good examples) it makes sense to make as many pieces as possible (batch or lot size) during the process cycle so that the portion of set-up cost allocated to each piece is small. Thus the larger the lot size, the smaller the set-up cost allocated to each piece, and the lower the total cost per piece. Any lot size greater than actual demand builds unnecessary inventory, so reducing set-up cost will reduce unit cost, lot size and inventory.

6.3 Information Provides Opportunity

In addition to limiting production to actual customer demand by adopting lean manufacturing, there are other techniques in practice today to limit unnecessary inventory investment. The Internet provides a high-speed communication channel to better align customer demand and manufacturing supply.

For example, when customers pay for their purchases at the cashier of a Wal-Mart store, a record of the transaction is transmitted directly to the suppliers, triggering a replenishment cycle. In effect, immediately upon completion of the sale, an order is initiated to replace the item sold. This process, repeated across all Wal-Mart stores simultaneously allows the supply chain to respond to actual demand on a site-by-site basis. The result of this information flow is shorter replenishment cycle-time, lower system-wide inventory, and lower cost throughout the supply chain.

Similarly, system interconnection enabled by the Internet (information flow in real time) can reduce inventories carried in the distribution channel. By having on-line access to inventory information at the manufacturer or a

central warehouse, distributors find it possible to hold smaller quantities locally and still provide the same level of service to their customers. This visibility up and down the supply chain allows buyers and suppliers to better align their stocks to varying customer demand, and uses information to remove excess inventory and cost from the chain.

7. PURCHASING'S ROLE IN SUPPORTING INVENTORY OBJECTIVES

PMs have to be constantly aware of the enterprise' inventory objectives and to contribute to their attainment. PMs and buyers should note that the American Production and Inventory Control Society (APICS) has embraced the JIT approach. Controlling inventory, not only suggests, but actually **demands** purchasing leadership. Some PM's response to JIT initiatives was to demand that the supplier hold the inventory for immediate shipment. The supplier has assumed the cost of carrying inventory but it surely will appear in the buyer's cost eventually. From a total cost perspective, this could be a waste of everyone's efforts.

The ability of manufacturing organizations to produce quality products is limited by the timing and quality of incoming materials and components. So, JIT requires that buyers pay close attention to their supplier base. As any company's internal processes are brought under control, buyers need to extend the six-sigma methods back to their sources. Suppliers are viewed as an extension of the company's own operation. Any failure to perform affects the entire system. So, long-term supplier relationships, based on mutual trust and shared risks and rewards, will ultimately serve to help meet the buying company's goals.

In managing inventory, some actions for which purchasing may assume responsibility are:

- Reduce supplier set-up costs to reduce unit cost of low production quantities.
- Expect shorter supplier leadtimes to reduce safety stocks needed to cover the order-to-delivery period.
- Encourage greater supplier production flexibility to be better able to respond to changes in production schedules when forecasts of customer demand inevitably prove inaccurate.
- Encourage supplier quality programs, ensuring 100% usable goods are received and reducing the need for incoming inspection.
- Make use of nearby suppliers can reduce shipping cost and time, allowing receipts more frequently and in smaller quantities.

- Encourage suppliers to implement lean manufacturing and set-up reduction projects.
- Make the buying company's technical support and know-how available to the suppliers.
- Find alternate shipment methods for smaller quantities to reduce cost of more frequent shipments.
- Specify standard reusable shipping containers for incoming parts to eliminate part counting and container disposal.
- Track economic supply conditions, a potential work stoppage for example, to minimize the need for extra inventory protection.

While there are many benefits to JIT, stress can be expected from lowered buffer stocks. As problems causing the need for such reserves are solved, the inventory is reduced again to isolate more problems. As the inventory is lowered, defects from components become more onerous, and can no longer be tolerated. "Kaizen," or constant improvement *must* follow.

7.1 Supplier-Managed Inventory

Inventories turns can be improved dramatically when the buyer arranges for the supplier to control the inventory, referred to as "*supplier-managed inventory*." A supplier may provide this service in a separate facility or on the buyer's site. The arrangement assures the supplier of all requirements for the contract items for a specified period and may include price discounts for the buyer as well. The supplier monitors consumption and the supplier is responsible for replenishment.

The buyer draws from the inventory as needed and is ensured a continuous supply. Payment is made based upon actual consumption. As a result, inventory responsibility is shifted to the supplier. If in-house cycle time is low, the interval between the items entering the buyer's inventory and sale of the finished product will be very short, causing a very favorable effect on inventory turns.

"*Stockless purchasing*" is similar to *systems contracting*, and is used when suppliers carry in-stock nearby sufficient quantities of items so that the buyer may operate its production processes without owning considerable inventory itself. These stocking programs are usually negotiated to save the manufacturer money by reducing the physical space needed for, and dollar value of, the inventory needed to operate.

"*Consigned inventory*" refers to ownership of inventory by the supplier that is often located at the buyer's facility. The buyer may physically control the inventory, but ownership is not assumed until the inventory is taken for

use. Special information systems facilitate the information exchange between customer/buyer and the supplier including the job of inventory management.

In all the cases above it is important to consider the system-wide cost of carrying inventory. Any benefits will be short-lived if cost is simply shifted from one entity to another. For true gain, there must be a net reduction in inventory levels and carrying costs in the system between buyer and seller.

Management of the supply chain carries the responsibility to explore such opportunities and facilitate the improvements at both the supplier and the buyer level to reduce costs and errors and to improve customer response. Even good goals and programs can go astray. As we reflect on it, there is no single or simple answer to questions about the correct inventory level. There are, however, many proven techniques to use that have been reviewed here.

The importance of the impact of inventory on every company's return on investment makes these issues a challenge for alert purchasing managers and buyers. Certainly, "ROI" is the *king* of inventory management.

Chapter 10

PROACTIVE TECHNOLOGY MANAGEMENT STRATEGY FOR COMPONENT OBsolescence

The rate of technology change has been mostly positive as we can now communicate instantaneously and in real time with virtually anyone in the world with the click of a few buttons. However, technology change also has negative repercussions for companies manufacturing complex and/or expensive products that must be supported for many years. This is because oftentimes technologically superior devices are replacing less capable component parts, resulting in the original device in the design becoming discontinued. As technological change accelerates, component *obsolescence* is becoming a nightmare for manufacturers of such products as aircraft, energy systems, medical equipment, and complex telecom switching systems, to name just a few industries facing this ever-growing need to manage component obsolescence.

As technology change accelerates, individual component life cycles shrink. The result: manufacturers without a proactive technology management strategy find themselves in an endless, reactive firefighting job—trying to find suitable replacement part solutions when parts embedded in their Bills of Materials (BOMs) are impacted by discontinuance of production. The challenge is magnified when you consider that the objective of material/inventory management is to optimize inventory due to the obvious financial implications for the company. Optimizing inventory while proactively dealing with obsolescence requires a strategy to manage these issues. Let's look at some strategies and practices aimed at balancing these conflicting objectives.

1. THE CHALLENGE OF OBSOLESCENCE

In a nutshell, the challenge in managing obsolescence is based on two diverging realities: (1) life cycles of the components in expensive electronic systems are shrinking, while at the same time (2) the life cycles of the end-products themselves are often increasing. Figure 10-1 clearly conveys this divergence, using the example of a high cost military system manufactured twenty years ago, but which must still be supported with replacement parts inventory today and for many years going forward. (An extreme example of this would be the B-52 bomber that some experts project will be in operation nearly 100 years before it is finally mothballed.) The military examples are cited here because they tend to be exaggerated examples and therefore more clearly demonstrate the growing issue of obsolescence that now also pertains to commercial products. Consider that in 1986, the average life cycle for military-grade semiconductors in the world was approximately 15 years. At that time, military consumption was clearly driving the marketplace as over 15% of all semiconductor purchases were for military and/or high reliability applications. Since 1986 major changes have occurred: (1) new powerful and faster technologies were taking hold in areas such as personal computing and telecommunications while at the same time, (2) military usage was declining as the world was enjoying a period of relative peace. As the market followed the money, military usage became less a factor and the semiconductor industry repositioned itself to support the more financially lucrative commercial sectors in the marketplace.

The market had so changed that by 1998 the life cycles of commercial semiconductor components had shrunk to an average of just 5 years! Implications were clear: at the same time the U.S. military was trying to stretch its dollars and correspondingly stretch the life cycle of its various products and programs, the marketplace provided fewer and fewer military devices while the availability of commercial devices was experiencing explosive growth.

New technologies in commercial development were leading edge and the military needed to have access to them. In 1994 the U.S. Secretary of Defense, recognizing the trend, mandated the use of commercial products wherever practical in military applications. This Commercial Off-The-Shelf (COTS) initiative made sense, as industry was not likely to have economic incentive to justify specialized low-volume military parts. High volume parts could be sold at higher profit margins from the same production lines. But as Figure 10-1 shows, this initiative, while undoubtedly one approach in terms of assuring access to leading technologies and product support, also created an obsolescence problem since the life cycles of commercial quality components generally are shorter than those of military grade parts.

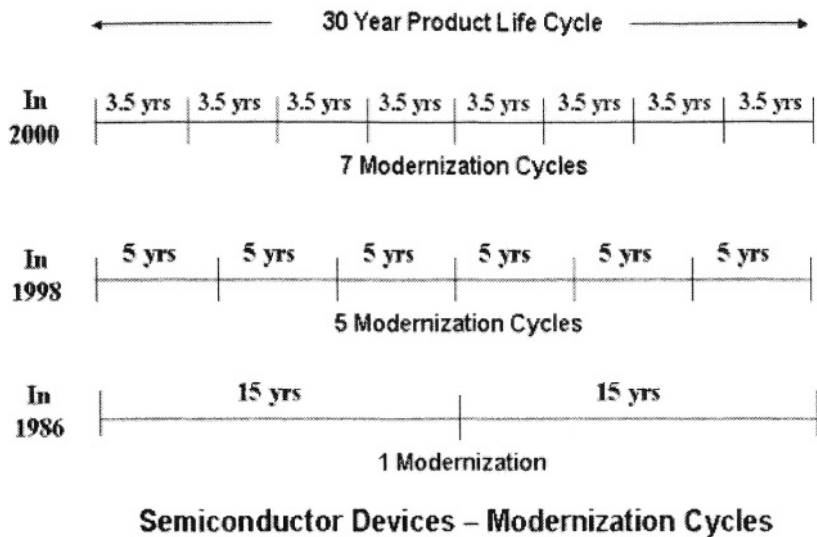


Figure 10-1. Life Cycle Changes from 1986 to 2000

Figure 10-1 clearly shows the problem—in this example faced by the Department of Defense—as a program with a 30-year life span was likely to require only a single modernization using then-plentiful military grade components. By contrast, programs fielded in the new millennium using commercial components would likely require seven modernizations! Imagine the similar challenges faced today by engineering and buying organizations to support production of airplanes, automobiles, medical equipment, and other expensive products when some devices planned to be embedded in those products for decades are discontinued—sometimes in the same year they are introduced! This highlights the challenge of obsolescence management.

1.1 **Obsolescence as an Incurable Disease**

Like an incurable disease, obsolescence can't be simply made to disappear. However, it *can* be managed, minimizing the pain and the otherwise debilitating effects with a plan and a proactive process. To manage obsolescence, first put obsolescence services in place as far upstream in the operations of the company as possible (i.e., engineering/design) as the

problems multiply, and become greatly magnified and increasingly costly if allowed to reach downstream. Conceptually, this is similar to how the pendulum swings farthest at the bottom of the arc and much less at the top.

Just as the purchasing function must interface with engineering to assist with the specification of sources that will likely provide good purchasing results, so too must the buying function educate engineering on the issue of obsolescence. That's because the purchasing effort, other downstream functions, and the company as a whole will suffer if they don't. Why should obsolescence management be a purchasing task? Because unfortunately, in the absence of a sound obsolescence management strategy, purchasing is usually the function that finds it! The buyer attempts to buy a component, and is advised by the manufacturer that the part is no longer produced. Even if engineering is doing a good job of selecting components least prone to obsolescence, there can be no guarantee it won't pop up at some point anyway. So, purchasing must work with engineering to institute a program of carefully and proactively managing future obsolescence risks.

Another reason purchasing must become involved is that oftentimes an obsolescence solution involves a lifetime buy. If Purchasing is not aware of obsolescence issues either in place or pending, then the risk is that the best solution's "window of opportunity" may close. This can happen when a company exiting the business issues a short lifetime buy notification.

1.2 The Ideal Obsolescence Management System: "Clean Sheet of Paper" Design

One way to improve a process is to identify how we perform the process now, and then identify individual initiatives and process changes to improve it. But we may want to avoid the burden of how we do things now in the identification of an ideal process. Therefore, we start fresh with a "clean sheet of paper."

To define the "elements of excellence" in the ideal system to manage obsolescence issues using the clean sheet approach, we would probably conclude that the following key attributes would be included:

1. A comprehensive library (or "database") of component information that is also accurate, accessible and current (currency is critical when managing obsolescence issues!)
 - Library must be global to optimize number of solution options available
 - Track each component as to its availability status
 - a) Is it available?
 - b) Is it discontinued?

- c) Are there replacement options, and if so, what are they?
- d) What is the projected life cycle of each component in the design?
- Ability to search the worldwide library for parts meeting part number and/or parametric criteria.
- 2. Software interface into the library with functionality that includes the following:
 - Ability to load Bills of Materials in indented or flat file and monitor it for changing availability.
 - Linking changing availability directly to the BOMs affected.
 - Visibility of all replacement options where they exist.
 - Ability to show commonality of component usage collectively across all products.
 - Life cycle assessment of all individual components as well as the entire product.
 - Ability to create a collaborative data exchange on common component programs as well as solution sharing.

The above elements of “excellence” are already in place in the better commercially available obsolescence management information services currently in the marketplace. With these initiatives in place, many benefits can be achieved. These benefits come in all areas of operations, as indicated in Table 10-1.

Table 10-1. Benefits of Proactive Obsolescence Management

Design	Purchasing	Manufacturing
Producibility verification	Supplier base consolidation	Minimize down time
Visibility of all product availability to optimize design	Aggregation of buy quantities	Smooth production flow
Life cycle projection	Notification of lifetime buy requirements	Better production planning
Documentation control	Negotiation advantage	Better asset management
Improved time to market	Early procurement problem identification	
	Notice of change in availability	

The multiple benefits described accrue to all functions in the operations chain, beginning with engineering design, through the procurement function, and on through the manufacturing process. Engineering benefits can include improved time to market, as well as better selection of components by virtue

of accurate market availability information and life cycle projections. Purchasing gets the advantage of early discontinuance announcements thereby optimizing the window of opportunity to make a solution decision and perhaps make a lifetime buy.

1.3 Conflicting Challenge: Managing Obsolescence and Change Issues while Optimizing Inventory

As obsolescence issues continue to arise, the importance of controlling inventory as covered in chapter 9 becomes more difficult. There is no benefit in a highly wasteful and expensive 30 years of inventory of a part on the shelf, especially if a redesign of the end item is contemplated! From a strictly material/manufacturing support standpoint, high inventories may be an appealing alternative, but inventory carrying costs are expensive—not to mention the cost of disposing of inventory excesses years downstream when end products are discontinued. So, the challenge is to select obsolescence management alternatives that balance the need to support end-product delivery, while minimizing expensive inventories. To do this, the company needs to develop the capability to optimize the obsolescence management process.

2. OBSOLESCENCE MANAGEMENT SOFTWARE: HOW IT WORKS

Several subscription services can help with the management of obsolescence issues. How these systems operate under a general set of principals is summarized sequentially below:

1. A software interface is provided which summarizes findings in the library of parts being monitored by the software provider.
2. The user of the software loads Bills of Materials into the software interface.
3. The software then automatically analyzes the BOMs identifying all known products being tracked in the provider's database.
4. For all parts identified, a summary of available information on these tracked parts is provided to the user through the software interface.
5. The information is prioritized from areas of greatest vulnerability to areas with the least. Areas of vulnerability generally covered by the available services include:
 - Parts discontinuance
 - Life time buy notification

- Single source situation
 - Life cycle projection indicating suspected near term discontinuance
6. In some systems, potential solutions are identified for the user, such as:
- Life time buy recommendation
 - Recommended list of still available parts from which to select a replacement alternate
 - Bridge buy recommendation pending redesign
 - Circuit card redesign options

PROJECT HEALTH STATUS								
Project Name	Part Counts		Part Availability			New	Parts	Total
			Available	Discontinued		Alerts	With	Parts
	Total	Unmatched		With Alts	No Alts	Issued	LTB	at Risk
Antenna 6A	10	0	8	1	1	1	1	2
Auto Test Unit	1,477	233	1,260	122	95	5	8	225
Calibration Pump	775	15	702	61	12	12	0	73
Radar 15B	2,640	120	2,560	45	35	32	18	98
TOTALS	4,902	368	4,530	229	143	50	27	398

Figure 10-2. Project Component Health Status Example

Figure 10-2 shows conceptually how this system works for one such software product currently in the marketplace.

In this case, the Health Status in a single screen summarizes all parts loaded in Bills of Materials, by program or product name. The system has performed an automated match of the user-loaded BOM parts with the worldwide component database and this results in a vulnerability grading process. Usually these systems will color code the various parts with a red, yellow or green designation to identify the “seriousness of vulnerability” status. There are no colors in our sample figures, but actual Internet-based working screens vividly highlight specific sections. In this case, the “red” signals that these parts have serious problems that must be resolved, such as component discontinuance with no alternative part known to exist in the marketplace. A “yellow” part is perhaps a single source item, while “green” is a part that is readily available in the market place and not a current

obsolescence issue. Though difficult to see in the example above, the different gradations of “gray” are in fact indicative of the different color codes in use.

To solve a particular component problem, the user will drill into the detail and the system will provide more information about the part in question. Key parametric data on the part will normally be included and the system will also identify potential replacement parts for consideration. In addition, a life cycle code (LCC) for the component in question will be identified, and this is usually a number grade ranging from a “1” to a “5”, with a 1 being a brand new product just introduced in the marketplace, while a “5” represents a part no longer available.

Now let’s look at a real part and the actual data that might be presented by the obsolescence management system, as shown in Table 10-2:

Table 10-2. Part Detail Analysis for a Sample Part

Part Number Being Analyzed:	PALCE22 V10-10JC
Manufacturer:	Cypress Semiconductor
Part Function:	Programmable Logic Device
Quality Level:	Commercial
Life Cycle Code:	5.00 (Discontinued)

Potential In-Production Replacements Identified by the System:

Part Number	Mfr	Life Cycle Code	Years to End-of-Life
5962-89841123X	QP Semi	4.20	5.70
GAL22V10D-10IR/883	Lattice Semi	4.89	2.00
GAL22V10D-15LR/883	Lattice Semi	4.89	2.00
TIBPAL22V10-10CFN	Texas Inst.	4.89	2.00

Let’s summarize what the above tells us. As shown in Table 10-2, this part is a commercial grade component previously manufactured by Cypress Semiconductor. Options readily available include the possibility of locating stock of the discontinued part to satisfy the need, or possibly changing the product’s design to accommodate one of the recommended replacement parts identified by the system. Usually the decision on the best solution option will take consideration of the expected life span of the end product, and a product expected to be in production for a year or less will likely be efficiently supported by the life-time buy decision. On the other hand, a longer-term product such as an aircraft may require selection of a different component in the design, or perhaps even a circuit card redesign.

A key feature in leading obsolescence management products is the “commonality” feature. Commonality refers to the fact that many BOMs within many different companies may be impacted when any given part is discontinued. Since this is the case, wouldn’t it be nice if other companies with the identical problem could be identified, so that perhaps you could “piggy back” off one or the other’s solution decisions?

Let’s use an example to make the point that the “commonality” feature has real value to the user of such an obsolescence management tool. Company A is a small \$100 million company that uses a leading obsolescence management system to manage its single product, which is a very expensive medical test equipment product having a cost of approximately \$1 million dollars each. Company B, on the other hand, is a very large manufacturer of automobiles using the same service to monitor discontinuance of the various electronic systems contained in their commercial truck product line.

Today, Part number X manufactured by Intel is discontinued, and unfortunately both companies use the part in the products they build. The system therefore flags the obsolescence issue, and managers from both companies are automatically notified by the system that they have been impacted. Both companies face the same significant problem, and both share the need to identify the solution options as quickly as possible.

Interestingly, neither company would perceive the other to be a competitive threat in this case, so the question becomes, “wouldn’t it be nice if we could work together to come up with an optimal solution for both companies?” Think about it: obsolescence in this context is not a competitive issue, so why not pool the skill resources of both operations to more quickly and efficiently identify all available solution options, thereby reducing otherwise duplicated administrative costs? And, perhaps we can achieve a direct material cost reduction and save even more money in the event the decision is, say, to jointly make a lifetime buy. In this case, perhaps the automotive company will need 1,000,000 of the affected part, while the smaller company will need perhaps only 1,000. So, the smaller company may benefit from the extremely attractive buying power of the two companies collectively, with no negative side effect to the larger company!

This is exactly what is happening in some companies today. But it would be inaccurate to imply that the teaming concept has gained rapid acceptance in industry to date. Most companies have difficulty accepting that obsolescence is *not* a competitive issue, and so have often been slow to fully adopt such an approach. So these companies often selectively team with only divisions of their own company initially, and then may graduate to larger

acceptance and inclusion of extra-company entities as trust in the process grows.

3. THE LIFE CYCLE CONCEPT

As mentioned earlier, the system shown in the examples above uses a 1 through 5 life cycle grading system, as shown in Figure 10-3. No acknowledged single way exists to accurately project life cycles. Most information services do this by identifying those characteristics that affect longevity in the type of device in question, and then measure the actual device against those attributes. As an example, for a memory semiconductor device, the speed of the memory may be one attribute measured, as slower speed memory devices will obviously be discontinued in the marketplace before faster devices!

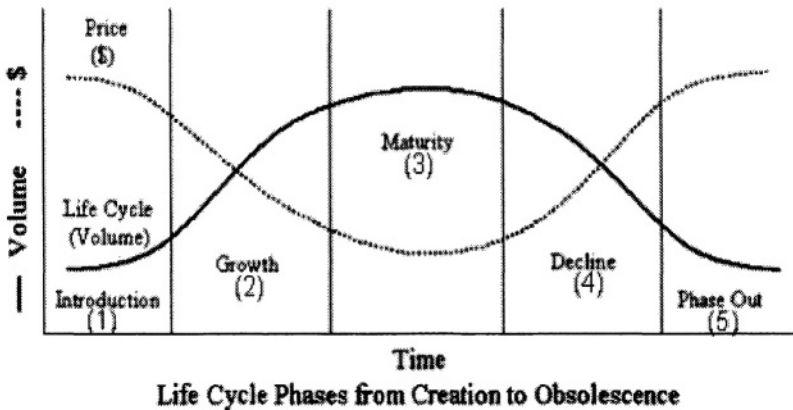


Figure 10-3. The Life Cycle Concept

The life cycle curve has additional important implications for purchasing and engineering. Notice in Figure 10-3 the inverse relationship between the component's life cycle and the pricing curve. Think about how much sense this makes—a brand new part introduced will not have a competitor, yet it will have additional functionality or some other characteristic that makes it attractive in the marketplace. That part is rightfully graded a "1" on a 1 to 5 scale of life, where a "1" designates a part "just birthed" and "5" being "eulogized". In such a case, the "1" part will be priced at a handsome

premium to recoup the sole source manufacturer's significant investment. The manufacturer also wants to take advantage of the sole source "leading edge" competitive advantage the part provides to those willing to pay for the privilege of having it. A classic example of this phenomenon is the latest version of Intel's microprocessor, which always commands a significant price premium for the reasons mentioned.

Let's look forward a couple of years. With success, this same part naturally attracts competitors who either match or exceed its capabilities, resulting in the original manufacturer reducing the price (often dramatically) to meet the growing competition. This part then is rightly rated a "2" or "3" in the life cycle continuum.

Finally, look at the demise of our part as it reaches stage "5" in its life cycle. Here, this same part is not selling well, because more capable descendents of the part (i.e., faster, more efficient, more capable) are being introduced by the same company or a competitor. At some point, the company making the original part typically either discontinues the part or attempts to "harvest" its remaining value. Meanwhile competitors may drop out of the market, thereby leaving the company with fewer and fewer competitors. But because the part is used in many legacy systems (remember the B-52?), the company may well continue to harvest market share and raise the price (again, sometimes dramatically) to achieve a premium price until its ultimate demise with the decision to cease production.

What lessons do the life cycle (LC) and inverse LC price curves teach us? From an engineering perspective, the key is to AVOID parts in the extreme "1" or "5" categories! While it may seem that a "1" is ideal because its life cycle should be longest vis-à-vis any comparable alternatives in the marketplace, the fact is that the price to pay, literally, may not warrant the selection. And remember, the problem is greatest for an end product that is both heavily loaded with electronic contents and also requires a long life cycle of support. On the contrary, selection of a stage 1 part may be absolutely appropriate for a leading edge, low cost throwaway product where "time to market" is critical. An example is the cell phone!

4. BENEFITS OF A SOUND OBSOLESCENCE MANAGEMENT PROCESS

The following summarizes some of the benefits that are to be expected by use of obsolescence management information systems:

- Improved time to market for new products

- Accurate component selection for new designs as well as product redesigns
- Avoidance of single source (or worse yet, no source!) components in designs
- Product technology baseline standardization
- Standardization of part identification for all parts across all BOMs
- Early warning of component discontinuance
- Replacement options for discontinued components
- Fewer production delays and cost overruns due to reduced incidence of obsolescence
- Reduction in embedded component obsolescence by selecting products early in their life cycle
- Life cycle assessments at the component level that can be summed up for the total BOM thereby allowing for prediction of the total product life cycle
- Collaborative problem solving among companies to reduce administrative cost to identify solution options and perhaps save significant money through coordinated multi-company action

5. SO WHO NEEDS OBSOLESCENCE MANAGEMENT TOOLS?

The least likely candidates for such a service are companies that build throwaway products, meaning those that are not supported beyond the initial one-year warranty. After all, if a component is discontinued in a cell phone, the fact is the cell phone is often discarded within a year or two of purchase in favor of a more recent model. So the company manufacturing the cell phone will simply provide a new phone for those relatively few instances when a component needs replacement. Even if the failed component is no longer available, these companies typically have sufficient inventory of identical phones to replace any failures, or in the absence of an exact replacement, will often provide a free upgraded product.

What companies benefit most from such services? Usually two important questions provide the answer: (1) Does the product being manufactured contain significant electronic component content, and (2) does the product require repair parts and support for many years if issues surface? Because electronic components are by far the most likely components in end products to become obsolete, the electronic component content is clearly an important determinant. If the answer to both of the above questions is “yes”, then the company needs to seriously consider adoption of proactive obsolescence management processes as described here.

Companies with short life cycle or throwaway products may still need this type of capability, though in a different way. To these companies, the key is getting to market ahead of the competition and keeping their leadership positions. Therefore, they need a way to prioritize, via the LC calculation process, a means to select the right components to carry them through the life span (no matter how short) of the products they produce. They need obsolescence management techniques to determine which components are most likely to support the market leading functionality they require to achieve competitive advantage.

5.1 The Old Way Versus the New Way...

Those not in tune with the issue of obsolescence often first encounter the beast when the buyer finds he can't fill a purchase requirement because the manufacturer is out of business or no longer produces the part. If the component is needed in support of a production requirement, this understandably begins a sequence of activities most accurately referred to as "fire fighting." Typically, the buyer dons his asbestos suit and notifies engineering of the issue, meetings are convened, and various troops are enlisted and dispatched in search of solution options. Additional meetings are called to review options and ultimately take action.

Without a strategy and way to manage the process, no amount of asbestos will make the job any easier. Moreover, consider the following examples of how obsolescence management tooling like that previously described can help to improve the company's bottom line.

5.2 How to Win a Spares Contract and Lose your Shirt!

Let's look at a real life example. A few years ago, the U.S. Government requested a defense contractor to bid a spares support requirement for one of its flagship defense programs. The quote was to be in support of the contractor's providing ten years in spare parts for this venerable program. A large contract was expected for the company, perhaps over \$100 million per year, or \$1 billion in total over the ten-year period. The company chose to price the spares components based on historical prices paid over time. They proudly pointed to a sophisticated computerized pricing model that put in inflationary increases and other pricing accommodations based on learning curves and other academically sound principals. The cost of the entire list of spare components was then calculated, and a hefty profit was added to assure a profitable venture.

The resultant quote was submitted and the company was awarded the contract. The company then ordered the first year's requirement. Blanket orders would assure long-term economic supply with minimal inventory carrying requirements. But an ugly surprise provided a rude awakening. When buyers sought to buy the first year's material requirement and set up initial blanket agreements, they discovered that nearly 15% of all the required components were no longer available in the marketplace from the approved suppliers. Therefore, instead of winning a lucrative contract, performing it and making a handsome profit, the company ultimately took a financial bath because they had to redesign some systems where there were no replacement part options. Premium prices had to be paid when previously multiple sourced items became single source. Other costly actions added to the debacle.

5.3 How to Win a Spares Contract and Win Big!

Firefighting, as in the above example, serves to tip the balance in the buyer/supplier relationship away from the buyer and toward the seller. But had the company above done its homework on the parts using current day obsolescence management tools, it would have known all areas of obsolescence vulnerability prior to pricing its bid. Virtually all of the problems encountered could have been avoided. Had the company taken this same spare parts list, and analyzed them with the tool previously described, all vulnerable parts would have been identified. By isolating those parts they would have been able to identify those that needed to be double-checked for accuracy. Immediately, all areas of vulnerability are summarized at a top level, right down to each part number that has an issue, such as those parts having no source, or a single source, or a high risk life cycle code.

The lesson is that for parts that are vulnerable, solution options could have been identified and these could have been reviewed with the customer in advance of the bid to get prior approvals for deviations where required. The customer most likely would have been receptive to this response as it shows the contractor is carefully assessing its ability to support the customer in the long run. Customers typically do not like surprises after award, and recoil from requests for more money because the supplier has done a poor job of analyzing their (the customer's) requirements. Further creativity in the company's proposal could have resulted in "killing two birds with one stone" to solve the obsolescence issue, and also perhaps improve and/or modernize the design to ensure an even longer life cycle.

6. THE FUTURE AND THE WAY FORWARD... HOW TO SELECT THE RIGHT TOOLSET

Do your homework similar to the analysis for a make versus buy decision. Does a company want to create its own organically grown system to manage its obsolescence issues? Alternatively, should it buy the service from outside? There are benefits as well as negatives to both approaches, and they largely follow the argument “do we do this as core business” or “do we outsource to others who do this as their core business?” In most companies, management supports the latter philosophy, though this is a strategic company decision. Sometimes, a hybrid of the two positions works for companies with very specific requirements.

If selecting a third party provider, remember that comprehensive, accurate and current data content is expensive to produce. That’s why more and more companies providing commercially available services are using web crawler technology to accelerate raw data search, and then using the more expensive human intervention only to validate and refine the results. But beware; some companies may not perform the validation as well as others, so the accuracy of the data collected is in question. Data accuracy and currency are the keys to obsolescence management! The idea is to accurately notify when a part is discontinued, and provide solution options. Reject any service that does not give you the discontinuance notification immediately, to widen your time window of opportunity to consider alternatives. Relying on a service without an early warning capability in such a case is worse than not having the service at all, as in the latter instance you at least know you’re not protected!

The “how to” and “how not to” example above illustrates the difference between the old and the new ways of handling this otherwise potentially crippling issue known as obsolescence. The old way of fire fighting is intense, expensive, and disruptive. The new way is proactive and greatly reduces risk of failure. By no means can the obsolescence dilemma be totally eradicated, but we can manage it with the tools available in the market today.

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Chapter 11

BUYING AT THE “RIGHT” PRICE

Some prices are rigidly set and no amount of skill or negotiation will change them. Fortunately, many items are competitive or can be negotiated, leaving the buyer to find the “right price” from the “right supplier.”

Although price is important, it’s smart for the buyer to focus on total cost and value rather than to simply take an opposing view seeking a lower price. Astute buyers have demonstrated that there are many opportunities to find common ground on price while achieving many other advantages in the terms of the final agreement. Price may rise but total costs may be lower. As stressed throughout this work, price is not the only criterion in reaching proper purchasing decisions.

Quantity discount schedules normally reflect the economic benefits of higher volume to the seller, allowing him or her to sell at a lower price. Schedules will vary with the quantity bought, size of your shipment, containers used, channels of distribution, and special discounts. Because trade discounts are given for different customers in the distribution network, eliminating the “middle man” can sometimes bring better prices. The existence of published price schedules for standard items doesn’t prevent negotiations for discounts or better deals. Obviously there are those times when the buyer has insufficient volume or other incentives to persuade the seller to change existing price levels.

Price breaks may allow you to choose between buying larger quantities, thereby getting lower prices, or lower quantities at correspondingly higher prices. Be aware that this can be deceiving however, because the basis for the volume discount may be due to large batch sizes driven by high set-up costs. As a matter of fact, some buyers familiar with lean manufacturing methods actually eschew quantity discounts. The reasoning is that the

quantity discount implies the seller is attempting to recover, rather than reduce, excessive set-up costs.

Elaborate formulas have been developed to determine the “economic order quantity” to buy, using the fixed and variable elements of cost present in a purchase transaction. Cost and price analysis combined with a generous amount of common sense provide the buyer with the best tools to balance a fair price with inventory carrying costs, transaction costs and other costs of ownership.

1. HOW PRICES ARE SET

When studying prices, consider the question, “What is a price and what is its purpose?” Price is the monetary value at which ownership of an item is exchanged, an amount acceptable to both the seller and the buyer. There will usually be a range of values that will meet the price definition. It is this range of possible prices acceptable to both parties that makes the give and take of negotiation possible and necessary.

A firm fixed price for a specific period of time is normally best. Escalation of prices or “price at time of shipment” and “cost-plus” deals should normally be avoided except for certain circumstances. An example of such an exception is when cost is “managed” by customer and supplier together, as this may yield true savings for both parties on a cost-plus basis. However, the agreement *must* include the terms of how cost improvement will be accomplished and tracked, and how competitive price levels will be maintained.

The following seller’s approaches to establishing the appropriate price, while offered with tongue in cheek, give an insight into true pricing methods.

- The “tag-along” studies competitors’ price sheets and matches them exactly.
- The “ratio specialist” believes established profit ratios are valid, so everything has to get the same profit multiplier.
- The “mathematician” creates charts and trend lines, weights, averages, and standard deviations. Prices are precisely where the lines intersect.
- The “psychologist” figures, “If I do this, this will happen, then the probability is this will result. So, I’ll start the sequence by asking for this price.”
- The “quick change artist” reacts to all competition and suggestions without much forethought. If a better price exists across town, then prices are adjusted to respond.

- The “novelist” (also often known as the “used car salesman”) doesn’t believe in worrying about price structure. He or she quickly comes out with any “safe” price, but expects to haggle over discounts, just enough to get the sale.

As with most humor, there is more than a shred of truth in the above. If you still believe prices are always based on costs, ask yourself the following:

- When traveling in the same aircraft, why do the people on board pay 10 or more different fares?
- Why is electricity distributed to different customers at different rates—by volume, but also by classification, whether factory, municipality, or residence?
- Why are transportation rates different for various commodities, while costs to haul may be the same?
- Why are identical products priced differently for different customers?

Buyers should ask themselves why profit margins for products within a company vary so much from one product to the next. How costs are computed can vary widely, and many factors other than cost will affect the price. Early stage prices are typically high and gradually decline as competitors enter the market. Experienced buyers know well the nature of price flexibility. Also, they’ve learned that suppliers don’t always know their costs—at least not accurately.

These points should give us reason to doubt that prices are cast in concrete. One of the first things to understand is, “Most prices are flexible and can be changed!” Effective buyers have learned that price depends on how many people want the item; knowing what potential buyers think it’s worth is a major factor in establishing price.

The price is never low enough to suit some buyers. That’s not always bad, but has made some suppliers believe that most buyers want only the lowest price. These sellers might contend that, “It’s gotten so we can’t afford any service on what we sell.” It is therefore important for both seller and buyer to understand that price is but one of the factors in their overall trading relationship and price should not be the singular focus of either party. By considering only price, the buyer may force a good supplier into an unprofitable exchange, which may contribute to financial failure. The astute buyer will seek a price that helps the supplier succeed, while offering the buyer substantial additional benefits from the exchange.

The senior author recalls a college roommate who has one of the largest car agencies in Maine. During a visit to the dealership, he was found doing service work in the garage. Bill has 28 employees in his two locations (that have since expanded to six) and more than six well-dressed salespeople in

the office, but he still sells more cars in the service area than all of them together. When questioned about this, Bill explained, “You can really sell ‘em when you service ‘em. I know when they need a new car before they do. Further, when a guy’s car is in trouble he wants advice and he’s listening.” The same applies to the industrial buyer—when in need of service, he or she will buy from the source that provides help. Many major buying decisions often are swayed by stories of past service.

1.1 Market-based and cost-based prices

Powerful forces, very independent of the actual cost of supply, guide markets for certain materials. As an example, petroleum prices are affected by cartels, world politics, futures markets, strategic reserves, taxes and tariffs, boycotts, wars, spills, weather and strikes. Arguably many of these factors directly affect supply and demand but the price of petroleum-based products varies widely, often in opposition to the trend predicted by these events.

Prices for most globally traded commodities are driven by market forces rather than by actual cost factors. This is especially true if there are secondary markets in the commodity, such as futures trading, because speculation is added to supply and demand forces in driving price volatility. These are termed “market-based prices.” In these commodities, suppliers’ prices will usually be “what the market will bear.” Even in these circumstances, however, the buyer has a responsibility to seek opportunities to reduce total cost through elements other than the price.

It’s difficult to know whether a price is “right” and fair, allowing a profit to the supplier yet ensuring the price gives a value to the buyer. Successful buyers in these markets monitor market movements closely and often practice hedging or forward buying to protect themselves from price volatility. These tactics are discussed later in this chapter.

Cost-based pricing assumes that costs can be measured and a reasonable profit added to determine a fair price. But even in the case of manufactured goods or personal services, where costs can be computed with reasonable accuracy, the price is rarely the result of a simple cost-plus-profit computation. The manufacturer producing an item usually makes somewhat arbitrary decisions regarding the allocation of overhead and selling, general and administrative (SG&A) costs to a particular item. If these overhead allocations differ between two suppliers, the “cost” will be different even with identical material and labor costs. Buyers should therefore challenge suppliers’ allocation of costs, and should strive to learn how to judge what allocations are reasonable. A cost breakdown and mutual agreement on the

appropriate allocation of overhead costs is considered an essential element of any supplier partnership agreement.

Buyers should attempt to understand the relevant cost drivers for major purchases, whether pricing is driven largely by market conditions or by a detailed cost analysis. This will enable the buyer to recognize those factors that will truly affect prices as well as items that may be cited by the seller only to confuse the buyer.

2. PRICE AND COST ANALYSIS

Price analysis is the bottom line judgment of which of several sellers' prices is the most reasonable and acceptable. It involves comparing (1) bids, (2) published or past prices, and (3) prices for similar products.

The old formula of “price per pound” comparison for engines, compressors, and the like still has some merit. This relatively simple method of price comparison is certainly not as accurate or acceptable as a current market analysis, yet when nothing else is available, it can be useful. In the absence of better data, use it regardless of the product being analyzed. An index such as the Producer Price Index for the specific item can be used to update that price. In this manner, any previous price may be updated. A specific application of indices will be shown later in this chapter.

Graphs are often overlooked as simple devices to study basic pricing structures. Figure 11-1 is an example of a statistical price comparison chart. It depicts two valve suppliers' prices along with proposed price increases.

By showing the two supplier's present and proposed pricing structures graphically, the buyer has an opportunity to see them more clearly. Note that in the quantity range normally purchased, the new price from Supplier A is increased substantially, while that of Supplier B is reduced. For the normal quantity range, this changes the low priced supplier from Supplier A to Supplier B. Perhaps the most interesting aspect of this chart is the shift in pricing structure by each supplier; A has gone from a very flat pattern to a steep quantity discount, while B has done the opposite. Considerable insight can be gained by asking both suppliers why they made the change.

2.1 An Exercise to Compute Price of Paint

A form of price analysis can be used to determine the applied price for products requiring different quantities when used. Take the example of the buyer who has received a requisition for 100 gallons of paint, and obtained three quotes. The lowest price is from supplier A, but we know industrial paints are thinned based on the application when applied. Industrial paints are specially formulated and have varying viscosities, and dilution with paint thinner is needed based on spray equipment used and drying time. The maker of brand A suggests a thinning ratio of 3 parts paint to 1 part thinner and his product is priced at \$9.00/Gal. Brand B’s ratio is 4 to 3 and his product is priced at \$14.00/Gal; while brand C’s ratio is 3 to 2 and his product priced at \$10.00/Gal. Make the following computations:

Table 11-1. Computing Applied Price

Brand	Price (\$/gal.)	Mix Ratio	Thinner Price (\$/gal.)	Applied Price
A	9.00	3:1	2.00	?
B	14.00	4:3	2.00	?
C	10.00	3:2	2.00	?

Now continuing our analysis, assume thinner costs \$2.00/Gal and coverage of all brands after thinning is identical. Which is the best buy—brand A, B, or C? Please work the computation before reading the answer in the footnote!²⁹ Is the lowest price the best buy?

Experienced buyers know that it’s not sufficient to simply consider the price of the item, as each challenge of a price naturally will lead to a review of costs. A new product may command premiums as a reward for supplier innovation until a competitor is also able to meet demand. The ultimate goal of cost analysis should be to remove unnecessary features or cost elements through an understanding of component costs. A change in any of the three factors of design, materials, and methods can produce savings. Cost and price analyses are ways to identify and manage cost drivers within the price so that it is possible for the supplier to offer a lower price without sacrificing the profit necessary to succeed in business.

2.2 Cost analysis

Analysis forms the basis of understanding from which the buyer can question and probe. Getting as many specifics as possible will assist in

²⁹ Brand A’s application cost is \$7.25/gallon, B’s \$8.85/gallon, and C’s \$6.80/gallon is the best buy.

making a case for lowest ultimate cost. Information disclosed for cost analysis can be used only in a completely “above board” approach to maintain good buyer and seller relationships. It would be a mistake to ask the supplier for cost information that is later used to unfairly coerce a lower price, as the supplier will soon learn to withhold valuable data! Alert buyers make it a point to learn the major cost elements and cost drivers for the goods or services they purchase.

To conduct a cost analysis requires the availability of usable data, but what if the supplier is unwilling to provide detailed cost elements? Many suppliers consider production costs proprietary, and are afraid the information requested will fall into competitors’ hands. In such cases, one solution is the analysis of similar products or services on a cost per unit basis. A scattergram of known prices for similar items shows if there is a pattern of cost per pound or cost per horsepower, which in turn permits estimates of cost for the items being evaluated. Compare proposed prices against your estimates of the supplier’s cost. While this will rarely provide precise information, it can serve as a starting point for meaningful discussion of supplier costs.

A buyer’s own plant can often estimate likely production costs of a supplier so the buyer can show the supplier where costs are questionable. The supplier may then be able to reduce his own costs, perhaps by changing methods of processing. The information gathered and reviewed adds to both the buyer’s and the supplier’s knowledge of possible cost and price reduction opportunities. The purpose of such information exchange is to identify ways the supplier may be able to reduce the price while retaining a reasonable margin on the sale.

2.3 Cost Analysis Tips for Buyers

Here are the general steps to take along with some ideas to consider when performing a cost analysis:

1. Ask the supplier for an analysis of major cost elements.
2. Review the specification with engineering and quality personnel, to identify possible unnecessary requirements.
3. Visit the supplier’s plant to learn how the item is processed or assembled.
4. Solicit the expertise of your company technical specialists and make them part of your team.
5. Get information from the second tier suppliers of raw materials and components used in the manufacturing process.
6. Develop the major components of costs, using best estimates when details are not available.

7. Compare the current prices requested by the supplier with any appropriate price benchmarks.
8. Probe constantly to determine the primary cost drivers
9. Ask questions and listen actively.

Most manufactured items follow a simple price formula, if the price is based upon cost, as follows:

$$\begin{aligned} &\textbf{Material Cost/unit} \\ &+ \textbf{Direct Labor Cost/unit} \\ &+ \textbf{Manufacturing Overhead/unit} \\ &+ \textbf{Selling, General \& Administration/unit} \\ &+ \textbf{Profit/unit} \\ &= \textbf{Price/unit} \end{aligned}$$

If the price is a “delivered” price, transportation costs will also be added. The material, labor and manufacturing overhead portions collectively are referred to as the *manufactured cost*.

Material cost includes that which goes directly into the product. Because it is often a large portion of the total unit cost, the buyer should delve into what material will be used, as well as at what prices are being paid. It’s important to know whether a material burden is used. In an actual dispute, a buyer agreed the supplier would invoice “at his cost,” which would include labor and burden, but no profit. Both parties felt it a fair settlement until 2 weeks later when an invoice called out “costs” that included a 50% material burden. In the eyes of the buyer, material burdens were unheard of, whereas the seller claimed, since they had very little labor content, a large burden on material was always used. The lesson is clear: understand and agree in advance what cost elements will be included and how overhead will be distributed.

Direct Labor cost is that needed to directly fabricate, assemble, and finish the product. This includes not just the wage rate, but also cost of fringe benefits and direct supervision. So, a wage earner at \$15 per hour might carry an effective direct labor cost of \$20-25 per hour.

Manufacturing Overhead cost includes all support for manufacturing, such as material handling, depreciation, machine maintenance, and factory operating costs—taxes, insurance, management salaries and all other factory costs.

In the above formula, *Selling, General and Administrative* (SG&A) costs include general offices, executive salaries, R&D and most non-manufacturing costs such as information systems, finance, legal, human resources, selling, and advertising. Note that manufacturing overhead and SG&A costs apply to the entire factory and to the entire business, respectively. These costs can be large in relation to the manufactured cost and are usually allocated to all products by a formula developed by the accounting department. It is extremely difficult to determine how much of these costs are actually needed to produce and sell a particular product, so the allocation of these overhead costs, also referred to as spreading the burden, is often very arbitrary. The most common method of allocating overhead is as a percent of direct labor hours, but with automation and productivity gains over the last several decades, these formulas are becoming much less meaningful. In this light, the buyer should not hesitate to question whether the allocation is appropriate for the items being purchased.

Profit is considered a “cost” of doing business. It’s the reward for taking the risks and producing something of value. It is a return to those investing in the effort, and it is an element of cost that must be built into pricing or the business may fail.

Generally the *direct costs* (material and labor) are classified for accounting purposes as *variable costs*, meaning they are incurred as units are produced. The *overhead costs*, also sometimes called *indirect costs*, similarly are normally treated as *fixed costs* because they are incurred independent of the actual production of goods. These groupings of cost elements will be discussed in more detail later in this chapter.

If a supplier is charging research and development expenses to the buyer, but the buyer’s company designed the product, those costs should not be included! Suppose the buyer has furnished certain components for assembly by a supplier. Should such a supplier be allowed to apply overhead to this material the buying company acquired? Not unless he’s expended time and effort and has the risks for spoilage, or other justifiable rationale.

Scrap and spoilage is another area for potential abuse when claiming high production costs. It is indicative that the supplier’s quality is not under control, and the buyer is paying extra for this condition. Also if a raw material can be recycled and cost recovered, be sure the value of scrap is credited back to the buyer. Failure to eliminate excess scrap or recover its value means you’re paying inflated prices!

Tooling and Engineering costs and other startup costs are often charged to an initial production run, but are not related to the total volume to be produced. These costs may be added to direct costs, or treated as overhead. In either case, failure to get these costs out of repeat business results in overstating the cost. In such a circumstance, it may pay to buy special

tooling outright, to remove it as an element of cost that won't recur in future prices.

From these examples it should be apparent that this simple price formula should help alert buyers to probe into the actual cost elements of the purchase. At the very least, such analysis provides the knowledge from which the buyer can question and probe. Getting as much data as possible assists in making the buyer's case for lowest ultimate costs.

Additional cost elements not identified in the simple price formula (though they may be included in overhead or SG&A) that buyers need also to consider are:

- Engineering design and manufacturing process costs for new products
- Special tools, dies, and fixtures needed to produce the product
- Facilities and equipment used only in manufacturing this product
- Plant layout changes needed to produce the item
- Training of employees to perform new tasks and processes

Using standard accounting procedures, the accountant separates overhead cost into fixed and variable elements, as explained below.

Fixed costs are those the supplier incurs even if he didn't get your order, such as depreciation of the building, machinery and rent. They are usually expressed in total and allocated on a per unit basis. *Period costs* are fixed costs incurred over a certain time interval. Interest cost is an example. Buyers should be aware that because a cost element is considered “fixed” from an accounting viewpoint does not mean that it couldn't be reduced. To the contrary, savings opportunities are often greatest in this category, though they may be much harder to identify.

Variable costs are incurred specifically because the supplier fulfills your order. In addition to raw materials and direct labor, this may include materials consumed during processing, such as machining coolant, paint, cutting tools and abrasive disks. Variable costs are usually expressed on a “per unit” basis but can also be expressed on a “total” basis.

Some costs are combinations of fixed and variable, such as:

- *Margin costs* (also called incremental costs) are extra costs resulting from making an extra unit of quantity. They include direct variable costs and any fixed costs if there is a new step level of costs.
- *Full costs* (total of fixed and variable on a per unit basis) are computed by adding the two unit costs together or by dividing the total of fixed and variable cost by the number of units of output.
- *Step costs* vary with volume, but are fixed for short segments of volume spans.

- *Semi-variable costs* are those partly variable, and partly fixed, such as heat, light and power, supplies, and repair of equipment. Most accountants would include them in the variable category.

Some other cost terms that buyers may encounter particularly with respect to capital equipment or real estate purchases are:

- *Depreciation* is the write-off over its useful life of costs of an investment that has been capitalized. This cost doesn't necessarily reflect actual cost outlays in any period.
- *Economic cost* refers to remaining value, based upon cost and useful life expectancy. If a machine cost \$1000 to build 2 years ago, and the machine has a life expectancy of 3 more years (total life of 5 years), then an accountant would say its value is currently \$600 (2/5 of the value has been spent and 3/5 remain). But if the machine is no longer needed, a salvage sale might bring \$100. The remaining value is the economic cost.
- *Opportunity cost* is another term used to describe possible future economic benefits. It is a measure of the alternative earnings potential of funds that are tied up in doing a project instead of being invested elsewhere.

The challenge for the buyer is, "How does a supplier allocate the overhead costs?" If a supplier devotes a specific plant solely to the buyer's production, allocating the manufacturing burden can be straightforward. But usually other products are in process, so the supplier uses a percent allotment. The buyer must be sure he or she is not charged too high a percentage of these costs, which can be difficult because overhead allocations are somewhat arbitrary and often much less precise than costs for direct labor and materials.

2.4 Break-even Analysis

Break-even analysis is a useful tool to the supplier when trying to determine when a production run turns a profit. The break-even point is defined as the point on the chart where total revenue equals total costs. Any volume below the breakeven point loses money, while those volumes above it will make money.

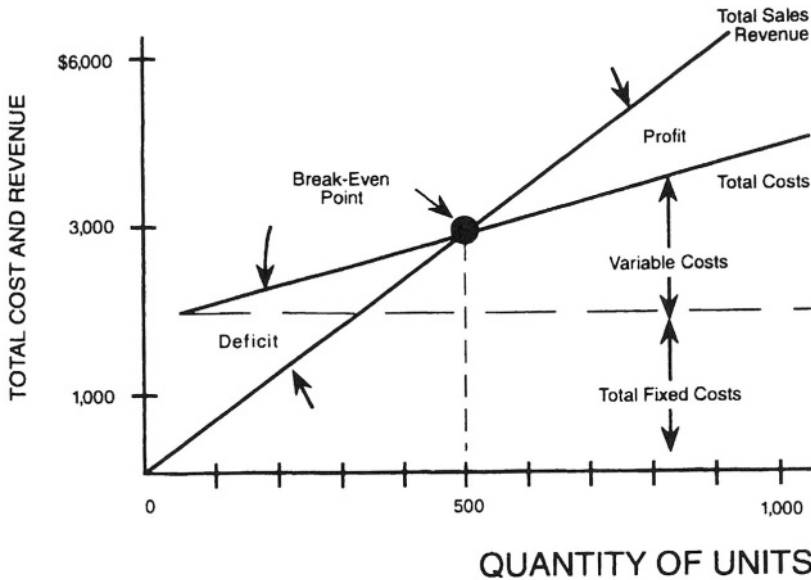


Figure 11-2. Break-even Diagram

The buyer, armed with this information, can use these data in determining buy quantities and in negotiations of pricing. With respect to the area of profitability, the implication is that the supplier can afford to reduce his price when the volume is well within the high-profit area. Figure 11-2 demonstrates graphically how the break-even point is determined, or it may be computed algebraically, solving for X (the exact quantity to achieve break-even) as follows.

Given:

- (1) Break-even occurs where total costs = total revenue
- (2) Total costs = fixed costs + (variable cost $\times$ number of units)
- (3) Total revenue = unit price $\times$ number of units

Assumed facts: variable cost of item = \$4.00, fixed costs = \$1,000 and selling price = \$6.00.

$$\text{Total costs} = \$1,000 + \$4.00 \text{ times } X$$

$$\text{Total revenue} = \$6.00 \text{ times } X$$

$$\text{So, } \$1,000 + \$4.00 \text{ times } X = \$6.00 \text{ times } X$$

$$2X = 1,000$$

$$X = 500 \text{ units}$$

In this example, the supplier's break-even is at 500 units. By changing the quantity we buy, we can see the result on the supplier's profit. If price

were raised to \$7.00, the new break-even would occur at 333 units. But if labor costs (variable costs) then increased to bring variable cost/unit to \$4.50, the break-even point would increase to 400 units.

Break-even is a tool to check sensitivity of prices and costs. Each unit of production is absorbing fixed cost at a rate equal to the difference between the selling price per unit and the variable cost per unit. Buyers should be aware that if the supplier is able to reduce the allocation of fixed cost, the break-even point is lowered.

3. MEETING TARGET COSTS FOR NEW DESIGNS

The cost of the materials or components is usually a major factor in determining the final manufactured product cost. Carefully evaluate material and component costs during product design and development to establish a target cost that acts as a benchmark for later price quotations. Target costs are useful in negotiations by setting clear expectations about the prices needed to meet the design objectives.

Setting a target price strikes a bogey for you to measure performance. The target cost calculation should be aggressive but realistic. If each cost element is evaluated and a best-in-class cost level assigned to that cost, the total cost might be lower than anyone can currently achieve. This cost however is a valid target that can be met by achieving the best of each cost element. Avoid the temptation to simply take a generous discount from what was paid in the past to set a target price for the new item. Such an approach is not only without basis; it also may leave money on the table if a lower cost is determined to be achievable.

3.1 Price, Cost, and Value Relationships

The price to be paid to accomplish the task often is affected by the time allowed for completion of the work. Time can usually be compressed with higher expenditure of resources; conversely, the setting of the priorities and allowing a longer schedule can save money. An excellent example was the \$24 billion to reach the moon within President Kennedy's prescribed 1970 deadline. Perhaps it could have been done at half the cost if Americans would have waited until 1980, but that was not acceptable after the early Russian success in space exploration.

To play an important role in cost reductions, start by considering the relationship of price, cost, and value, and remember that value often has little relationship to cost. As an example, a one-cent and a 50-cent postage stamp cost the same to make, yet one's value is 50 times that of the other. Another

simple illustration is a common ballpoint pen. Ask most people what its value is, and they’ll ask, “What did it cost?” Assume \$1. Now take out the spring, pull it to twice its length, and then break the filler by bending sharply. You’ve now added labor. The cost has gone up, but what about the value? As a writing instrument, the pen may be worthless.

So value depends on the usefulness, and on factors other than cost! Buyers should think in terms of constantly changing values, where there is no such thing as a firm price. Price is seldom constant, often depending on how many people want an item!

The psychology of what people think it’s worth is a major factor, as value can depend on:

- Desirability (psychological, aesthetic, artistic, pleasing, prestige, esteem, and uniqueness, with price escalating sharply with increased desire to own the item!)
- Location
- Time
- Use—collector, or for utility

An example of prestige value can be illustrated in the 1996 Sotheby’s auction of Jackie Kennedy Onassis’ memorabilia, which was advertised as “a piece of Camelot.” Ordinary items went for what many would believe are astronomical prices. Examples included \$48,875 for a tape measure, and \$18,000 for a salt-and-pepper shaker. Perhaps most remarkable were Jackie’s fake pearls shown in a picture while she was holding her son, John. A comparable three-strand necklace sells for about \$65 at Macy’s, but the Franklin Mint paid \$211,500 to display the necklace in the photo in their Philadelphia museum. Replicas are now selling at a reasonable price.

In the real world or in industry, it is a popular belief that the more expensive a product, the better the quality must be. But the truth is whoever said, “You get what you pay for” is guilty of utter nonsense! The buyer of today knows—Costs do not determine prices, rather *prices determine the amount of costs that can be incurred* by the manufacturer or distributor and still stay in business. Price is what you pay for the *value* that you receive.

4. PRODUCER PRICE AND CONSUMER PRICE INDEXES

The government provides useful tools known as the Producer Price Index (PPI) and Consumer Price Index (CPI). As an analogy, consider the homemaker’s typical shopping basket for which prices of the same items are

noted each month and a composite index is created for the monthly prices of the list of food items. The government does exactly the same thing with industrial commodities, the result being a producer price index issued by the U.S. Department of Labor, Bureau of Labor Statistics. The PPI is arranged by stage of processing and by commodity, so as to be relevant to specific commodities, and is the composite price level for industrial and contractor goods. The Bureau of Labor Statistics takes monthly price surveys as of "the Tuesday of the week containing the 13th day of the month," for about 1,250 individual commodity indices. Each number, 02 to 1599, is weighted for its impact on the overall price level. Because it tracks actual exchange prices, the PPI is a reliable measure of industrial pricing levels on a national scale. Current information is available at [www.bls.gov/news.release/ppi.toc.htm.]

Producer price indexes for selected commodity groupings

(1982=100 unless otherwise indicated)

Commodity code	Grouping	Unadjusted index 1/		
		March 2003	June 2003	July 2003
	Finished Goods (1967=100).....	404.6	401.5	401.4
	All commodities.....	141.2	138.0	137.8
	MAJOR COMMODITY GROUPS			
	Farm products and processed foods and feeds....	128.1	131.2	130.7
01	Farm products.....	104.0	106.9	104.6
02	Processed foods and feeds.....	140.1	143.3	142.9
	Industrial commodities.....	143.6	139.2	139.2
03	Textile products and apparel.....	119.7	119.5	119.3
04	Hides, skins, leather, and related products..	162.3	159.8	160.6
05	Fuels and related products and power.....	129.6	114.4	114.1
06	Chemicals and allied products 2/.....	164.5	162.0	161.3
07	Rubber and plastic products.....	129.9	130.8	130.7
08	Lumber and wood products.....	172.6	173.9	177.0
09	Pulp, paper, and allied products.....	189.1	190.0	190.1
10	Metals and metal products.....	128.5	128.4	128.3
11	Machinery and equipment.....	122.1	122.2	122.4
12	Furniture and household durables.....	133.6	134.0	134.0
13	Nonmetallic mineral products.....	147.8	148.4	148.4
14	Transportation equipment.....	146.9	144.0	144.1
15	Miscellaneous products.....	179.9	179.4	179.3
	Industrial commodities less fuels and related products and power.....	145.3	144.8	144.8

Figure 11-3. Actual Example of On-line Producer Price Index Table (partial)

Using the PPI reports, buyers can compute price inflation for any specific period of time by subtracting the number for the earlier date from the number for the recent date and dividing by the number from the earlier date.

Multiply the result by 100 to determine the change as a percentage. As an example, in Figure 11-3 under commodity code 08, the PPI for lumber and wood products for July 2003 is 177.0. Note that the index has increased from 172.6 in March 2003, or 2.5% in 4 months. The index also indicates an overall increase in lumber prices of 77% since the base year 1982 (index base value of 100).

The Consumer Price Index (CPI) is a standard measure of the price level of purchase transactions for retail goods and services. Computed similarly to the PPI, it includes consumer items such as insurance, housing, and food. Because the CPI provides tracking of prices paid for consumer goods, it may be less useful for most industrial buyers but can be especially useful for retail buyers. These indices are excellent tools to track price trends, and to update a previous price to a current level.

The CPI Report is issued monthly and is available at Internet site location [www.bls.gov/cpi/home.htm].

4.1 Your Company Market Basket Index

A company can create an index of its own purchases, which is the *Company Market Basket (CMB)* index, similar to and based upon the PPI or CPI. It is computed by first determining the percentage of each major commodity purchased, as compared to total purchase volume. Then the resulting ratio is multiplied by the appropriate government index for the individual commodity within the PPI or CPI. The sum of the major commodities (about 15 or so for most companies will suffice) will give a single index number for the CMB. Plotting the CMB index monthly will provide a trend of the marketplace in which your buys are made.

This index can be used as a buyer performance measurement as described in Chapter 19, recognizing the relative difficulty of buying in the specific marketplace. It should not be used as a singular measure of purchasing performance since certain market conditions and product design changes are beyond the control of the individual buyer. Also, it can be used in highly inflationary times to determine appropriate price escalation.

5. USE OF STANDARD COST

Standard cost is the most commonly available method that manufacturing companies use to monitor their costs. Each item or unit of material purchased is assigned a *standard cost* which is the best estimate of the average purchase price we expect to pay. Sometimes inbound freight is included in the standard cost. Each month the actual costs paid for materials

are recorded and the difference between actual and standard costs are computed. The difference is reported as *Purchase Variance (PV)*.

A monthly PV report is prepared by finance, showing whether the department paid more or less than expected for any given item. If the expenditures follow the “standard,” then purchases are “on target.” A “favorable variance” at the end of the period may indicate good buying (or poor forecasting).

Table 11-2. Standard Cost and Purchase Variance

	Purchases at standard	Purchases at actual	Purchase Variance (Favorable)	PV %
Class 1 Steel				
Plate	294,470	264,785	(29,685)	(10.5)
Sheet	1,826,575	1,749,570	(77,005)	(4.2)
Bar	82,720	78,970	(3,750)	(4.6)
Total Class 1	2,203,765	2,073,325	(110,440)	(5.0)
Class 2 Nonferrous				
Copper	5,406,505	5,380,435	(26,070)	(0.5)
Aluminum	1,766,205	1,731,375	(34,830)	(2.0)
Total Class 2	7,172,710	7,111,810	(60,900)	(0.9)
Class 3 Castings				
Ferrous	2,697,005	2,618,175	(15,830)	(0.6)
Nonferrous	772,670	774,370	1,700	0.2
Total Class 3	3,469,675	3,455,545	(14,130)	(0.4)
Class 4 Electrical				
Motors	7,708,720	7,483,840	(224,880)	(2.9)
Starters	994,210	989,290	(4,920)	(0.5)
Total Class 4	8,702,930	8,473,130	(229,800)	(2.6)
Class 5 Fabrications				
Fasteners	647,710	619,615	(28,095)	(4.3)
Stampings	1,048,350	1,042,765	(5,585)	(0.5)
Machined Parts	377,645	376,045	(1,600)	(0.4)
Compressors	1,424,905	1,430,935	6,030	0.4
Total Class 5	3,498,610	3,469,360	(29,250)	(0.8)
Class 6 Miscellaneous				
Rubber/plastic	627,410	633,565	6,155	1.0
Miscellaneous	1,319,000	1,297,505	(21,495)	(1.6)
Total Class 6	1,946,410	1,930,565	(15,340)	(0.8)
Total All Classes	26,994,345	26,534,485	(459,860)	(1.7)

Table 11-2 shows a standard cost and PV chart broken down by major categories, such as steel, copper, and motors. Note that for electrical items, total actual purchase costs were \$229,800 less than the standard cost of \$8,702,930, for a 2.6% favorable variance. Overall, purchase variance for all purchases was 1.7% less than the standard (expected) purchase cost.

PV provides buyers a check to see how actual prices compared to forecasts. This provides the basis for raising valid questions. If an item's price is 15% over the standard, the buyer should ask, "why?" The answer will provide insight into the reason for the price change, a supply problem with the item, or a possible error in the report.

PV is falling from favor as a measure of buying performance in many companies and should never be used as the only such measure. The value called a standard cost is in reality a forecast of future price. Because PV measures both the accuracy of the forecast of price and the subsequent management of the actual purchase price, variance results alone can be very misleading. The buyer may seek to overstate the standard to reflect favorably on his performance; conversely, if the standard is unrealistically low, the buyer will be viewed unfavorably, no matter how well the spending is being managed. Tracking of variance and understanding the reason for high variances remain valid, however.

6. PRICE FORECASTING

Marketplace uncertainty demands that buyers be alert to changing conditions and anticipate them whenever possible. Consider purchasing's responsibility for economic supply assurance through improved forecasting. Anyone who had managed during the late 1970s, when inflation was rampant, knows how management depends on accurate projections of future cost. Inflation rates must be anticipated if the company profit objective is to be attainable.

Forecasting can be informal. The chosen method may be judgmental or intuitive and may be based upon opinions and knowledge of a few key buyers. These can be fairly accurate short-term, if these people know their markets, and use available data.

When asked how he felt about the future, an economist replied, "Optimistic." When asked, "Then why are you so gloomy?" he replied, "Because I'm not so sure my optimism is justified." That makes a point. Forecasting is not an exact undertaking and is still partly an art. Yet, if forecasts are to help companies, they must be soundly based. Beware that forecasts can show trends, but rarely can they accurately predict a turning point.

When establishing standard costs for a future period, the purchasing department uses its judgment to arrive at the percentage changes expected in the prices of all major categories of purchased goods during the 12 months when the standard cost will be in effect. One method is to rely on the buyers' judgment to evaluate expected percent changes of price of major purchases for the coming year. These figures can be reviewed with finance or management, who may concur or make alternative recommendations, usually on the basis of historical data or other meaningful criteria.

Significant inflation can be defined as a rapid rise in prices over a short time. The result is sharp erosion in buying power of the currency used to buy.

Economists distinguish between two types of inflation:

- “Demand-pull,” when more buyers compete for limited supply.
- “Cost push,” when rising costs are reflected in the prices charged.

Buyers are not helpless to fight inflation; they can set a competitive environment to prevent unreasonable price increases. Here's a tactical checklist for managing price increases:

- Refuse to pay increased prices! Just don't accept increases without justification.
- Ask for a cost breakdown to assess the need for increases.
- Compare the amount of increase with the available PPI or CPI.
- Follow published cost indices, or make your own calculations and track them.
- Monitor industry pricing announcement patterns and avoid suppliers that most often lead an increase.
- Use the “pricing formula” to be sure the increase is based upon a reasonable calculation.
- Be responsive to supplier pricing actions. Lower prices earn more business, while higher prices earn less.
- Expecting an increase? Don't wait! Take the initiative in seeking cost reduction.
- If an increase is inevitable, ask the supplier for alternatives or cost savings ideas, to counteract the effect of the increase.
- Consider giving the business to someone else, but only after fair warning—and discussion.
- Don't give a supplier who leads an industry increase a chance to meet a lower price offered by a competitor, thereby rewarding the behavior.
- Make assumptions if facts are scarce, and compute a reasonable price; be sure to err in your favor. Ask the supplier to defend any disagreement with your computation.

- If a supplier gives you an exceptional deal, don’t brag to others about it.
- Be sure to advise marketing and finance of price changes to be sure they can cover them in your company’s pricing to ensure profitability.

Perhaps you can think of other ideas. Although some of the above would appear to fly in the face of a supportive partnership, buyers must nevertheless always remember that there has to be economic parity and fairness. Buyers are responsible for their companies’ costs! Remember: the buyer’s job would be largely unnecessary if every supplier sold at fair prices without diligent oversight.

Put a Price Adjustment clause in your purchase order. A buyer may have to call for periodic review of prices on long-term contracts. When you discuss price escalation, also negotiate a discount for higher volume, and spell out those terms here.

If a blanket order price is subject to change, fix a ceiling to the amount of escalation by using the following pricing adjustment clause stating to the effect:

“Purchaser has the right to approve all price increases in advance. Any price increase is limited to:

- A (named) maximum percentage
- Shipments after (a set date)
- A (percentage) of the U.S. Producer Price Index for (site the specific items to be adjusted)

Here are other suggestions about pricing clauses:

- *Most Favored Pricing clause*: “If Supplier gives any buyer a lower price for like or similar item(s) prior to completion of this purchase order, Supplier will promptly extend to Buyer the lower price, providing granting of such lower price is not in violation of any law.”
- *Pre-price increase notification clause*: “In the event of price escalation, Supplier must notify Buyer 30 days in advance and review with Buyer reasons for changes subject to negotiation.”

Although these clauses are intended to keep downward pressure on future price increases, no knowledgeable buyer would *always* buy at the lowest price, as often a truly low price could be a warning something is wrong. Some prices are pinned to cost of ingredients, so in such a case the buyer must keep abreast of market trends. A buyer of copper tubing must know the daily price of copper, a baker the price of wheat, and so on.

An example of “sharp practice” is where a buyer gets supplier A to go below supplier B’s price. Then the buyer asks B to do better again. This

auction keeps up for some time. As one salesperson said, “I don’t mind auctions, just so long as I get the last chance to bid!” Any salesperson who asks for a last look, or buyer who gives it, should be shown the door!

In the above auction situation, or when there is reason to feel the prices are out of line, a good tactic is to give all suppliers the same opportunity to price again. Buyers should always try to get a supplier’s lowest price the first time; otherwise, they may be wasting time and money.

To deal with this dilemma, consider the use of on-line bidding, also referred to as a *reverse auction* to be sure all bidders get the chance to offer their best price. Reverse auctions conducted over the Internet are becoming a common way of bidding for some requirements. Because multiple bid cycles can be conducted in a matter of minutes with bidders all over the world, this method can yield the lowest bid available in a single event.

7. STRATEGY OF HEDGING VERSUS FORWARD BUY

Even when the exact price has been agreed upon, offshore buying confronts buyers with a price dilemma. After the price is set, how can we be sure that the amount paid does not change with foreign currencies exchange rate fluctuations? That becomes a critical issue when buying offshore. When a buy is in another currency, the possibility of translation losses affecting profitability becomes a significant management concern. The buyer will need to decide whether to buy in U.S. dollars or in the foreign currency *before* placing the order.

Before getting into the details of the hedging versus forward buy strategies, let’s consider some basic definitions. “Currency” is the medium of exchange, such as coins, money, and bank notes. Currency value has both a *level* and a *volatility* factor to be considered. Level is the number of pounds or marks required to buy one dollar, while volatility measures the rapidity of those currency fluctuations or level changes. “Foreign exchange” is conversion of funds of one country into usable funds from another. The rate at which the exchange takes place varies frequently. Daily rates are published in most major newspapers for the prior day’s trades on the International Monetary Market (IMM) of the Chicago Mercantile Exchange. Such information is also available on the Internet at sites such as [www.forex-markets.com/].

A “bid” is the price at which a currency holder is willing to purchase a foreign currency, whereas an “offer” is the price at which the holder is willing to sell a foreign currency. The “dealing date” is the date that the deal

was made. The “value date” is the day the deal is to be settled by either delivery or receipt of funds.

Factors that influence the currency exchange rate are:

- Inflationary or deflationary trends of the two currencies.
- Relative value of the U.S. dollar to other currencies (current exchange rates).

When an exchange takes place with other currencies, the issue of relative value occurs. As an example, a purchase order is issued in January to a supplier in Japan, with the price in U.S. dollars. By the time shipment is made from Japan in August, assume that the value of the yen has dropped 20% versus the dollar. From the supplier’s perspective, they will receive 20% less value when the dollars received in payment are converted to yen.

The buyer has to determine in which currency to buy. When asking for quotes, it is a good idea to get the prices in both U.S. and foreign currency. Then, before making major expenditures, the buyer should consult with finance for advice regarding currency exchange rate risks.

7.1 Ways to Minimize Risk

When buying in the foreign currency, buyers can try to negotiate a sharing of risk of currency fluctuation in their contract to help maintain balanced long-term relationships. Currency adjustments might be negotiated in advance and inserted as a clause in the purchase order.

Such a clause might cover any of the following provisions:

- Equal sharing of gains or losses resulting from exchange rate changes
- A band or window set for currency adjustment: “If the exchange rate varies more than plus or minus 5% from the rate as of the date of this PO, an offsetting adjustment will be made.”
- An adjustment to be made at the time of delivery
- Adjustments for blanket orders to be made each month, quarter (or as otherwise determined appropriate)
- Hedge through the use of futures or options
- Using a *Forward Buy Contract*

The buyer’s objective is to freeze the value at the time of payment in the future. By using the tactic of making a “forward buy” contract for the foreign currency, buyers can protect their foreign currency exposure, buying or selling currency for future delivery to correspond to the purchase

transaction. Forward buys can be made for delivery in 30, 60, 90, or 180 days, and special quotes for longer times can be obtained from the banker.

A forward buy contract eliminates the risk of exchange rates moving unfavorably to the buyer between the time the deal is made and the actual delivery date when funds are needed to make the purchase. For instance, if buyers know they must pay Italian lira in 90 days, they can forward buy the lira today and be assured exactly what their costs will be upon delivery. There is no separate fee charged as the bank's profit is in the price charged. This locks in the exact product cost and eliminates currency exchange risks.

7.2 How a Futures Hedge Works

Another buyer tactic is the "futures hedge." A financial futures contract is a buyer commitment to buy or sell a set amount of that currency at a future time. Futures contracts are commitments to buy ("long") or sell ("short") at a time in the future. The price of the futures contract is free to change with the market until the settlement date on the futures exchange.

Although about 1% of contracts expire with the buyer actually taking possession of the currency, most will cancel by selling. When the contract is canceled by selling it, there is a small fee (commission) paid. A margin must be deposited when a futures contract is created. A gain or loss results from this financial transaction that will almost exactly cancel the corresponding opposite gain or loss from any exchange rate change in our purchase order transaction.

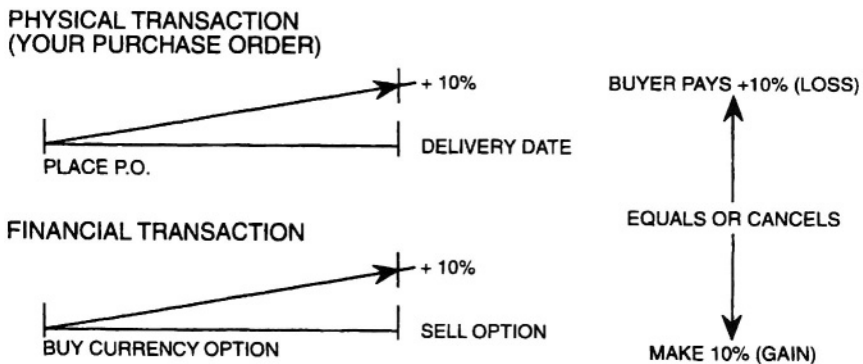


Figure 11-4. How Hedging Cancels Price Changes

Figure 11-4 depicts how the futures action cancels the price change. In effect, the original cost of products purchased was ensured. The fluctuation of currency was eliminated, or hedged, as the buyer froze the price level at

close to the quoted price. The small fee paid is the insurance cost of eliminating risk. Although clearly a business decision, some may decide to hedge only a portion of the total buy value, and accept the risk on the balance.

Of course, if the buyer takes no action, and the local currency strengthens, there will be a net gain, but that’s considered speculation, and most finance departments do not endorse such actions. We must remember that the *object is to be certain of costs—that is, to minimize fluctuation risk*. Company policies vary considerably about the degree of risk to allow. These hedging activities are sophisticated tactics, and large amounts of money can be made or lost in this manner. Those doing the buying must have financial and management concurrence and support when conducting such transactions.

This chapter has addressed the vital role of prices in the world of purchasing. Many buyers are accused of being interested only in low price, sometimes justifiably. It is now evident that to best manage prices, refined skills are needed to track market conditions, to conduct detailed cost and price analyses and to facilitate cooperative efforts to improve the total cost structure. This approach has distinguished many highly successful businesses from their envious competitors. Price remains one of the most critical aspects of supply management, but the focus has clearly broadened to include detailed analysis of cost and price drivers as well.

The informed buyer will work with key suppliers to create a highly competitive extended enterprise. A similar detailed, analytical and collaborative approach to mutual process improvement is valuable in achieving success in negotiations, as we will see in the next chapter.

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Chapter 12

NEGOTIATIONS

Keystone of Effective Buying

If we had to agree on only one key personal trait a professional buyer must possess, it would be the ability to negotiate. Most of us tend to underestimate our power to influence others.

Buyers need to negotiate proactively, taking the initiative. Simply sending out inquiries to potential suppliers asking, “What price will you charge us?” is not doing the job. This is only the first step. When all the quotations are in, it’s up to the buyers to tell the suppliers what terms of agreement are acceptable. At this point, the difference in supplier offerings often spells success or failure. Some buyers are timid about price negotiations, thinking such discussions degrade themselves or their company. Others fear being labeled “price buyers.” If the buyer is not getting a better total cost package than anyone else could, then the buyer is not doing the job with optimal effectiveness.

Buyers in U.S. companies are often dealing with foreign governments who must approve and shape the deal. Negotiating with governments is more complex than simpler negotiations with individual companies.

Offshore suppliers expect to do what we call “haggling” or “horse trading.” Many offshore suppliers love to negotiate, seeing it as an act of “friendship and honesty.” Americans call it an “auction” when a buyer gets supplier A to go below supplier B’s price, then asks B to do better—this keeps up for some time. Buyers should make every effort to get a supplier’s lowest price the first time, or they may be wasting lots of time.

A negotiation is communication between the parties. Though not an exact science, techniques have been found that are of use to experienced negotiators.

Webster defines “negotiate” in three ways:

1. “To discuss a matter with a view to coming to terms about it”
2. “To procure or arrange for by means of a discussion of terms”
3. “Negotiation” is “a parley or conference regarding terms.”

It’s interesting to note the use of the word “terms” in these definitions. While most buying negotiations involve prices, many things other than *price* are negotiable; for instance, terms and conditions of the PO, changes in packaging, reduction of overhead rates, settlements of disputes and damaged goods, and so forth. This is especially true when purchasing services or capital equipment and many other items where the price may be one of the least important performance factors. A powerful leverage effect is available to keep suppliers competitive before the buyer has committed to the complete terms of the purchase.

In buying situations, negotiations may change depending on the intended purpose. These could include:

- Set the specific contract terms, including price.
- Revise existing terms to improve the agreement.
- Change terms to meet changes in circumstances.
- Get agreement in advance on selected terms and conditions.
- Settle various unforeseen commercial problems.

1. CREATING THE NEGOTIATION ENVIRONMENT

Does a time constraint exist? If you must buy, and do it quickly, you are at a distinct disadvantage. It is best to be prepared for negotiations to take longer. It is possible to conclude a complex contract in a few days, but only if most of the details are settled well in advance. Major agreements may take four, five, or more rounds of thorough discussion to resolve all open issues.

Be sensitive and tolerant to the time needed to reach consensus decisions—especially when dealing in the international environment. The American may perceive vacillation while, in reality, consensus is being reached. If it takes one hour, day, or week, to negotiate with Americans, it may take two times that with Europeans, and about six times that with the Japanese.

Location of the meeting and channels of communication are important. It is not always desirable to negotiate in your host’s office. Set the meeting to begin at a time that will allow for breaks at a proper time. People are always more agreeable (though sometimes drowsy) after eating. In face-to-face meetings, psychologists tell us that if you have a choice, take a chair where

there is no barrier such as a desk between you and the other party. The removal of barriers serves to relax the participants.

Personal characteristics give us clues to the tendency to take risks, or play it safe. Is there a tolerance for ambiguity or not? How interested is the seller in making a deal? Sometimes a negotiation is fruitless, especially when one side isn't interested in settling or agreeing. It's always wise to ascertain in advance what the other party needs most from the exchange. Put yourself in the other party's place to determine their WIIFM (What's In It For Me?). Both sides must want an agreement to succeed.

Do your homework thoroughly! There is no substitute for advanced planning leading to a sound negotiation strategy. Some advance thought should be given to such questions as: What information is to be given? Have goals and priorities been set? What are the target prices? Are there concessions that will be accepted to encourage reciprocation?

A tremendous negotiation lever is available to keep domestic suppliers competitive when the buyer uses the global marketplace. Don't overlook it. Basics of negotiation don't change just because the buyer is negotiating internationally. Yet, there are differences to explore in each unique situation.

2. NEGOTIATION STRATEGY

Negotiation strategies can be broken down into these six key activities:

1. Prepare for negotiations—database/forecast.
2. Define objectives—your position limits.
3. Organize your team.
4. Develop a strategic plan.
5. Control the climate or behavior.
6. Seek alternative solutions to achieve “win-win” results.

Many buyers think that for them to win the negotiation, the other party must lose. Not so! In fact, most successful negotiations are “win-win.” The buyer gets a measure of what he or she wants and so does the seller, though perhaps neither achieved everything they'd wanted. A successful negotiation is a mutual bargaining discussion, to arrive at terms that are *agreeable to both parties*.

What are your expectations? Who has the authority to make final decisions? Be aware of restrictions on the seller's authority. Can he or she sign or negotiate agreements without approval? Ask! Sense the relative power of the parties—who is the boss? But more important, *who makes the final decision?*

Most of us don't plan for negotiations as well as we should. Plan the agenda ahead to gain advantage. Brief team members beforehand so none of them tips your hand, or gives up a point before you do. Make sure your negotiation team agrees on the overall strategy.

More specifically, ask:

- Have goals and priorities been set?
- What are the target values?
- What is the time and location of the meeting?
- What are the channels of communications and who will do the talking?
- Who will keep a record of the agreement?
- How will disagreement among team members be handled?
- Who has the authority to make final decisions?

Do parties to the negotiation trust each other? Ask yourself if you believe there is a basis for negotiation. Does the supplier have something to give? If there's no room for give and take, the negotiation may be a waste of time, as both sides must want an agreement. It pays to work for a trusting and open relationship. You must negotiate with the right people. If people don't know you, it is much more difficult to have an effective exchange. So, buyers must first establish good relationships based on trust.

Most effective negotiators focus on what they *need to have*—not stated *wants*. For example, if someone's bargaining position is, "I want an apple," the actual need may be based on *hunger*. If you have a sandwich and banana, it's possible to fulfill his or her underlying need to overcome hunger while not being able to satisfy the stated want.

Another example: two chefs both want an orange, but you have only one. Based on their *wants* you can't win, but upon exploring their *needs* you find one needs an orange for juice while the other needs grated rind for pie flavoring. Applying that to the job—when a salesperson tells you, "I *want* a higher price, in reality the need may be greater profit! Offering greater volume or lower manufacturing costs may satisfy that need.

Professional purchasing managers usually consult lawyers and follow their advice on matters of contract language, but consider leaving them out of actual negotiation meetings. Presence of a legal representative often invites the other party to reciprocate and can result in unnecessary debate over minor issues. Having a lawyer present may be seen as a threat to sue and as a lack of confidence in the negotiation outcome.

Define your position limits by setting targets and goals as a team. Set reasonable but ambitious goals and expectations. This usually means at least a minimum and maximum position. Remember, "You don't get what you don't ask for." Negotiation exercises show that the team with the higher

goals almost always achieves better results. Set goals high to be sure opportunities are not missed. You can still set your acceptable outcome at a lower point. Commitments must not be given before the resolution of major negotiation goals are met. Be aware that the personal values of the negotiator are non-negotiable. Successful negotiations are the result of dedicated effort to improve the outcome by following proven techniques.

2.1 Address Alternative Solutions to Gain Concessions

When making a concession, don't give it too quickly or easily! Moreover, "Quid pro quo"—ask for something in return. And when conceding, do so graciously without haggling. Remember, when it's all done, *both parties should be reasonably satisfied about the deal.*

If the negotiator doesn't ask questions or offer alternatives, then he or she is not performing the job effectively. Ask lots of questions, for clarification and to uncover alternatives. Open-ended questions are far superior to statements that may offend the other party, as they allow a touchy point to be put on the table without being offensive. And, they help when probing for information.

"Why?" and "Why not?" can be effective questions, as well as "What do you need on this point?" Another approach is to make a statement that implies a question.

Here are other simple questions to use—"What if we:

- Give you a 1- or 5-year contract?"
- Reduce the length of the warranty period?"
- Allow you to manufacture to better utilize production capacity?"
- Supply you with technological help?"
- Commit to a long-term relationship?"
- Make progress payments?"
- Change our specifications to suit your manufacturing processes?"
- Provide certain materials and components?"
- Buy an item with higher profit margin?"
- Double our order?"
- Promote your products with our customers?" (As with the "Intel Inside" labeling)

Perhaps you can think of many others! All of these questions give the supplier alternatives that make it easier to agree. Most importantly, they provide the buyer with issues to discuss. Asking questions is a sound technique toward finding solutions of mutual satisfaction.

A negotiation expert once quipped, “You only need 5 words to be a good negotiator—“No!” “What If?” “Why?” and “Justify!” Intended to be both humorous and enlightening, these words can in fact elicit considerable negotiating power. The use of these words makes it clear. 1) There will be negotiation. 2) We will learn about alternatives. 3) We will understand how the alternatives are of value. 4) We will learn how the value can be exploited.

An effective and proven approach to negotiation strategy is to create a model of the agreement to be reached. This model can be constructed using the following steps:

1. List each of the issues to be discussed.
2. For each item listed, identify your range of acceptability, and if appropriate, establish a “walk-away” value where the deal simply becomes unacceptable.
3. Prioritize the items from most essential to nice-to-have.
4. If possible estimate the seller’s range of acceptability and walk-away values for each item.
5. Is the seller’s likely position outside your range of acceptability? How will you address this with the supplier?
6. Use the questions raised by this analysis to guide your research before the negotiation begins, and again to test your assumptions about the seller’s position during the negotiation.
7. Prepare a separate list of possible alternatives to be explored if a critical item reaches an impasse.

These preparations will ensure an effective exchange and may well uncover settlement options not anticipated. And it will be clear when the agreement meets all your objectives.

Despite the best of planning and intentions, a negotiation may reach an impasse. Sometimes buyers have to learn not to plunge ahead. You might liken it to driving a motorboat through seaweed. Gradually the motor propeller fouls and turns ever slower as the boat slows to a crawl. You can’t get out of the weeds by racing full speed ahead. By reversing the propeller the debris is cast off. Then you can resume the journey. In business, sometimes the negotiator makes no progress heading straight at the problem. Change direction or go into reverse until the hazard clears. Then go ahead once again toward your target. In this light, an impasse may be acceptable—and even planned—as part of the negotiation strategy!

3. IMPLEMENTING TACTICS AND NEGOTIATION CHECKLIST

Tactics of negotiation change depending on whether it's a buyers' or sellers' market. One commodity may be plentiful, while another is in scarce supply. In the latter case, buyers must often "sell their position" to be offered the opportunity to buy the goods instead of them being sold to others. This is where relationships can help!

In a sellers' market, the skilled buyer/negotiator with better interpersonal skills—with the ability to set up trusting relationships—will perform better, as he or she is politically adept at winning concessions. In this market, a demanding purchasing manager may be viewed as rigid and unrealistic. To be truly effective, buyers should recognize when their personal style is disadvantageous and adapt their style to suit the situation at hand.

3.1 Negotiation Checklist ("Do's and Don'ts")

This time-tested tactics checklist provides ideas for conducting a win-win negotiation:

Do

- Find out if the seller is interested in making a deal. Negotiation may be fruitless, if one side isn't interested in settling.
- Negotiate with those who can make the final decision. Often a seller has a range of options to submit, and these may have specific limits that cannot be exceeded without management approval.
- Negotiate at home when possible—and be seated somewhat together. (Don't be trapped into swiveling your head as at a tennis match!)
- Be patient! Patience is one of the most important attributes of the negotiator. Few successful negotiators plunge in and try to wrap everything up too quickly.
- Enlist the aid of team specialists in manufacturing, finance, and engineering to help evaluate alternatives. Purchasing research will help supply basic market and financial data.
- Expect some concessions. Be confident of facts you present.
- Slow down or take a short break if the negotiation moves to unfamiliar areas. Do you need to bring others into the discussion?
- When there is an impasse on a major point, shift to minor points that you may be able to agree upon and come back to the major point later. The agreement on minor items will help relieve the impasse.

- Use techniques such as cost and value analysis that provide details for discussion on how to reduce prices.
- Negotiate for the long-term result—not for short-term advantage that may prove detrimental at the first turn of economic conditions.
- Remain silent at times! It is not necessary to answer every question. Often greater concessions result from a seller's fear of losing business.
- Know what you can expect to gain by negotiating. Keep that target in mind, and be reasonable about what the supplier can give.
- Plan ahead! Prepare the agenda to your advantage. Brief team members beforehand so none of them tips your hand, or gives up a point before you do.
- Set the meeting to begin at a time that will allow for a coffee break or perhaps a relaxing lunch. Call a recess if talks hit a snag!
- Confirm the agreement in writing, and *always be fair!*

Don't

- Tip your hand too easily!
- Accept the first thing or idea tossed out. When acknowledging the other side's point, the buyer doesn't have to agree with it.
- Get so bogged down in details that the overall objectives are lost. Many a session occurs where agreement was there, only to have someone keep negotiating and lose it.
- Use information you know is wrong or is not pertinent. This strains your credibility. Information available on the Internet today leaves little excuse for being uninformed.
- Try to prove the supplier is wrong! You may succeed in embarrassing them and winning your point, but you've damaged your relationship, and your negotiation position.

4. NEGOTIATION FUNDAMENTALS FROM A GLOBAL PERSPECTIVE

While negotiation techniques may be used worldwide, the major challenge is to *apply them with an understanding of the cultural and business practices* of the other party. Cultural variations are not right or wrong—simply variations that must be recognized. Even if we conduct most of our business domestically, a global perspective can help us to better understand the subtle cultural differences between the parties of a business transaction. Even within the United States, consider that business is conducted at a different pace in New York City than in the rural South.

Moreover, distance between the parties increases the chance of misunderstandings.

Our global awareness, then, can help us to become more sensitive to those differences, even when they are quite subtle. Even local negotiations require sensitivity to your business partner's cultural differences to be effective. However, because cultural differences are more extreme when dealing overseas, we will focus primarily on these international differences to provide stark examples of the point.

Lack of knowledge of the foreign supplier's culture has long been a weakness of American negotiators. Too often, the American buyer is seen as too direct and impersonal. In a hurry to conclude an agreement, his or her impersonal approach often offends the sensitivities of foreign sellers. That result is clearly unintentional. Better understanding of others' culture and practices through study, travel, and experience all help overcome this roadblock.

Cultural similarities and differences have been documented and studied. Though we have such a diversity of ethnic cultures that borrows from all races and nations, business culture in the United States is unique. For example, we seek agreement first, and build a relationship second. Business people in virtually every other culture in the world *build relationships* before doing business.

Americans often inadvertently make blunders. When you meet someone do you touch his shoulder or grab his arms? People from many cultures (notably those in Europe and the Far East) feel ill at ease when touched—other than when shaking hands. Do you pass food with your left hand? That's highly offensive in some countries.

Many American buyers believe in fairness and "playing by the rules," though sometimes we exhibit a tendency for "one-upmanship." We tend to have "win/lose" value systems—if he wins, then I must lose. Competition is revered in America! Competitive skills are honed not only in our sports, but also in our businesses. Children naturally "keep score." "Who has the most marbles?" Who's the strongest? It's natural in our culture, but the knowledgeable buyer must recognize this is not the case worldwide.

It was no fluke that Americans got to the moon first. We pride ourselves on being No. 1. We're idealists and romanticists. We believe in the American dream—anyone can come here and make it if they persevere. Some American buyers are described as having a macho "I'm in charge" style, and are often referred to as "John Wayne" negotiators—"take it or leave it!"

We can't hope to know all cultures, and can't include them here. In this section, we will focus on the Canadian, Mexican, and American cultures, as

the North American Free Trade Agreement (NAFTA) frames our collective destinies to work together.

4.1 Canadian Culture

Most Americans don't consider Canadians foreigners, so they may believe there are no cultural differences. Americans have to be mindful that Canadians can be sensitive about French and English relationships. Canadian culture is entwined with American because of geographical closeness and strong trading relationships. Coupled with the close contacts, the backgrounds of many Americans are similar to their Canadian counterparts. The same European powers played an important role in shaping the Canadian and U.S. cultures.

"Canada" is an old Iroquois Indian name meaning "group of huts." Early French settlers founded "New France." The French/Canadians had to escape the fierce Iroquois Indians to the South. Canada's early settlers battled along with the British and French who were both vying for new territory. New France was heavily populated and settled by soldiers, and even the civilians bore arms. This fit into their culture of a militarist type government. In fact the governor's chief duty was to fight the Indians.

"New France" in the St. Lawrence valley and "New England" each encouraged settlement to maintain their claims. Though caught up earlier in English and French wars, since the end of the War of 1812 the U.S. and Canada have maintained what is regarded as the longest open and friendly border in the world.

Following American independence in 1776, many Americans loyal to the Crown moved into Canada. Some Canadians of French heritage moved into the U.S. but most remained where they were, with divided loyalties. Canada has two basic cultural heritages. About half of all Canadians are of British descent, while one-third are descendants of earlier French immigrants. French Canadians have kept their language and customs.

Two-thirds of Canadians live in the St. Lawrence and lower Great Lakes lowland regions. The French-speaking Quebecois have in the past threatened to establish a separate nation. The Separatist movement is active and always present in eastern Canada. Accommodations have been made to keep the country unified, but it remains a struggle.

So, there are cultural differences that over the years have tended to meld into what some might call a North American culture. Some Canadians say they have picked up some of the best traits in their heritage from contacts with the British, French, and Americans. They mention leaving behind some of the negative aspects of these three societies.

Canadians generally like a polite and perhaps somewhat slower pace in getting into business details. They use first names, but wait a bit with new acquaintances. They will invite you too, when they detect you're being polite and friendly. Be wary of coming on as being too overpowering in your relationships.

Canadians sometimes express a dislike of being talked down to by some Americans. Americans are sometimes perceived as being somewhat arrogant, often lacking knowledge and appreciation of Canadian culture. In business, more appreciation by Americans about the importance of the strong relationship of trade with Canada will be welcomed!

Canada's government is committed to free-trade principles. NAFTA will gradually eliminate all restrictions between these two great trading partners. While benefiting both nations, some Canadians express worry that being "too cozy" could result in gradual loss of their cultural identity. The American buyer should be sensitive to this concern.

Certainly negotiations would not be unlike in the United States, but in dealing with a French-speaking company, an interpreter might be helpful. And although lack of easy conversation will make for more formality, most all companies have bilingual employees to ease communication difficulties. This is particularly the case outside of French-speaking Quebec.

4.2 Mexican Culture

Like Canada, Mexico is a valued, though smaller, partner under the NAFTA umbrella. Spanish influence affects its cultural norms. However, unlike other Latinos who say they are descendants of the Spanish, Mexicans say, "When we were *conquered* by the Spanish." Many Mexicans consider themselves as having an Aztec heritage.

Protocol and social competence are admired. Shake hands upon meeting business people, but wait to see if women offer theirs. A slight bow may suffice for some.

Direct contact within Mexico is preferred and much business will be done through acquaintances in place of official channels. Friendliness and courtesy together with sensitivity to Mexican culture and independence will help to smooth relations.

Mexico's official language is Spanish and the predominant religion is Roman Catholic. Mexicans have strong feelings about their neighbors to the north sometimes bordering on paranoia. As one explained, "When we look at a map we always see the big U.S. sitting on our shoulders." Unless there have been previous contacts, there can be a suspicion about Americans motives. It is said, "We sleep with one eye open." As with most cultures, Mexicans can be sensitive to comparisons and condescension. They most

certainly don't like to be reminded of the U.S. border invasion by a small subset of their countrymen. Proud of their independence, they sometimes understandably complain when the word "America" is applied exclusively to U.S. citizens.

Decisions are highly centralized. Managers decide without much consultation with lower levels. Prices can swing considerably, so expect to negotiate them down! The Mexican negotiator may be selected by his social standing and not by his technical talent. It may be more important that he has the proper family ties and political influence.

Because trust and compatibility are important in Mexican negotiations, center heavily on personal aspects. Deliberations are usually cautious and a better deal will often be forthcoming. Although on occasion Mexicans may appear to be overly dramatic and emotional to Americans, they see themselves as more reserved than the brasher Americans. They prefer behind-the-scenes bargaining, and may see little value in direct negotiation exchanges.

Mexicans expect you to socialize with them before dealing. And business schedules should not preclude involvement with their family or friends. In formal meetings, informational charts, samples, and models are of help and appreciated. Some Americans report that after verbal arrangements are concluded, they are rescinded later. So as elsewhere, there is no substitute for a formally documented agreement. Some Americans feel Mexicans are too relaxed in their scheduling of appointments. You must allow for more time to conclude arrangements and be patient.

Most businessmen take no siesta, but use the early afternoon time for lunch and socializing. Between 2 and 5 p.m. is the time for the main meal. Dinner is around 8:30, and it's not courteous to arrive early. The spouse is often invited. If you go to the home, flowers for the hostess are always welcomed. A thank you and a phone call afterwards are common courtesies.

4.3 Negotiation Sensitivity

Certainly the above are sketchy descriptions of the complex cultural issues American buyers most likely will engage. They serve to point out cross-cultural frictions Americans tend to overlook. Hopefully the next time you deal with our trading partner suppliers, recalling some of these cultural issues will help you to be a more sophisticated global negotiator. And, being more sensitive to American culture will help us on our home ground.

Americans want people to get to the point; after all, a favored expression begins with "the bottom line is". We are in a greater hurry. Foreigners are repeatedly expected to plunge right into the subject. Conversely, the advice to Americans is to "count to ten" when waiting for replies to questions. In

fact, the single most important piece of advice in dealing with foreign trading partners is “*Be patient!*”

Communication is almost always the greatest problem for most negotiators worldwide. Shockingly, many Americans traveling abroad find that despite much progress in recent years, many people still speak foreign languages! Seriously though, for most negotiators worldwide the primary impediment to getting a good deal is lack of effective communication.

4.4 Avoiding the Pitfalls—How *Not* to Blow It!

We can learn from negative negotiation actions. Save some bargaining chips to use to get rid of a stumbling block, especially if parties begin to change previously agreed upon positions or issues. Members of a team can provide unknowing obstacles to successful negotiations.

The following is a list of stumbling blocks guaranteed to disrupt any negotiation:

- Letting the supplier know there is no other source available. Even when a partnership has been established, the buyer needs to retain supply options.
- Boasting how much money you will make on the deal. The supplier will feel he has a good share of that coming to him, so it’s better to stress how competitive your marketplace is, and your concern that the supplier must help you meet that market.
- Divulging authority limitations. Making a statement such as, “I’ve got to clear it with the boss” weakens your negotiation power. Moreover, it may cause the seller to visit the boss! (However, divulging authority limitations may be acceptable in limited cases where the buyer is being pushed into an untenable position that requires a temporary escape!)
- Not knowing what you need. Letting the supplier lead the exchange can be acceptable in some instances; but to achieve your objectives, they must be kept in mind at all times.
- Waiting until the last minute to spring a major issue. It’s better to outline it early—otherwise, the late entry may submarine the entire negotiation!
- Discussing information on the seller’s competition. If you’ll talk about the seller’s competition in his presence, he will always wonder what you are telling the competitor about his company!

When an agreement is reached, always reduce the discussions to writing. Your record should be accurate. Simple language should be used with short sentences for clarity. Both parties can sign joint memoranda of understanding prepared during the negotiation. By jointly agreeing to the

final wording, this becomes part of the negotiation process as loose ends are tied together.

Sales are made in part with emotions, and not solely logic. Emotions can be studied by body language. Some experts claim that 90% of communicating is by other than word meanings. Someone may say something that he does not mean, but his mannerisms will give him away. Body language is an often-overlooked part of communications, which can be broken down into various categories: facial expressions, eye contact, posture, movement, speech, tone of voice, and attitude.

We can learn from these nonverbal cues:

- *Facial expression.* We tend to like someone with a ready smile, while a frown betrays disagreement.
- *Eye contact.* We rely on our perceptions of others. Many of us believe that someone is more honest if he maintains eye contact. Didn't your mother ask you to "Look me in the eye and tell me you didn't eat those cookies?"
- *Posture.* Someone who leans forward is seen as interested, when compared to someone laid back and relaxed with legs crossed. Crossed and folded arms sometimes suggest a person is closed to change or suggestion.
- *Movement.* Drumming your fingers, fiddling with rings, or tapping your foot are all distractions that give others a feeling of impatience, or lack of interest in their ideas.
- *Speech pattern.* Rate, volume, and clarity of speech affects how your message is received. Advance preparation allows you to speak comfortably. People can listen at 400 words per minute, yet we speak at about 200. Listeners have "free time" to notice many little distractions while speakers think about what to say next.
- *Tone of voice.* What you say is often lost in how you say it! Tone of voice conveys more meaning than words.
- *Attitude.* Attitude is important! You will need to be a good communicator, patient, even tempered, and not easily frustrated. A sense of humor may help. To achieve a successful negotiation one must use persuasion and arguments, both emotional and logical.

Buyers need to be aware of symbols and gestures that may not be what we think! Be wary of using hand signals, as they may not convey the message intended! Tapping the side of the head in some parts of Europe implies "something is crazy here," while a similar gesture in the Netherlands, conveys the message, "How clever, or smart."

In ancient Rome, the thumbs down symbol said it all! Hitchhiking with a fist and the thumb is an obscene gesture in Australia. The thumbs-up

symbol, given with a quick clockwise jerk of the right hand, is a Brazilian's way of showing approval. But to an Iranian, it is the filthy sign. The hand symbol of **O** with the thumb and forefinger means "OK" in the U.S., "zero" in France, and "money" in Japan, while in Germany and Brazil its meaning is an obscene reference.

Consider this true story about the dedication of an American company's new Brazilian operation. The government officials were present along with local plant officials and their wives and families. Public relations, wanting to be dramatic, decided to have their top executive whisked away in a helicopter from the assembled crowd after the dedication ceremonies. The helicopter hovered above as the excited crowd below watched with impressed interest. The American executive leaned toward the window and with a big grin, gave the Brazilians the infamous "OK" hand symbol. Imagine the repercussions!

5. A NEGOTIATION SETTLEMENT

A true-life negotiation settlement may help bring together some of the issues just reviewed. A large metal fabricator was unable to keep up with the volume of self-made parts for a new product. The company therefore turned to a small nearby company for help. Needing the work, the smaller company struck a friendly agreement to begin the subcontract at once.

An engineer was placed at the disposal of the subcontractor to clarify details about the special nature of the work required. Because of the urgency, a verbal approval to begin work was given. A purchase order followed shortly, approving an hourly rate, plus the cost of various materials to be itemized.

Several weeks passed without delivery of parts acceptable to the large company's quality people. After joint efforts to solve the problems, exasperation began to set in. The small supplier felt his reputation was at stake, and resented being pushed by the larger neighboring plant. Soon, it became evident that the standards of the buying plant were not being met, so by mutual consent the contract was canceled. Only one acceptable unit was produced from 30 started.

An invoice was submitted to the buyer amounting to \$12,000 based on work performed. Twenty-nine units were scrapped, so the single acceptable unit cost \$12,000 compared to an in-house cost of \$400. The smaller company felt they had tried to help to the best of their ability, and did not believe they should lose money on this venture. They said their interpretation was that the buyer had simply purchased their labor to do the job; further, because the buying company had its engineer located at their

production facility, and because this engineer dictated the methods of operation, the subcontractor was not responsible for output and performance. They went on to add that if they had used their own judgment and methods, the quality would have been satisfactory. They contended that they could have produced to the required standards had they been in charge.

Consider these questions before reading the actual settlement, which follows.

- What are the basic issues of this case?
- How would you go about negotiating a fair settlement?

A settlement was reached that provided that the subcontractor is reimbursed for the materials and labor expended. The buyer believed the supplier had acted in “good faith” in trying to “help out” in an emergency, so should not suffer a loss. He negotiated an allowable profit that was a third of that expected. All unused materials were promptly returned. Both parties agreed not to blame the other, or hinder a possible future relationship. Obviously, poor preliminary work in spelling out the agreement caused a good deal of the trouble in this case. The moral is that even in emergencies, it’s always best to anticipate possible problems and cover contingencies in the purchase order.

Negotiations remain the heart of the purchasing job. How well it is done determines to a large extent the difference between a reactive support function and a profit-oriented arm of management.

Regardless of the outcome, even if results are a disappointment, remember to part on friendly terms (unless using disappointment is a specific short-term tactic to achieve a long-term result). It pays to work for a long-term and open relationship, as there will always be another day and another need to be fulfilled.

Chapter 13

GLOBAL SUPPLY DEMANDS TECHNICAL BUYING COOPERATION

The modern strategic and global purchasing effort is technologically oriented! Using the greater *worldwide technology* exposure helps a company to become globally competitive. The technical buyer and purchasing engineer jobs become more vital as the supply base problems become more technical. For “partnerships” between suppliers and buyers to flourish where companies work together instead of as adversaries, managements expect increased technical expertise from their buyers.

On the lighter side, this would appear to be a difficult task given the difficulties of interaction between the players, as indicated in the following “old chestnut”:

“An engineer is said to be a person who knows a great deal about very little, and who goes along knowing more and more about less and less until finally he or she knows practically everything about nothing, whereas:

“A salesperson is a person who knows very little about a great deal and keeps knowing less and less about more and more, until he or she knows practically nothing about everything;

“A buyer starts out knowing practically everything about everything, but ends up knowing nothing about anything due to association with engineers and salespersons.”

On a more serious note, purchasing managers (PMs) must ensure that their department is provided with the technical know-how to work successfully with suppliers and operating departments, or that buyers can do the job themselves. Purchasing must be proactive, taking the initiative, or it will be relegated to accepting the role of a clerical servant of what others decide to do.

Purchasing research is the systematic study and analysis of any purchased item or procedure. The goal is to improve the purchase and reduce costs. Some U.S. companies use a small research staff of one or two people, while most report they have no staff research personnel but depend on the buyers to handle such work for their own commodities. The larger a department the more likely it is to employ researchers. Each buyer has to become more technically knowledgeable or the advantages of research will be lost.

Analysts may participate with the buyer during negotiations to provide technical backup. If a supplier submits a low-ball price, technical experts delve into the situation with manufacturing and engineering to make sure the supplier understands the requirement and is not being unrealistic only to increase prices in the near future. Analysts are particularly helpful in make-or-buy analyses. A technical support analyst can uncover pertinent facts that help buyers negotiate with suppliers.

Through analysis, purchasing has been able to procure materials at lower cost and has acquired better control of the supply chain. Further, newer materials can be placed in engineering hands more quickly, and the company's products can be improved at the earliest stage in their development, when cost are being built-in.

1. ORGANIZING TO ACHIEVE TECHNICAL COMPETENCE

In all but the least technical buying environments, there must be technical competence on the supply management team.

There are a variety of ways this can be done, such as:

- Hire engineers to do the buying – This may make sense in a very small company or in a very high tech industry. But the engineering curricula include very little if any business training and many engineers have little interest in the business issues common to purchasing work. In some cases this is overcome by seeking people with an undergraduate degree in engineering and a masters degree in business. General Electric sought the addition of such people to their purchasing organization in the late 1980s.
- Hire people with market or technical expertise in the commodity to buy these items – For example one company hired a former computer salesperson to do the computer buying. This approach brings to the job a strong knowledge of the market or of the product, sometimes both. As in the case above, training in purchasing skills may need to be enhanced.
- Create a position to provide technical support to the buying staff – Positions such as purchasing engineer or engineering buyer have been

very successful. The limitation of this approach is the individual serves in a support role and may not be as knowledgeable about either the business or the technical issues as in the examples above.

- Cross train technical and supply professionals by rotating assignments – This has been done in some companies with excellent results, but has failed to gain wide application. There is a substantial amount of training required in either case before the individual can be proficient in the tasks of the other function. If the organization were willing to provide resources for such training, perhaps it would be more effective to train all purchasing people in fundamental engineering skills and vice-versa.

While all have had some success, none of these approaches seems to answer all the needs. As with many other situations, a combination often works best. What is important is that the need for such crossover training and experience is acknowledged and addressed. Many engineering people have little concern for commercial issues, and few buyers are as technically competent as the work today demands.

2. THE DESIGN ENGINEERING PROCESS

Engineering is one of the true cornerstones of a company's success; without good engineers the company will be mediocre at best. And engineering must be supported in its search for new products and ideas, as it must approve changes that result in improved products or cost savings. For its part, engineering must translate research ideas into marketable products, a process that requires the balancing of many factors to achieve reliable commercial design.

New designs are continually conceived. Testing and evaluations need to be reviewed with suppliers, and adjustments made when: (1) customers demand changes after a design is in production, (2) a manufacturer provides a replacement for obsolete parts, or (3) a supplier stops making certain components.

Supplier technology should be used, not avoided! Innovative materials, components, and products should be explored during the development phase and at times of design change. The degree of complexity often determines the extent of interchange. Design review teams, with qualified suppliers participating, are often needed for military or technical products. This should preferably be done before the design is finalized.

Design integration and cooperation between the specifying and supplying organizations is needed to achieve a balance between the product's

specifications, cost, and value for the end-use customer. Per a sales engineer, “If someone says they have a problem—and they’re cooperative, I’ll give an extra effort.” She maintains she’ll stay in the office until late in the evening to help out the cooperative customer. You build “credits and debits” with the customer.

2.1 Need for Follow-up of Design Programs

If new product design target costs were not achieved on early production models, cost reductions can still be achieved. Changes must be made with purchasing participation so the change doesn’t provide a blank check to the supplier allowing them to raise the price unnecessarily. If a certain change makes the product easier to make, perhaps a price reduction is in order. But buyers can’t expect the supplier to offer a decrease—so the engineer must consult the buyer, who can assure the appropriate price adjustment is made. We have all heard suppliers say, “I’ll price the sale at a loss to get the order, and make it up on the changes.”

Purchasing often represents the supplier in internal company dealings, such as pricing, availability, etc. Purchasing should take the lead to search out and pre-qualify world-class suppliers. Its mission is to make available such information in advance, so it can be quickly fed to engineering when needed. Engineering and purchasing together must see that information is fed into the process of designing and developing new products.

Table 13-1 shows who will handle the purchasing/engineering interface based on the objective being addressed. The priorities given to various joint objectives by a purchasing and engineering team change, depending on whether the design already exists or is being created.

Table 13-1. Purchasing/engineering Technical Interface Matrix

Objective or Task	Purchasing best performed at:		Priority	
	Plant or	Headquarters	New product	Existing product
Source selection	Best done at the location of the design engineer		1	5
Make-or-buy decision	X		2	3
Strategic sourcing		X	3	1
Promote standardization	X		4	4
Initiate cost reduction	X	X	5	2
Support global procurement		X	6	6

About 70% of production savings occur from improvement in design. Begin by taking these steps:

1. Review suppliers' performance in giving technical support during design.
2. Evaluate suppliers' technical leadership in their industry.
3. Coordinate engineering/purchasing/supplier meetings.
4. Analyze product development projects for purchased materials needs and project timetable.
5. Work with suppliers to meet production start-up delivery schedules.

State-of-the-art technology designs increase the cost and potential for technical problems, because the technology may be untested. Such risks, however, can be minimized if the suppliers are recognized and rewarded for valuable contributions to the buying company.

Earlier supplier involvement is a fact.³⁰ Suppliers are becoming involved earlier in the design cycle. Why? This is required to capitalize on suppliers' expertise, on the latest technology, and because the design cycle is getting shorter.

Some of the biggest benefits of early involvement are:

- Latest technologies available
- Better manufacturability
- Better quality results
- Lower costs

The qualification of components for both existing and new products is a critical part of the technical and purchasing interface. Although this may be the direct responsibility of the design engineering organization, there are economic and supply considerations that must be introduced by purchasing. This must occur early in the process—prior to source selection. Pre-qualifying suppliers is one way to get earlier involvement.

3. THE REENGINEERING PROCESS

“Reengineering” was defined in Chapter 2. What better place to use it than when giving thought to purchasing and engineering's joint role? Engineering can exist quite well without regular input from the supply organization. But the reverse, purchasing doing its job well without engineering involvement, is very unlikely. If a cooperative effort is to exist, usually it will be purchasing that must therefore initiate the contact. And, it is purchasing that must create the vision!

³⁰ “Design ‘88: Teaming Up,” *Purchasing*, March 10, 1988.

This chapter delves into the serious relationship between the purchasing and engineering disciplines. With both working with the supplier, a productive relationship is formed. (Refer to Chapter 1, Figure 1-4). When reengineering, it helps to review proven existing programs and techniques to adapt to today's demanding challenges. Some say, "Do whatever adds value and/or eliminates waste. In short, keep things 'lean and mean'".

Although many artists and scientists are quite prolific until very late in life, tests indicate that creativity generally drops 90% between ages 5 and 7, and by age 40 an individual is only about 2% as creative as when at age 5.³¹ Psychologists believe that the filtering process is so strong in most people that they tend to block out new and creative thinking because of inhibitions or fear of ridicule. The thought is that if the filtering process could be detached from the creative generation of ideas, creativity would be enhanced—a contention that has led to the concept of "brainstorming"—allowing someone to express whatever comes to mind without fear of ridicule or of being analyzed.

When someone comes up with what later proves to be a great idea, the thought often is seen as having been derived from an analogy with another situation known to the inventor—that is, it is an adaptation of another concept. For example, the idea of packing seeds in a dissolvable tape to be planted in the ground is said to have resulted from association with a machine-gun belt!

Creative responses do not always come from the engineer's logical 1, 2, 3 approach, but rather from the releasing of repressed ideas from free association where ideas may come from any direction. Every music pattern consists of no more than 12 notes; yet look at what Chopin and Beethoven have written with them! The pianist picks up sheet music 100 years old and the melody is played exactly as it was composed. The notes, or "symbols," unlock the door!

The development of the personal computer is a classic study of assembling building blocks. IBM made its first small PC models by simply assembling existing components. Then Steve Jobs adapted the "user friendly" visual image projection developed by Xerox's Palo Alto Labs. IBM enlisted Bill Gates to let them use Microsoft's DOS operating system, and later developed their own OS/2. Microsoft subsequently developed the popular Windows® platform which remains the industry standard today. And the beat goes on ...

We need more symbols in the business world, more pictures or images, more recognition of roles to play, to better understand and coordinate

³¹ Niles Howard, "Business Probes—the Creative Spark," *Dun's Review*, January 1980.

business conditions. And business people often find that difficult! Like something a child makes with building blocks, all progress is pyramidal.

Creative management begins with commitment, involvement, and motivation. With our minds on innovative thoughts, we're now ready to grapple with the practicality of the job situation. The basic techniques of purchasing change little over time. However, our vision changes.

Critical success factors for technical buying or purchasing engineering are listed below:

- Awareness of the global environment
- Knowledge of your products and processes
- Knowledge of suppliers' capabilities
- Education or experience (engineering background desirable) to comprehend the technology
- Experience in interpreting drawings and specifications
- Knowledge of business and financial principles (e.g. to conduct make-or-buy, cost/price and value engineering analyses)
- Ability to access information within your company—engineering, manufacturing, quality, etc.

In reengineering the roles of the buyer, the engineer and the supplier, we hope to develop a collaboration that will bring the unique strengths of these three critical players to bear on our most complex business challenges. If the technical ability of the engineer can be added to the supplier's knowledge of manufacturing methods and the buyer's business acumen, the possibilities are enormous. Now add skills in facilitating creativity in problem solving and imagine the results that may be achieved.

4. STRATEGIC TECHNICAL SUPPORT ACTIVITIES

Before reviewing ways to improve relationships between design engineers and buyers we should consider what has been learned about natural frictions that exist.

Based on experience, the following underlying causes for roadblocks to cooperation between buyers and some design engineers have been identified: The engineer is hesitant to accept changes offered by purchasing because,

- A feeling that suggesting a new method or material represents criticism of decisions engineers have made in the past.

- A fear that adoption of the proposal will diminish the quality of the product (or component, material, or system) for which they're responsible.
- A risk aversion by the engineer who in the past has approved changes that caused problems.

Buyers cite problems with the practices of some design engineers, such as,

- Some designers will specify parts, materials, and processes that are familiar, not wanting to risk an unproven alternative.
- Designers may lack knowledge of or interest in economic factors.
- Engineers often see no harm in specifying just one supplier for a given requirement.
- Some engineers are reluctant to accept buyers' suggested supplier recommendations.
- Engineers may resent any suggestions that would lengthen development time.
- They often put new design efforts before redesign opportunities.
- Sometimes engineers fail to supply full and complete specifications, or specify tolerances that are too tight.
- The engineer does not appreciate the importance and time required to create an effective supplier agreement.
- There are too many engineering changes in design as the project continues—often with conflicting or incorrect specifications.
- Engineering may weaken negotiation positions, by letting suppliers know, "We will specify your product."

The above comments are the expressed reactions of buyers in attendance at seminars conducted by the authors. Certainly there is some venting in the above listing, yet buyers can expect some of the above forms of defensiveness from some design engineers. Buyers should work to encourage the engineers to take some reasonable degree of risk, but remember that the *design engineer is always responsible for the integrity of the design!* Don't underestimate that responsibility.

4.1 Manage Conflict with Design Engineers

This is a two-way street. What do engineers say bothers them about purchasing?

Some of the most frequently mentioned complaints by engineers about buyers are:

- Buyers' lack of product knowledge.

- Buying decisions are based solely on low price. One engineer says, "Purchasing people buy the lowest price, no matter how much it costs."
- Purchasing provides poor follow-up and feedback.
- Buyers insist on "Going by the book" and are inflexible.
- Purchasing is unwilling to try new suppliers.
- Purchase agreement terms conflict with design specifications.
- Procurement people are just "paper pushers."
- Some buyers have an "attitude problem."
- Purchasing does not support us in meeting our needs.

So, there has been some dissatisfaction on both sides of the issue! Good relationships between purchasing and engineering are vital. Despite all the above complaints, many buyers, purchasing engineers, and design engineers do get along well because of enlightened managers of these operations. As an example, a vice president of engineering who was aware of frictions, issued guidelines in conjunction with the director of purchasing. Although aimed primarily at the engineering staff, these guidelines also provide purchasing managers with some insights that may be helpful, so they are reproduced here.

The written instructions prepared by this chief engineer for his department were as follows:

- The purchasing department should be informed of correspondence with suppliers. This means that copies of any such correspondence should go to purchasing. And when correspondence is received from suppliers, either the original or a copy should be given to purchasing.
- The engineer should call in a purchasing representative whenever an important discussion is to be held with a supplier, even though it relates to some future design.
- It is essential that no engineer advise any supplier directly relative to changes of prices or specifications on current production models. The purchasing department must handle any negotiations with or advice to suppliers on products.
- No engineer should take it upon himself to change any existing purchase order either by verbal or written instructions to a supplier. Correspondence concerning any existing purchase orders must be handled by purchasing. Any necessary technical transmissions should be done only with the agreement of purchasing, with copies to the appropriate buyers.
- Any discussions, that lead to prices being mentioned should have written confirmation (a copy of which should go to purchasing), or a record of

the conversation should be made by the engineer and furnished to purchasing.

- It is necessary that the engineer talk tentative price and cost in conversations with suppliers in connection with new products and in the process of selecting and qualifying components or parts. If the engineer is to be cost conscious, this is definitely part of the job.
- Confidential information or quotations provided by one supplier should not be passed along to another and the confidential disclosure of new developments on the part of the supplier should be respected.
- It is essential in conversations with suppliers that the engineers make it perfectly clear that they do not make the decision to buy and that the purchasing department is completely responsible for such a decision.

Engineering usually requires more services from purchasing than from other departments. The capabilities of engineering and purchasing should be complementary. Corresponding suggested guidelines for the behavior of purchasing personnel in their dealings with suppliers and engineers are listed below:

Purchasing will -

- Lead the source selection process for major new source requirements.
- Track product development projects and coordinate deliveries to meet first production requirements.
- Make supplier catalogues and technical data readily accessible to engineering.
- Invite engineers to join them during key supplier discussions and site visits.
- Act quickly to place orders and to attain delivery for developmental needs.
- Designate a buyer or purchasing engineer who will provide interdepartmental liaison if needed (larger organizations only).
- Ensure that its supplier evaluation system stresses the value of design suggestions.
- Maintain routine information exchange between buyers and engineers and with supplier engineers.
- Support and participate fully in the design process, by leading source selection and standardization efforts, and attending key meetings and design reviews.
- Support the search for less costly substitutes offering equal or better performance.
- Initiate supplier efforts to improve quality methods that will allow elimination of incoming inspection.

There is plenty of room for improvement to rid the company of such frictions. It is clear that the activities of design engineers can materially impact the buyer's sourcing options. So, if the buyer can help the engineers with several constructive alternatives—early in the design process—the payoff comes in lowered material costs and greater supplier contribution. How can buyers and purchasing engineers ensure cooperation with engineering? They should look for ways to satisfy: (1) reliability, (2) technical capabilities, (3) service availability, and (4) supply availability. Design engineers indicate the aspects of supplier performance that are most important to them include technical assistance, fast delivery of test items, a consistency between samples provided and production lots, good after-sale service, and ability to maintain competitive pricing. Surely there is nothing in that statement that is not also in the best interests of purchasing people.

There are two extremes in purchasing's relationships with engineering, neither of which is optimal. One is the situation where the purchasing department insists that it must make all supplier contacts, handle all correspondence, and decide whether or not a supplier may see an engineer; in the other the engineer is a free agent who on his or her own introduces changes in contracts, makes commitments to suppliers, and approves costly changes without proper authorization from purchasing. As seen in chapter 2, with the complexity of managing the supply chain to benefit the organization today, neither of these positions is tolerable.

The optimum situation allows the engineer sufficient access to supplier "know how" and advice without eliminating the buyer from the supply management process. An engineer may be "just looking," but before he is through he may have effectively set a price and made firm commitments, "forgetting" to key the buyer in. To illustrate: A production manager phoned a PM and complained loudly that delivery of promised widgets was late. As a consequence, the line had to be shut down and several hundred people were sent home. Confused, the widget buyer called the supplier and was told an engineer had given orders not to produce the widgets until it could be decided whether to add a corner molding for appearance. When contacted, the engineer advised he had no idea his call to the supplier would cause such a problem and was unaware of the delivery requirement.

The normal inclination is to give the engineer who exceeds his authority a verbal lacing, but it is far better to preserve good relationships and explain why he should not contact a supplier without advising the buyer. Again, the key is tact—you may need this same engineer's help tomorrow!

5. REVIEW OF THE TECHNICAL BUYER AND PURCHASING ENGINEER JOBS

The purchasing engineer's task is to assist the buyer in managing the supplier base, using his technical knowledge and skills. To do this well, purchasing engineers should try to see both the buyer's and the engineer's points of view.

Progressive buyers and purchasing engineers should seek the following:

- Know the seller, and in addition, understand modern purchasing strategies and tactics, so as to be part of the purchasing team.
- Follow closely the plans and programs of importance to the design or manufacturing engineers.
- Assist in preliminary evaluation of supplier proposals, to avoid unnecessary expenditure of engineering resources.
- Help engineers understand the valid commercial reasons for buying decisions that may appear at odds with the engineer's interests.

5.1 The Role of Purchasing Engineers

The following questions were designed to draw out discussions about the responsibilities of purchasing engineers, analysts, and buyers, and the issues that affect their deployment. Reviewing this list raises appropriate issues:

- What is the ratio of purchase engineers or similar technical support people to buyers?
- Do suppliers submit cost breakdowns when requested?
- When is price/cost analysis begun, upstream or after drawings are issued and "firm"?
- Is it more rewarding to go downstream? Experiences?
- How are burden rates for suppliers determined?
- Can target prices be set if specifications and sample units are not defined reasonably?
- How long are prices tracked for key components for which a target price was set?
- How do buyers submit new prices to the engineers? By phone, electronic media, or written forms?
- How is performance measured versus target price for key items?
- Are prices measured against target only, or against a base quote and a target?
- Do analysts participate in make-or-buy decisions?
- Can analysts contact suppliers directly for cost data, etc.?

- Do purchasing engineers assist buyers in source selection? Do process engineers get into the act?

These questions, when addressed by the supply organization, force a confrontation with the various aspects of the job, including some of the frustrations. It's said that much of the information purchasing gets on new products comes directly from salespeople. But some salespeople will tell you buyers often don't understand the technical aspects of their offerings. The purchasing engineer job came in part from the realization that otherwise effective buyers may find it difficult to communicate in a technologically complex situation without an engineering background. The sales counterpart to the buyer is the salesperson, and in most technological areas this salesperson is also the sales engineer.

The above questions were used in an actual setting of purchasing practitioners. Following study of the questions posed above, the group drew up their strategies and tactics.

Actions to be taken by the purchasing engineer or progressive technical buyer are suggested below:

- Determine cost targets.
- Perform cost/price analysis.
- Work with Quality and Reliability functions.
- Attend key engineering design meetings.
- Search for less costly substitutes.
- Assist purchasing to conduct "pooled buying" studies.
- Follow up with engineers for specification approval.
- Work closely with electronic design engineers.
- Visit supplier sources, as appropriate.

The senior author originally entered the purchasing field because the chief engineer thought nobody in the purchasing department knew what the engineers were talking about. Some engineers no doubt still find that's the case. The purchasing engineer operates within the purchasing sphere, but has key interfaces with design engineers as well.

6. MAKE-OR-BUY STUDIES

All businesses may be thought of as a store. The choice is to get products from within ("make") or from outside ("buy"). Balancing the pros and cons allows an objective decision. While such elections are seldom the sole

domain of the supply management organization, they have a profound impact on effectively managing the supply chain. The organization sometimes elects to make an item solely for the purpose of participating in the supply chain marketplace. More often however, the purchasing organization is called upon to define the “buy” option with sufficient clarity to allow a sound business decision, whether to make or to buy.

Make-or-buy can be a complex analytical process. But it is simple in concept, answering the question, “Should our company make this item, or buy it?” Competitive advantage exists when you make products efficiently, and you buy what others can make more economically. As such, wise make-or-buy decisions are vital to the success of any manufacturing company. This discussion is centered primarily on the manufacturing organization’s question of whether to make or to buy a particular part, component or sub assembly. But consider that many organizations today conduct make-or-buy analyses for goods and services under the name of *outsourcing*, which of course, is just another way of saying, “buy.”

There are many factors to address to make a good make-or-buy decision. Following are some of the conditions that are generally supportive of a “make” decision:

- Your product has valuable in-house technology, particularly proprietary processes.
- Your product is unusual or complex, and direct supervision is needed to ensure tight control over quality.
- Assurance of adequate supply is critical making outside buys very risky.
- Absorption of fixed capital investment is a primary business objective and alternative uses for the investment are limited.
- A “make” decision will allow for preservation of an employment base possessing unique skills.
- In-house manufacturing is determined to be a lower total cost alternative to purchasing.
- A “make” decision is supported by your company “know how,” your equipment, and experience, and is consistent with company growth goals.
- Control of design changes, inventories, and deliveries are of critical importance and buying would involve substantial risk.
- The design or its processing is confidential, and is considered key to the company’s future competitiveness.
- Idle capacity is available for which there is no foreseeable better use.
- The part is delicate and/or costly to transport.
- Your company does not wish to depend on an outside source of supply—regardless of the reason.

At the same time, many items are best purchased outside the company. Conditions supportive of a “buy” decision include the following:

- Cost studies show lower costs to buy than to make in-house.
- Space, equipment, time, and/or skill requirements are not readily available to develop and implement the production operations.
- Supplier provides unique process or design technology.
- Supplier has unique features or capabilities (maybe even patents).
- Supplier’s product reflects value improvements fostered by the competitive supply marketplace.
- Capital is not currently available for investment in manufacturing capacity.
- The customer has expressed a brand preference.
- A “buy” decision puts the buyer into play in the market, thereby providing knowledge of changing market prices and conditions.
- Because of small volume or other capital priorities, investment in manufacturing does not provide sufficient ROI.
- The company wishes to avoid exposure to seasonal, cyclical, or risky market situations that could adversely affect employment and investment.
- There is a need for special techniques and/or equipment in order to make.

Capability to manufacture specific in-house (make) products will be inherent in the company business strategy. Some manufacturing people think buyers want to “buy” everything, and buyers sometimes think manufacturing wants to “make” everything. Paradoxically, there are more buying transactions when a company manufactures than if it buys the component. Consider that when a company buys a compressor, this is a single item to purchase. Making the compressor may require thousands of purchases of the subassemblies, components, and materials, such as castings, connecting rods, piston rings, and lubricating oil.

Following are some of the situations that trigger the need to conduct make-or-buy evaluations:

- Technology change to certain hardware or processes
- Change in available sources—quantity, quality, location, or price
- Company goals for vertical integration (focus on core business)
- Review of manufacturing strategies
 - a) Plant facilities. Is there idle space?
 - b) Capital utilization. Are there idle funds?
 - c) Employment objectives?
 - d) Legal conflicts? Patent protections?
 - e) Supplier relationship objectives?

Many companies have constructed forms similar to the one below, which focuses on the data relevant to a sound make-or-buy decision:

Make-or-Buy Analysis

1. Cost to make (per piece)
 - a) Direct material (incl. freight, handling, and scrap) _____
 - b) Direct labor at projected actual rate _____
 - c) Indirect or variable burden (incl. engr. and mfg.) _____
 - d) Depreciation (if new capital or tooling needed) _____
 - e) Total variable cost to make (a + b + c + d) _____
 - f) Fixed burden on estimated plant loading of ____% _____
 - g) Profit desired (30% of e above) _____
 - h) Total cost to make (e + f + g) _____
2. Cost to buy (per piece)
 - a) Purchase price _____
 - b) Freight/handling & purchase order costs _____
 - c) Supplier tooling/engineering _____
 - d) Other (specify) _____
 - e) Total cost to buy (a + b + c + d) _____
3. Other non-cost considerations with implications and conclusions:
4. Annualized savings: Make \$_____ versus Buy \$_____
5. Final decision is to: Make _____, or Buy _____
6. Decision review date: _____

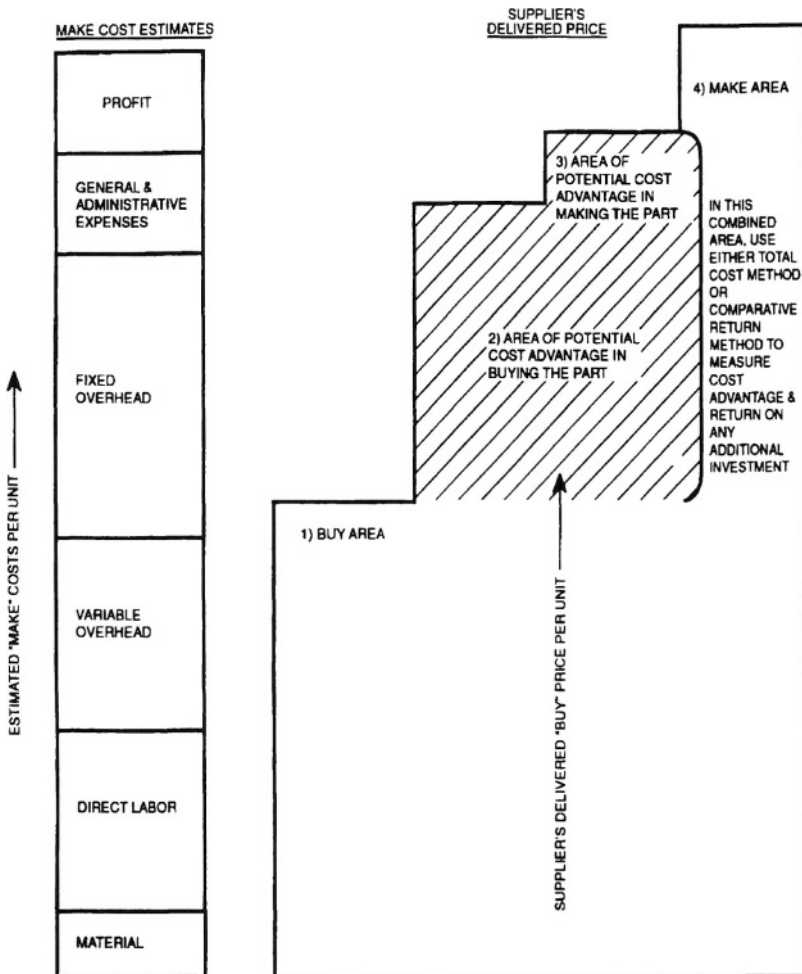


Figure 13-1. Chart of "Make" Costs and Supplier "Buy" Prices

Figure 13-1 shows a comparison of "make" costs and supplier "buy" costs. This visual framework may help to clarify the areas of make-or-buy decisions that fall into the qualitative area of judgment and those areas more readily quantified.

Elimination of sales expense and the supplier's profit should favor making an item if it can be done as economically as the supplier would do it. However, with increases in specialization it becomes more difficult for the

using firm to be as efficient as the specialist in say, metal stampings and castings.

In conducting make-or-buy analyses, quality and cost are, of course, prime considerations. Other major factors are service and supply risk. Costs computed as described above are valid for make-or-buy decisions whose dollar value is relatively small and that do not greatly affect plant capacity. But when we are considering a bigger decision where plant capacity may be idled or new facilities may have to be built, the cost of manufacturing must include period (or fixed) costs, which do not fluctuate with the volume of products produced. Some such periodic expenses are the salaries of additional supervisors, capital expenditures for machinery and buildings, depreciation of equipment, taxes, and insurance.

Table 13-2 is a checklist showing the most appropriately department to perform the data collection for a make-or-buy study.

Table 13-2. Make-or-Buy Study Data Collection Responsibilities

Issue	Responsibility
A. Proprietary items	Engineering
B. Term of investment	
Production life	Engineering/marketing
Payback required	Finance
Cost advantage life	Manufacturing
C. Quantities required per year	Production control
D. "Make" costs	
Material	Purchasing
Direct labor content	Manufacturing
Variable overhead	Finance
Expense tooling	Manufacturing
Fixed overhead	Finance
Sales, general and admin.	Finance
E. "Buy" costs	
Purchase price including freight, etc.	Purchasing
F. Cost to qualify component	Engineering
G. Inventory obsolescence	Production control
H. "Make" investment	
Inventory	Production control
Capital/tooling/equipment	Manufacturing
I. Alternative use of existing equipment, or scrap value?	Manufacturing

6.1 Purchasing's Role in Make-or-Buy

Purchasing should have a systematic way to contribute their input to these make-or-buy decisions. It's important to have a written format to ensure that all proper factors are considered efficiently, and that all critical considerations are analyzed. In addition to pure cost factors, non-financial factors need to also be considered, which ultimately may override cost in reaching a final make-or-buy decision.

Who makes the decision to make or to buy depends to a large degree on the dollars involved and on the areas of the organization that will be impacted. One person might make the decision, but most often several individuals or groups will make it. This is especially true when plant additions or large capital expenditures are at stake; then top management makes the final decision. With lesser expenditures, purchasing or engineering and manufacturing officials may settle the question individually or jointly. It is advisable for a committee to make or at a minimum to review, important decisions. Such a committee may be headed by the manager of the project and should include representatives of major company functions. Purchasing must take part, and cooperate with manufacturing engineering, estimating, design engineers, finance, and others to review major projects.

Although top management might have the final say on important make-or-buy decisions, purchasing managers do have a team role. At a minimum, they collect the cost data for these decisions; and, when appropriate, they may actually be the coordinating official and spearhead the decision themselves. Buyers' suggestions for cost savings often identify items that become the subject of make-or-buy studies. Purchasing will advise on cost comparisons; manufacturing will specify needs and capacities; finance will tabulate manufacturing cost data; engineering will check technical specifications, quality, and suitability; and marketing may advise on trends and the likelihood that sales volume will be affected by the decision.

It should be recognized that cost accounting alone might not be able to address all the issues relevant to a comprehensive make-or-buy analysis. Labor relationships can be affected. In some instances, when a part is to be removed from manufacturing and bought outside, jobs are affected. Suppliers' prices vary according to their sales volume and with other economic factors. Conditions are always changing; so, a make-or-buy decision made one year may be invalid the next. Obviously, a company cannot change back and forth repeatedly, which emphasizes the need for a systematic approach in the initial decision.

Sometimes the decision may be to both make and buy. To illustrate: Special fittings are created by converting standard ones by drilling oil

grooves and openings; so a more favorable overall lower cost results than if they had been either purchased as a finished product or manufactured completely by the user. Another alternative may be to make a portion of an item while buying the remainder.

The practice of buying a higher-level assembly is yet another variation of this approach that has gained favor in recent years. As an example, Honda of America buys automobile tires mounted on the wheels, balanced and in sets of 5 (including the spare). This avoids the in-house expense of mounting and balancing, but perhaps more importantly reduces ordering and scheduling requirements to one item versus at least five separate items previously (spare tire, regular tires, spare wheel, regular wheels, and balance weights). Also one supplier is responsible for quality and delivery of the five mounted and balanced tires, which are scheduled for delivery to match the automobile assembly sequence.

The criticism leveled by engineers at buyers as paper-pushers is giving way to the acknowledgement that purchasing has a place of real strategic importance. The buying role is emerging as one of considerable managerial leadership and planning. Even when the buying organization possesses strong technical capabilities itself, coordination must include engineering for by far the greatest cost reductions come from the original design. Managements want alert, aggressive, and intelligent purchasing personnel who practice modern techniques of buying and contribute to the organization's goals as complete team players.

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Chapter 14

USING COST REDUCTION TECHNIQUES

Cost reduction is perhaps the most visible aspect of the supply chain management professional's job. Ask top management what the role of purchasing is and you will likely hear, "Save us money." Of course this implies that supply has been assured as expected, and such a management response is probably a good indicator that supply is under good control. Cost reduction then is the opportunity for the buying organization to make a valued contribution to the enterprise. When considering this vital role, the PM should be clear that the issue is *total cost*, not just price. Total cost includes cost of quality, inventory, freight, handling, cost of capital (cash flow), cost of time and administrative costs, all in addition to the price of the materials. One more important point; be sure to team with the financial organization on this issue. They must concur with all savings calculations, or they will not be credible to the organization. Also, finance people can be critical allies when others need to help with implementation.

Because the quality and suitability for a specific purpose can be based on technical considerations, the buyer must work closely with the design engineer. And consider the effect of resulting cost reductions on both costs of products and inventory. For example, a reduction in price of any commodity decreases inventory, thereby increasing capital turnover. At the same time, the same "better buy" reduces operating costs, increasing the profit generated by each sales dollar. The combination of an increased turnover of capital, as shown on the balance sheet, with an increased profit percentage, as indicated on the P&L statement, causes resulting ROIC to be doubly enhanced.

This important financial relationship can be seen schematically in Figure 14-1.

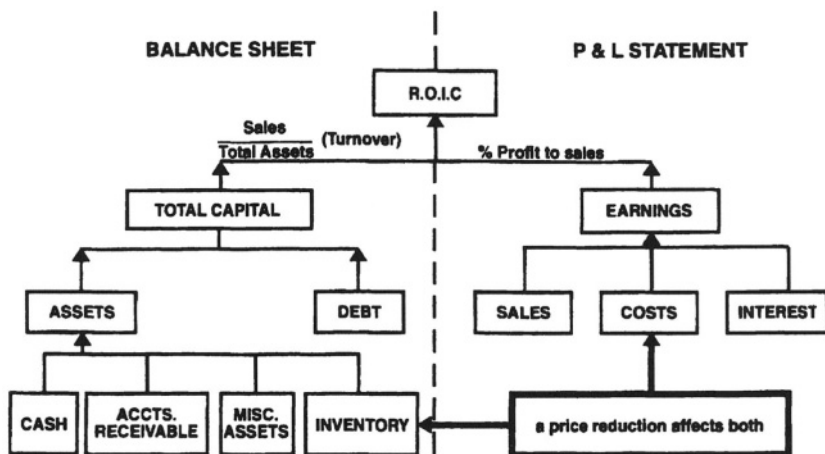


Figure 14-1. Effect of Cost Savings on Profitability

With regard to Figure 14-1, note again that the cost savings includes all reduction to total operating cost. Purchasing must be an important contributor to profit and growth through active cost reduction efforts. The need to search out ways to control and cut expense is a given. Perhaps the term Economic Value Added (EVA) is a more appropriate term. Value can be enhanced in different ways.

Buyers can strive to achieve strategic global competitiveness for their company by using some analytical techniques and tools on-the-job, such as:

- Strong long-range source development and joint process improvements
- Team buying leverage: local, national, and global
- Cost and price analysis and subsequent improvement projects
- Six-sigma and value analysis
- Complexity reduction: standardization and simplification
- Statistical and graphic analysis to identify opportunities
- Outsourcing and lease-versus-buy
- Make-or-buy analysis
- Application of the learning curve
- Forward buying or hedging

Productivity is a matter of effectiveness on-the-job, not just how hard one works. The more complex cost savings efforts require more technical and financial analysis. What are the advantages and disadvantages of each? How can the manager recognize the opportunities and potential problem areas for the proposed cost reduction? If top management fails to set broad strategic

cost reduction goals, then the purchasing manager or buyer must set his own high standards of performance and do his best to achieve them.

Typical strategies might include the following:

- Maintain an effective profit contribution through supplier development, value analysis and cost reduction techniques.
- Obtain the best value in purchased materials at the lowest total cost, consistent with quality requirements.

Specific goals should be developed to implement these strategies. After considering several possible activities, they must be prioritized and implementation plans created. Choose goals to meet your organization's specific needs; the following suggestions may be helpful:

- Use the buyer's intrinsic buying leverage to improve the company's competitive market position.
- Integrate commodity productivity projects with new product development projects.
- Identify product cost reduction opportunities with suppliers and with engineering.
- Provide cost target data to engineering based on market and cost trends.
- Conduct a minority/small-business buying program.
- Initiate performance-tracking projects to:
 - a) Control department expenses
 - b) Measure purchasing productivity and interpret results
 - c) Upgrade product quality through supplier quality and reliability efforts
 - d) Develop suppliers

In Chapter 7 the importance and potential benefits of supplier relationships were introduced. Many supply management organizations have begun to exploit this fertile area of cost reduction. First the relationship must move from one of buyer versus seller quibbling over price to one of collaborative mutual interest in improving the future. One educator suggests the buyer start with two simple questions of the supplier's top management: "Do you value my business?" and "Will you work with me?" If you can get a strong positive response to these questions, you are ready to begin seeking mutual gains.

Improvements will require hard work and risk taking on the parts of both buyer and seller, so it is important to start with an understanding that we are in this together. Sometimes it's wise to document this shared commitment in the form of a *Memorandum Of Understanding* (MOU), so there will be more clarity of the intentions of both parties. This is a good place to define in

advance the individual roles and responsibilities and how savings will be shared. If either party has identified concerns or risks, spell them out here as well.

To develop this sort of collaborative approach requires advance planning and will not apply to all supplier relationships. Prior to embarking on this effort, strategic commodity plans should be already in place as outlined in Chapter 3. If the strategy for the commodity is to further leverage purchase volumes to reduce the supply base, complete that process before embarking on joint improvements. A supplier is not likely to be interested in collaboration if his sales are subject to a competition in the near future.

To determine the supplier situations where the likelihood of collaborative cost reduction success is greatest, follow the steps below:

1. Analyze spending patterns by commodity or part family. Identify key suppliers and if buying from multiple locations, identify quantity and supplier by location. This describes the current situation.
2. From the sourcing strategies defined in commodity plans, identify the suppliers who are expected to contribute most to future requirements (i.e. those suppliers with whom you plan to increase purchase volumes or upon whom you will be dependent in the future). This defines where future mutual dependency and improvement opportunities are greatest.
3. Assess potential opportunities for joint cost improvement—consider cost of quality, long lead times, high inventory levels, and sole-source situations as possible drivers of high costs. Discuss the potential project objectives with suppliers and with the internal departments affected. Refine the definition of opportunities based upon these discussions.
4. Prioritize the opportunities identified, based upon the projected return and investment required for each project. This will require estimating and will not be precise. Consider the likely cost reduction (for both buyer and seller) and the difficulty and cost of implementing a change. The rate of return is the savings divided by the cost to implement, considering both the dollar cost and the time required to achieve the savings.

1. SIX-SIGMA METHODOLOGY

The six-sigma methodology was introduced in Chapter 8. In many leading companies it has become an umbrella to describe any process improvement initiative and the tools to make such improvements. For this discussion, we will include such efforts as *value analysis*, cycle-time reduction, quality improvements and manufacturing process improvements in this area.

The most significant elements common to these methods are:

- Process mapping—lays out the existing process in steps from start to completion for delivery to the next operation (the customer of the process). It includes all activities, individuals or groups who complete the activities and the time intervals expended to perform tasks and wait times between tasks.
- Process analysis—looking for unnecessary steps, excessive wait times, redundancies, unneeded copies or approvals, potential for automation of manual tasks and any other improvement possibilities. The analysis will attempt to identify anything that may reduce the path (time and/or cost) between the start of the process and completion of the process as viewed by the customer. Any activity or time spent not directly leading to meeting customer needs is considered an opportunity for improvement.
- Evaluation of alternatives—from the customers view, will this be an improvement? How much will it save in time or dollars? What will it take to accomplish? What is the ROI of the effort?
- Implementation plans—who will need to do what and when? All individuals expected to participate significantly in implementation are expected to participate in the decisions on how to implement.
- Test and improve—in most cases there will be a pilot or small-scale implementation to test the process for flaws and to identify refinements or additional improvements before full implementation, though this is not always practical.
- Document the final process—to standardize and make permanent the new preferred process.

The following example of a joint supplier-customer process improvement project will serve to demonstrate this concept. Consider the payment of the supplier's invoice for a shipment of goods, which has been received by the customer. The process begins with the receipt of the goods by the customer and ends with the check for payment issued to the supplier. The process customer objective (in this case the supplier) is to receive payment.

Table 14-1. Old Supplier Payment Process

Task	Performed by	Time on task	Elapsed time	Activity Cost
1. Prepare receipt for goods	Receiving clerk	15 min	4 hours	\$9.00
2. Send receiving report to accounting	Receiving clerk	5 min	4 hours	3.00
3. Prepare invoice	Supplier accounting	15 min	4 hours	9.00
4. Send invoice to buyer	Supplier accounting	5 min	4 hours	3.00
5. Receive and match invoice, receiving report and purchase order	Buyer accounting clerk	15 min	4 hours	9.00
6. Report to buyer discrepancy in quantity received with purchase order quantity	Buyer accounting clerk	10 min	8 hours	6.00
7. Resolve quantity discrepancy and approve invoice payment	Buyer	30 min	8 hours	30.00
8. Record and authorize payment	Buyer accounting clerk	10 min	8 hours	6.00
9. Prepare and send check to supplier	Buyer treasury clerk	5 min	4 hours	3.00
Totals		110 min	48 hours	\$78.00

Many companies have improved upon this process through a payment method called “*pay-on-receipt*.” In this scenario, the customer uses the receiving report to authorize payment, and no invoice is required. The argument is that if the goods were ordered from the supplier and the goods were received from the supplier, the invoice is not necessary to trigger payment and can be eliminated. The 3-way match of invoice, purchase order and receiving report has simply been replaced with a 2-way match of purchase order and receiving report. Let’s assume the buyer has kept current with change notices to the purchase order and the supplier ships the agreed upon quantity. Look at the new process shown in Table 14-2 for comparison.

In this example cost, task time and elapsed time have all been reduced by at least half. Can we expect the supplier to reduce our price in response to the invoice preparation savings and prompt payment benefits? Now multiply this improvement by the number of receiving and invoice transactions conducted annually to get the annual savings to the two trading partners.

Table 14-2. Improved Supplier Payment Process

Task	Performed by	Time on task	Elapsed time	Activity Cost
1. Prepare receipt for goods	Receiving clerk	15 min	4 hours	\$ 9.00
2. Send receiving report to accounting	Receiving clerk	5 min	4 hours	3.00
3. Receive and match receiving report and purchase order	Buyer accounting clerk	10 min	4 hours	6.00
4. Record and authorize payment	Buyer accounting clerk	10 min	8 hours	6.00
5. Prepare and send check to supplier	Buyer treasury clerk	5 min	4 hours	3.00
Totals		45 min	24 hours	\$27.00

Wait a minute! We cheated! Those savings did not come from the process change alone. There was no quantity discrepancy requiring resolution with the improved process. There is an important point here that you may recall from the discussion of inventory. A significant source of process cost is errors, often in the documentation. Just as JIT deliveries cannot tolerate quality defects, the pay-on-receipt process will not tolerate discrepancies. The buyer must keep the purchase order change notices current and the supplier must ship in agreement with the purchase order. And is that not a reasonable expectation, and should we not take corrective action if errors do occur?

1.1 Value and Engineering Analysis

As a buying technique, value analysis (VA), sometimes called engineering analysis (EA) or value engineering (VE), is a tremendous tool for the professional buyer. Value analysis is a systematic study applied to *any* item used, the goal being to maintain the desired value but at a lower cost. Whether it is called purchase analysis, economic value analysis (EVA), purchased material cost reduction, value control, value engineering, or simply cost and engineering analysis, it has a general theme—to save money. Most purchasing people prefer the “value analysis” title.

Value analysis is a proven cost reduction technique used by competent industrial buyers and engineers, though there are also times when construction contract buyers can apply it to advantage. VA is not simply a

“study of value” to achieve lower costs, and therefore lower prices; nor is it solely cost reduction. In a strict sense, it is an organized approach to study value and cost relationships, wherein the objective is to improve buying performance. Team meetings will enhance the number of good ideas, but any size department can practice VA.

Suppliers play an important role in cost reduction since they furnish data and innovative ideas on which results depend. At a minimum, you should make use of suppliers’ know-how and suggestions. Persevere, and give credit to others who may help you. A salesperson giving assistance in VA projects should be given increased buyer respect and opportunity to sell. The buyer interested in value analysis will rightly be open to sellers’ suggestions.

A formal VA study takes an item and first determines what it does in terms of two words—a verb and a noun. For instance, pencils make (verb) marks (noun). Then other ways of doing the same job are considered. All ideas are written, perhaps in a brainstorming session, to allow free thought association and to get a fresh approach. VA doesn’t simply question cost, it looks at the item’s function, what has to be done, and puts a price on it. The biggest savings typically result from a change in design specification. It isn’t a question of *what is the item worth*, but of *what the item’s function is worth*. VA is a supplement to cost reduction and good buying, not a substitute for them.

The six steps of value analysis are:

1. Identify the basic function of the item under scrutiny, preferably with just two words. Remember our example: a pencil “makes marks.”
2. Brainstorm alternatives. All ideas that would do the same function of “making marks” are to be listed.
3. Analyze the alternatives. Some people call this “blast and refine” before analyzing associated costs and performance.
4. Study other ways to provide the same function, but at *lower cost*. Rank the alternatives from lowest to highest cost. Test one or two proposals.
5. Implement the new design, method, manufacturing process, packaging, or shipment method. Then follow through.
6. Report results on the project to management.

The transition from study (step 4) to implementation (step 5) is usually the most difficult in practice.

Key elements of a successful approach to VA are: wide scope of information collected, costs are well identified, and functions are defined and evaluated effectively. These elements must be augmented with support from others in the company, with PMs setting an example. Buyers judge the

importance of the savings effort by the amount of effort, involvement, and support top management and the PM give the program.

Here's a typical VA checklist that has proven useful in actual practice. You might prepare one for your specific use:

- What is the material used?
- Is the shape mandatory?
- How does it work?
- Does its use contribute to value?
- Is strength critical?
- What process is used in construction?
- What is the primary function?
- What else will do the same job?
- Can a standard part be used?
- Can a less expensive part work?
- Are all machined surfaces necessary?
- Are tolerances unnecessarily restrictive?
- Can the design be changed to simplify?
- What type maintenance is needed?
- Are special tools needed?
- Can it be easily packaged?

The above list can be much longer, but is typical of the thoroughness involved, and demonstrates how buyers can create a checklist for their own company's use.

1.2 Overcoming Resistance to Change

Pitfalls are commonly expressed as: "You can't do that in this company," "We tried it before," "Why change now, it's working," and so on. Unfortunately, almost no important value change or savings is accepted quickly, and it takes time and effort to put into effect. Buyers *must expect initial resistance to change!* An example of this resistance is the case history of a small shaft plug. Used as a centering device during a balancing operation, it has absolutely no function after the shaft is balanced. A buyer came up with a good cost reduction, substituting molded nylon in place of a machined metal plug. Before it could be approved, the sales department was asked to evaluate it. The immediate reaction was, "It won't sell—plastics are too cheap." To get around this objection, the plug was covered with aluminum paint and driven into place in the shaft. The salesman, looking at the two models, one with the silver and one with the original plastic coloring, promptly said, "There! That's what we want right there—that one."

Upon closer examination and becoming suspicious, he asked, “Did you trick me?” The item was approved, but at a small extra cost the plug was made of gray plastic so that it looked more like metal. This was done to allay concern that some may believe plastics are inferior in that application and therefore the item won’t be saleable.

Many companies have shown 25% to 35% and more cost reductions resulting from formal value analysis/value engineering team efforts. Team meetings within larger operations will generate a substantial number of ideas for further evaluation. With representatives from product engineering, purchasing, service, and so on, this is similar to the quality circles approach. It is essential that engineering play a key role, so they don’t have to be “sold” by non-technical people. Engineers should make the technical decisions, as part of the team approach.

Here are some actual examples of positive VA results; savings are often due to smart buying:

- A company initially bought its oil in barrels. By buying in bulk tank car quantities versus frequent receipts of barrels, the \$15,000 annual savings paid for the required storage tank in 3 months.
- Sheet rubber gasket material always had to be red; that is, until a buyer found out it cost extra to color it red. Now, black material does the job at 12% less cost.
- Yellow paint was bought at 15 cents per gallon less, by changing from a 5-gallon pail to a 55-gallon drum. In addition, handling was quicker and more efficient.

These are very simple examples. However, we want to go a step further into in-depth analysis. Value analysis reverses the thought process to place the burden of proving why a constructive idea *cannot* be carried out with the person who wants to block it. For instance, while inspecting an air receiver tank, a buyer asked an engineer, “What are these two holes for?” The engineer said one opening was for the inlet for air, the other was an inspection opening required by the ASME code. The buyer retorted, “But couldn’t you unscrew the inlet pipe and look in?” After review, the second hole was eliminated, resulting in savings of over \$10,000 annually for many years. Note that not one bit of *value* was removed from the product.

The following true incident illustrates receptivity of an idea and follow-through. An engineer sat at a buyer’s desk idly tossing a small carbon resistor. Each of his engines used 12 resistors costing \$2.85 each. The buyer wondered what the resistors did, while the engineer got interested in their cost. The engineer was astounded to find that what he thought was a 25-cent item was costing almost \$3. The supplier reduced its price for these resistors

to \$1.60 when the buyer's specification referred to the supplier's part number rather than to a special drawing as previously done.

Now the buyer and engineer were working together. The engineer made a new sketch, and the buyer shopped with different manufacturers. They found resistors could be custom made for 9 cents each. Upon being appraised, the original supplier offered to buy them from the new supplier. Until this time, no one had done his homework!

Persevere, and give credit to others who may help you. All of the previous examples are based on the senior author's experience with a multi-million dollar savings program. In his department, 60% of savings resulted from buyer action, 30% by product study and changes in specifications, and 10% by substitution of material. As this is just one department's experience, you will want to measure your own savings.

2. REDUCING COMPLEXITY - STANDARDIZATION AND SUBSTITUTION

The supply management organization at Motorola's Personal Communications Sector (PCS) has "declared war" on complexity. They understand the high cost and inflexibility caused by having many products each requiring unique components. Benchmark studies showed that the numbers of different items handled by PCS were two to four times that of their competitors. The supply organization has taken the lead in fighting this war to reduce supply chain cost, inventory cost and to improve customer delivery. They see two fronts in their war, the portfolio complexity (number of different products offered) and the product complexity (number of different components in each product).

Benefits are still growing as the fight to reduce complexity continues, but results reported in the spring of 2003 were impressive. More than \$2 billion was removed from supply chain cost, and Motorola reports more than \$1 billion were removed from inventory. There has been nearly a 50% improvement in on-time delivery performance.³²

Standardization is an excellent way to control material costs, by the reduction of the number and variety of different items bought. If two will do the job of three, inventory control is simplified, obsolescence is reduced, and the administrative costs of purchasing, receiving, stores, and the like also decrease.

Standardization is conceptually relatively simple. It's a matter of having technical people determine if one item can be used to perform the task of

³² Theresa Metty, "War on Complexity," ISM International Conference, May 20, 2003.

another and if items can be eliminated. For example, a distributor stocks 10 different bolts. One of them is bought in lots of 50 per year, whereas another is bought in 10,000 piece lots. Even if there is a cost penalty per piece, it will pay to replace the small-quantity item with the other bolt. It would pay to eliminate the 10th bolt and purchase and inventory only 9 items.

A way to facilitate multiple, or “pooled” buying, is through the use of available standard items. A generic pharmaceutical can be much more economical than a brand name. So, an item meeting a contracting standard can be bought from many sources. Through such standards, volumes can be pooled that result not only in reduced prices, but also in lower inventories and faster deliveries. A larger volume offers the supplier more business and makes the buyer a more desirable customer. Standardization opportunities are found in almost all types of purchases.

Benefits of standardization and simplification are that fewer items need to be ordered, controlled and stocked. Storage space is lessened and record keeping is reduced. Risk of obsolescence is reduced and longer shelf life often results. Standardization can also be achieved by reducing the number of suppliers.

2.1 Simplification

Simplification is the selection of the most readily available parts or materials and eliminating all unnecessary features or costs. This is a by-product of competitive ingenuity with the goal to reduce the excessive variety of manufactured and purchased items, first by determining which of these are important, and then by concentrating purchasing and production on these items only. Buyers, by pushing simplification along with standardization, can obtain better value because the supplier's price reflects (or should) their savings.

Reliability and faster availability, coupled with better job scheduling, all make the materials flow job easier to control. Better delivery service and fewer repairs are the rule, since fewer items are inventoried and less likely to become damaged or obsolete. Lower operating costs, better maintained equipment, and less downtime are the result. The purchasing function itself may be simplified to streamline inquiry and purchase order forms and the like.

3. OUTSOURCING AND LEASE-VERSUS-BUY

As companies continue to focus on their core competencies, to apply the majority of attention and resources to those areas that provide a competitive

advantage, they begin to address any source of expense not contributing directly to serving customer needs. As a result many organizations have chosen to purchase services formerly provided in-house by employees. As in the case of judging the make-or-buy decision for goods discussed in Chapter 13, the basic question when considering outsourcing is, "Should we do that ourselves, or should we pay someone else to do it for us?" And similar to the make-or-buy question, it is often primarily a matter of cost analysis of the two alternatives. Perhaps the biggest difference in the case of outsourcing is that employment is the prime non-financial issue, rather than a secondary one.

Outsourcing can produce large savings, primarily through one or both of two mechanisms, reduction in employment and benefit costs, and economies of scale. In the case of benefit costs, most companies cover all salaried employees with the same or similar benefits packages. These benefits typically add 25 to 40% or more to compensation costs. The outside provider may have a much lower benefit cost, sometimes using temporary workers with little or no benefits package. And in such cases, only that labor actually needed is paid for when the services are purchased, creating greater flexibility during high or low demand periods and lower cost of the services.

The supplier is most likely a specialist in the service being provided, such as payroll management. This means that their systems are fine-tuned to do the necessary tasks, their employees do only the payroll tasks and they do considerably more of the payroll management work than any of their customers. These factors give the outsource supplier distinct cost advantages.

For purchasing people, there are several challenges in a potential outsource contract:

- Prices are driven primarily by the employee skills required and by the labor rates for these skills. This means the differences from one supplier to another are usually subtle and may require expertise in the work performed to evaluate supplier capabilities and prices.
- Contracts will likely be long-term and involve large expenditures. Because the in-house ability to do the work will no longer be available, both the supplier and the buyer will want a long-term agreement to assure smooth performance of the work.
- Because employment in the buying company will likely be affected, there may be high negative emotions surrounding the sourcing decision.

Purchasing again has the opportunity to demonstrate to top management that they can be a strategic contributor to the enterprise by participating on the outsourcing team. The skills to do this supply management work require

good negotiating ability as well as financial analysis, influence and diplomacy.

3.1 Lease-Versus-Buy

Leasing is a form of acquisition without ownership. The concept of leasing goes back many years and probably started with land and buildings. For many years, industrial equipment and plant machinery, trucks and cars, as well as office equipment, furniture, and the like, have been available on a rental basis. Those buyers who may have had little or no exposure to leasing do not always understand how a lease works.

Is it better to lease or to buy? There is no pat answer to that question. The buyer must study the cost versus the benefits of both and decide. The “breakeven” point is a financial balance that occurs when *total* leasing costs are equal to *total* costs of outright ownership. That depends on the cost of the equipment and the monthly lease fees, life span for equipment—which depends on the usage, and what the equipment will be worth at the expiration of the lease. Other factors include use of money (are there more valuable uses?), services required, and so on.

Some of the specific benefits of leasing are:

- Cash is conserved.
- Leasing overcomes a capital budget restriction, as payments are monthly rather than all up-front.
- It is often a simpler financial transaction than borrowing money to buy capital equipment.
- Other credit options are largely unaffected, and remain open.
- Leasing eliminates the need for partial down payment or full payment.
- It removes the risks of ownership (and the attendant risks due to obsolescence and deterioration).
- Fixed payment allows accurate budgeting.
- As a sales vehicle that enlarges the potential market for the seller, leasing provides economies of scale (as the lessor buys larger volume at better discounts).
- Leasing sometimes provides tax advantages, though the company’s tax accountants should carefully analyze this to determine applicability of each case.

An effective argument for leasing is, “Profits don’t come from owning, but from *using*!” The lease concept means that a buyer pays for use of equipment while it is being used, rather than paying for it outright at the time it is installed or acquired. Payment terms are highly flexible and negotiable.

For example, a farmer paying for leased land might pay after the crop is harvested!

A major legal distinction is that when a company buys, it owns. When the buyer leases, the company does not take title, but does control the item, and uses it as it sees fit. Upon deciding to discontinue use of owned equipment, the owning company sells to get whatever residual value is still there. With a lease, the item is turned back to the lessor.

Leases for new and used computer equipment are popular today. Furthermore, aircraft companies have at least 50% of their aircraft on lease, while much of the nation's railway cars are covered by similar arrangements. Other major areas where leasing has become popular include automobiles, telephone equipment, furnishings for hotels/motels, commercial buildings, medical equipment, and office equipment.

3.2 Methods of Acquisition

A lease is a contract between an owner (lessor) and the user (lessee) that enables the lessor to grant permission for use to the lessee usually for a set monthly fee. Two general types of leases are available: (1) a capital lease and (2) an operating (or true) lease.

A capital lease transfers ownership to another party, usually by the lessor, and is actually a time payment purchase, as equipment must be capitalized. By contrast, with the operating lease, the lessee *rents*, and ownership does not pass to the lessee after the end of the lease, allowing the tax benefits of the lease payments to accrue to the lessee.

The lessee commonly makes payments of a fixed monthly fee for a period of time (usually less than the asset's economic life). The payments must cover the cost of depreciation or use of the equipment during the lease term. When the term is over, the equipment is returned to the lessor, although arrangements can be made for the lessee to buy the used equipment for its residual value, that is, what has not yet been paid off, to amortize it.

Let's look at a leasing example. Leasing is one way to have use of something tangible that can be used to produce profit. Let's take the simple case where the use of a car priced at \$20,000 is to be acquired. Assuming there is no trade in, the options are:

- Pay \$20,000 for it in cash and own it.
- Finance it through one of the dealership's financing arrangements, paying the \$20,000 purchase price plus financing charges, and own it.
- Finance it similarly through a bank, and own it.
- Lease it from the manufacturer or from an independent lessor, who continues to own the car. Pay a monthly fee of \$430/month for 48

months, covering finance costs and only for the portion of the purchase price actually used during the lease period.

Below is the formula to compute the dollar amount to be financed in a lease arrangement. Because it can be tricky to accurately estimate the value of the equipment 3 to 5 years in the future, both the residual value and the purchase value may differ from one supplier to another.

$$\text{Equity to be Financed} = \text{Purchase Value} - \text{Residual Value}$$

Buyers are usually completely familiar with the outright buy option. Over the long haul, buying outright will generally cost less than leasing. But, there are other considerations we'll now trace for a lease. If the car had been bought outright and assuming it was fully depreciated, the total proceeds from disposal will usually be added back into the company's assets. In the case of leasing the car, there will be no value on the buyer's books after the lease is terminated. Also, leasing keeps assets off the books! All else being equal, this means a company's ROA and ROI are improved.

3.3 Other Leasing Considerations

Be clear on how the value of the asset is determined when the lease is signed because that value is used to compute the payments. Also be advised that a lessor may arrange for a car to be delivered from out of town that may make it more difficult for the driver to get warranty service. Also, most leases limit driving mileage to a specific number of miles, after which "so many cents per mile" will be charged for excess usage. And with early termination, a buyout nearly always brings a penalty cost.

The leasing company typically charges a financing rate roughly equal to that charged by a bank for a purchase transaction. But, since the leasing company pays a lesser amount to an underlying financing institution, their profit can come out of that difference. But, that's not all! The key lies in the fact that all leases are for a value somewhat less than their true value. This leaves a "residual" value after the lease has expired. This allows the lessor to sell that residual value to another investor who wants depreciation (or may in turn sell to other corporations who use depreciation). In our example, the residual could be \$4,000.

Your company's financial position and interest rates at the time will be part of the rationale of whether or not to lease. For our example, to lease, the buyer pays \$430/month for 48 months. An alternative use for the buyer's

money is to invest it at a minimum of 5%, which would amount to \$25,000 over the 4-year lease period.

3.4 Tax Advantages

There are possible tax advantages from leasing. As an example, a company buys a bulldozer for \$35,000. Financially, the company's books show the depreciation for 5 years on the straight-line method. The more a company can increase depreciation expense, the less they pay to the IRS (assuming they have been fortunate enough to generate the revenue to owe taxes!).

A sublease allows transfer of the asset to another party, usually by the lessor. While the simple car lease involved two parties, other leases might involve three or four parties. The five-party lease is an expansion on the concept, where an investor steps in to purchase the residual value and gets depreciation tax advantages that either he can use or resell the benefit to someone who can. The five-party lease is said to be the key to the leasing industry. The participants are: (1) the bank that loans to lessor, (2) the lessor who makes interest income on the investment and sells the residual value, (3) the customer, or user, (4) the manufacturer who sells the equipment, and (5) the investor who wants the depreciation break, or will resell.

Experts say a sound strategy is to invest in things that appreciate in value, and lease those things that depreciate. If the item requires some maintenance, often the lessor will want to insure it. But many larger companies want to "self-insure," so this can be arranged, and the costs removed from the lease. Users of an item have a responsibility to return the item in a condition expected from "reasonable wear and tear." Obviously, this leaves some room for judgment.

Leases can be highly complex. Buyers don't have to be financial experts, as they can always rely on the support and expertise of the company's finance function to provide analysis as required. The best advice is to consult your company experts when in doubt as to the relative merits of lease versus buy.

4. USE OF THE LEARNING CURVE

When a buyer has no competition, yet is buying a complex technological item, the learning curve (L/C)—called by some an "improvement curve"—may be the only technique available. The curve is a sophisticated mathematical form of price analysis that can be very useful to the buyer. It is based on the fact that the time required to do work will decrease each time it

is done. Repetitive production uses a percentage less labor cost. This decrease will be smaller each time the quantity produced is doubled, and can be charted.

The need to determine the “right” price is always present. New, highly engineered products often are priced higher because costs are high; but when processes improve with experience and costs fall, the purchasing manager can’t afford to let the initial high price stand. The learning curve is a special cost reduction and negotiation technique every purchasing manager and technical buyer should understand. When applied by the skillful buyer, it is not simply a theoretical exercise, as case studies show that the learning curve technique has enabled buyers to cut thousands of dollars from the cost of purchased materials.

4.1 How the Learning Curve Works

Complex operations become simpler with repetition. Recall the first time you built something, for example, window screens. The first one took all day; the second took half a day, and the third, 2 hours. Why? Because the worker requires less time to analyze the job and his motions become more efficient. Short cuts are discovered and refinements made.

Each time the total quantity of units produced is doubled, the cumulative average hours required to produce the new total quantity is a percentage of the original average. There are reasons for this. As quantity increases, the worker needs less time to analyze the job before starting and the operator’s physical motions become more efficient. There is improvement in operational sequences, machine feeds, and so on. Better equipment may be used: tooling is improved; rejections and rework decreases. Management controls get better and there is less waste. Fewer engineering changes are needed and costs go down.

The relationship of quantity and cost to produce described above is the learning curve (L/C). While a plot of the relationship on a linear graph is a curve (hyperbola) that makes analysis awkward, when plotted on log-log scales, the L/C is a straight line.

The learning curve shows two things:

1. That the time to do work will decrease each time the number produced is doubled, and
2. The amount of decrease will be less for each doubling of quantity.

The L/C has been used in negotiations, pricing, and forecasting direct labor hours for new products. It is an accepted tool in industries including

aircraft, electronics, appliances, and shipbuilding. It is widely used by the Air Force and the Navy for weapons acquisition.

A 100% learning curve would mean no learning occurs; this might apply only to an automated “man-less” factory. A 50% L/C means that when the production quantity is doubled, the second half is produced at no cost, which is also an impossible condition. In actual practice, the useful range of learning curves lies between the area of 70% and 95%.

During World War II the Air Force commissioned the Stanford Research Institute to make a statistical study of direct labor input for military aircraft. A series of L/C's resulted and paved the way for its use in industry. Although an exact curve never occurs when production records are graphed, the aircraft industry's rate of learning, with each doubling of quantities, averages about 80% of the previous time required. Amazingly, to build the 1000th B29 bomber took only 3% of the time used to produce the first plane!

Aircraft production is ideal for L/C use because 75% of the cost is in assembly labor where much learning can occur. In machinery manufacturing, however, where assembly time might be 25% and machining 75%, learning is much less a factor, so a 90% or 95% curve would be more applicable.

For most applications, the curve for machining and assembly work will be around 95%. For detail fabrication and assembly, it would be in the 70% to 80% range.

Figure 14-2 will show how a learning curve works. If the manufacturer's actual labor time were known, that would be the most accurate data to use. If labor hours are not available, the buyer will need to estimate the percent of labor in the quoted price, because the learning curve applies only to the labor portion.

This 90% curve was developed in the following manner:

1. Plot point A on the graph for known quantity versus labor hours to produce that quantity.
2. Double the original quantity and plot point B versus 90 (or other) percent of original hours. Draw a line through A and B.
3. Compare the expected labor cost for any quantity following the example below.

Two hundred units were bought with labor content of \$30 each. How much should the labor content be for a quantity of 400 units? Again, plot A and B (step 2 above). Draw a line through A and B at 600 total quantity (200 original plus 400 new order). Trace vertically to L/C line, and read \$25 at C by following the dotted line. Total cumulative average labor cost is $600 \times 25 = \$15,000$. Old order labor cost was $200 \times 30 = \$6,000$. So, the new order labor cost value should be $\$15,000$ minus $\$6,000 = \$9,000$. The new unit

labor cost is \$9,000 divided by 400 = \$22.50 each. Similarly, for an 80% curve, the new order for 400 would be at \$18 unit labor cost.

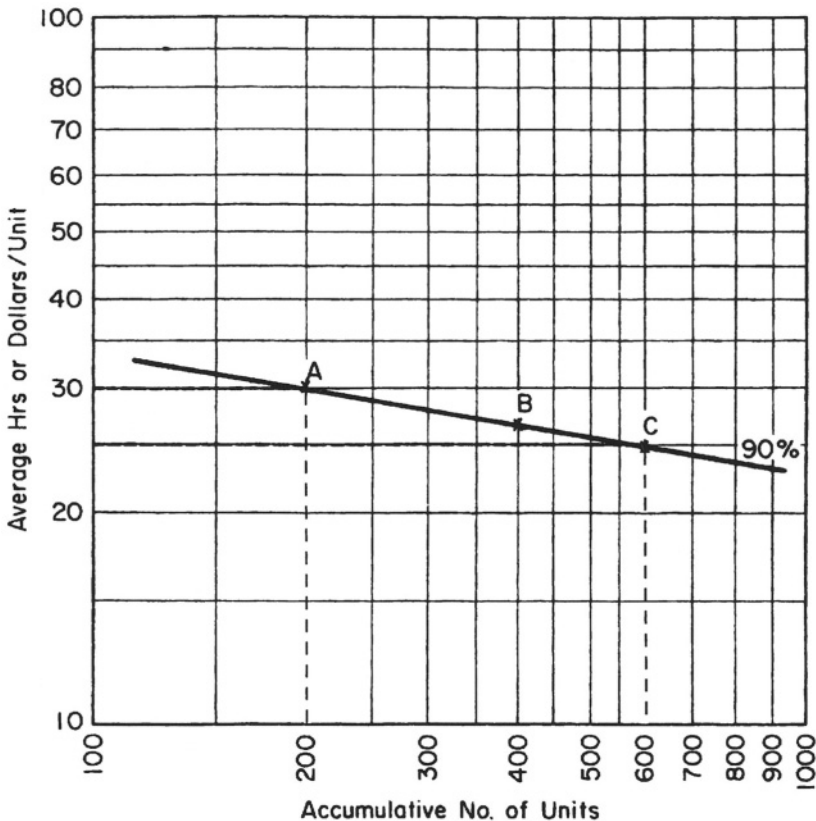


Figure 14-2. Example of Learning Curve Application

Buyers use the L/C as a negotiation tool, and to predict future costs. Give thought to a learning curve under any of the following conditions:

- The product manufactured is a special, nonstandard, and made to your design and specification.
- Proprietary factors limit competition for a complex technological item, wherein the L/C may be the only analytical technique available.
- Quantity is large enough to allow “learning” to occur.
- Direct labor costs are high compared to material costs.

The curve’s importance lies in its ability to predict lower costs and therefore as an incentive for producers to acknowledge lower costs from

repetitive operations. One company president, when confronted with the L/C's predicted cost, said, "You've got me. If I denied the savings were there I'd be admitting we couldn't improve our operations one bit. I know better." So, the curve is a way to apply analytical pressure to reduce costs; it is a means of checking the reasonableness of suppliers' quotations, and can serve to step up negotiations and thereby arrive at the correct price.

Defensive suppliers have said, "Sure our labor hours go down, but look at the 50% of materials we buy over which we have no control." This is answered by an analysis of price as we reviewed earlier under price/cost analysis.

Pitfalls to avoid are:

- Don't apply the L/C to an estimated initial cost, thereby possibly magnifying errors contained in the original estimate.
- Don't apply the curve to standard items as if the first article purchased was the first produced.
- Avoid applying the wrong percentage curve, or using an arbitrary value for the sake of simplicity. Validate the curve's reasonableness before use.
- Caution! Learning curve is not the same as supplier quantity discounts, which might arise from factors not included in your analysis. In such a case, don't use the L/C!

Remember, while the L/C uses a statistical and highly technical analysis, it is an estimate of costs, as actual costs can be known only after the production takes place. Yet, as a negotiation technique that leads to a mutually agreeable price it can be most effective, especially if buyers involve the supplier in plotting their own data and lead them through a trial exercise. When tactfully done with honest intent, this can help to build a superior supplier partnership. By cooperating, suppliers are able to make manufacturing cost savings that might not otherwise have been attempted. But don't use L/C if it doesn't reasonably apply to the specific situation.

Not only does the curve help buyers understand suppliers' sophisticated pricing methods better, but it also encourages suppliers to volunteer information about them. A negotiating session, which often results in changing a supplier's prices, can prove advantageous to both parties. The seller gets a chance to hold on to business he might otherwise lose. And the buyer receives a fair price, and discovers ways to make savings in manufacturing costs that might not otherwise have been attempted. In one case a supplier that was unable to save much on labor costs became convinced, after studying the learning curve that the price it paid for a purchased component was too high. The result was a 35% reduction from a subcontractor passed on to the buyer.

Suppliers play an important role since they must supply data on which results depend. Invite key suppliers to a series of meetings whereby competitive components or items are scrutinized, looking for cost reduction or quality improvements. Search for more joint design effort opportunities.

5. TRACKING COST SAVINGS RESULTS

Most departments have found it convenient to keep simple savings records—perhaps a simple box chart showing the contributor's name, dollars saved, percent savings based on purchases, and how it was accomplished. Occasionally there should be an audit of the recorded savings to ensure the integrity of the process.

Some suggested categories on where savings can be achieved might be:

- Change of supplier
- Combined quantity buys
- Joint process improvements
- Team buying leverage
- Cost and price analysis improvement projects
- Six-sigma and value analysis projects
- Complexity reduction: standardization and simplification
- Suggested engineering and/or material changes
- Renegotiation of present source
- Outsourcing and lease-versus-buy projects
- Make-or-buy analysis
- Forward buying or hedging

The above should cover most areas of savings. No savings under a set minimum value should be reported to conserve time and recording expense. In any event, use of some form of savings report is always productive.

Buyers are important players who have key roles in cost reduction programs. But, *how do you define a savings?* Although price savings is traditionally defined as dollars paid below a previously paid price, the more complex cost of quality or inventory reduction savings will be calculated very differently. The finance department should assist in quantifying savings from process improvement efforts. Obviously no ironclad rules exist for savings reports, so some disagreement over what should be reported is probably inevitable.

From experience, following are some of the most common questions that buyers ask about savings programs, along with suggested answers to each:

- On savings for specific projects, are savings measured from projected costs as originally budgeted? Answer: Could be, but most managers would accept a saving only when it is an actual reduction from a previously paid price.
- On repetitive production runs, do savings count on the first invoice only, on all usage from then (obviously impractical), or is there a time limit? Answer: Savings should be reported only once, but on an annual basis.
- If savings result from expenses or activity cost being reduced, can we take credit for the lower expense or fewer man-hours? Answer: Ask finance to assist because these are often called “soft savings” and are difficult to evaluate, though no less valid. Expense savings will be effective only if expense budgets are reduced accordingly. Reductions based upon analysis of Activity-Based-Cost require a change in manpower utilization to produce the dollar benefit anticipated.
- How about a voluntary price reduction? Answer: Absolutely not! This is one area where a buyer can take advantage of the system and fake a good job. The key is, did the buyer take the initiative? If a fine line, give credit.
- How about elimination of other elements of total cost brought about by a higher price paid? Answer: Certainly, but the savings will be computed by deducting the extra price paid to accomplish the savings.
- Are quantity discounts considered savings? Answer: Not on their own, but if a buyer changes the pattern of buying to take advantage of them, it is a valid saving. The key is, did the buyer do something different to effect the change? In this case, be certain the costs of carrying a higher quantity of inventory do not negate the savings.

Summarizing, savings reports show the results of important supply management initiatives and strategies. They encourage the buyer to act and they assure management support. For purchasing to truly assert itself as a profit-producing function, such reports are vital. They are useful in recognizing and encouraging all contributors. Simple, straightforward reporting is an aid to any cost improvement plan. The financial staff must acknowledge the savings calculations and should be a party to the definitions of savings terms. The team should report team projects so that credit and recognition are shared. Savings must be accounted for, other than those computed from the difference between old price and new price, if buyers are to avoid being branded “price buyers”.

A monthly report should be issued by each buyer and sent through channels, to the PM and to the division manager or president. The report gives credit to all individuals participating in the efforts and keeps others informed of progress by projecting annual savings. A quarterly progress report may be of value as well. Remember: accounting precision is not

nearly as important as buyer awareness there is management support for savings, as these savings have an impact on company profitability.

Incentives should stress the importance of a person's contributions. Recognize and reward performance! As a minimum, outstanding contributors can be singled out to receive certificates signed by the Director of Purchasing and the President of the company.

Chapter 15

LEGALITIES IN BUYING

Purchasing's heritage lies in the *Law of Agency*, and purchasing alone has the formal authority to commit the corporation to expenditures. In view of this reality, purchasing is seen as independent and legally derived—not organizationally based. In this chapter we will look at the various aspects of law that apply to the buying job, in the context of both domestic and international buying. We will also look at many of the specific contractual clauses that should be considered for inclusion in purchase documents.

Current contract law derives from English common law, which is a body of documented case precedents. To create a contract, there must be an offer (to provide or do something) and an acceptance, plus consideration (which is normally the payment). The purchase order becomes a binding contract upon its acceptance or shipment of the goods.

A contract is simply a list of promises made by the buyer and seller. A valid contract is made between capable parties with their mutual consent. Contract law is basically the same around the globe, in the sense that handshakes may still work, but in business and internationally, it's necessary to follow through with proper written documentation.

Satisfaction of the contract comes from performance. Non-performance includes defective or rejected goods, and possibly damages on the part of the seller or lack of agreed payment by the buyer. A party not complying with the contract commits a breach of contract.

1. KEY ELEMENTS OF EVERY CONTRACT

For a contract to be valid, it will contain these key elements:

- *Manifestation of intent*, which means both parties must agree to perform in some way.
- *Consideration*, which is the price the buyer pays for what the supplier ships or does.
- *Capacity to act*, which is to say, the parties must have the authority to commit their respective companies.
- *Reality of intent*, which has to do with issues of mistakes or, as an example, use of duress when making contract.
- *Legality of purpose*, which means that what is in the contract, is not involved with crimes, torts, or violation of existing statutes.
- *Compliance with statute of frauds*, which protects a person from false testimony.

The buyer must be sure *who has ownership* and *who has authority to make agreements!* Because the buyer's job has legal accountability under the Law of Agency, wherein he or she has the authority to commit his or her employer through delegated signing authority, buyers are warned not to sign agreements in excess of their commitment authority limits.

2. THE UNIFORM COMMERCIAL CODE

To look at the various laws and business issues that relate to buying, we will start with those that pertain primarily to domestic purchasing. This discussion will be followed by a review of the antitrust and other laws that govern international business arrangements.

The Federal government has authority to regulate business activity as stated in Article 1, Section 8 of the U.S. Constitution. Congress is empowered "to regulate Commerce with foreign nations, among several States, and the Indian Tribes." Within the U.S., the buyer has the Uniform Commercial Code (UCC) as the legal standard.

The UCC is a set of commercial laws that prescribe legal guidelines and limits for business transactions. Considered the most important regulation for U.S. commerce, the code attempts to systematize procedures and simplify otherwise confusing, complex, and often-contradictory rules derived from common law and statutes from various states. The UCC consists of 10 articles covering Terms of Purchase, Letters of Credit, warehouse receipts, warranties, and other key areas. The UCC is a living document that is continually being interpreted by the courts to adapt to the practices of business today. Let's look at some of the more important clauses under the UCC.

3. CONTRACT TERMS AND CONDITIONS

3.1 Word Processing Templates

“Boilerplate” is the term used to describe the statements contained in the wording of inquiries, purchase orders, and follow-up requests, also known as *terms and conditions* (Ts&Cs). Certain clauses can be used over and over. They can be standardized and brought into play as needed. The savings in typing is significant and the wording will be exactly as desired. The use of templates will reduce the need to repeat the same clause from one contract to the next, saving time and repetition. And, word processing software permits standard language to be called out to suit specific buying needs. A number of possible standard clause templates follow throughout this chapter.

3.2 Warranties

What is the manufacturer’s policy on protection for the buyer with regard to product quality and performance? It pays to be specific about supplier warranties. There are four types: express and implied warranties of merchantability, implied warranty of fitness for a particular purpose, and implied warranty of title. Warranties almost always pass from the manufacturer through middlemen to the end-user.

Express warranties are in writing and state what the product will (or won’t) do. For example, a battery will last 3 years under normal service.

Without anything to the contrary in writing, the UCC (Section 2, Part 3) provides minimum requirements for an implied warranty. The buyer has a right to expect the goods to be merchantable, to “pass without objection in the trade under the contract description,” and to be “fit for ordinary purposes for which such goods are used.” If the buyer refuses to disclose to the seller how the item is used, that can lead to a later dispute.

When a seller makes a warranty orally and the confirming agreement between buyer and seller does not include this warranty, a problem may arise about whether the express warranty became part of the contract. Under the UCC, as part of the Law of Sales, the parole evidence rule states, “Oral or extrinsic evidence is not admissible to add to, alter, or vary the terms of a written contract.” This makes it important for the buyer to be sure any verbal statements of warranty are included in the written agreement.

Warranty clauses are most important when dealing with third-party arrangements. The UCC states that express warranties are “any description of the goods, which is made part of the basis of the bargain.”

Warranties are negotiable! A warranty is a promise by the seller to the buyer that the goods purchased are of a quality conforming to certain standards.

An express (written) warranty defines the extent of coverage and is created in three ways:

1. By “affirmation of fact or promise made by the seller,”
2. By description of the goods, and
3. By “sample or model”.

In all three cases the promise, description, or sample must become “part of the basis for the bargain”.³³ A *materials warranty clause* is mandatory for your protection! This is especially important when dealing with three-party arrangements.

Spell out the obligations for warranties, repairs, etc. in the contract, using language something like this:

“Seller shall be responsible for warranties of merchantability and fitness for a particular purpose and assures the products are safe to use.” (Buyer should spell out any special features relevant to the specific buy.)

“This warranty shall cover the first 12 months of use, or 18 months after purchase (or as desired). In the event of failure, the seller will reimburse the cost of replacement parts and labor to the buyer. Items that fail under warranty shall be returned to the factory at the buyer’s expense. Seller may choose to replace defective item(s) with a new replacement.” (Again these issues are specific to the item being purchased.)

3.3 Epidemic Failure Clause

Epidemic failure can be defined in terms of failure occurring in “X” percent or more of total sales of the product to consumers within “Y” months of the date of the supplier’s manufacture of them. You can negotiate the numbers! As an example, let’s assume that “X” is negotiated at 3% and “Y” at 18 months. In this case, you can detail how the seller will repay you for excessive defects by using a clause such as this:

“An epidemic failure means a defect in materials or workmanship of a specific type that occurs or recurs in any part, component, accessory, or item of equipment of a product and that impairs the function, operation, or safety of such product, provided such failure occurs or recurs in three percent (3%)

³³ “Purchasing and the Law of Contracts,” in McGraw-Hill’s Purchasing Handbook 4th ed., pp. 4 21.

or more of the total sales of the products to consumers within eighteen (18) months from the date of manufacture.

“In the event of such an ‘epidemic failure,’ Seller shall remedy such excessive defects more than the three percent (3%) in one of the following ways to be selected by Seller at its option: (1) Repair such units, (2) Replace such units, (3) Credit Purchaser units at Purchaser’s unit price stated on the purchase order, or (4) Pay Purchaser for its reasonable expenses including labor, materials, and the usual transport allowances in correcting the units.”

There is a chance the buyer can’t get monies due from the supplier because of a lack of funds. In such case, the buyer may choose to insist on an insurance policy in his or her favor, provided and paid for by the seller.

3.4 Liability Insurance

The distributor buyer should be sure the manufacturer has adequate insurance to cover his product liability. One way to do this is to contractually state in the purchase order that the manufacturer is to furnish a Certificate of Insurance covering a specified insured dollar amount. While 98% of manufacturers will already have this coverage, it’s the others that can cause a problem!

3.5 Force Majeure

A *Force Majeure* clause protects the seller, limiting his liability from “Acts of God.” In stating the circumstances of a Force Majeure, the buyer should stipulate something along the lines of the following in the contract:

“Seller is responsible to notify Purchaser within seven (7) working days of such a happening, in writing, and Seller will make every reasonable effort to resolve the Force Majeure occurrence as soon as possible. Reportable occurrences would include (1) Acts of God, (2) civil uprising or war, (3) acts of the Government in either its sovereign or contractual capacity, (4) extreme weather conditions, fires, or floods, (5) epidemics or quarantine restrictions, (6) strikes, and (7) freight embargoes.”

“Should the Seller be unable to fulfill the contract after a one month period, the Purchaser shall have the right to terminate the purchase order, with its only liability being to pay Seller for products received by Purchaser.”

3.6 Contract Cancellation or Termination

Spell out under what conditions either party can withdraw from the purchase contract. A *cancellation clause* should spell out the conditions allowing either party to withdraw from the purchase, and this can be in the form of a termination for convenience arrangement or a termination for default.

Though sometimes difficult to gain seller acceptance, a *termination for convenience clause* can often be negotiated if it is based on principles of fairness. An example of such a clause would be as follows:

“The Buyer may terminate this order for convenience. In the event of such termination, Buyer will reimburse Seller for all expenses incurred or committed up to the date of receipt of notice of termination.”

An example of a *termination for default clause* is shown below:

“In the event Seller fails to properly fulfill any of the terms of this order, or if Seller files a petition for bankruptcy, reorganization, assignment for benefit of creditors, or similar proceedings, Buyer may, by written notice to Seller, without prejudice to any other rights or remedies that Buyer may have, terminate further performance by Seller. In the event of such termination, Buyer may complete performance of this purchase order by such means as Buyer selects, and Seller shall be responsible for any additional costs incurred by Buyer in doing so.”

This Default Compensation clause holds the supplier liable for procurement costs incurred by the buyer should the supplier default his contract.

3.7 Indemnification of Buyer

An indemnification clause can be controversial, and difficult to get the supplier to approve, as its purpose is full protection of the buyer, which implies risk to the seller. Use this clause to protect yourself in the event of suppliers' providing goods that inflict harm on others.

There are two areas to cover here. The first is personal or property damage, and the second is patent or copyright infringement, or theft of a trade secret. The latter area looms even larger in offshore buying, where the exact origin of a product may be less clear than in domestic buying. Buyers want the supplier's assurance that they, the customer, are held harmless from suits for both of the above areas. Include and use as much of the clause as possible to protect the buyer if the product or merchandise is the source of such legal action. Following is an example:

“Seller covenants and agrees at all times to indemnify, hold harmless (including, but not limited to, the payment of all reasonable expenses and

satisfaction of all judgments) and defend Purchaser, its agents, and their respective directors, officers, employees, successors, and assigns against any and all claims for loss, damage or injury, suits or actions brought against Purchaser or such other parties by or on account of any third person, persons or entities, on account of any personal injuries received or sustained by such person or damage to tangible property, other than the product, caused by or growing out of any defects of the products supplied by Seller to Purchaser.

“Seller’s obligations hereunder are conditioned upon Purchaser promptly notifying Seller of all such claims, demands, or legal proceedings. Seller shall have the right to control, manage, litigate, or compromise any such claim, suit or demand; and Purchaser shall provide such information and assistance in the defense as Seller may reasonable request. Purchaser agrees that it shall not compromise or settle any claim or case without the prior written approval of Seller.

“The indemnification shall not apply in event of misapplication of the product or improper installation, or Purchaser’s negligence in handling or modification without Seller’s written consent, that is the cause of any injury to persons or damage to property. Except for the foregoing, Seller will defend any suit and hold Purchaser and its partners harmless against any claim, demand, cost, or loss arising from a suit or proceeding brought against Purchaser or its customers based on the claim that any product or part thereof furnished hereunder constitutes an infringement of any patent, copyright, or trade secret of the United States, if notified and given authority, information, and assistance for the settlement or defense of the same that, other than for the assistance of Purchaser employees, shall be at Seller’s expense; and Seller shall pay all damages and costs awarded therein against Purchaser.”

3.8 Patents, Proprietary Information, and Disclosure

A patent, or proprietary protection clause, should be used if appropriate. This type of protection clause can be included as the last paragraph of the indemnification clauses, but also may be used alone.

In the case of most purchases, this clause is intended to protect the buyer if another party has patented the item. The liability for using or reselling an item made by someone without a valid patent, without knowledge or intention on the part of the buyer, can be significant. So, a precautionary protective clause should be in the terms and conditions whereby the seller agrees to assume full responsibility. Such a clause could look something like this:

“Seller warrants that it’s product(s) are of it’s own design and manufacture, and any use of others’ patents or proprietary design has been cleared properly.”

Sales of counterfeit trademark goods may be illegal in the U.S. The liability is substantial for the buyer reselling an item made by someone without a valid patent, with or without knowledge or intention on the part of the buyer. A precautionary protective clause should therefore be part of the terms and conditions getting the seller to assume full responsibility.

The warranty against patent infringement is deemed to be one of the *warranties of title*. But, when the seller is making something conforming to what is specified by the buyer, the liability could be the buyer’s. This clause can be included as the last paragraph of the indemnification clauses, but it also can stand alone.

Buyers requesting quotations may need to provide details about new innovations, designs or know-how. Notify the supplier about limitations to the use of this data by using a non-disclosure clause:

“The *Confidential Disclosure* of ... (information disclosed) shall only be used for the purpose of ... (manufacture, assembly, etc.)”

Simply giving technical information without such a statement puts the data in the public domain.

Some lawyers have pointed out that Americans freely give or make available their information to the world when buyers make price inquiries of suppliers. Also be aware that many forms of technology information may not be disclosed to certain foreign countries without the U.S. government granting of a license to do so. In sending quote requests, the buyer must be careful to fully protect proprietary data before sending. If the patent is not protected in the foreign country, it can be copied and made. A distinction is drawn for proprietary protection of data of a technical or business nature, which are classified as “trade secrets” or “confidential.” These may not be patentable, so by use of the following clause, the buyer shows data are submitted with restrictive provisions and establishes a proprietary or confidential relationship. Signature of acknowledgement from the seller makes the requirement more binding.

“(Date)

To Chris Michaels (person receiving disclosure);

The *Confidential Disclosure* of Pooler & Associates’ (your company) computer related idea (... spell out the type of information disclosed) to me on this date shall only be used for the purpose of quoting (or assembly, evaluating manufacture costs, etc.). The purpose for disclosure is to determine if this product has economic feasibility.

I agree to use this information mindful of Pooler & Associates' (your company) patent pending application.

Chris Michaels (Signature of reviewer)"

3.9 Other Suggested Purchase Order Clauses

Following are some boilerplate clauses that won't all be used for every purchase. Instead, these are representative examples offered to buyers who should adapt them to the specifics of each negotiation and specifics of the buy.

Many problems that arise when sourcing come mainly from improperly documented buying agreements. Some of the following instruction clauses should be added to the standard clauses used on the back of the purchase order form. Spell them out specifically for major buys. The individual buying company is responsible for its own proper wording, based on its buyers' negotiations with suppliers.

An *Entire Agreement* clause prevents a seller from later defending his mistake by saying essentially "Your letter, or quality people told me to do it differently." The purpose is to strengthen written agreements:

"This Agreement shall solely control the terms of Purchase and Sale of the products/services hereunder. Any contrary, different or added terms in any purchase order, contract, sales acknowledgment, or other documentation of either party shall have no effect and this Agreement shall override any such documentation. This Agreement may not be changed or modified except by written notice signed by both parties."

Assignment of Agreement—Buyers may want to prohibit assignment of the agreement or subcontracting to another party without the buyer's approval. To ensure you know who is doing the work, use the following clause:

"This Agreement may not be assigned to any other party, nor any interest transferred without the written consent of the Purchaser. Furnishing of any products (other than component and replacement parts) shall not be subcontracted by Seller without the prior written consent of Purchaser."

A *Repairs, Service Parts, and Replacement* clause spells out in the contract the seller's obligations on repairs and parts. This is especially important when dealing with third-party arrangements. The buyer's interest here lies in any surprise changes in the design of items purchased. It may also serve to protect the buyer as some suppliers may otherwise find it convenient to drop a product and not provide for replacement components later. Insert:

"During life of this agreement, Seller agrees to provide Purchaser a complete description of any changes in form, fit, or function of component

parts or accessories of products purchased. Seller agrees to furnish all component specifications, drawings, and installation instructions for parts sufficient for service and installation.

“Seller agrees to make available for replacement purposes for those products sold, functional fabricated or purchased replacement parts (or acceptable substitutes) ten (10) years after date of last unit of production by Seller of (name key parts here).”

This bears repeating! These clauses are representative examples only and suggested as a training aid. The buying company is responsible for its own proper wording, based on negotiations with the supplier and the specifics of the goods bought.

4. SOCIOECONOMIC AND ENVIRONMENTAL LAWS

There are other socioeconomic and environmental laws that can have implications for the buyer. Although these were touched on in Chapter 1, it is worthwhile to highlight the more important ones here.

Public Law 95-507 mandates goals for minority purchases. It requires any prime contractor receiving government contracts over \$1 million to establish minority-sourcing programs. The Defense Department itself has set percentage minority participation goals for its defense procurements, and these in some cases allow premium prices to be paid to meet the legislation’s objectives.

Other examples of legislative regulations include:

- The Toxic Substance Control Act of 1977, which addresses disposal of hazardous substances—supervised by the Office of Hazardous Materials Transportation, Department of Transportation
- Radioactive materials and reactors—controlled by the Nuclear Regulatory Commission
- Radiation producing products, such as TV receivers, microwave ovens, x-ray machines, and laser products—covered by the Radiation Control for Health and Safety Act of 1968
- Narcotics and drug control—under the Department of Justice
- Consumer products—must comply with the Consumer Product Safety Act as well as the Flammable Fabrics Act
- Household appliances—must comply with the Energy Policy and Conservation Act

5. ANTITRUST LAWS

Let's look at some of the more pertinent laws in effect in the United States as they relate to the job of buying. The antitrust laws that are of concern are:

- The Sherman Act
- The Clayton Act, with its famous amendment known as the Robinson–Patman Act
- The Federal Trade Commission Acts

Of these, the buyer's main concern lies with the Clayton Act and the Robinson–Patman Act, which address pricing situations that could be considered “restraint of trade.”

The Sherman Act, passed in 1890, made *illegal* certain contracts and conspiracies in restraint of trade.

Section 2 of The Clayton Act forbids price discrimination between different buyers “where the effect of such discrimination may be substantially to lessen competition or tend to create a monopoly in any line of commerce.” Section 3 forbids tying-in arrangements wherein the buyers must buy something they may not want in order to purchase what is wanted.

The Robinson–Patman Act redefined the above Section 2 in 1936. This Act prohibits a buyer from knowingly inducing and buying at discriminatory lower prices than other buyers. This is to ensure equality of treatment to all buyers by a seller. Buyers can be in violation of this act should they induce the seller to lower the price by giving false competitive price information. For example, assume you were to say, “I can get it for \$2 from Jones” when you're really paying \$2.50. That's illegal! You can say you don't like the price, say it's too high, but you can't induce a lower price by falsely naming prices lower than you know exist.

Although domestically, buyers can be in violation of Robinson–Patman by giving false competitive price information, these antitrust laws don't apply overseas. Reciprocity, wherein “If you buy my wine, I'll buy your flour” is illegal in the United States. However, it is a common and legally acceptable type of business arrangement overseas.

The *Federal Trade Commission Act*, passed in 1914, created the Federal Trade Commission to prevent unfair methods of competition. *The Trade Act Of 1974* amended Title VII of the Tariff Act of 1930, and prevents foreigners selling at prices much lower in the U.S. than at home, an activity commonly known as “dumping.” *Antidumping legislation* may be invoked when a foreign product is sold in the U.S. at a price lower than its cost. The Act provides for additional *countervailing duties* when foreign goods are dumped in the U.S. market.

Two sections of this Act apply specifically to this issue of dumping.

Section 201 provides relief from injury caused or threatened by unfairly priced imports, though it is noted that to date, only about 12 of 60 cases have resulted in successful relief.

Section 301 empowers the President to “take all appropriate and feasible action... to enforce the rights of the United States under any trade agreement... to counter any foreign trade practice that is unjustifiable, unreasonable, or discriminatory and burdens or restricts U.S. commerce.” The Omnibus Trade and Competitiveness Act of 1988 initially mandated a “Super 301” process for a two-year period that was extended by several Executive Orders. Super 301 required United States Trade Representative (USTR) to identify priority foreign country practices, the elimination of which were likely to have the most significant potential to increase U.S. exports. Within 90 days after identification of priority foreign practices, USTR was required to initiate Section 301 investigations of any priority practices identified in the report.

Most new buyers have heard of the Buy America Act, and believe it to be an important law. The fact is that the Buy America Act of 1933 is practically a nonissue to many commercial buyers. It was passed to provide preference to U.S. suppliers when the Federal Government made purchases, but provisions of this Act were weakened by the Trade Agreement Act of 1979, and the Defense Acquisition Circular No. 76-25 in 1980. The Buy America Act still can apply where national security is at stake. For government procurement and purchasing by government contractors, it places significant restrictions on buying other than U.S. produced items.

Many states have enacted legislation for some type of American preference policy. With many foreign-owned companies manufacturing in the U.S. today, it is often hard to discern what is made in America. Automakers are required to list American and foreign content on product labels. But again, Buy America is not a factor in most commercial buying decisions. The preceding is by no means a comprehensive list of all the laws applying primarily to domestic purchasing, but it covers the more important ones.

6. UNITED NATIONS CONVENTION

“If it doesn’t work, we’ll sue ‘em!” is sometimes the U.S. buyer’s position. But, it’s not a good posture to assume, and when you factor in the added complexities of international buying, it’s especially difficult to accomplish. Global buying was intended to have come under the “United Nations Convention on Contracts for the International Sale of Goods.”

(CISG) Known simply as the 1980 Convention, it contains 101 articles, covering formation of contracts, as well as the rights, debts, and remedies.

About 60 nations have ratified CISG, including the U.S. Congress that passed it in 1986, making it effective in 1988. Essentially, the CISG makes it easier for the seller to enforce verbal agreements or phone conversations. In fact, terms appear to be more favorable in some respects to the seller than the buyer may be accustomed to in the UCC, so “buyer beware!”

If your contract is with a supplier whose country also has approved, the CISG terms apply, unless you specifically state, “*CISG does not apply.*” Make sure you understand the implications of the CISG before you sign up to these provisions.

7. GENEVA AGREEMENT ON TARIFFS AND TRADE

In lieu of a code, international trade is being conducted through bilateral and multilateral trade agreements and under the General Agreement on Tariffs and Trade (GATT). The GATT agreement created in 1948 provides for periodic negotiations to reduce tariffs, settle disputes, and discuss ways to promote “free trade.”

Through eight “rounds” of follow-up meetings (e.g., the Kennedy Round in 1984 featured such players as then President Reagan, Premier Nakasone, and Prime Minister Thatcher), and the Uruguay Round concluded in 1995, tariffs on industrial goods have been negotiated down to the 2% to 6% range on average.

8. GLOBAL TRADE BARRIERS

8.1 Boycotts

Boycotts are often not workable. Some groups may call for boycotts of goods from countries based on an underlying social, political, or economic motivation. Angry South Carolina legislators, spurred by France’s opposition to U.S. efforts in Iraq, called for a boycott of Michelin tires, until they remembered the tires were made in their state. Boycotts, while not common, could be a problem for the buyer. Should a buyer honor a boycott, such an action is subject to punishment. A buyer not only should avoid any agreement involving a boycott, but also is obliged by law to report such attempts to the U.S. government. Run to an attorney on this issue!

8.2 Cartels and Closed Countries

Cartels present buyers with an unfair pricing situation. They exist when companies that produce the same or similar products plan together to control their market share and prices. *By U.S. law such action is illegal!* OPEC is perhaps the most famous cartel, which has been successful in maintaining some control over the price of petroleum for many years.

Next in order of potentially serious impediments to trade are “closed countries.” Certain foreign governments play the protectionist game by closing their borders to any import except those they absolutely want. Some newer industrialized nations ban foreign firms from making investments or acquiring control of native companies. This situation is constantly changing.

As explained in Chapter 6, countertrade is any transaction involving exchange of goods or services for something of equal value. Sometimes cash is used to compensate for value differences. Although countertrade is an arrangement where there have been few problems, antitrust implications could arise. For example, if a buyer is trying to fulfill the countertrade terms, and he or she pressures suppliers to buy certain items along the lines of, “I won’t buy from you unless you buy this, so we can compete abroad,” this could be a questionable practice.

8.3 Counterfeiting and Piracy of Property

Agreements that protect ownership are: the Paris Convention for Patents, the Universal Copyright Convention, the Berne Convention for Copyrights, and the Madrid Agreement on Trademarks. Primary patent and copyright protection is under the World Intellectual Property Organization.

Gray market goods are authentic items brought into the country by unauthorized or unlicensed distributors. Although Customs doesn’t sometimes appear to be overly attentive to the gray market, some companies are being damaged as their sales are diluted due to gray market activities. Electronic goods have been especially hard hit.

New technological developments speed around the world in weeks. Today, a company brings out a new product and it is copied in a matter of a few months, or even weeks. A few years ago, a company had up to 3 years when it could recover much of its research and development costs. Today, the speed with which competitors can copy a design is beginning to discourage some large research and development efforts.

An anti-counterfeiting code has been in review by GATT since 1970. Some headway is being made, but getting a consensus remains difficult. The GATT Round in Uruguay in 1986 took up the issue, but it was still under

discussion in 1995. During 1996 there have been agreements to stop the activity, but rumors persist of continued violations.

The International Trade Commission (ITC) decides proprietary rights and whether copyrights are violated. It decides injury to a U.S. company from foreign unfair trade practices. It does not determine *if* it occurs. In 2003 this is a hotly contested issue.

How can designs be protected if foreign interests own the American company? This is an important question, as certain foreign governments feel their citizens have a right to use whatever information is available. They go out of their way to protect that right. Moderates believe the rest of the world denies free trade in the fear that trade reprisals would undermine the world economy, so they advocate a cautious approach to solving some of these proprietary legal issues.

Appeals in U.S. patent-infringement suits go to the Court of Appeals for the Federal Circuit (CAFC). Of course, foreign companies have no monopoly on such disputes. Kodak's use of a Polaroid style self-developing film is an example, where in 1990 the courts ruled Kodak had to pay damages.

8.4 Import Customs Laws and Regulations

Regardless of laws—international or otherwise—that may be considered applicable to disputes between foreign nationals, when buyers import into the U.S., they and their company are bound by all applicable U.S. laws and Customs regulations relating to such imports. It's important to understand the essence of import regulations themselves.

Import duties for contractor type products are down to around 2% to 6%. For Most Favored Nations (MFNs), many duties have been lowered or eliminated.

When buying internationally, it's a good idea to state in the purchase order that the party signing for the foreign seller must be a company officer, and has the authority to contract for the seller. This is recommended as foreigners often aren't delegated such authority. When buying globally, the same legal issues pertain as with domestic buying, but the scope of law expands to other areas such as Customs duties, embargoes, import licenses, etc.

8.5 Unfair Pricing and Protectionism

Organized labor is a major force trying to protect its jobs. Charges have been made of unfair trade practices in the shoe and textile industries, by copper fabricators and miners, and others. When companies can't resolve

their complaints about unfair pricing, they have some relief under various trade acts.

8.6 Antidumping Duties

As previously defined, selling products at prices less than their fair market value is termed “dumping.” Although we commented briefly on the laws relating to antidumping in the earlier discussion of antitrust laws, let’s look in more detail at the subject as it relates to the penalties involved for noncompliance.

Title VII of the Tariff Act of 1930, and as amended by the Trade Act of 1974, provides for added duties when foreign goods are dumped in the U.S. market. An antidumping duty may be assessed for imports sold to American buyers at prices less than their fair market value. As an example, a duty fine as high as 213% was levied on imported Swedish bearings, as it was found that nine foreign bearing makers were selling at prices about one-third of those in their home countries. The response of the offenders was to simply reduce the shipments from their home plants, diverting through third parties in other countries that ultimately shipped the bearings to the States. Shipments from Sweden dropped almost 20% in 1989, while shipments were increased as high as 543% from Austria, Spain, and Argentina.³⁴ Then bearing shipments increased from Spain, Poland, Mexico, Turkey, South Korea, and Hong Kong—from plants that don’t make any bearings! They got away with it for quite a while, as it is sometimes difficult to prove.

The U.S. Department of Commerce (DOC) rules on dumping, and makes the price ruling based upon complaints presented. It is difficult to get the DOC to make a dumping ruling because getting good data is not easy. To improve the chances for success of a filed complaint, critics want this authority transferred to the U.S. Trade Representative.

Action against dumping is controversial, as seen by trying to impose a 35% penalty on Canadian housing shake shingles around 1995. A problem of using duties to protect American industry is that there is always a tradeoff penalty paid by the American consumer. In this case, a tariff was imposed that would have eliminated \$350 million of Canadian lumber exports to the U.S. Four thousand Canadian jobs would have been eliminated. While highly unpopular in Canada, it was considered by some Americans as an acceptable way to react to severe hardship suffered by American labor. This action generated Canadian debate on punitive countermeasures, and it’s still a contentious issue in 2003. The solution to the conflict at the time was a 15% surtax that was imposed on Canadian lumber dealers by the Canadian

³⁴“Cat and mouse game,” *Forbes*, May 28, 1990, p. 48

government to prevent higher proposed U.S. tariffs. Though praised as a compromise, this action meant a 15% increase in cost to U.S. consumers. And, in 2003 this again is a source of great trade friction.

Government subsidies can take the form of duty rebates, lower sales taxes, income tax concessions, transportation taxes, cash rebates, and lower interest rates on loans. A spate of retaliatory tariffs hopefully will be avoided. Foreign companies, as well as American, are often given government incentives and subsidies to export. The procedure to answer a complaint is to call for an investigation by the U.S. Trade Representative; staffed with about 130 people, the office of the Trade Representative takes up cases involving U.S. companies claiming they can't get into a foreign market.

Governments use Value Added Taxes in various ways. Certainly as a way to raise money, they often influence trade by enhancing or discouraging it. Taxes are another tactic used for protectionism. Some 50 countries have a Value Added Tax (VAT). This VAT is widely used in Europe.

The U.S. has long complained about these discriminatory type taxes. For example, the VAT is not imposed on goods Europe ships into the U.S., while American goods are subject to it when going into Europe. Thus this tax discourages American exports.

Canada has a business-transfer tax that is similar to a VAT though it shouldn't affect the cost of their products. The Goods and Services Tax (GST) is 7% of value and was imposed in 1991 to replace an older manufacturers' tax. The GST differs from a retail sales tax in that the tax is paid as value is added. As an example, an aluminum sheet is sold for \$10 to a stamping plant that pays 70 cents of taxes at that time. The stamping plant sells to a fabricator for \$50 and collects a 7% tax of \$3.50. When the stamping company pays its tax, it gets to deduct the tax it has already paid (70 cents) to the aluminum mill. Each firm in turn does the same accounting until the consumer pays his 7% on the retail price. The Canadian Government claims that consumers will pay no more, though the government collects its taxes faster. The level of taxation is of major importance in the business environment.

8.7 Countervailing Duties

Countervailing Duties are the internationally approved way under GATT to prevent unfairly priced products from being sold at excessively low prices. Higher tariffs and surcharge taxes are permissible when there is a balance-of-payments problem.

Many governments have been accused of violating U.S. trade laws by subsidizing their industries to gain an unfair advantage. Countervailing

Duties may be levied against any foreign government that permits or causes an unfair trade advantage within the U.S. As an example of how this works, let's say the Greek government gives a 2% rebate to encourage export of a certain product. Spain does not. If Spain or the U.S. company complains, U.S. Customs might add a 2% countervailing duty to buys from Greece, to level the market.

The U.S. charges that government subsidies granted European farmers prevent U.S. agriculture produce sales. Many European companies are government owned, so some people believe the U.S. government should become a participant in their problems.

9. BATTLE OF THE FORMS

Daily throughout the U.S. and the rest of the world, thousands of purchase orders are prepared with terms & conditions (Ts & Cs) of purchase carefully developed over time. Methodically, supplying companies acknowledge these customer orders on *their* forms with conditions of sale. Buyers mailing their POs often ignore the supplier's acknowledgement terms, just as the supplier ignores the buyer's PO terms. Should major difficulty arise, each party falls back on its terms and somehow reaches a settlement. Without the buyer's Ts and Cs it would be difficult to build a logical negotiating argument, much less a legal case. The implication is clear: use care in developing the provisions, terms, and conditions of your purchase! To do otherwise is to invite a dispute.

9.1 Dispute Settlements

An aspect of the buying job is that buyers have to settle conflicts and disputes. Since the buyer must often question many aspects of a purchase, the buyer is in "conflict between two worlds"—that of the company he or she represents and that of the supplying interests.

There is no substitute for trust and a willingness to negotiate to clear any disputed commercial transaction. When all else fails, the last resort is to go to court. But in a sense, that's tantamount to an admission of failure, as the relationship may be irreparably damaged. Lawsuits often leave parties unable or unwilling to do business again as resentment is too deep.

Most commercial disputes that arise are settled amicably. The best inducement for settlement is the understanding that the seller wants another sale, and the buyer likes or needs the materials being purchased. Despite the utmost care in preparing the purchase order, the chance of an occasional dispute is always present.

Generally, in a conflict the following typically hold true:

- Typewritten insertions in context take precedence over preprinted (or “boilerplate”) items.
- Handwritten insertions take precedence over typed or preprinted.
- Spelled out numbers typically take precedence over the Arabic numerals.
- Conflicts favor the first stipulation in order of presentation.
- Ambiguities are often interpreted against the party who inserted the language that is the source of the ambiguity.

Disputes start with a conflict between two parties. The settlement steps arranged in increasing complexity are: (1) problem solving, (2) mediation, (3) arbitration, and (4) litigation. Perhaps buyer and seller, by using problem solving techniques, will reach a settlement. This is the preferred resolution.

If buyers focus objectively on the need for a resolution, and do not use a “We” versus “They” approach, most disputes can be settled amicably. Failing this, the next level of settlement is pursued. Although there is a tendency in our litigious society to pursue a legal approach too quickly, it should be remembered that court action is too uncertain and certainly too complex and costly to be the course of first action. In any event, it’s just as certain that both parties, assuming integrity, want to solve any dispute. But, what if you can’t find a way to settle? Submitting an unsolvable dispute to binding arbitration is one alternative.

Settling consequential damages resulting from product failure is difficult. As an example of consequential damage, consider a situation where a fuse blows due to a defective motor and a factory shuts down for the day, sending 100 people home. An overzealous buyer might try to collect from the motor supplier for the lost wages, but in most cases this will be unsuccessful, as the damage is “consequential.”

It’s possible to contract for consequential damages by negotiation and stating it is covered in your purchase order. However, there will invariably be heavy costs charged into the pricing by the seller looking to cover the added risk—and that will discourage most buyers trying for it.

Another special area that may lead to controversy between buyer and seller is the issue of when title, or ownership, officially passes from the seller to the buyer. Because the legal provision for passage of title is included in the terms of shipment, often referred to as the freight or FOB terms, this will be covered more fully in Chapter 17. As with other areas subject to potential dispute, the buyer should be clear on the intended point of title transfer and upon whom responsibility will fall for damage during shipment. This will be documented by the statement of FOB terms on the purchase order.

9.2 Alternative Dispute Resolution

Increasingly, resolutions have taken place through “alternative dispute resolution” or ADR, which consists of arbitration and/or mediation. What’s the difference? While mediation implies a “counseling” role for the mediator wherein decisions are reached by consensus, in the U.S. and abroad arbitration is generally backed by laws. In binding arbitration, the arbitrator—the neutral third party—listens to both sides’ “best case” arguments and renders a decision.

A major advantage of the arbitration process is the shorter time between filing and a decision from a court action. Also, hearsay testimony is permitted. The American Arbitration Association (AAA) or the International Chamber of Commerce (ICC) will prescribe the procedures usually followed. Inclusion of a purchase order clause providing for use of either of the two organizations commits the two disputing parties to use this method to secure a neutral judgment. So, use of a standard Arbitration clause in the contract gains advance agreement of the parties to arbitrate as part of their contractual understanding. A buyer may never invoke the clause, but should the need arise, it commits the two parties to a practical way to a neutral judgment. If the buyer fails to enter the clause on his purchase document, arbitration will still be possible if both parties agree.

The AAA suggests the following clause be inserted into the purchase order:

“Any controversy or claim arising out of or relating to this contract, or the breach thereof, shall be settled by arbitration in accordance with the Rules of the American Arbitration Association, and judgment upon the award rendered by the Arbitrator(s) may be entered in any Court having jurisdiction thereof.”

The arbitrator acts as a type of judge, making a decision that is based only on the evidence that has been given. Judgments are given in a short written form, but they are not published in the public domain. An arbitrator can be challenged before a final decision is reached and the AAA will determine whether to disqualify. After a decision is rendered, and in the event it is inconsistent with the parties’ negotiated rights or the law, an appeal can be made to the court.

The other option is the International Chamber of Commerce’s (ICC) Court of Arbitration. Their wide contacts within many nations make them preferable for disputes over offshore purchases. If you wish to use the ICC, insert a clause as follows:

“All disputes arising in connection with the present contract shall be finally settled under the Rules of Conciliation and Arbitration of the

International Chamber of Commerce by one or more arbitrators appointed in accordance with the Rules.”

After 30 days the order becomes final. If a party wants to litigate before a judge or jury, a complaint must be filed during the 30 days. The arbitration proceedings are admissible as evidence in a trial. The court may ultimately enforce the ADR decision or render its own.

Remember that when buyers give power to a third party to solve their dispute through binding arbitration, an appeal from the award or decision is not expected. This is because the intent is to prevent recurring quarrels over the same incident and the use of lawyers, but symptomatic of our legal system, lawyers are often willing to make any challenge.

9.3 Mediation

As implied earlier, mediation differs from arbitration, as the third party doesn't have authority to settle, but merely aids in clarifying issues. Mediators have the right and responsibility to suggest compromises or solutions. Mediators are neutral third parties that act as moderators between the disputants. They try to cause the two parties to discuss and focus on the disagreement, and to assist the parties to settle their own grievances. Local agencies sponsored by local or state governments usually provide mediation service free of charge.

Mediators are most desirable for small family businesses or an intra-company dispute where the parties must keep working together. Again, this is the preferable course as lawsuits often leave parties unable or unwilling to do business again as deep resentment continues.

How would you, as a buyer, solve this bid scenario? A few years ago, a New York discount house placed an afternoon newspaper ad featuring portable TV sets at \$89.50 each. Unfortunately, the printer made a mistake, and the price was listed as \$8.95 in the advertisement. This was a well-publicized situation that resulted in a rush of thousands who showed up demanding a set at the quoted price. Ultimately, the police had to come and close the store. To quiet the customers, the manager agreed to sell all sets at the printed price as a matter of good public relations. However, he stressed that legally the store did not have to sell on the basis of an obvious error.

The American Arbitration Association had a similar situation to resolve—though it was caused by a mathematical miscalculation rather than by a typographical error. The question came down to “*Can one party bind another to the terms of a contract that they know is erroneously stated?*”

In this case, the contracting parties were a general building contractor and a plumbing subcontractor. In preparation for bidding on the construction of a commercial building, the general contractor had shown the architect's plans

to several plumbing firms. He asked how much each would charge to handle all the plumbing and air conditioning work.

Material costs were fairly uniform in the area. All plumbing contractors were subject to the same union contracts, so it was expected the bids would be quite close. They all were, except for that of one company, whose bid was remarkably low.

The general contractor was experienced enough to know this low bid was based on miscalculation. More than that, he knew exactly where the error was, but decided to accept the bid and proceed on that basis. The low bid seemed to be a blessing to the general contractor who wanted to lower his own bid to the real estate syndicate that was putting up the structure.

On the strength of the unusually low price for plumbing, the general contractor entered a low bid of his own and nailed down the job. Shortly after the project got under way, however, the plumbing subcontractor discovered the error. Promptly, they got the general contractor on the phone. "Look," he said, "We just spotted a mistake on our work sheets. We forgot to include the extension of air-conditioning ducts into a wing of the building that was not part of the original plans. We will have to charge more for that."

The general contractor expressed sympathy, but offered no relief. "That's tough on you," he said, "but a contract is a contract. If I gave you more, it would come out of my pocket. I've already bid on the basis of your estimate. Now you're stuck with it." The general contractor reminded the plumbing contractor that the contract contained a damages clause that would be invoked if the work weren't done according to the specifications, and on time. Both parties needed a quick decision. This contract also had an arbitration clause, and the plumbing contractor promptly invoked it.

During arbitration, arguments and evidence for the case were aired. The general contractor's lawyer stated, "Neither the law nor an arbitration hearing should be available to any businessman for the purpose of escaping contractual obligations that may prove to be onerous. They may have shown bad judgment in bidding low. That's too bad for them. But, my client acted on the basis of his belief, and the plumbing supply house should be held to it."

"This is not a case of an improvident contract," replied the attorney for the plumber. "This is just a matter of an obvious mistake in arithmetic, and, furthermore, it is a mistake that the general contractor must have known about when he accepted the bid so hastily."

Now, put yourself into the role of the arbitrator who must render the award. Would you return a decision for the general contractor or for the plumbing subcontractor? Generally a supplier will not be held to an erroneous quotation especially if he advised the contractor in time to alter his bid.

10. FOREIGN CORRUPT PRACTICES ACT

The 1977 *Foreign Corrupt Practices Act* raised ethical issues for Americans involved in international business dealings, as it declared it a crime for American business executives to pay for favors or otherwise offer bribery to foreign government officials. Corporations face fines up to \$1 million and individuals \$10,000—and the employer cannot indemnify the individual. Penalties for the individual can also include a jail term of up to 5 years, so take note! An example of a potential buying problem is if a foreign official offers to arrange for purchases through his connections. Your challenge is to discern whether you are running into unnecessary government bureaucracy or whether their law mandates the administrative delay.

This law came on the heels of the Watergate scandal. About 400 corporations, including 117 of the top 500, were found to have paid out hundreds of millions of dollars for these nefarious services. The Security and Exchange Commission described it as a national crisis. Money was used to influence foreigners who had discretionary authority to assist the company to get or maintain business. The new law did not prevent payments of lesser figures to get someone to perform normal duties at a clerical or lower administrative level. In 1988, the Senate relaxed on this issue, stating that U.S. business personnel could pay “if payments were legal in a foreign country where they were made to expedite routing government action.”³⁵

Consider this real-life situation: You can’t move your shipment from a port, and it seems a gift might ease its release. When does a gift become a bribe? Is it any different if it’s in an Italian or a Korean port? In any event, make sure any service given is legitimate and not already a part of the official duties of the official offering the service. This is a sensitive area because people-to-people contacts are there, providing potential for illegal payments.

Examples have been cited by Americans, who, upon completing a deal, were told what gift would be proper to celebrate the occasion. Bribery is not a crime in many developing countries. In fact, gift giving is often part of their heritage—and is in no way considered a bribe.

³⁵ *New York Times*, 3/16/88, p. D7

11. THE BUYER AND LEGAL ISSUES

As we close out this chapter, let's consider the following scenario that is based on a true situation. The "angry supplier," will bring out some legal issues that should interest most buyers:

Ross Dielectric produces resins, laminates, and plastic coatings. They have developed a problem in keeping different products from contamination by product carryover materials during processing stages. Storage prior to final packing and shipping was a contributing cause. In time, expensive handling, cleaning, and inspection instructions have mushroomed into a major cost factor. Chris Michaels was charged with improving the system as a formal cost reduction project.

In his previous job with a small plastics company, Chris had used the Poulin Machine Works for fabrication of some custom-made process equipment. He thought of calling in Poulin's sales engineer for a review of the problem. After a long and detailed discussion, Poulin's sales engineer took the general specifications with him, promising a fast answer.

Sure enough, the next week, the sales engineer returned with sketches of a novel tote box and conveyor system that completely protected the material during critical process steps. It also delivered the material through processing to packing in a closed system, and provided for automatic clearing of the boxes after use.

Pleased with the concept, Chris transposed the specification in detail onto his drawings and assigned new drawing numbers. He then sent these drawings with buy requisitions to Amanda Kay, buyer in the Purchasing Department. Ms. Kay in turn sent requests to four firms, including Poulin Machine Works.

When Poulin's sales manager Rick Brown got the request for quotes, he made a get-acquainted visit to meet Ross Dielectric's buyer, Amanda Kay. Rick learned their sketches had been sent to competitors for quote, and promptly blew his top. Returning to his office, Rick dispatched the following letter to Ross Dielectric's general manager:

Dear Sir:

On May 1, 2003 we submitted in good faith several sketches of a tote-box handling system to Ross Dielectric Company. It now appears that our designs have been reproduced onto Ross Dielectric drawings. Further, it appears that competitive quotations have been sought from suppliers other than Poulin.

We should like to point out that this system is a proprietary design, and was submitted for your review with no authority to reproduce it, or have it

reproduced. Unless your action of duplicating drawings and soliciting quotations from others thereto is rescinded at once, we shall have no alternative but to commence appropriate legal action to protect our interest.

Sincerely,
Richard Brown
Sales Manager
Poulin Machine Works

How would you as buyer handle this problem? For further consideration, how would you answer the following questions?

1. What is the legal significance, as you see it, of Poulin's letter?
2. What was purchasing's responsibility to check or establish the identity or origin of the drawings developed?
3. Even though the system was not patented and Poulin did not specifically state that they were not to be reproduced, what business ethics are involved?
4. If you were buyer Amanda Kay, what would you do?
 - a) Do you give the order to Poulin without competition?
 - b) Do you give Poulin a special price consideration in the bid evaluation?
 - c) Do you take exception to Poulin's letter and attitude?
 - d) *Get creative—there may be more than one solution!*

Actually, as with most "case studies" there is no single right or wrong answer to these questions, as we need to know more of the specifics to reach a universally accepted conclusion. But what is clear is that some sort of mutually satisfying resolution should be attempted as a first action. Both parties have too much to lose by achieving anything less.

Volumes could be written (and have been!) on legal issues. Our intention here is not to duplicate that effort, but instead to highlight the more important issues that affect the buyer in both the domestic and the international business arenas. Legal issues arise from many commercial situations and they can't all be anticipated. But, with the preceding key legal issues in mind, you don't need to be a lawyer. If such situations arise, it is wise to seek legal help.

The preceding review provided in this chapter covers the issues of most likely impact—but the buyer and purchasing management must become cognizant of those issues specific to the circumstances of their business situations.

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Chapter 16

SERVICES AND MRO BUYING

Two important aspects of services buying are covered in this chapter, the purchase of services for any business, including manufacturing and retail, and the purchases made by organizations that themselves sell services. Purchasing of services has become more important as about 80% of the United States' Gross Domestic Product in 2002 was for services, while 18% was for industrial goods, and 2% for agriculture. Furthermore, service-type jobs account for about 80% of new jobs per the Commerce Department. As such, service buying has become more important while often possessing unique challenges and being more demanding.

Hospitals are an example of the very complex and special needs of service buying, where purchasing may be charged with inventory control and management of stores, central processing and printing, laundry, cafeteria, maintenance, medical supplies, and distribution.

1. BUYING IN SERVICE ORGANIZATIONS

The number and type of service purchasing examples is both vast and diverse, and includes entities such as school districts, hospitals, Health Maintenance Organizations (HMOs), banks, utilities, training companies, advertising agencies, travel agencies, hotels, car rentals, food processing and vending, cable networks, security personnel, and the like. In these cases, buying is similar in its process to industrial purchase of maintenance, repair, and operating (MRO) supplies.

Many purchases are contracts for time and effort (labor) and do not produce a physical end product. Buys are frequently for combinations of

goods and services and in many of these cases, the purchases are of either a person's or a company's time and include labor, parts, and materials used.

Service contracts are often negotiated after bids or quotes are taken. That's because the proposals often provide ideas and suggestions not previously considered. When buying services, the statement of work to be performed is the specification. The request for bids or prices, supplier sourcing, and all other buying functions are identical. Terms of payment should be discussed early in the process, as many smaller companies expect advance payments because they may have insufficient capital on which to operate.

A materials budget is commonly used for major projects. It may be broken down into monthly increments covering the project span, or for one year. Such a budget is usually estimated based on expected performance; and construction contractors may have separate budgets for each of their major projects. In contrast, government and university purchasing departments usually operate under definite, inflexible limitations on expenditures. Some flexibility may, however, be provided by authorizing purchasing to forward-buy up to a certain percentage of the total value. In effect, this sets up a revolving fund to take advantage of fluctuating price situations.

Purchasing is known to have plenty of help in some companies of these types. Acquisition of property, capital equipment, utilities, insurance, and travel are sometimes assigned to people outside purchasing who may have considerable experience and backgrounds for such special assignments. Purchasing is mostly charged to buy office supplies, MRO items, and resale items. There often isn't need of inventory control of raw materials, or in-process goods. However, stocking of purchased supplies may be required and distribution requirements planning (DRP) and materials requirement planning (MRP) can be adopted depending on the organization. Certainly inventory is of universal concern, even though inventories of supplies are not normally carried as an asset on the balance sheet, because they were expensed when purchased.

Buying is universal. Because much of the technical buying outlook in this book is applicable to industrial buyers does not mean that different types of buying jobs are less important. Moreover, many buyers and purchasing managers who have handled both jobs know the buying process is similar. Much of what has been detailed in this book with respect to negotiation, cost reduction techniques, conflict resolution, and the like is equally pertinent to service-type buying. Another good example is managing inventory. While most service buyers may have no interest in Material Requirements Planning (MRP), the Re-Order-Point (ROP) inventory control using the ABC system and Economic Order Quantity (EOQ) applies well for service type buying and MRO items.

1.1 Distribution Buying

Several approaches are used to enhance the distributor business because of the need to include multiple locations. Though the smaller distributor/warehouse buying operation doesn't want or need to be as elaborate as the larger, more complex operations, the principles remain the same.

Large distributors have several branches in multiple locations to better serve customers. Distributors, aware of industrial buyers shopping their various branches, call it "branch shopping." That's because industrial buyers have learned that service provided, stock carried, and prices could vary with different branches of the same distributor, and often may search out this information, as sellers must often price to suit the individual marketplace. In similar fashion, the distributor/contractor buyer should shop among industrial sellers. As information systems become faster and more sophisticated sharing common information on stock levels and pricing, differences among branch operations tend to disappear.

As part of their educational program for distribution purchasing management, the American Supply Education Foundation, Inc., Chicago, IL, published Purchasing: Balancing Price and Value.³⁶ This book is directed toward the specific needs of distributor buyers.

Because of the major impact of materials and components cost, the wholesaler/distributor wants alert, aggressive, and intelligent purchasing personnel who practice modern techniques of buying. Purchasing has become recognized today as an important economic factor in the business. Central inventory makes central buying easier. A sound strategy of distributor buying could be to identify separately the high volume items to be bought centrally, and leave specials, or smaller volume items, to be acquired by each branch. This concept is similar to multi-plant buying by major manufacturers.

Buying for a distributor or contractor has distinct challenges. It is often difficult to exert any buying leverage when sourcing components and parts from a manufacturer whose line the distributorship sells. Other than this unique aspect, participants at the authors' seminars for distributors confirmed that most buys were similar to industrial MRO buying. Buying is generic with universal guiding principles.

³⁶ V.H. Pooler, American Supply Education Foundation, Inc., Chicago, IL, 1987

1.2 Merchandise (Retail) Buying

Those who have studied this field tell us that the buying responsibilities are again essentially identical, except for one very significant difference. When buying for resale, the buyer is often charged with responsibility for the market research necessary to determine what products will be in demand, and need to be purchased. This critically important role in the success of the retailer, often allows retail buyers to command compensation well above the average buyer.

The image of the products bought can dramatically affect their salability. The markets are highly seasonal, so the buyer may contract for a portion of a supplier's productive output capacity. For example, while buyers may not know the exact new styles for clothing, they must secure capacity to cut and sew in advance. So, they contract with long-term commitments to volume but not to specific items, which are flexible in meeting their customer demands. Buying cooperatives are often used. The retail buyer faces the same issue with respect to the optimal number of sources. If many suppliers are used, there isn't as much leverage to negotiate, while if few are available, they may lose out on the latest fashion or innovations. So usually two or three major suppliers will be used.

Ways to measure buyer performance differ in that the number of customer complaints and returns are most important. Also, if many alterations, refinishing, or excessive costs occur, these are all reflections of the buyer's decisions. The retail buyer is apparently much closer to the end customer than is the industrial buyer. While there appears to be no formal purchasing association dedicated to this type of buying, there is a National Retail Merchants Association (NRMA) that provides guidance on good business practices.

1.3 Hospitals and Health Maintenance Organizations

With fast rising health care costs, the importance of purchasing in the medical field is evident. Insurance companies and companies that pay for their employees' health insurance have been putting pressure on the providers to cap their costs. In turn, this impacts on the buying job and must lead to more sophisticated buying practices, including use of centralized buying and collaborative supplier relationships to produce better results.

The American Society for Hospital Materials Management represents buying interests in this field. The technical demands of buying Pharmaceuticals, laboratory supplies, and equipment all require specific technical skills just as in manufacturing. Group buying agreements are often

used by hospitals, often including shared services that provide approved price lists.

1.4 Schools and Educational Buying

As in the case for health care, educational expenses have risen faster than the growth in the general economy. Cooperative buying has been one way for educational institutions to buy better. The National Association of Educational Buyers (NAEB) set up the Educational and Institutional Cooperative Service some years ago. This group establishes contracts for furniture and other items.

1.5 Government Procurement and Military Buying

The National Institute of Government Purchasing (NIGP) represents state and local government buyers. Also, the National Association of State Purchasing Officials (NASPO) is active. Both strongly support training activities. A difficulty in studying government buying activities is that they often report to individuals with titles other than purchasing, such as commissioners, etc.

The Department of Defense (DOD) is the source of the majority of the Federal Government's expenditures. The Office of Federal Procurement Policy (OFPP) has exhaustive regulations covering all the award activities, from determining the requirement through to completion of the file documentation. The purchasing contracting officer (PCO) handles the pre-award activities, and the administrative contracting officer (ACO) administers the contract after it's awarded.

The Armed Services Procurement Act (ASPA) has been amended with the Defense Acquisition Regulations (DAR), and the Federal Acquisition Regulations (FAR). This activity is too complex and detailed to attempt any detailed description. Suffice it to say that, as in other cases reviewed, purchasing principles are essentially the same, although the rules are complex and must be followed carefully.

In summary, reducing costs is a top priority despite the fact that the purchasing may be for nonprofit organizations. The significant point is that buyers for *any* type organization should be able to apply many purchasing techniques reviewed in this chapter and throughout the book.

2. CO-OP AND CONSORTIUM BUYING

Many times we're dealing with a cooperative company (*co-op*), and don't know it. As companies get larger, co-ops present one way for the smaller business to survive. "Hundreds of independent druggists buy their pharmaceutical and other supplies through business co-ops, allowing them to compete with mass merchandisers. More than 20,000 independent hardware stores and home repair centers take advantage of joint purchasing, joint advertising, and assurance of quality products through membership in 10 retailer-owned wholesale co-ops."³⁷ Co-ops give buyers greater choice of supply by not having suppliers dominating one-sided negotiations.

What about the smaller single-location distributor? Enterprising buyers sometimes act as a central clearing house. Following the example of some school districts and area hospitals, the distributor buyer can often get improved deals by adding to his or her volume. For example, by phoning a half-dozen users of valves in the region, a buyer was able to place a truckload order. He or she gets 500, and has 50 or so shipped to the other buyers' locations. Or, the seller may drop ship individually at the agreed price.

Co-ops often have competitors as members and paid staff for administrative service. Co-op members pay dues, and the suppliers pay fees. By cooperatively pooling their buying volume with several other smaller users, considerable savings result. This type of pooling makes the order quantity large enough to run economically. The major problem is finding other buyers who have similar requirements and information readily available when contacted, so that quick decisions can be reached.

2.1 Consortium Purchasing

Some companies participate in purchasing consortiums to increase their buying leverage. Consortiums are envisioned as part of strategic supply chain management. They are an outgrowth of the success of co-op buying that is widely used by schools, hospitals, and local government purchasers. Pharmaceutical and medical organizations alone claim to have formed over 100 group-purchasing arrangements.

Consortiums are organized differently than co-ops, and may be either a formal corporation or a loose affiliation of companies whose members may be large business firms from different industries. Members preferably hire a

³⁷ "Co-op Buying Gives Consumers, Small Business More Dollar Power," *Syracuse Herald Journal*, March 14, 1988, p. D 14.

third party to negotiate. Usually a membership fee or percent of savings supports the administrative costs.

Proponents say the grouping of several companies' buys allows suppliers to gain added sales volume allowing quality improvements. A study by the Center for Advanced Purchasing Studies reports savings in the range of 5% to 15%.³⁸ Consortiums that include many major U.S. companies exist for purchasing business travel. The participants pay a fee that supports the independent operation that in turn represents more than a billion dollars in air travel expenditures.

Questions about possible antitrust violations bother some people, as collusion among buyers as among suppliers that affects prices is illegal under the Robinson-Patman Act. In 1994, the Department of Justice and Federal Trade Commission set out a position about joint purchasing among health-care providers. It condemned price fixing, while supporting legitimate joint purchasing, saying, "An agreement among purchasers that simply fixes the price that each purchaser will pay or offer to pay for a product or service is not a legitimate joint purchasing arrangement and is a *per se* antitrust violation. Legitimate joint purchasing arrangements provide some integration of purchasing functions to achieve efficiencies."³⁹

The Antitrust Division of the U.S. Department of Justice has developed a standard known as the "35-20" rule. This means that if its purchases account for less than 35% of the total sales of the seller's product or service for that good or service, and the cost of individual goods is less than 20% of the user's final product price, there should be no concern regarding antitrust. When considering consortium buying, legal scrutiny of the specific arrangement being contemplated will be essential.

Other mitigating circumstances were if the buyers didn't get all of his purchases of any item from a particular supplier, or an independent agent negotiates for the users, and all communications are confidential. Again, the justice department is concerned with significant discounts and whether they're available to others.

Inherently, consortium buying requires team play to make decisions and concessions. The buyers naturally must have some commonality of what they buy, and a willingness to share the source selection decision with other buyers. This is often the largest hurdle to such efforts.

³⁸ *Purchasing Today*, May 1996, p. 34.

³⁹ "The Consortium: Basic Antitrust Principles," *Purchasing Today*, May 1996, p. 18.

3. BUYING FOR MAJOR PROJECTS

Major equipment purchases, as well as disposal of still useful equipment, are unique in several ways, and will usually be heavily influenced by the personnel in the using department.

Some of the special considerations of major equipment buying include:

- Product is expensive and has a life of several years (life-cycle cost is a major consideration)
- The purchase is usually capitalized (treated as a fixed asset, requiring depreciation over its useful life)
- May be very specialized, with a limited number of potential suppliers, often only one
- May require maintenance and parts support, after the purchase
- Equipment often must function in conjunction with other related equipment, meaning the brand selected for the initial purchase may dictate the same brand for future purchases.
- May be extremely complex technologically, with sophisticated electronic controls

Because of these realities, the purchasing department often finds it difficult to do more than submit the request for bids and participate in evaluating bids and negotiation sessions. The issues are the same as discussed earlier in managing the technical interface. Some astute buyers have demonstrated the ability to contribute more if involved earlier in the selection cycle, before the specifications have dramatically narrowed the supplier options. The buyers then are able to review the capital spending budgets and become involved before final specifications are written to help the using department to get the most cost-effective solution available in the marketplace.

In any case the buyer should not allow the unique nature of the purchase to detract from the fiduciary responsibility to finalize the pricing and delivery issues. Disposal of obsolete equipment is usually a consideration during purchase and can be very complex. The primary concern is how to recover maximum residual value after the original purpose has been fulfilled. Perhaps, a machine can be traded in for newer models. Or, can the machine be used by another plant location? The buyer can be of significant help to the using department in these matters, and needs to earn a place on the team.

3.1 Construction Contracting

When companies build new facilities and buildings, they often depend on specialists to lead in the coordination. When it comes to equipping and arranging the plant layouts many engineers are involved. Buyers with relevant experience and keen commercial skills are often placed in charge of the project from a source management aspect at least. A team consisting of several specialists will coordinate major projects and will follow it to completion. This area of specialization can be rewarding for the supply management professional interested in such a project management role.

3.2 Recycling and Trash Removal

These are some of the ancillary functions sometimes given to purchasing. Trash disposal today is a high-cost item. Recycling efforts, whether voluntary or mandated by regulations, make it quite demanding. For example, batteries and used motor oil can't simply be sent to a landfill. Asbestos and other hazardous materials must receive special handling, storage and disposal. Purchasing is usually responsible for assuring that suppliers provide material safety data sheets (MSDS) for all hazardous materials purchased.

3.3 Use of Bids

Bids imply that formal price quotes are to be solicited. This is a good tactic when there is a large project or contracting job to let. By getting bids, often more favorable pricing will be offered. Competitive bid solicitation is a formalized way buyers can decide from whom they will buy. The idea is to document what is wanted, so sellers can give buyers facts to analyze the proposal.

Should the buyer choose a formal or an informal type of bid? Use formal bids for projects, or work that is by specialized craftsmen and not easily cost targeted in advance. Formal bids are open to all, and the responses are in sealed written form only. When many of the suppliers are local and known to the buyer as reputable, more informal procedures, such as telephone bids may be sufficient.

Most formal bids are "closed," wherein the buyer has the option of reserving the opening and studying the bids in private, and deciding not to reveal competitive prices. "Open" means the suppliers are invited to share in the data—most commonly used when buying construction or other capital type projects.

The solicitation package must include as many of the terms and conditions as possible, and other requirements data that will be contained in the contract. Also the buyer should give an explanation to the prospective supplier about the information needed to allow evaluation of the bid or offer. Do you intend to negotiate with the suppliers, or will you take the best offer the first time with no second chances to bid again? Many buyers ask for the “best and final offer” from suppliers, sometimes in several bidding cycles. The suppliers will likely learn of this practice and ignore the appeal for the first few rounds. Say what you mean and mean what you say!

In case of contracts for construction, bid guarantees, performance, and payment bonds should be required. A bid guarantee provides the buyer the assurance that the bidder will not withdraw the bid, and will execute a written contract and furnish such bonds as required. A performance bond assures that the contract performance will be met, including all terms and conditions that are spelled out in the contract. A payment bond secures the payment to all persons supplying labor and material in the execution of the work provided in the contract.

If special items will be part of the bid, address these in the invitation to bid. Examples might be requiring a certificate of licensing from the state, amount of insurance covering the supplier’s liability, tooling, fixtures or dies, hourly rates charged, or any special arrangements needed.

4. SYSTEMS CONTRACTS FOR MRO SUPPLIES

Although most Maintenance, Repair and Operating, (MRO) items may be bought using the same processes as for other buys, there are some additional steps that can be taken to address the high administrative costs of these types of buys. In Chapter 4, the special nature of purchasing indirect supplies was discussed (see Figure 4-3 in particular). Supply management leaders have learned that these purchases are characterized by a large variety of items, a large number of transactions and items of relatively low value. As a consequence, the cost of executing the purchase may be of more concern than the cost of the goods being acquired. Methods of managing these expenditures focus on developing a good working relationship with suppliers capable of serving a broad range of needs and automating the fulfillment process.

“Systems contracting” can be used for repetitive, low-cost/high-variety maintenance, repair, and operating type buys. Under this scenario, requirements are negotiated based on a “catalogue” of items, and the catalogue is made a part of the contract. Administrative costs are greatly reduced. Under such an arrangement, using departments can release

requirement “calls” by telephone or short release form for whatever is needed. Most indirect purchasing e-procurement systems have simply taken this principle the next step and automated the cataloging, search and release processes to make them available at the users desktop terminal and the transaction is transmitted electronically over the Internet.

The consolidated invoice is mailed monthly to the buyer for review and approval. Simplified methods of releasing “calls” act to reduce the need for longer formal purchase orders. Using systems contracts, the buyer determines source and price, while the user releases only what is needed, and states when it is required.

The benefits of systems contracting (and e-procurement) can be summarized as follows:

- Designated users can deal directly with suppliers, while the buyer controls price and conditions of purchase.
- The supplier keeps records of usage, with invoices providing a check on this. In the case of e-commerce, transactions are logged electronically in both buyer and seller systems. Payment can be made without use of an invoice if the user has acknowledged receipt in the system.
- The supplier maintains inventory stock, thereby permitting 24-hour or less delivery requests supportive of Just-In-Time (JIT) needs.
- A significant additional benefit with e-commerce is the detailed purchase history records contained in the system. These allow the buyer to track changes in buying patterns in real time, and respond with contract adjustments as warranted.

Though the benefits are significant, a possible systems contracting pitfall is having a supplier who is “locked-in” as a single source of supply. There should be continuous tracking of supplier performance to ensure that delivery, quality and costs are meeting expectations. Also it will be extremely difficult to replace the supplier who currently holds such an arrangement. The buyer therefore should be sure the best supplier is selected initially and that the relationship is working for both parties. This is a good example of the shift in supply management responsibilities from short-term buying to long-term relationship and performance management.

5. INSTANT CASH AND THE PROCUREMENT CREDIT CARD

Some companies use a one-page simple purchase order form that has a blank check (with low dollar limit) attached to the bottom. Sometimes called

an “instant cash PO,” this procedure is used for routine, low-value repetitive purchases. No back orders are allowed, which is an incentive to the seller to complete your order first. The seller makes the shipment or delivers directly to the buyer and fills out and cashes the buyer’s check.

Buyers sometimes consider this a radical approach, but it can be a great help in simplifying buying of repetitive low cost items. As long as it is limited to very low value transactions with a stated maximum dollar value, such as \$25 or \$50, and periodically audited, it can be a tool for major process cost savings. There is no need for an invoice and the transaction cost is near zero.

Some finance people also object to this practice, yet it can be successfully implemented with known and trusted suppliers where there is a limit to the check’s value. Needless to say, any supplier abusing the system loses any future business. Still, the use of the procurement card appears to some a more readily acceptable way for acquisition of low-cost items.

5.1 The Procurement Card

This method of payment is familiar to most business people, as they use credit cards for their personal buys. When a company uses the procurement-card system, users are given their own cards. Sometimes referred to as p-cards, the cards can be branded with the company’s name prominently displayed. There is more discussion of this method in Chapter 4.

A benefit resulting from use of the card is that the card effectively “outsources” much of the clerical workload! Accounts payable is relieved of the need to make many separate, small value payments, while the buyer receives detailed activity reports to use in creating new contracts for repetitive items. Cards can also be used for more detailed departmental expense tracking.

Rather than simply using a local bankcard, selection of a procurement card should be carefully shopped, as there are significant differences among the alternatives. Some capture sales tax data, while others provide minority/1099 supplier tracking and reporting. Some cards give access to item detail such as description, quantity, unit size, and any discounts you have arranged with your suppliers, while others provide less detail.

When might use of the procurement-card be unwise? In practice, there have been some problems with the procedure—users report some managers get a card and allow others to sign for them, thereby creating a signature authorization control problem. Rules spell out limitations to each cardholder on the allowable dollar value, what can be acquired, and the suppliers that may be used. Other issues that complicate its use: (1) only authorized people are given the privilege of the card’s use, and (2) the card must be turned in if

the authorized employee changes assignments removing the need for the card, or the employee is terminated or resigns.

Use of the procurement card is a recent development in which little trouble or fraud has been experienced. Lost cards have been reported, but risk of loss is primarily the bank's responsibility. In the earlier discussion of indirect purchasing, it was pointed out that p-cards offer a good temporary solution to the low value, high transaction purchasing problem, until a comprehensive e-procurement system can be implemented to replace it. The essential elements of an effective p-card program are: (1) limiting its use to very low value items, (2) carefully constructed rules of use and (3) zero tolerance for any misuse.

5.2 "Smart Cards"

This type of card is used where cash purchases for low-value buys are possible. During 1996, VISA introduced "Visa Cash" at the Olympics in Atlanta. However, this type of card is already used by many college bookstores that allow plastic to replace coinage. The University of Michigan's Ann Arbor campus uses a MasterCard/First America smart card for its bookstore and restaurants as well as about 50 local retail outlets such as laundries, photocopiers, and so on. And, commercial companies such as Kinko's have their own cards that the customer pays to replenish as the funds are expended.

The "smart card" looks like other credit cards, but holds a miniature electronic memory chip that can store and retrieve a variety of data. The card's cash value is replenished by depositing funds that increase the card value accordingly. As the card is used for payments, the remaining balance is displayed. The smart card is like cash. Anyone having it can spend it, so care must be taken not to lose the card. Since many smaller suppliers may not be able to accept smart cards, they are not yet practical for widespread commercial use.

Purchasing of services and MRO supplies at first appears very different from purchasing for manufacturing operations, and it is. But the differences are in the nature of the value being acquired and the purpose for which it is intended. The skills required and the techniques used by procurement professionals in handling these purchases are more alike than they are different. The need for in-depth knowledge of the item being acquired can be even greater for services than for products and in both cases, the techniques and skills required have been elevated to a more strategic level.

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Chapter 17

TRANSPORTATION STRATEGIES TO REDUCE LOGISTICS COSTS

Transportation costs become a major factor as part of the complete supply chain management solution. Since deregulation of the transportation industry, shipping costs have had more impact on total purchase costs than in the past.

Today, JIT delivery requirements favor shipping more frequently and in smaller quantities in response to customer demand “pull” signals. This has to be balanced carefully with potential higher cost of acquisition, material purchase price, and transportation costs.

Because of the major impact of transportation on materials and components purchased, companies want alert, aggressive, and intelligent transportation personnel who understand and practice modern physical distribution. Traffic, in the past often perceived by its own management as more of a clerical function, has become recognized today as an important economic factor in the overall supply chain functions.

Transportation costs may approach 20% of the total purchase cost and are therefore much too important to ignore! Transportation costs are part of the buyer's overall purchase transaction. Yet, transportation knowledge is sometimes a weak area for purchasing personnel.

Buyers should learn of the many actions possible to get the best transportation service at the least expense. A buyer may be able to negotiate advantageous contract terms, especially when there is a steady or large volume to be transported. Transportation, like any other commodity purchased, is negotiable, and discounts are widely available in this competitive area.

Buyers have told how they've been annoyed when someone in the traffic operation tried to back charge for routings that were more expensive than the

“cheapest way.” Some buyers decry the few transportation specialists who are so wrapped up in the details of freight that they miss the big picture. Although there is perhaps some truth in that, it is also true that transportation costs are a significant cost item that must be managed carefully.

Whether buyers know it, or even admit it, they often need help. Buyers need to know delivery, documentation, and transportation cost, to compute total landed costs. In some cases, they don’t have this information, and perhaps they don’t know how to get it. But the specialist does, or can learn more quickly, because it’s their profession.

1. DEVELOPMENTS WITH A PROFOUND IMPACT ON TRANSPORT

A number of developments in recent years have had a profound impact on the transportation industry. These include:

- Information technology advances—which have dramatically increased the amount and timeliness of available information.
- Container revolution—Internationally, provides economic advantage and ease of handling and stack loading. Domestically, trailer, and container-on-flatcar moves, and the double stack are gaining favor.
- The process of deregulation leading to a free market—allowing for negotiated rates.
- Advanced warehousing and inventory handling processes.

A few years back, technical experts handled transportation in the back room. Today, however, based on the above major developments, the emergence of physical distribution has helped bring about an expanded outlook.

Surveys among purchasing managers indicate that about 75% of the information buyers obtain on new products comes directly from salesmen. Where do buyers get input on transportation? In most cases, today, the answer is an independent transportation or traffic representative. This may be a single individual or a department, depending on the size of the operation. The function may report to purchasing or it may be entirely independent in terms of reporting relationship. Regardless, purchasing and traffic must work closely together to optimize operation in this vital area.

Buyers should include traffic in their purchasing planning process to influence and control shipments better, as the transportation cost is usually a significant factor in determining the lowest total cost purchase. There are tradeoffs between the various modes of transportation available. Speed of delivery certainly relates to higher cost in most cases.

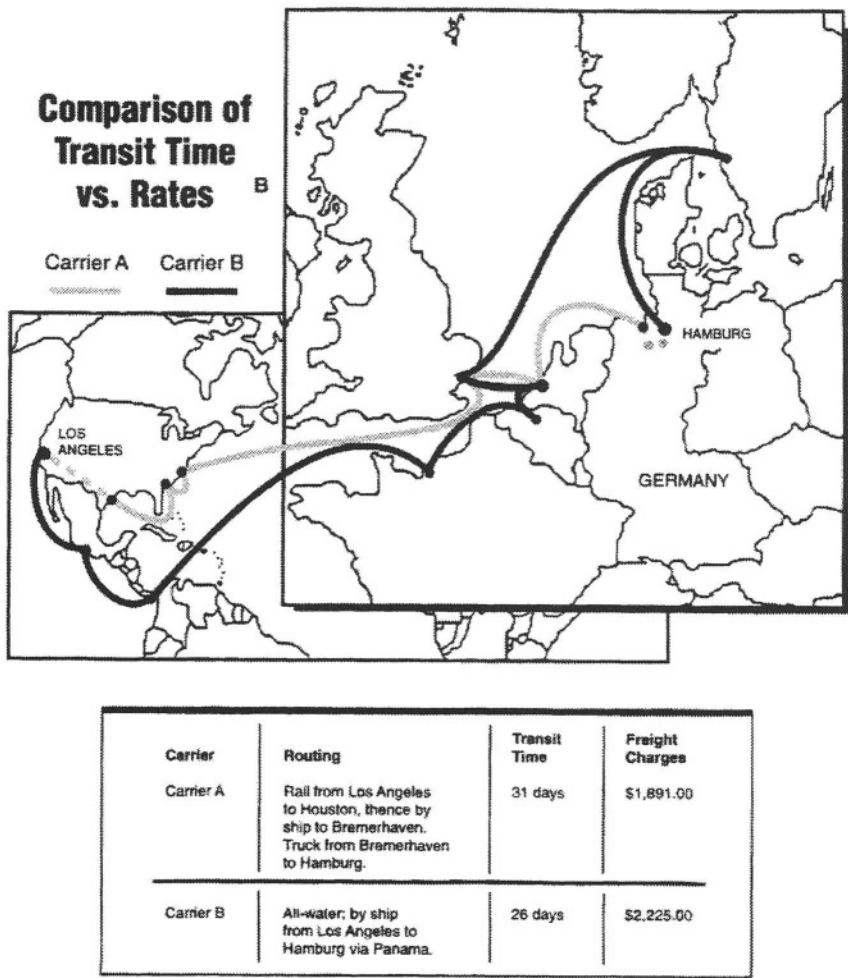


Figure 17-1 illustrates the trade-off of rates for transit time by comparing two carriers' actual sailing schedules and published tariff rates. The freight charges shown are for a hypothetical shipment of 1 x 40' container of food-processing machinery, measuring 20 cubic meters, from Los Angeles to Hamburg.

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Figure 17-1 Time Vs Cost for International Shipments

Figure 17-1 depicts how a transportation decision involves balancing speed of shipment versus cost for a multi-modal shipment. Other tradeoffs relate to the use of light packaging for lower cost versus the higher cost of heavier packaging and risk of damage.

During the 1970s, government regulation was seen as stifling efficiency but this is no longer true. In the early 1980s, the Interstate Commerce Commission's role of protecting carriers, ruling on tariff violations and other "economic abuses" was reduced. This freed carriers to compete in a more open market. Since 1978, many regulations have been relaxed or eliminated. The ICC has the responsibility to regulate interstate commerce carriage contracts.

Laws, rules, and regulations about contract carriage are in the ICC regulations within Title 49, Code of Federal Regulations (Parts 1000 to end). These regulations specify obligations of the carrier, shipper, and receiver. They cover routing permits, contract filing, and other services.

Many shipments are interstate or intrastate movements in nature. State economic regulators vary from those with none (such as Florida and New Jersey) to those considered tighter than the ICC before 1980 (for example, Ohio and Georgia).

2. SIGNIFICANT BUYING ISSUES

A strong program of transportation/traffic management complements the overall purchasing strategy, and addresses general purchasing concerns relating to cost, quality, and schedule performance.

As such, some of the objectives of a good transportation/traffic program will include the following measures or activities:

- Secure cost/benefits of consolidating inbound shipments from a number of suppliers in certain locations.
- Analyze cost versus benefits of scheduling inbound shipments to match production schedule sequence, eliminating storage and handling cost and risk of loss.
- Eliminate cost of transportation errors, such as freight miscalculations or simple overcharging.
- Reduce costs of customer dissatisfaction resulting from slow or late deliveries.
- Evaluate costs versus benefits of changing product packaging or shipment unitization procedures.
- Reduce the total landed costs in buying materials and components.

Carrier financial instability is always of concern. Are their finances—that is, debt, cash flow, and capital—strong enough to ensure long term survival? The same financial ratios as those covered in Chapter 5, Section 5.3, such as

return on investment, profit ratio and debt-to-equity ratio can be applied to motor carriers, serving as one measure of financial health.

Motor carriage is the most popular mode for domestic transport. In choosing a trucking company, consider how many break-bulk (sorting) terminals your shipment will pass through. Availability of a shipper's terminals to sort and consolidate is a major consideration. At break-bulk terminals, shipments are sorted and grouped according to ultimate destination. Usually located in strategic hub cities, shippers can tie in with other connecting carriers. Fewer "breaks" means faster transit and less damage.

General freight carriers haul a variety of commodities differing in size, weight and bulk. They combine different classifications of freight into truckloads, to reduce line haul costs. Motor carriers provide a wide variety of services. Specialized freight carriers usually carry only one, or perhaps two, types of commodities. For example, a tank truck can normally not carry both food and nonfood cargoes.

When buying transportation services, these are major issues of concern to the buyer:

- Equipment availability and suitability—Does the carrier have enough of the right equipment to do your job? Is it in good repair?
- Time in transit
- Control of shipment—Does the carrier know where your shipment is, so they can track and advise you of progress? Modern wireless digital tools and satellite-based global positioning systems (GPS) have revolutionized the tracking of shipments.
- Prompt and accurate proof-of-delivery
- Inconsistent services, such as poor handling practices—Can you get reports on damage? What damage ratios does the carrier have? Are they computerized?
- Timely settlement process for loss damage claims
- Clear rates and charges, and minimal instances of overcharges
- Adequate packaging—The buyer should specify how goods are to be packed and marked for shipment.
- Cautionary labeling—Hazardous materials require the use of universal standardized symbols depending upon the item.

Packaging is extremely important as dented, marred, or rusty products can hurt visual appearance, influence sales, and lead to customer rejection. Airtight packaging can be used with moisture-absorbent silica gel to absorb small amounts of moisture that could otherwise damage items such as

motors and machinery. “See through” shrink-wrap is an excellent way to prevent load shifting, and also makes it easier to view damage and makes theft more difficult to conceal. Crates and skids allow forklifts to move heavy packages easily. They also keep the cargo off the floor, above small puddles. Unitizing the pallet load by strapping or banding keeps it compact and tight.

Carriers can track the location of shipments quite readily when computers are used to expedite freight handling, through satellite tracking and electronic communication with individual units. You can take advantage of the transportation industries’ free floppy disks for service, rate, and other information. Software for tracking and reporting is available upon request from many truckers. Carriers’ EDI and e-commerce systems can provide rates, manifests, rated shipping orders, shipment location, and detailed shipping reports.

2.1 Freight Consolidation

Smaller volume users may have trouble getting a less-than-truckload (LTL) shipment moved promptly. LTL rates are normally higher per one hundred pounds (hundred-weight [cwt]) than full truckload (TL) or bulk rates. You can make your shipment more attractive, however, by consolidating shipments of a variety of items into a single LTL shipment, and pay a lower price per cwt. However, packing is simpler when shipments contain only one kind of package. Another idea is to arrange for suppliers to ship only on a certain day, for example Friday. So, creating a full load gains a favored transport rate.

Through a freight forwarder or consolidator, your shipment might be combined with those of other firms to get lower rates. For new importers, there is a tendency to rely on the foreign manufacturer or his foreign freight forwarder to get the product out of the foreign country. By training and experience, buyers know that in the U.S. manufacturers typically handle all aspects of the transportation task, so why not the same when we source offshore? Often the buyer is dealing with a new foreign exporting company. Neither may have the experience to make transportation work smoothly. In such a case, it can be dangerous to allow a little known seller to handle shipping arrangements. The offshore supplier may use a “buddy” who charges excessively. Reportedly, some foreigners with a cozy relationship can rebate part of their charge to those who hire them. Customs vary among different regions of the world and further, among individuals, so relying on the foreign supplier to monitor your costs and interests could be a costly bad judgment call.

3. MODES OF TRANSPORT

Transportation may be by land, air, and sea, and sometimes is a multi-modal combination of these. For small packages, United Parcel Service (UPS) [www.ups.com] and Federal Express (FedEx) [www.fedex.com] give fast dependable service. They have specific size and weight limitations per carton. Consult these shippers for current guidelines.

When maximum speed is needed, have the item shipped by Air. Some of the advantages are:

- This mode is much faster than by land.
- Insurance is often less expensive.
- Cost of warehousing is generally lower.
- Packing needs are often less.
- Risk of damage is minimized.
- Potential for theft losses is reduced. (However, major thefts have occurred at airports in specific cases where freight has not been moved promptly.)
- Transfer to truck is easily accomplished.
- Purchase leadtime is reduced.
- Small-item inventory costs are reduced, as less leadtime is needed to acquire the item.

While passenger airlines, cargo plane operators, and air freight forwarders publish rates, remember that most volume shipment rates may still be negotiable. Airfreight service is routinely provided by carriers who handle up to 50, 70, or 150 pound maximum weight packages. Shipments under 1,500 pounds now can move economically by air, while heavier shipments of 2,000 pounds or more usually require special arrangements.

In selecting an airfreight forwarder, the buyer has a number of choices available, including:

- Air Parcel Post (Express mail for 2 lb envelopes for next day delivery)
- Direct commercial airline
- Door-to-door by such carriers as American Airlines, US Air, United and others
- Counter-to-counter, again by such carriers as those noted just above
- Overnight express (Federal Express, UPS, Burlington Air Express, and Airborne Express) that offer:
 - a) Overnight freight service with a 100 to 150 lb per carton limit
 - b) Overnight Envelope Service—generally up to 2 lbs

- c) Air service for second business day delivery, with possible next morning delivery in major markets (with some weight restrictions)
- Airfreight forwarders and others that use the lift of scheduled passenger carriers. They often provide lower cost “time definite” delivery for 2-day to 5-day transit, to support just-in-time needs.
- Charter airlines

When shipping by air, breaking the shipment down into smaller (50 lb) cartons sometimes allows speedier handling. However, some carriers charge more for multiple piece shipments. Packages weighing 100 lbs have lower rates than those weighing 250 lbs, which are more difficult to handle. Also, some carriers have different “cube” rules. For example, “166 cubic inches are equal to a pound of chargeable weight.” Some aircraft operators will waive these cube rules, so you should check the specific services and rates available before specifying packaging.

In addition to air, there are also the other available modes on land and sea. With respect to the former, the Motor Carrier Act of 1980 brought about a high degree of deregulation to truckers. Also, the 1980 Staggers Rail Act is credited with creating more competition by reviving the railroad system. These deregulatory acts gave shippers and carriers freedom to negotiate contracts without heavy-handed government interference. So, as noted earlier and as with any other commodity, *transportation can be negotiated!* Whether air, land, or sea is selected for a given shipment will depend on a variety of factors to be considered by the buyer. These factors pertain not only to the item being shipped, but also to the attributes relevant to the available modes of shipment.

Factors to be considered by the buyer will include:

- Date needed
- Rates, cost of shipping
- Cost of insurance
- Cubic size and weight of shipment
- Value of products
- Discharge and destination point
- Possibility of deterioration in transit
- Susceptibility to shipping damage
- Handling requirements during shipment
- Possibilities of theft
- Use of containers, type: 20,40, or 45 ft, standard or high cube, insulated, refrigerated, controlled atmosphere, etc.
- Paperwork required

How many of the above *can* buyers influence? How many *do* they influence?

4. TRANSPORTATION CONTRACT CONTENTS

The Interstate Commerce Commission (ICC) regulates interstate motor carrier contracts. While contracts are no longer filed with the ICC, they must be in writing, and conform to rules governing contracts. If not, the contract can be declared invalid, and higher price class rates apply (even retroactively).

The ICC's role of protecting carriers and ruling on tariff proposals has been reduced drastically. With deregulation, more general contracts can now be established. Instead of one specific haul agreement, a contract can call for various items to be hauled within the United States, at an agreed rate. As each shipment is ready, the shipper is advised to make a pick-up.

There are now four key freight characteristics used to set classification (reduced from 15 before deregulation). They are:

1. Density (weight per cubic volume)
2. Storability
3. Ease or difficulty of handling
4. Liability (including value per pound, susceptibility to theft, damage, perishability, propensity to damage other commodities with which it is transported, and propensity for spontaneous combustion or explosion)⁴⁰

The first item above, density, has been evolving as the major characteristic in classifications.

Common carriers are plentiful and readily available. They may operate over regular or customized routes. Most less-than-truckload carriers operate regular schedules, while truckload carriers schedule to meet the shipper's specific needs. They consolidate and distribute shipments at terminals within their system.

Negotiation of point-to-point LTL rates, along with discounts ranging from 20% to 50%, is possible.⁴¹ These early successes were confirmed by a trucking survey that indicated, "three out of four discounts gotten by buyers are in the 30 to 50 percent range." Most discounts for domestic carriers were

⁴⁰ R. Bohman, "Characteristics that Determine Freight Classification Ratings," *Traffic Management*, May 1989, p. 25.

⁴¹ *Purchasing*, April 23, 1987, p. 56.

in the 10% to 50% range, and 10% of the discounts were more than 50%. Without doubt, if a current survey were conducted these discounts would be even greater now!

From a transportation buyer's perspective, the following actions should be taken when drafting a transportation agreement:

- Determine your company's risk exposure.
- Determine carrier's liability (common, \$/pound, or other).
- Consider escape clauses with minimum notice times.
- Are the provisions (such as "most favored rates") enforceable?
- Choose proper insurance coverage (after analysis of premium and loss statistics).
- Choose a venue to settle disputes.
- Become aware of available carrier resources.

The contract for transportation is similar in structure to other buying agreements. Here are some key clauses to use:

- Statement of Work (SOW) clause
- Dispute clause
- Replacement of Prior Agreements clause
- Most Favored Shipper clause
- Force Majeure clause

The *Statement of Work* clause is an exacting section that must explicitly specify the work required and by whom. Spell out any special handling instructions or expected perils.

The *Dispute* clause is similar to the arbitration clause reviewed in Chapter 15. *Replacement of Prior Agreements* clause means that this new contract replaces any older or prior agreement.

The *Most Favored Shipper* clause is similar to *Most Favored Buyer* clauses inserted in purchase orders by buyers. The essence is that the shipper agrees to extend any lower rate given anyone else for comparable volume and commodity. Lower rates extended to one shipper must be given to another with similar volume to eliminate shipper discrimination. Also, providing equipment or free loading or unloading to another shipper means these concessions must be given to the most favored shipper as well.

The *Force Majeure* clause is well known to buyers as the "Act of God" clause. It provides for temporary relief from contractual terms should events occur beyond the control of the parties—such as a work stoppage, highway accident, or storm damage to goods in transit.

4.1 Ocean Carriage Contracts

The Shipping Act of 1916 set conference regulations enforced by the Federal Maritime Commission (FMC). With passage of the Shipping Act of 1984, a U.S. shipper can now enter into long-term contracts with ocean carriers. The shipper has an option to move cargo under the regular liner rates or negotiate service contracts.

The Ocean Bill of Lading formerly covered each shipment as a single-haul agreement. Buyers can now commit their total volume, and negotiate lower fixed rates in broader ocean carrier contracts (in exchange for “take or pay” provisions). Today, more contracts are signed through negotiation of rates with ocean carriers than by acceptance of published rates.

Service contracts require that the shipper commit to provide a minimum quantity of cargo over a fixed time period. The carrier commits to a certain rate schedule, and defines the assured space, time in transit, port rotation, or similar service features.

Deregulation has forced carriers to be more attuned to customers’ needs. While deregulation made special agreements possible, they still must be filed with the Federal Maritime Commission. Because a contract filed with the commission cannot be amended, you must use specific terms that are well thought through, covering such issues as length of agreement, the exact transport work to be performed, the amount and terms of payment, and performance shortfall penalties.

There are three types of ocean carrier: (1) conference carrier, (2) independent steamship line, and (3) “tramp,” or special charter service.

An ocean conference carrier is a member of a legal association of carriers joined to set common freight rates and shipping schedules. By signing a contract with the conference, lower rates are available. Rates are equal on all vessels in the conference. Buyers regularly contracting get good service. The conference operates on a nonprofit basis for the benefit of its carrier members.

Independent steamship lines quote rates individually and may be lower by as much as 10%, but it’s necessary to take into account:

- Space is allocated based on availability.
- All ports may not be covered.
- Changes in destination may occur.
- Tramp vessels usually carry only bulk cargo and have irregular sailing schedules. Charter rates vary widely.
- A conference carrier must stop at each scheduled port. Most regular trade lanes (U.S.–Japan, U.S.–Australia, U.S.–Hong Kong, U.S.–Northern

Europe) have regular conference schedules. A non-conference carrier may skip and land at an alternative port, depending on the volume of business and trade available.

- Shipping by ocean carriage enjoys the advantage of being the most economical method of transportation, especially for bulky products. To select a carrier, you can look in the daily “shipcards” section of the *Journal of Commerce Shipper’s Digest*. Find ship schedules of types of carriers going to your destination port for the month of your shipment.

Although ocean carriage is usually the lowest cost option for large products, there are some disadvantages that need to be recognized. These include:

- Length of transport time
- Goods are more susceptible to deterioration because of long transit time and exposure to salt air and water, as well as ship motions
- Exposure to theft in dock areas
- Occasional longshoremen strikes can tie up goods. Sometimes several U.S. ports will be struck simultaneously in a labor dispute. Usually foreign ports are struck singly, and alternates can be used
- Congested ports (including airports) often cause slow unloading
- Handling at ports can produce damages

4.2 Containers

Ocean shipments often use containers that are packed at the factory, and sealed to prevent pilferage and contamination. Within the last 20 years, use of containers has become the prime method for ocean and air shipments internationally. Containerization on water allows the use of fast modern container ships that use deck-stack loading. Containers come in various sizes, materials, and construction. The FEU (*Forty-foot Equivalent Unit*) is the most common size in use. It is equal to 2 TEUs (*Twenty-foot Equivalent Units*), the original standard.

Containers are often truck bodies, lifted off their over-the-road chassis and placed on the vessel. Getting a new chassis at the import terminal eases inland shipment. For rail shipment, this is known as a container-on-flat-car (COFC) shipment. The term “fishyback” has sometimes been used to describe this type of ocean shipment.

“House-to-house container” means the goods are placed in the container at the factory before going out for shipment, and the goods are delivered in the receiving country at the consignee’s door. The steamship company owns most containers and rental fees are not charged. If a rental is used, and the container is unused on its return trip, then the container rental company

increases their container use fee. Containers for rent can be found in the telephone Yellow Pages.

Special containers may have air conditioning equipment when the shipment warrants its use. They reduce product damage due to excessive moisture. If the product can shift inside, the container should be internally braced.

Trailer-on-flat-car (TOFC), formerly called “*piggy-back*”, shipments occur when a truck draws an already loaded truck body to the rail terminal where it is loaded directly onto a flat rail car and the goods transported by rail. At the terminus rail yard, the still loaded truck body is then hauled from the rail terminal to its final destination over the road. This provides the combined advantages of local pick-up and delivery by truck, and more efficient long-haul carriage by rail. The cargo itself requires no additional handling from the time it is loaded on the truck until it arrives at the final destination, using the same truck body.

4.3 Insurance

Insurance is sometimes difficult to buy at any price. Because the rates have escalated, some truckers have failed to maintain adequate insurance. So, the buyer has to be on guard and *be certain that sufficient insurance is in place*.

Insurance rates depend on many factors. Value of cargo is generally computed by its cost plus 10% for contingencies. Rates vary according to product, destination, shipping method, volume, and contractual relationships. If you have a large volume of goods, it may make sense to buy your own insurance. Only the end-user or buyer knows exactly what's best required.

Global buyers should put into their purchase order (and Letter of Credit) that *either a copy of the insurance policy or a Certificate of Insurance* is required as part of the documentation. This ensures insurance is in force, or relieves the buyer of responsibility to pay.

Of paramount concern are exclusion clauses defining limitations of coverage for items such as: nuclear, war (requires special policy), explosion, strikes, riot and civil commotions, delay, nationalized insurance restrictions, and definition of risk or “all-risk” coverage. Transportation insurance is a complex area; buyers should seek help from insurance experts when it's necessary to include such protection.

Proper planning for loss prevention is the best insurance! Are special risks covered where required? Is insurance coverage in effect throughout the journey? Make sure you have enough to cover any risk for which you are not prepared to self-insure!

4.4 Cost Analysis of Motor Carriage Transportation

Costs relating to transportation services can be broken down into four general groupings:

Cost/mile of moving materials or goods—Usually this is the hourly cost of vehicle operation divided by the number of miles traveled in one hour. Costs include labor, tolls, vehicle depreciation, and fuel consumed. Also included are costs related to maintenance, wear on tires, and taxes. The total cost is usually standardized for terminal-to-terminal travel.

Costs of billing—These are the costs to set charges, correctly rate and bill, and collect undercharges.

Terminal costs—These are costs that result from picking up goods from various customers, and moving for consolidation, etc. Upon delivering, there is a reverse cycle of distributing. Such costs include forklift handling, etc., and is heavily labor intensive.

Carrier Overhead Costs—As with any business, this item includes cost of management, overhead, and those costs not directly connected to individual shipments. Included are costs for vehicle registration fees, insurance, and depreciation of the buildings.

As in any buy, the detailed information known by the buyer is invaluable in seeking better carrier rates. The carrier overhead cost is an area that many truckers will remove rather than lose the business. So, this is the first area to negotiate!

Knowledgeable buyers select preferred routings that are often a compromise between speed and expense. Backhauls are often the secret to a carrier's profits, so if a buyer can help secure a full round trip, this is an excellent method to achieve cost reductions.

4.5 Negotiating Rates with Deregulated Carriers

To reduce shipping costs, it's important to first understand how the shipment rate classification will be determined. The analysis is similar to that done in classifying items in inventory, that is, into A, B, and C groupings. "A" would be the high-cost items, while medium and low-cost items would be designated as "B" and "C" items, respectively. Many companies will take deliveries of low-value "C" items in quantities sufficient to limit shipments to only three or four times per year, while "A" items will be shipped at the precise time and in the quantities actually needed. It is the "B" items that will require a more thorough analysis.

The next step is to negotiate for a better deal based upon the frequency of shipment. This negotiation is basically no different from buying goods or services, but, before doing so, determine the proper shipper classification

and terminology. The standards are described in the National Motor Freight Classification (NMFC) and New England's Coordinated Freight Classification (CFC).

The NMFC and the CFC contain descriptions for all commodities that are moved by motor carrier. The description of the item shipped can affect the rate, depending on the type of material the product is made of, such as aluminum, plastic, or sheet steel, and also whether it is assembled or knocked down, folded as nested, packaged in crates, in packages or on skids.

The following items can also affect costs:

- The density (weight/cubic foot), or length of the item
- Whether it's new, used, reconditioned, or scrap
- A liquid or solid
- Finished or rough form
- Hazardous, dangerous, or "reportable" as such

The proper description for your item will determine a specific NMFC number assigned to it, and a "class" that correlates to the economic value. For example, umbrellas (folded) in boxes are NMFC #188000, sub 1, and are rated class 100. Umbrellas (other than folded) are NMFC #18800, sub 2, and are assigned class 400. These designations indicate that open umbrellas will cost about four times more than folded ones to transport by truck.

There is no substitute for studying these classifications carefully. An occasional review by experts to determine the best classification for your items could pay off. Remember, the objective is to achieve the lowest total cost without sacrificing service.

5. COMMERCIAL TERMS OF SALE

Commercial Terms have been developed from years of business practice and usage. They are used in U.S. domestic trade under the Uniform Commercial Code, Article 2. For example, when a shipment term such as Cost, Insurance, and Freight (CIF) is included in the purchase order, it spells out the division of responsibilities for transportation and passage of title. Lacking mention to the contrary, a purchase order is treated as a shipping point contract, with risk passing to the buyer when the seller has delivered the goods to the carrier.

A distinction is made between who has possession and is controlling the shipment and who bears the risk and responsibility to settle problems occurring during shipment. The buyer has to be wary, as under some terms,

this risk has already passed to you though the seller has paid for and is controlling the shipment.

The goods are deemed to be delivered by seller to buyer at a point spelled out in the specific term. Based on identifying the transfer point for possession of goods, the term determines who will pay the costs and who assumes the risks. It spells out “What the buyer must do” and “What the seller must do.”

The options for choosing the best commercial term follow. The first four of these eight possession terms, listed below, are “shipping point” terms:

1. *Ex-Works* means possession changes along with title at the seller’s shipping dock, ready to ship but not yet loaded. The buyer may be responsible for loading, and is always responsible for transportation and insurance (plus duty and customs clearance if an import). This is a contract with minimal risk to the seller. Only those buyers who have strong transportation specialist support, and have a reason to control the entire shipment should use this term. Otherwise, it should be avoided.
2. *FOR/FOT (Free on Rail or Truck)* refers to a railway wagon, and is intended solely for goods transported by rail. Title passes to the buyer when the goods have been delivered to the rail carrier.
3. *FAS (Free Alongside Ship) to Named Port of Shipment*. Under this scenario, the seller provides transportation for the goods to the point of departure alongside the ship. The buyer has the responsibility to get ocean freight space, and marine and war risk insurance rests with the buyer.
4. *FOB (Free on Board) to Named Point of Shipment*. In this case, the price quoted applies only to an inland shipping point. The seller arranges for loading of goods on, or in, railway cars, trucks, barges, or aircraft, etc. The buyer will pay for all transportation costs, and assumes responsibility to make any claim. This is the most commonly used term.

The following four are the “destination point” terms:

5. *C&F (Cost & Freight) to Named Port of Destination*. This is a shipping point contract though the seller pays the charges. Title and risk of loss passes to the buyer when goods are delivered to the carrier.
6. *CIF (Cost, Insurance, and Freight) to Named Port of Destination*. This is the same as C&F above, but the seller also arranges and pays for insurance.
7. *Ex-Ship to Named Port of Destination*. This is an arrival contract, wherein title to the goods changes when they pass over the ship’s rails at the U.S. port of entry.

8. *Ex-Quay to Named Port of Import*. As with the item above, this is an arrival contract. The seller's price normally includes costs for the goods plus all other costs to place the goods on the quay (or dock), at the port of destination.

Seldom will buyers choose maximum responsibility using Ex Works. Firms using this term, such as banana plantations, have strong skills, and want to control everything. Most buys will gravitate toward the middle, C&F, CIF, or Ex Ship.

The above eight, the most common terms in use domestically today, were adopted in 1953. The following two terms were added in 1967 as goods moved increasingly across national borders:

1. *DAF (Delivered at Frontier) to Named Place of Entry at Frontier* implies delivery to the border of the destination country of import, by either rail or truck. For the U.S. buyer, this applies only for shipments from Canada or Mexico.
2. *DDP (Delivered Duty Paid) to Named Place of Destination in the Country of Importation*. This includes any mode of transport. The seller pays total landed costs to the buyer's destination, including duty.

With increased use of air transport, the following term was added in 1976.

1. *DAP (FOB Delivery at Airport) from Named Airport of Departure*. The buyer uses this term solely for air shipments. In this case, the seller pays all costs to the departure airport, and the buyer assumes possession at the import airport.

Figure 17-2 summarizes responsibilities for the 8 domestic terms based on identifying the transfer point for possession of goods. The "Commercial Term" determines who will pay the costs, and who assumes the risks.

Figure 17-2. Commercial Terms Define Buyer and Seller Responsibilities

BUYER & SELLER RESPONSIBILITIES		LOADS INLAND VEHICLE	SHIPPING DOCUMENTS SELECT & LOAD SHIP	PAYS FREIGHT	OBTAINS INSURANCE	ASSUMES RISK DURING TRANSIT	PAYS DUTY
B = BUYER RESPONSIBILITY S = SELLER RESPONSIBILITY	COMMERCIAL TERMS	BASIC RESPONSIBILITIES					
MAXIMUM BUYER ↑ RESPONSIBILITY ↓ MAXIMUM SELLER	EX WORKS	ORIGIN SPECIFIED AS TO PLANT SHIPPING DOCK.					
	FOR/FOT	SELLER ARRANGES RAIL CARRIER. OBTAINS BILL OF LADING.					
	FAS VESSEL FOREIGN PORT	SAME AS FOB EXCEPT BUYER PAYS FOR LIFTING.					
	FOB VESSEL	SELLER ARRANGES INLAND SHIPPING TO SHIP DOCK.					
	C & F	SELLER'S PRICE INCLUDES TRANSPORTATION.					
	C I F	SAME AS C & F AND ALSO INCLUDES INSURANCE.					
	EX SHIP	SELLER TO IMPORT SHIP LOADING.					
	EX QUAY (DOCK)	SELLER PAYS TO IMPORT CUSTOMS.					
	FOB DELIVERED	SELLER PAYS ALL COST.					

POOLER & ASSOCIATES



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As Customs adopts its new computerized systems, still being installed, three more systems have been added that are expected to gradually replace C&F and CIF since they will get higher priority:

1. *FRC (Free Carrier From Named Point)* of a cargo terminal located at a seaport or inland.
2. *DCP (Destination Carriage Paid)*. This is for land transport, but does include inland waterways. Seller pays freight to destination, but risks of loss are the buyer's.
3. *CIP (Carriage and Insurance Paid)* to named port of destination. Same as above DCP, but also includes insurance. It is similar to CIF.

Stick with the proper terminology on the purchase order. Spell out easily misunderstood terms. These commercial terms are preventive aids for buyers should disputes arise.

The International Chamber of Commerce (ICC)—not to be confused with the Interstate Commerce Commission, also ICC—has taken the lead encouraging trading nations to standardize and modernize International Commercial Terms that are known as INCOTERMS. They include the domestic terms mentioned, and other terms adapted to, and better suited to modern global transportation needs. Confusion concerning their use and meaning can be avoided by issuing purchase orders that contain a clause such as the following:

“This contract will be governed by the provisions of INCOTERMS 2000. In case of dispute, the published reference by the ICC, specifying ‘what the buyer and seller are responsible for’ will apply.”

Many U.S. buyers are not familiar with INCOTERMS. They consist of 13 terms that are divided into classification groups based on their first letter as shown in Table 17-1 below.

Table 17-1. INCOTERMS Groups

Group E	Group C	Group F	Group D
EXW	CFR	FAS	DAF
	CIF	FCA	DES
	CPT	FOB	DEQ
	CIP		DDU
			DDP

More complete updated information is not published here because of an ICC copyright of the current information. It appears that the former ICC policy of publicizing the terms openly has changed to one of requiring users to pay for maintaining the data. Nevertheless, the use of INCOTERMS offers a means to clarify responsibilities in international sales contracts and

should reduce the risk of misunderstandings. To obtain current information, check [www.incoterms.org/].

6. CLAIM SETTLEMENTS AND ADJUSTMENTS

Claims are usually controversial and may take much time and expense to settle. The first step is to find out who should file the claim. That is when you fall back on the commercial terms, or FOB point, in the contract. The shipping point used settles many a controversy about shipments as explained in Chapter 15. While it may appear easier to make it the shipper's problem, often the buyer will need to replace the goods, and must act at once. Take an example where a shipment is four cases short. You must reorder, and pay for the goods again. Meantime a claim is placed on the carrier.

Claims fall into categories known as (1) known loss, (2) concealed loss, (3) known damage, (4) concealed damage, and (5) loss or damage due to delay.

"Known loss" refers to damage that renders the goods worthless. It is the simplest claim to settle. Known damage is noticed and acknowledged by the carrier when delivered. Such information should be noted on the receipt for goods before signing for receipt. The receiver must legally receive the goods, but this does not prevent a legitimate claim against the carrier for restitution.

A "concealed loss" means one not apparent when delivered, but discovered later. The item appears to be in good order and is accepted upon receipt. Perhaps the material doesn't agree with the quantity, implying an error in loading, or someone has stolen part of the contents. Because the carrier did not have the opportunity to inspect and acknowledge, this is a more difficult claim to clear.

The *Bill-of-Lading (B/L)* is the legal contract between shipper and carrier, serving as a receipt for goods, evidence of title to goods, and sometimes is used as a packing list. On it are stated the description of items shipped, routing, and rates that are applicable. This document is used to determine the freight charges. When signed upon receipt, it's an important document in settling loss and damage claims.

A "clean" B/L, when signed by the carrier, acknowledges possession of goods in good condition. An "unclean" or "foul" bill means that the goods are damaged, or packaging is broken. Any defect is noted by inserted writing by the carrier, such as "damaged boxes." Carriers may reject shipments that do not meet packaging requirements.

A straight bill provides for delivery only to the named party. A "To Order" bill does not name the receiver specifically at the time it's issued. It

is a negotiable instrument that is delivered to anyone endorsed on the bill. The bill protects the shipper for the shipment's value by declaring exact payment charges. When signed upon receipt, the B/L is important for supporting loss and damage claims. Exceptions noted on the delivery receipt make claims easier to pursue.

Losses or damage due to delay in-transit are determined by comparing the actual time versus normal length of time in transit. The carrier has to deliver within a "reasonable time." If the carrier can be shown to be negligent, a claim can be made. However, unless a statement is made on the B/L about the urgency of delivery, such a claim is almost impossible to collect.

Many carriers for rail and motor carriage state that any claims must be filed within 15 days of delivery. This is not legally so, since the 9-month rule applies. All claims must be filed in writing within the proper time limit that is within 9 months from date of delivery, or, in case of loss, after reasonable time for delivery has elapsed. Standard legal forms are available for claims submission.

Set a minimum claim to file, such as \$100, as the claim cost may exceed the value recovered for lesser amounts. Claims can be taken to the Transportation Arbitration Board, made up of shippers, carriers, and attorneys. Any final recourse against a carrier for not settling a claim can be taken only by court action.

7. AUDITS OF FREIGHT BILLS

Those who audit paid freight bills know that savings almost always can be achieved. Often human error will cause overcharges. Five types of clerical errors can cause an over-or-under charge claim. These errors are found in (1) rate, (2) weight, (3) commodity description, (4) tariff interpretation, and (5) company identified as payer of freight charges.

Audits verify the rate classification used, weights billed, and extensions of total dollars. The freight auditors file overcharge claims, and settle all claims for losses and damage occurring during transit. By law, buyers have three years to audit the freight bills.

Although purchasing or traffic management can perform this audit, it may be preferable to employ outside specialists who perform such audits on a contingency fee basis. Since their fees are typically based on a portion of the savings they find, this approach is a good one—as you pay only when overcharges are found, so there is a built-in budget to do the audit!

8. THIRD PARTY LOGISTICS

Many buyers have found the complexities of managing inbound freight overwhelming in light of the many considerations above. Unless there is an in-house freight management capability that is well refined and that is constantly tracking developments in this field, this becomes a strong candidate for outsourcing.

A contract with a *third party logistics provider (3PL)* will usually include the following:

- Statement of Work (SOW) for transportation, warehousing and other services to be included
- Rate structure for various shipping methods and for warehousing, if that is included
- Provision for client tracking of shipments
- Insurance provisions for buyer's goods in shipment
- Risk-sharing formula, for goods in transit
- Description of any ancillary services included, such as intermediate handling, subassembly, inventory replenishment and delivery in production sequence
- Performance measurement parameters such as on-time delivery and total cost reduction
- Mutual objectives for managing performance, such as timeliness, costs and damage rates

A personal experience serves as an example of how 3PL arrangements work. The consumer purchases custom kitchen cabinets from a home improvement retailer. After the contract is recorded (overnight), the consumer receives a telephone call from the 3PL, who identifies the 3PL to the customer, asking for the desired delivery date. While there is some room for negotiation, it is expected that the delivery will fall within a few days of the leadtime quoted by the retailer. When the specific delivery date is agreed upon, the representative of the logistics provider informs the consumer they will receive a call two or three days prior to the agreed date to determine the precise day and time of delivery. The 3PL then schedules production of the cabinets with the cabinet manufacturer (actually the 4th party to this transaction).

A few days before the agreed delivery date, the consumer is notified that the cabinets are in transit, and a more precise day and time are agreed upon for delivery. On the day of delivery, within one hour of actual delivery, the customer receives a last contact to verify they will be present to accept delivery. When the truck arrives, it has the markings of the cabinet

manufacturer, but the driver and delivery people are employed by the 3PL. The delivery personnel note any handling damage, and provide the customer with contact information for the cabinet manufacturer, in the event of errors or hidden damage found after opening the containers.

In the above scenario consider the implications of the three-way division of responsibilities in providing customer satisfaction:

- Retailer sells cabinets directly to customer, and is ultimately responsible for customer satisfaction.
- 3PL deals directly with customer with regard to delivery, also responsible for customer satisfaction.
- Cabinet manufacturer allows 3PL to direct the production schedule to meet customer needs, and is responsible to customer for correct goods and manufacturing quality.
- Cabinet manufacturer is responsible to retailer to protect the retailer's reputation for quality and delivery.
- 3PL is responsible to both retailer and manufacturer for their customer's satisfaction.

A survey of third-party usage by major manufacturing companies suggests that buyers are missing opportunities to get greater value-added from the 3PLs.⁴² The majority of outsourced logistics programs covered only transportation services and somewhat less than half included warehousing support. Less than 20 percent also asked 3PLs to provide inventory replenishment, assembly or other value-added activities. Much of the shortfall of actual benefits achieved can be traced to the lack of skills of the people in charge of the outsourcing, the supply management team. The skills cited as valuable to achieve greater integration were abilities to (1) focus on customers, (2) see business needs, (3) set goals, and (4) coordinate teams.

The buyer for the retailer that selects the cabinet manufacturer, and the buyer for the manufacturer that selects the 3PL have both assumed a very non-traditional buying role, one that requires a skill level very different from even a decade ago.

This chapter has demonstrated that those buyers who have experience or ready access to expert advice in the field of transportation management are indeed fortunate. For various reasons, many buyers have neglected learning about the complexity of shipping options and regulations. When personal knowledge or expert help are not readily available, the buyer must recognize

⁴²Thomas A. Foster, "Logistics Management Distribution Report," Whitepaper, Nov. 30, 1999

that the possible magnitude of transportation cost is a major factor in securing the lowest total cost procurement. This, in turn, requires a dedicated effort to understand the many alternatives, together with their pros and cons, risks and costs, to determine the best method of transporting goods from the supplier to the customer. These issues probably explain the rapid rise in outsourcing of transportation management to independent or third party logistics providers.

III

LEADING AND MANAGING TO FULFILL THE VISION

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Chapter 18

IMPROVING MANAGEMENT OF THE PURCHASING FUNCTION

The science of management has provided a sound basis for motivating people in many work functions, and purchasing and supply management is no exception. This chapter draws upon those management principles that have proven highly useful when applied on-the-job to purchasing and supply situations.

Not every buyer is a paragon of virtue, nor does every buyer do everything right. But, one thing is certain, “No buyer is completely worthless; he can always be used as a horrible example.” And, of course, “Old buyers never die, they just go buy-buy.” Remember, a sense of humor is valuable for creativity and problem solving.

Purchasing departments throughout the country have personnel who are not properly motivated and have low morale. Simply paying buyers a fair salary, giving them an office, and telling them what to do does not ensure positive effort or results. Seldom can initiative, enthusiasm, or loyalty be bought. Buyers show up every day, do their work, and leave the office. They may not be unhappy with their jobs, but at the same time they may not feel a part of their company. They continue because they have to support themselves and their family, and they haven’t any better idea how to do it.

How much better these people would do if they not only *had* to do a good job, but also *wanted* to do it! Like managers in other professions, the purchasing manager is told he must “understand” those he supervises, “communicate” with them, and “motivate” them—in short, persuade them that the company’s need for improved productivity and profitability is compatible with their private needs, hopes, and ambitions.

How can a mere PM use the accumulated knowledge of the social scientist to improve his job effectiveness when the human mind continues to

baffle the most learned psychologists? Certainly, there is a danger in amateur psychology, but we can stick to intuitive feelings of how to deal with other people and concentrate on simple, basic and scientifically sound principles and their use in job situations. People want to get into the act! Poor job performance is often due more to lack of engagement than to laziness or incompetence. Buyers who are allowed as much influence as possible on the decisions that affect them can be motivated to find solutions, while those who feel no need to act will ultimately become ineffective.

Following World War I, business became preoccupied with people's motivation, guidance, and relationships as a means of improving productivity. Perhaps today the pendulum has swung too far away from sensitivity to people as companies continue to downsize their operations. But managements should still bear in mind what the pioneers of scientific management learned about dealing principally with *people*. After all, *management* is responsible for organizing elements of money, materials, equipment, processes, and people to serve the best economic interests of the company.

1. APPLICATION OF MANAGEMENT PRINCIPLES TO PURCHASING

Too often in practice the conventional wisdom is that without management action, the employees would be passive or even hostile to the company's interest. The underlying assumption, therefore, is that people by their very nature prefer to work as little as they can, resist change, lack real ambition, dislike responsibility, and want to be told what to do. Moreover, by this way of thinking, they are seldom very intelligent and often quite gullible. So, they must be controlled by a system of rewards for good and punishments for bad performance—in effect the “carrot and the stick” approach.

The PM may find a guide to understanding of human needs in the “hierarchy of values” arranged as a ladder by A. H. Maslow. Though developed decades ago, this work is seminal. At the bottom are the physiological needs: to stay alive, to be fed, followed by the need for sexual gratification and personal security. Social needs, such as a sense of belonging and being part of the group are next on the ladder, followed by the ego needs for self-confidence, achievement, status, and recognition. Finally at the top of the ladder is the need for self-fulfillment or self-development and a sense of realizing one's full potential.

When asked to identify what they thought employees wanted from their work, a group of managers and employees independently came up with the rank order listings as shown below:

Table 18-1. Differences of Perception

What Managers Thought	What Employees Wanted
1. Good wages	1. Full appreciation of work done
2. Job security	2. Feeling of being "in" on things
3. Promotion and growth in company	3. Sympathetic help on personal problems
4. Good working conditions	4. Job security
5. Interesting work	5. Good wages
6. Personal loyalty to workers	6. Interesting work
7. Tactful discipline	7. Promotion and growth in company
8. Full appreciation of work done	8. Personal loyalty to workers
9. Sympathetic help on personal problems	9. Good working conditions
10. Feeling of being "in" on things	10. Tactful discipline

Several surveys of PMs gave similar results. This realization tells the PM that some non-financial incentives are worth trying, as indicated by the personal wants of the employees.

Herbert Van Schaack, former professor of psychology at the State University of New York College in Oswego, NY, says, "The further a person is from achieving adequacy, the more distorted his perception, the more forced his behavior." He went on to conclude that the PM should develop an understanding of the behavior of people. Unless a manager can decide *why* a buyer acts the way he does, they can never hope to predict behavior, "A person's needs are the mainspring of his perception; they are the fuel that gives direction and force to behavior."

So, to deal effectively with buyers, for example, the manager's role should be one of "helping others to achieve a sense of accomplishment." For managers to reach their goals, it's essential that the buyers' goals are compatible with their own. Consideration for their ego needs and their desire for self-realization can pay real dividends.

The human is often termed a "wanting animal." As soon as one need is fulfilled, another takes its place. In short, few of us are ever fully satisfied. When channeled properly, this can have a favorable result, as those who have the most needs are usually the "doers" who accomplish things. If the PM realizes this, it will make the job of managing much easier.

Remember that as any one need is threatened, people will revert to the "lower" level. For example, a buyer is achieving a salary that lets her fulfill most of her economic needs. She is a part of a good purchasing team,

earning a fair living and contributing to the company. Yet, on occasion she may feel entitled to a bit more status, expressed by a need for recognition and achievement. Now, as downsizing threatens to eliminate one-third the buying jobs, the buyer becomes defensive, apprehensive, and reactive. Reverting to the level of needing continuing income to keep her present standard of living, a pronounced change in attitude and work performance occurs until some relief from the anxiety is provided.

Some managers are overly authoritative and do not delegate anything. Others may let everyone else do the job. In between is the manager flexible enough to change style with the need. He or she can be authoritative, democratic, or participative, according to their subordinates' needs and the requirements of the situation.

On-the-job experience has taught that when a change in job performance had to be made, confusion often led those involved to accept that change. A college professor discussing management-directed change once said that, "Out of chaos comes great flexibility." On the surface, that sounds like a foolish assertion. But, when we observe difficult problems, we find it's often true.

An experience comes to mind about a plant PM who was adamant to drop a certain motor supplier at the urging of his boss, the plant general manager. The CPO knew it was an impossibility, as other locations had to use this supplier as the only source for highly special products. The CPO decided that the best way to solve this was by agreeing completely. In a large meeting he instructed this PM to notify the supplier. Other personnel in the room immediately objected pointing out they would be out of production. Chaos erupted! Ultimately, chaos yielded way to flexibility with the final result that the supplier remained on the approved supplier list, while other avenues were used to solve the supplier problem.

1.1 Theory "X" and "Y"

Douglas McGregor is credited with the definition of management philosophies in two broad categories, termed Theory X and Theory Y.

Briefly, Theory X has been based on two models: the military and the Catholic Church, both of which have generally performed well for the purposes intended. Theory X can be "hard" or "soft." If the manager is easy going, reluctant to apply proper control, this is seen as a soft X management style. It is often viewed as an abdication of management that people take advantage of, which provides validation to the hard-X advocates who maintain that people must be controlled by threat or punishment. But in an affluent business society the threat is lost when it is relatively easy to get a new job. Though recently some of that threat remains, the wise management

will understand that people will not stand for tactics they dislike if they perceive that they don't have to. Examples of Theory X are the "command and control" manager, or the polite boss who tells everyone exactly what, when, and how to do things. His way is the only way.

Theory Y assumes that people are *not* resistant to the interest of the company; rather, all people, depending on individual capacity, can assume responsibility and are ready to *motivate themselves* toward the good of the company. In such a scenario, management can't control this intangible process of self-motivation, but must make it possible for employees to realize their fullest potential. That is, management must so organize its conditions and methods of operation that employees can achieve their own goals—which is best accomplished when each person controls his efforts toward company goals. Most people will do what is right when they know those goals, and understand the problems involved in achieving them, so if management can make clear the existence of mutual objectives, they will naturally provide the needed support and encouragement. Management is not abdicating its responsibilities, but substituting this emphasis on common objectives for workable team play to achieve good results.

1.2 Theory Z

Theory Z is not an evolution of either the X, or Y theory. It is a style suggested by William Ouchi, to address how American management could meet the Japanese challenge during the early 1980s, when many American business people believed the Japanese were overtaking American productivity. Theory Z has been characterized as the 'Japanese' management style. Z builds on the work of McGregor, and has been referred to as joining the good points in Theory X & Y, and modern Japanese management.

The Japanese are consummate team players. They are group orientated, and generally not as individually competitive as American business people. The following actual experience demonstrates the point. At a high level meeting it was agreed that in the future the supplier and buying company would each appoint one manager to coordinate exchanges between the two. At once the American president appointed "John." The Japanese huddled for about 15 minutes before announcing that Mr. Mikimoto would represent them. Twenty years later, Mr. Mikimoto was still present at every meeting even though he had been retired for 5 years. The Japanese put high faith in their workers who sometimes put the company ahead of their family.

Theory Z also places more reliance on the attitude and responsibilities of the workers, whereas McGregor's X and Y theories are mainly focused on management and motivation from the manager and organization's perspective. Critics claim managers haven't fully grasped the theories X &

Y, and throwing in the Z is perhaps too overwhelming. At a minimum, managers should be familiar with these theories that have influenced many American managers, and have proved helpful to many.

2. APPLY SOUND THEORY TO PURCHASING

So, what does all this theory mean to a PM? Simply that, if PMs put their energy into a supportive role, the buyers will realize purchasing's profit and process related roles as championed throughout this book, and they will perform accordingly. The more complex the task, the better the possible end results. Each person should be contributing fully as best he or she can, without constant supervision.

Let's further explore Theory Y, as compared with Theory X, using a simple buying situation. Theory X advocates would say that the PM must direct and control his people; so the buyer is told to reduce the price of a special valve by getting the supplier to agree to a lower price. The buyer negotiates persistently and gets the lower price, but the supplier cuts his costs by using a cheaper gasket and eventually valve leaks are reported in the buyer's end product, driving up the total cost of quality.

Now let's apply Theory Y to the same situation. In contrast, the PM points out the need to reduce the cost of the valve, explaining why it is essential to do so. The PM doesn't tell how it must be done, but she may suggest several ideas: material substitution, analysis of the supplier's cost, or possibly a new offshore source. In short, she leaves it to the buyer to find the solution. Several avenues may be explored, and the final result may be completely unexpected. The supplier may have a different line of valves that can provide even greater savings.

The buyer is not alone in this dilemma; a real-life occurrence will demonstrate. The buyer finds a perfectly valid solution to the challenge above, such as reducing the defect rate, thereby lowering the cost of quality. A problem arises, however, when attempting to show that because it has a lower defect rate, it is in fact, a lower cost valve. In this case the PM will need to go to bat for the buyer with the finance department to be sure such legitimate improvements are recognized as a cost saving. Otherwise the buyer's freedom to find the best solution will be thwarted, and he or she will revert to the lowest price. It's true, "What gets measured, gets done."

While the above is a simple situation, no manager can know how best to achieve the lowest cost for the thousands of items bought. Exaggeration or not, Theory Y points the way toward a high form of supportive management that helps build and maintain personal worth and importance.

In short, friction exists wherever people interrelate. Sound human relations, as with any other management specialty, is another opportunity for purchasing. Neither CPOs nor buyers can overlook the importance of human interactions.

3. EFFECTIVE COMMUNICATIONS, BOTH EXTERNAL AND INTERNAL

It isn't necessary to sell any progressive manager on the need for better communications. It has always been business' biggest headache to overcome. Many studies and surveys have documented that faulty communication is often behind poor employee attitudes. When something goes wrong down the line, it is often because someone wasn't clear about what was expected.

Vigorous leadership is not possible without effective communication. No plan can be carried out if the originator is unable to communicate it to others. Communication is a two-way street. Repeated studies have shown that the PM follows the pattern of how a typical executive communicates in an average day. On this basis, in an average hour, a PM spends about 5½ minutes writing, 9½ minutes reading, 18 minutes talking, and 21 minutes listening. At a salary of \$75,000⁴³ per year the PM's talking time alone costs about \$1,875 per month. Talk isn't cheap.

The PM is paid about \$2,188 per month for listening, so hopefully he is listening actively and learning from doing so. Asking questions and being receptive will make that sizable investment of time worthwhile. In any given day, the PM and most buyers communicate with salespeople, managers, engineers, and others in the company and the suppliers. But this doesn't necessarily mean that good communication takes place.

By nature, the span of human attention is very short, lasting only a few seconds at a time. During about 10 minutes of conversation a person is usually able to grasp the precise meaning of about 600 to 900 words. But our thinking speed far exceeds our listening rate, so while we're waiting for the speaker to catch up, our attention may wander. The speaker watches for this and may repeat statements several times to regain our attention to get the message across. Voice inflections, gestures, posture, and facial expression all may provide clues to a person's true thinking and intentions. Or, they may be used deliberately to deceive us. The glib, fast-talking sales veterans as well as the inarticulate and technical engineer are characters familiar to every PM. If you had to give up all the qualities of a manager save one, what might

⁴³*Business 2.0*, March 2003, page 89

that be? It is doubtful we can conceive of a truly effective leader without the ability to communicate!

To demonstrate how use of identical words can have totally different meanings, witness a dialogue between a PM and a buyer. Try reading the following dialogue in two different tones, first with a *praising* attitude that is cheerful and pleased with the effort. Then repeat the words with a condescending manner, displeased and *critical* of the job done.

Table 18-2. A Dialogue Subject to Interpretation

<u>Dialogue</u>	<u>Attitude and tone of voice</u>	
	<u>First way (Praising)</u>	<u>Second way (Critical)</u>
Buyer: What's up, boss?	Confidently	Fearfully
PM: Take a look at work Danielle did. That's a savings report!	Proudly - emphasize "That's"	Sneering and questioning - emphasize "report"
Buyer: Boss, you know the people I have. That's the kind of work they do.	Proudly	Apologizing - What can you expect?
PM: Don't be modest. Surely you shared in this.	Complimentary - Buyer gets some credit.	Sarcastically - Buyer doesn't get away with it.
Buyer: I reviewed it, but I have to rely on Danielle. It's her work.	Modestly - Don't want to take glory away from her.	Defensively - Avoid the blame so Danielle's identified.
PM: You're not going to get out of it that easily.	Jokingly - He's developed Danielle's capability.	Sarcastically - Don't let him get out of this.
Buyer: If you insist, I guess I share in it.	Still modestly - but ready to admit he's pretty good.	Reluctantly - Yielding, so he won't be the target.
PM: Can we expect continued work like this from Danielle?	Hopefully	Disgustedly - Gesture at report with contempt!
Buyer: We can. (then adds) But she is being transferred.	First sentence is happily ; second is regretfully .	First sentence is regretfully ; second is happily .
PM: I'll be sorry to see her go.	Regretfully	With relief and gleefully
Buyer: We're going to miss her.	Worried - How will we replace her?	Happily - No need to fire her.

In this example, notice how the two versions paint entirely different pictures of the situation. So too, our dialogs with supplier partners need to be carefully constructed. Use of intellect, words, and pictures makes humans the dominant species. And, our ability to leave behind a trail of progress allows those who follow to learn from past mistakes. Although communication has seen significant advancement in effective use, it remains as always our major problem—the ability to let others know what we really think and mean.

Effective managers know that you often communicate *through* people, rather than *at* them. The idea is that a manager often tells something to a person knowing they'll tell it to others—so the message is broadcast! In expressing your thoughts to a person, that individual in turn multiplies the message many times over. The buyer must communicate well with quality, engineering, manufacturing, finance, and others, in order to involve them. Likewise, the purchasing professional must communicate clearly with suppliers.

Tact is an indispensable lubricant of business relationships. The word *tact* is from the Latin, *tactus*, or to touch. But touch goes two ways! Some people “rub people the wrong way,” and lose the support of those they need to get the job done. Communication is more than just speaking, listening, or writing; for example, we communicate when we tap someone on the shoulder, slap them on the back, or when we shake the hand of a visiting salesperson. We gesture with the head, point the finger, nod at someone, or shrug a shoulder, smile, frown, wink an eye, or simply raise the tone of voice.

What would the impact on history have been had Winston Churchill said, “Now I may be wrong about this, but it would be my suggestion that we fight them on the beaches. Hopefully, we might engage them in the fields and streets, should that be necessary. There is a high probability we may have to fight them even on our hills. While some of you may not agree entirely with me, if I have my way, we shall never surrender!” The positive power of words clearly conveyed cannot be overstated! Unfortunately, the same can be stated with respect to the negative repercussions from poor communications.

Language is often the first and most important barrier whether communicating with offshore or local suppliers. Offshore supplier personnel often speak much less English than we Americans think. Because they nod, trying to be friendly, and say, “yes,” doesn't necessarily always mean they understand. So it takes extra care in communicating with offshore sources. The good news for Americans is that English is the language of international business in most areas of the globe.

Some buyers may dislike using clear, simple words and direct language. More likely, they lack the discipline of clear logic. Choice of words is important. Consider that it might be technically correct if a waiter asked if you would like “dead chicken fried,” but that wouldn’t have the persuasive appeal of “southern fried chicken.”

Let’s look at another example of poor communications—when what was said was not what was understood. A PM called a meeting to stress the need for more aggressive buying. As he walked through the door, the sign, “PUSH” caught his attention. He opened the meeting saying that there was one quality more than any other that was needed to get ahead in this department; and “it’s inscribed on the door to this meeting room.” Straining their necks, the buyers saw the word “PULL.”

A little pull surely helps since someone above you must recommend you, and someone who has faith in you promotes you. However, it’s just as true that some “push” needs to come from those with whom you work, and those who report to you. “Push-pull” actually needn’t be in opposite directions. If one person pushes on the door while someone pulls from the other side, opening the door is much easier for both.

3.1 Productive Work Habits

Nothing is so useless as doing with great efficiency what should not be done at all. Another consultant termed the number one problem of industry as “energetic stupidity”—eagerly spending time, effort, and money on doing things that shouldn’t have been started in the first place. A colleague once described such efforts as, “Paving the cow paths.”

What are some buying situations that cause unnecessary work? How about reading materials that have no bearing on the job, a failure to organize work, taking too long to respond to a letter, sending long memos when a quick phone call or e-mail might suffice, spending too much time on pleasantries during sales visits, and processing paperwork such as in-coming requisitions not properly completed.

Working on everything in sight may achieve little. The artist cannot paint everything he or she sees. The picture has to be focused. The contractor cannot build a building anywhere; he limits the plot of ground, as the architect limits the style. The mathematician can’t solve all equations, and the buyer can’t fulfill every requirement.

Productivity is a matter of quality, not quantity. Before being called for jury duty, a PM was already hard pressed to keep up. During the 2 weeks he spent on jury duty, the manager had only about 2 hours per day in the office. Buyers were told they could have about 5 minutes to talk about any urgent problems. The result was the buyers solved most of their own problems.

Management, like any productive work performed, must add value beyond its cost. “Try, try again, and if you don’t succeed, try again,” often should be reworded, “Try, try again, and if you don’t succeed, then find another solution.” Persevering in the face of all obstacles has helped solve many a problem that may seem unsolvable. But that is not always the best answer. A millionaire in the real estate development business said his secret of success was recognizing when a project was not working and ending the investment before any more money was lost.

How many purchasing people work endlessly in routine that produces little results? How many buyers spend a great deal of time on quotations and sales interviews that will bear no fruit? Worse yet, working to the wrong goals is like the floundering swimmer who when rescued was found to be paddling toward the open sea.

4. NEED TO SUPPORT EDUCATION AND BUYER DEVELOPMENT

One path to purchasing success—whether professional, technical, or managerial—is through education. PMs need to learn useful tools; as the mechanic uses a wrench to help tighten a bolt, the manager uses ideas that enable him or her to better grasp complex situations. In short, to be a good purchasing manager one must possess a broad scope of business acumen and human understanding—which comes from education and experience.

Besides the obvious skills such as negotiation and legal aspects of buying, the supply management professional of today requires a very broad set of business skills. One senior executive with no personal experience in purchasing, upon inheriting responsibility for the purchasing function, noted, “This is MBA heaven.” The financial analysis skills required to manage supply have become of paramount importance. Technical issues, such as lean manufacturing and electronic information systems, are now so much a part of enterprise success that the unfamiliar buyer will find it difficult to contribute to organizational initiatives. As with most true professionals, buyers can learn six-sigma problem solving methods and tools, and with them can contribute to improve processes both within their own company and with suppliers. The six-sigma tools and philosophy are powerful productivity-enhancing aids in the hands of trained individuals. They offer the practitioner the skills to avoid the trivial many and focus on the vital few.

According to author Farney, there are six distinct areas that purchasing pro's should seek to develop to maximize their worth:⁴⁴

1. Ability to grasp total value in the supply chain—view the supply chain holistically and orchestrate the entire acquisition process.
2. Technical know-how, especially in manufacturing—previously a third-party relationship, it is now a team relationship.
3. Analytical abilities—with a strategic view that focuses on the customer and on the process.
4. Ability to work with information technologies—using the capabilities of the Internet to streamline processes and workflow to save time and money and avoid errors.
5. A global perspective—understanding how cultural differences affect business relationships.
6. Interpersonal skills—the ability to sell ideas, to listen actively, to influence and to lead.

The author says that the most important ingredient of all is to conduct one's business with the highest personal integrity. For if you are not honest and open, you can't be trusted and will not be effective in your relationships, the critical element of future success.

There are many sources of education available to purchasing professionals, and these are not restricted simply to college courses. In part, self-development may be a major factor to an expanded global outlook. Training should be customized as much as possible. The purchasing manager should recognize and reward good performance. When you don't offer the fullness of the prize, you can't demand the person pay the price to achieve it.

What about on-the-job efforts to help development of the buyers? On-the-job experience is the most obvious, if the individual seeks to learn from the experience. Of course, years of experience are not necessarily years of learning. A company can hire an instructor to develop a seminar to suit its own specific needs. This in-house solution is often a cost-effective alternative compared to sending three or four participants to an off-site seminar. Also, many companies run in-house programs aimed at expanding the knowledge of the department. In such a case, the agenda can be highly flexible to suit the participants and the specific needs of the company. Subject matter may include anything the PM feels warrants greater understanding and may include experts from other departments as speakers.

Experience shows that the well-educated group develops a remarkably self-dedicated approach to problem-solving and appropriate action. This

⁴⁴ "New to Purchasing? – Here are some tips from a veteran." Interview of author Samuel Farney by Kathryn Belyea, *Purchasing*, January 13, 2000

follows the belief that people *will* do the right thing when they are allowed to come up with their own solutions. The opportunity to discuss the difficult buying situations faced by others lends conviction as to their own handling of the same difficulties.

Many colleges and universities have added supply management curricula and degree programs during the past two decades, testifying to the growing importance of the supply management field. Today, there are many educational opportunities, including forums, conferences, and seminars sponsored by the Institute for Supply Management (ISM). The ISM currently offers on-line training, self-study courses, satellite seminars, on-line tools and training on CD-ROM and videotape, in addition to study materials specifically targeted toward preparation for Certified Purchasing Manager (C.P.M.) and Accredited Purchasing Practitioner (A.P.P.) exams.

The American Management Association, ISM, and The World Trade Institute give management classes. Noted universities such as Michigan State, Arizona State, UCLA, and Florida State offer special supply management programs in addition to their academic programs. With all of these possibilities, there can be no excuse that a suitable learning medium is not available. The *Journal of Supply Chain Management* provides a forum for leading edge professional thinking that is published quarterly and available by subscription. The joint efforts of ISM and Arizona State University have created the Center for Advanced Purchasing Studies (CAPS). This organization's research efforts are documented in focus studies, benchmarking reports, best practices reviews (in *PRACTIX: Best Practices in Purchasing and Supply Chain Management*), Project 10X and the E-Supply Chain/E-Sourcing Project. ISM members receive the monthly magazine *Inside Supply Management*, with articles on numerous timely supply management issues.

A brief web search for related books at [www.amazon.com] located 2446 items under "purchasing" and 1406 under "supply management." Admittedly there is duplication and a large percentage of the works will not be relevant, but consider the many opportunities to learn by reading alone.

4.1 Pursue Buyer Development Programs

Professional development efforts are ongoing worldwide to take advantage of educational opportunities to become truly professional. Most developed countries have organizations devoted to professional purchasing and supply management. Truly, purchasing is one of the oldest arts known, and that may be one of the professional's chief headaches. Everyone thinks he knows how to buy. But those who understand the profound differences

between professional supply chain management today and the tactical buying of past decades have no such illusions.

Excellent PM skills mirror general management skills, because the supply manager is in effect responsible for the overall business results of supplier companies. As we have advocated throughout this work for PMs, the editorial director of the Chief Executive Group (publisher of *Chief Executive* magazine) says the critical strategies and tactics all CEOs must practice are: (1) Strategies – Collaboration and Innovation and (2) Tactics – Empowerment, Customer Focus and Lean Production.⁴⁵

While the company can provide opportunities to learn, it is the buyers themselves, supported by management, who must assume responsibility for their own development. Good buyers will develop with proper guidance. The best of them—with the proper motivation—will move upward to become purchasing managers and CPOs, and with today's skills, many will go into other senior management jobs.

4.2 Certified Purchasing Manager Program

Since 1974, the Institute for Supply Management, then the National Association of Purchasing Managers (NAPM), has bestowed the Certified Purchasing Manager (C.P.M.) designation to those meeting their requirements. Computerized tests are given worldwide. This program has been an unqualified success. As of 2003, over 40,000 purchasing professionals have earned the C.P.M. designation.⁴⁶ Requirements for the C.P.M. include earning points for education and experience, and passing an examination with four modules in the areas of: (1) Purchasing Process, (2) Supply Environment, (3) Value Enhancement Strategies, and (4) Management. In addition to formal education and experience, points are earned by attending sanctioned meetings, seminars, or courses.

Potential candidates may get a C.P.M. Study Guide that includes a diagnostic list to help identify areas for study. Further information can be obtained by contacting the nearest Institute for Supply Management affiliate on the web or by phone, or by contacting ISM, Tempe, AZ 85285, [www.ism.ws].

4.3 Accredited Purchasing Practitioner Program

In 1996, the ISM (then NAPM) implemented a program and examination process for Accredited Purchasing Practitioner (A.P.P.) candidates. In

⁴⁵ John R. Brandt, Closing The Gap, *Industry Week*, June 11, 2001

⁴⁶ *Newsline*, ISM, Tempe, AZ, September 2003, page 4

August 2003, over 7,000 A.P.P.s had been accredited.⁴⁷ This program is aimed to serve entry-level buyers, and those who have procurement responsibilities though may be outside their company's purchasing department. The accreditation may interest small business owners who buy, and others who want to gain purchasing expertise, yet are not ready to aspire to the full C.P.M. status. The attainment of the A.P.P. can be applied toward achieving C.P.M. status later.

Requirements for A.P.P. accreditation are that you must pass Modules 1 and 2 of the A.P.P. exam, and satisfy additional requirements. Satisfactory completion of modules 1 and 2 of the C.P.M. exam also qualify for A.P.P. accreditation. Consistent with ISM's overall charter, the goal is to increase participation and encourage professionalism within the purchasing and supply community.

In addition to the above, there are a number of other certifications in the supply field, some of which include:

- The American Production and Inventory Control Society (APICS) awards the “Certified in Production and Inventory Management” (CPIM) credential. Those passing their series of tests may use their CPIM designation after their name.
- The American Society for Quality Control (ASQC) grants a Certified Quality Engineer (CQE) and a Certified Quality Technician (CQT) or Certified Reliability Engineer (CRE).
- The National Association of Educational Buyers (NAEB) is aggressively active in promoting professional activities.

5. USE OF JOB DESCRIPTIONS AND A PURCHASING MANUAL

Managers have often found it much easier to break jobs down into parts to be done by different people than getting people to understand their role in the big picture. Position or job descriptions are tools that help both old and new personnel understand their role and perform it more effectively. They serve as guides, indicating the job's main activities, its responsibilities, and its relationships with other jobs or departmental functions.

Job descriptions are popular with management, and most agree people need to know what their job is. However, the PM cannot simply hand such a document to a new buyer and expect performance to improve automatically.

⁴⁷ *ibid*

A key element in development of a job description is the inclusion of ideas from persons who are doing the job.

A job description should not be interpreted as limiting one's responsibility, and there should be provision for maximum flexibility in accomplishing the desired results. No job can be covered completely in writing. Moreover, most jobs change—with time and with the incumbents. As long as these limitations are recognized, however, the usefulness of having superior and subordinate sit down together and establish the responsibility and authority to be assigned to a job can be extremely useful.

Job descriptions are a way of bringing clarity and structure to the purchasing job—and structure is certainly a concept consistent with management. Another tool available to bring structure is the Purchasing Manual. Properly constructed and maintained, the Purchasing Manual becomes the guiding document for policy and procedural reference. Certainly, as a strategic management initiative, creation and maintenance of a Purchasing Manual is an important undertaking for the professional purchasing department.

5.1 Develop and Use a Purchasing Manual

Purchasing policies exist, whether or not they are in writing. A company Purchasing Manual can be as brief as a few pages giving simple, straightforward statements on general policy, forms, and their use. Medium to larger-sized companies gradually build a detailed working manual. This section is for those wanting to begin a manual or improve an existing one. This is certainly a strategic undertaking as it allows the purchasing department's long-term policy and procedures to become standardized and institutionalized as a guideline for productive operation.

What does a manual do for buyers? It defines purchasing scope and clarifies purchasing's role and methods for other company functions affected by its activities. It defines the standard work of supply management and provides proven tools to conduct tasks. By defining process end-points and interrelationships, it is an aid to avoiding potential conflicts with other departments.

A large company's purchasing manual may contain many sections. Few manuals are written from scratch; rather they evolve as the need arises. A simple start calls for drawing up an outline and gradually filling it with various memos, bulletins, and process descriptions. Later, these can be reduced to a compact manual for endorsement by top management as the company's official purchasing guide. The editing job can be delegated, say to a diverse group who operate as a team. A review of the material with the

PM provides an excellent chance to discuss what is presently being done in the department and the pros and cons of the present method.

Most manuals are kept in the form of an electronic file, thereby making changes, additions, deletions and distribution timely. The manual can also be placed on the company's intranet, making it readily available to any who need it. Each section under a major heading should have its own sequence of page numbers, perhaps combining section and page designation (for example A-1, A-2, and so on.). In this way, changes or additions affect only one particular section. A table of contents will provide easy reference; and—to keep the manual as concise as possible—an appendix can be used for quick reference to forms and details.

An overly complex process required to make an acquisition is a detriment to efficient buying. The challenge is to state the need for control simply while minimizing the documentation steps required. A manual is a place to maintain many pieces of useful information. It's especially important to keep a record of special procedures. For example, an import from Denmark may require special handling information that may be spelled out and kept available for later reference.

The subjects you include will depend on what you want the manual to do and how your department operates.

Below are some of the topics that may be covered:

- Scope and responsibilities of purchasing
- Various policies defined
- Supplier relationships defined for various circumstances
- Source selection criteria
- Standards used when contracting for materials, subcontracts, equipment, or construction
- Gift and entertainment (ethics) policy
- Any specific procedures needing to be explained

Many buyers have found a supplier information file of value. The file will list the company's name, address and Website, phone numbers, and e-mail for key contacts. The standard terms of sale, commercial terms, local representative with mail and phone and fax numbers are also noted. The supplier is identified as manufacturer, distributor or service provider and the commodity class is normally recorded.

Below is a sample outline that may be useful in creating a purchasing manual:

Part 1. Responsibilities and objectives of purchasing

A. *Major responsibilities* (Outline the broad functions of purchasing. Avoid descriptions of specific duties.)

- Formulate buying policies, plans, and procedures.
- Gather and disseminate market intelligence.
- Handle procurement and expediting.
- Other (e.g., surplus disposal, receiving, traffic).
- Exceptions, if any (e.g., buying advertising, insurance).

B. *Primary objectives* (These should be the general goals of purchasing; a bit philosophical, perhaps, from which departmental policies are derived.)

- Serve the company economically and contribute to profits.
- Procure materials at the lowest total cost consistent with quality and service.
- Maintain world-class sources of key supplies.
- Support lean manufacturing methods and inventory management efforts.
- Keep management informed of market conditions and procurement risks.
- Collaborate with other company units to improve internal and supplier processes.
- Search for new and improved sources and materials.
- Lead six-sigma, value analysis and standardization efforts.
- Keep abreast of leading purchasing methods and practices.

Part II. Policies. (Don't let procedures creep in. Define attitudes only.)

A. *General policies*

- Overall strategies in support of business strategies.
- Determination of need; specifications, quantities. (Who is responsible? How will purchasing influence?)
- Standard process workflows. (Process steps, participants and responsibilities.)
- Purchase commitments. (Who makes them? What are the restrictions?)
- Supplier contacts. (By purchasing only? Any limits?)

B. *Buying policies*

- Central or local procurement (Multi-plant companies should state what headquarters buys, and what will be done by the branch locations, and so on.)
- Selecting sources of supply (Discuss criteria used.)
- Multiple versus single sources (What are the advantages of each for your company?)
- Trade relationships (Do you favor them? When are they practiced?)

- Buying from stockholders (You may want to avoid this.)
- Consideration of small and disadvantaged business (A “must” if you have government contracts.)
- Negotiation (When should it be used? When is it optional?)
- Competitive bids (When required? How many?)
- Trial orders and samples (State the obligations.)
- Classified purchases (Again, for government orders.)
- Speculative purchases (You’ll be against them unless you’re in a commodity business.)
- Foreign purchases (When should they be considered?)
- Interplant buying (For multi-plant companies.)
- Employee purchases (For or against?)

C. *Pricing and payment* (Clearly state your position on each practice: when it may be used, when preferred, and special conditions.)

- Target cost or cost analysis requirement
- Unpriced orders
- Estimated prices
- Escalation
- Liquidated damages
- Deferred payments
- Progress payments
- Cash discounts
- Use of forward buy or hedging action

D. *Relationships with other departments*

- Collaboration with internal customers (How will you work together to meet final customer needs?)
- Delegated authority (Any circumstances when others may assume purchasing prerogatives?)
- Emergency orders (You are prepared for them, but don’t encourage them.)
- Dissemination of price information (Security issues, who has access, and how it is made available?)
- Inspection, receiving and traffic
- Legal assistance
- Credit assistance
- Make-or-buy (Who decides? Purchasing’s role?)

E. *Supplier relationships*

- Tracking supplier performance. (Methods used, how results are distributed, corrective action plans)

- Supplier relations. (Expectations, standard methods, who leads efforts, tracking requirements, etc.)
- Handling complaints and rejections (Who will handle them? What do you expect from the supplier as relief?)
- Visiting suppliers' plants (Who arranges? Who pays?)
- Accepting suggestions from suppliers (Do you encourage them? What will you do with them?)
- Receiving and interviewing sales people (Whom will you see? When? For how long?)
- Evaluating suppliers' prospects (Are you prepared to tell them their chances, or do you prefer to hedge?)
- Advising unsuccessful bidders (How much will you tell them? Will they have to ask?)
- Dealing with cancellations (Do you try to limit them? Will you pay the costs?)

F. Ethics

- Courtesy and fairness (Of course, this is expected, but how you say it counts.)
- Security of confidential information (What do you do to safeguard supplier confidences?)
- Entertainment (How much is acceptable? Do your buyers have expense accounts?)
- Gifts and gratuities (Where do you draw the line?)
- Conflict of interest (How is "interest" defined? If you have a code, to whom does it apply?)

Part III. Duties and organization

A. Specific duties of the purchasing department (Make a detailed list, but if you think it's too obvious, this section may be omitted altogether.)

- Select and manage suppliers.
- Make purchase commitments.
- Track supplier performance.
- Expedite open orders.
- Audit invoices and payments.
- Maintain supplier and order files.
- Maintain source information (catalog) files.
- Maintain price and cost history information.
- Disseminate supplier product offering information.
- Report supplier performance and supply risks to management.
- Prepare statistical reports to support management needs.

B. Organization

- Position of the purchasing department in the company
- Organization chart

C. Position guides

Guide for each key position: director of purchasing, purchasing manager, buyers or buyer/planners, expeditors (if applicable), administrators, analysts, and so on.

- To whom does the manager report?
- Whom does the CPO supervise?
- Specific duties of each position
- Authority: its limits and extent

Part IV. Procedures (This can be a large section if each detail is included. The standard workflow for key repetitive tasks should be documented although it is not necessary to include it in the purchasing manual. If desired, they may be made a separate document.)

A. Buying procedures (Templates or electronic forms should be included.)

- Requisitions
- Inquiries
- Purchase orders
- Cash orders
- Blanket orders
- Invoices
- Receiving reports
- Change orders
- Credits
- Cancellations

B. Filing practice (most can probably be electronic)

- Order files
- Inquiry files
- Catalog files
- Price files
- Part history files

C. Contracts (This section should describe the various kinds of contracts: when they should be used; how they should be prepared.)

- Subcontracts

- Service contracts (outsource agreements)
- Construction contracts

D. *Special procedures* (Those that require unusual attention, involve special trade practices, or are performed so infrequently that reminders are needed.)

- Supplier partnerships and joint improvement efforts
- Buying raw materials
- Commodity buying
- Buying capital equipment
- Disposing of scrap and surplus

E. *Reports* (Define each report: who gets it, what it contains, when it is due.)

F. *Statistics* (Explain where to get them, how to organize them, what to do with them.)

Any manual, to be effective, must be tailored to meet the needs of the individual company. While it may be helpful to find out how other companies have worded theirs and what is included in them, it is a mistake to believe that any existing manual can be found that will fit every department's requirements. In fact, much of the benefit you can expect to derive from your manual lies in the thought and care that goes into the process of putting existing purchasing policies into writing.

Supply management leaders set the direction for the efforts of all involved, including the suppliers themselves. If results from managing the supply chain are disappointing, the CPO and the PM should look inwardly for the answers as to why this is so. Before deciding on a new direction, the first step should be to clarify customer needs, internal and external to the organization. Then proceed boldly to implement changes directed at better meeting those customer expectations. Keep them informed as you go.

Chapter 19

MEASUREMENTS OF PURCHASING PERFORMANCE

On an average working day over \$25 billion will be spent by purchasing people in the U.S. But how well will that money be spent? That's what this discussion of measurement and productivity improvement is really all about!

Most professional purchasing departments try to measure their results in some way. Attempts at measuring purchasing effectiveness have been extremely varied, but usually limited in scope—somewhat like checking the oil with a car's dipstick, and declaring the engine is in excellent shape. The adage, "If you don't measure it, you can't control it" applies to purchasing activity as well as any other.

Why bother with measurements? Quantifiable measurements such as cost reductions *can* be evaluated, yet experienced managers and buyers know they can't measure everything. Certainly not all the procedures to be described in this chapter will be presented with the idea that they will be immediately applicable. Rather, they show the diversity and possibilities in this field of measurement. The professional CPO must continue the quest for better ways to measure based on the specifics of his or her particular business.

As a practical reality, purchasing managers frequently find themselves trying to justify their department to a management that judges purchasing solely by financial statistics relating to salaries and costs, or to a production-minded management that is interested primarily in a steady flow of critical material with minimal investment in carrying an inventory. Enlightened managements are beginning to judge the performance of the supply management organization, at least in part, by the performance of the suppliers. This requires a simple and clear statement of the organization's objectives and a clear picture of the suppliers' role in meeting those

objectives, followed by an effective method of tracking supplier contributions to those objectives.

Because the validity of the chosen yardsticks is critical, it is sound practice to get management input as to the key elements to be measured. One way to do this is to set goals and ask management to look them over. However, judging purchasing performance is difficult for many organizations.

Many in senior management positions with responsibility for the supply management activity have had little contact with the purchasing function during their rise to the present role. Perhaps the most common background for these individuals is finance, and while that indicates they will be familiar with many important aspects of procurement activity, there are others they will not. Whatever the experience of the executive to whom Purchasing reports, it is common for the evaluation of performance of the unit to be based upon audits, an accounting technique that ensures honesty and procedural accuracy, but little else.

The most common measure of supply management organizations is cost savings (hopefully not based solely on price) usually reported in both dollars saved and as a percent of spending. In many cases the function is evaluated by comparing prices paid against standard cost, another technique with a focus on price and controlled to some extent by the quality of the estimate of future prices. A few look at the department's operating expense budget, and sometimes expense is evaluated against the spending level; this provides at least a crude measure of productivity. In some cases, executives judged purchasing by gauging the timeliness and accuracy of information provided on markets and prices.

One company president said he plotted the number of orders each buyer placed and the number of dollars each spent. He defined the resulting curve as "the performance norm for the department, and each buyer can be checked against this norm." Imagine that! The next time you buy a double order of widgets using a single purchase order, be sure to ask for a doubling of your salary based on the concurrent doubling of your productivity!

This sort of management ignorance is reminiscent of a true-life story at the ballpark where 11-year-old Steven excitedly exclaimed, "Dad, Look! The first baseman has the ball bidden in his glove!" Let's set this up: the home team was leading 2 to 1, but the opponents had the bases loaded with two out in the top of the ninth inning, and the home team—which couldn't buy a hit late in the game—had to get out of this inning. Their first baseman strode nonchalantly over to talk to the pitcher. Returning with the ball hidden in his glove, he stood close to first base, and when the runner took a lead, he promptly tagged the runner to make the final out.

The first baseman held up the ball, and shouted to the startled base umpire who looked over to first to see the runner safely back on the bag. The umpire signaled with both hands outstretched—"safe." The first baseman argued and pleaded, and many fans near first base knew he was dead right; but the truth is that the umpire's view was similar to some management's—the "action" was between the pitcher and home plate where the batter stood ready to swing at the next pitch.

Buyers are sometimes in the position of that first baseman. They make a solid contribution, and look to the chief executive for acknowledgment, while the focus may be on perhaps sales or engineering. However, buyers are still in the ball game—and need to be sure their results are noticed.

A more recent survey is encouraging. In 1997, the Center for Advanced Purchasing Studies surveyed CEOs or presidents of 1,000 of the largest manufacturing and service companies and 200 leading small firms.

These leaders cited the following five most-needed measures of purchasing performance, in order:⁴⁸

1. Quality of purchased items
2. Key supplier problems that could affect supply
3. Supplier delivery performance
4. Internal customer satisfaction
5. Purchase inventory dollars

Management is not interested, as a first focus, in optimizing purchasing per se, but they are interested in purchasing's contributions to the company's business strategies. In short, efforts to show the effect of performance on such key goals as return-on-investment and profit contribution should be appreciated.

Measurements that will satisfy everyone may not exist. The reality is that many opinions or judgments exist about performance—and though these opinions can be influenced by measurements—to a large degree these quantitative measurements are colored by the interrelationships that purchasing has with other functions.

When financial controllers think of purchasing, they relate to the finance areas that affect them. Engineering cares about those areas that relate to its design responsibility. Differing opinions exist within any company about what constitutes good job performance. In considering overall purchasing performance, it therefore makes sense to look at it through the eyes of those

48 Harold E. Fearon, Ph.D., C.P.M. and Bill Bales, C.P.M., "Measures of Purchasing Effectiveness," CAPS Focus Study, 1997

other functions to which purchasing relates. All eyes may be on Purchasing and Supply Management, but *what* they see may differ greatly.

How well purchasing performs relating to others will determine how these others will rate purchasing. And that's not theory—it's reality! The sum total of those opinions is purchasing's "image"—which too often is negative. Why? Because purchasing cuts across so many major functions, truly spectacular results may not occur at any single juncture. Often the only news top management hears is negative. If something goes wrong such as the production line is short of material, orders aren't processed quickly, or quality is lacking—then it is only natural that there is a complaint. Fortunate indeed (and rarer still) is the purchasing professional whose management understands that this is the nature of the job!

It only makes sense that any function responsible for managing the spending of well over 50% of the sales dollar is going to be subjected to the accounting or managerial eye. The CPO must be prepared with some kind of a yardstick that will help pinpoint weak and strong points. A review of current measurement practices will be helpful to sort out the methods available to the purchasing professional.

The important implication from this chapter is the varying validity of the yardsticks reviewed. This chapter has been arranged to review historically the efforts to improve measurements on-the-job. We must somehow tell management what to measure, or do it ourselves anyway! The CPO needs to bridge the gap between existing measurement theory and the practical realities of the professional buying responsibility.

Managers wanting to develop their own system may find these steps can be useful in designing a measurement system:

1. Define the area of purchasing activity to be evaluated, including supplier performance if desired.
2. Select the measurable factors (parameters) in each area that the manager believes are indicators of quality or productivity performance.
3. Arrange the parameters mentioned above in order of importance.
4. Assign a weight factor to each parameter.
5. Periodically review the above and update as necessary.

1. VARIOUS KINDS OF MEASUREMENTS USED

The purchasing department budget is an accounting and administrative control over the cost of operating the department. Too often it is used as a measurement. Improvement comes from simply cutting costs. The big item of cost in operating a purchasing department is salaries and wages, such that

when employee benefits are included, they may run well over 80% of the total cost. While this measure of cost control is widely used, it is also the least indicative of the kind of purchasing job being done in terms of productive results in managing supply effectively. Operating costs alone cannot measure the quality of material purchased, reliability of sources, services rendered, and changes to reduce costs, to name a few.

1.1 Internal Audit

Auditing is another form of measurement that may be used. Auditors define it as “the measurement of job performance and the clerical comparison to what it should be.” Few auditors, however, know how to determine the best job that can be done. Audits are most effective in reviewing documentary controls. For example, “were purchases properly authorized, did buyers adhere to their dollar commitment limits, and is the purchasing process verifiable based on records kept?”

A good internal audit is vital to ensure management that purchasing is performing properly. The Institute of Internal Auditors issued “Internal Audit and Control of the Purchasing Department,” a publication that defined auditing as “a type of control which functions by measuring and evaluating the effectiveness of other types of control.” The art of purchasing is often an enigma to the auditor. By traditional audit methods, a relatively poor purchasing department might be rated higher than an aggressive one. That is because the aggressive department goes out of its way to improve supplier performance and contribute to profit, but might make more slips in the control functions. A buying department can go through the motions of buying, expediting, with excellent records and controls, yet not take advantage of profit opportunities within its grasp.

Here are a few specific points that might be included in any checklist of internal audit requirements for purchasing:

- Are company goals clearly stated? Does purchasing have goals and strategies that support them?
- Is there an awareness of buying value, making use of proven buying techniques such as cost and value analysis?
- Are suppliers encouraged to improve performance? Is there evidence of achieving such improvement?
- Is inventory management a purchasing priority? Do buyers understand and support lean manufacturing by suppliers?
- Are reports on cost reduction made, and are they audited? Are these reports sent to top management?

- Are buyers acquainted with six-sigma, ISO9000, SPC, and similar quality concepts?
- Are buyers alert to new product availability? Is there evidence of an ongoing search for global supply?
- Are buyers familiar with, and using, sound negotiation techniques? Were they productive? Were negotiations conducted on an ethical and honorable basis?
- Do buyers explain to suppliers the end-use and function of what they are supplying, and seek supplier input for improvements?
- Is there evidence of a productive purchasing work environment? Is there an indication of a culture that fosters employee development?

Internal audit is another means whereby the need for specific corrective action is made clear by isolating and examining the department's procedures. An audit should stress ways to improve, and not focus solely on deficiencies. Recommendations for improvement will result from the process of scrutiny.

There is good reason for purchasing and internal audit to be allies. They both seek control and understanding of a profit-making function that is difficult to measure, yet too important to ignore. Auditors are in a position to suggest to top management that buyers need authority to control the flow of money. Giving leverage to buyers in dealing with suppliers does pay dividends. Most managers who have had a first-class audit are unanimous in saying "It helps!"

1.2 Management by Objectives

Purchasing managers sometimes forget that management by objectives (MBO) is still a highly useful and workable form of measurement. Supervisors should sit down with their subordinates and arrive at an agreement—the job to be done, and the rating system for merit pay. Use of MBOs can be both a means of improving performance and an aid to measurements.

What can be learned from the experience of others? Reduce the MBOs to a simple statement of intentions; the purchasing manager and buyer should discuss a shared understanding of the desired results. Written key goals and a means to measure results are basic. An MBO program doesn't have to be complex to be effective, but must state the specific results expected of the person being measured.

Let's consider four action steps of a simplified MBO process that can assist the PM:

1. Accurately describe job outputs—the key desired results.

2. Set goals for each buyer relevant to company strategies as part of a corporate planning and control system. Four to eight is usually best; fewer goals that require a “stretch” to achieve are better than many easy targets.
3. Agree on goals jointly—buyer and manager. Commit them to writing so there is joint responsibility for success.
4. Set standards for measurement and milestones along the way.

For MBOs to impact company performance the goals should be verifiable, weighted, and part of a network—in short, a *system* of measurement. Use measurements that can be quantified. As an example, an acceptable objective would be “\$100,000 in documented cost reductions will be reported by year’s end,” while a poor, unacceptable version is “I’ll save money on purchases this year.”

Rewarding good performance is a key to successfully managing buying. But how do we know whom to reward? In short, who are the effective performers in the department? And which suppliers have performed best to meet the company’s needs?

For the purchasing and supply management function, we may want to track and report on some of the following:

- Strategic procurement plan—are company objectives advanced by purchasing integration and contribution?
- Annual plan—departmental budget, material cost reduction targets, standard cost price forecasting for production materials, supplier performance improvement targets
- Individual objectives—MBOs, quarterly and year-end reports
- Scoring and tracking progress—superior and subordinate agreement in advance
- Pay for performance—bonuses for exceeding “stretch” objectives

Measurement of these factors, allowing feedback about performance, is an integral part of the buying process itself!

2. INDICATORS OF PURCHASING EFFICIENCY

It is difficult, if not impossible, to try to evaluate all purchasing departments on the same basis. There are simply too many variants. One department checks invoices, another handles freight bills, and the like; yet another in the identical industry may do none of these things. There are, however, year-to-year variations *within a specific purchasing department*

that provide interesting and useful data. They can be used as indicators of purchasing efficiency that, for simplicity, we shall call IPEs. While measuring efficiency is worthwhile as a part of an overall measurement system, do not use efficiency alone or mistake efficiency for effectiveness.

The PM can use these IPEs to graphically display data, and satisfy others that the department is performing properly. It is not difficult to gather this information. At a minimum, a PM should know most of the following IPEs. To be meaningful, data should be tracked for a 5-year period, as shown in Table 19-1.

Table 19-1. Indicators of Purchasing Performance for Hypothetical Manufacturer

CAPS Item Number	Description	Year 1	Year 2	Year 3	Year 4	Year 5
1	Purchase spend as a percent of sales dollars	50.0	50.2	50.2	50.5	52.0
3	Purchasing operating expense as a percent of purchase spend	1.6	1.5	1.5	1.4	1.3
6	Purchase spend per purchasing employee (millions of dollars)	11.5	11.7	12.0	11.9	12.3
7	Percent of purchase spend managed/controlled by purchasing	84.1	85.0	85.1	84.8	85.5
8	Average number of training hours per purchasing employee	15	16	19	22	17
10	Cost reduction savings as a percent of purchase spend attributed to purchasing	2.8	3.2	3.5	2.9	3.3
14 & 15	Percent of purchase spend via EDI or B2B e-Commerce	25.0	28.3	31.5	37.1	38.5
19	Percent of purchase spend via strategic alliances	10.4	12.0	14.6	18.3	21.5

The IPEs listed in the table were selected from CAPS Cross-Industry Benchmarking Metrics⁴⁹ and assigned hypothetical values for demonstration purposes. The PM may select from any of these evaluation criteria and add or delete factors based on his or her specific requirements. In this hypothetical example, note the rising value of purchases per employee (No. 6), and at the same time the decreasing ratio of purchasing operating expense

⁴⁹ Center for Advanced Purchasing Study, August 15, 2003, 20 items and 24 industry groups reported, [<http://www.capsresearch.org/publications/pdfs-protected/CrossInd082003.pdf>]

to purchase spend (No. 3). Would these trends indicate improving or deteriorating purchasing efficiency?

An excellent indicator is the percent of cost reduction savings (No. 10), but this should be seen in the light of market conditions. This performance indicator can be expected to improve in a buyer's market and decline in a seller's market. Two important indicators added in recent years, transactions conducted electronically (No. 14 & 15) and purchases made under strategic alliances (No. 19) might be expected to rise rather sharply as these practices are expanded.

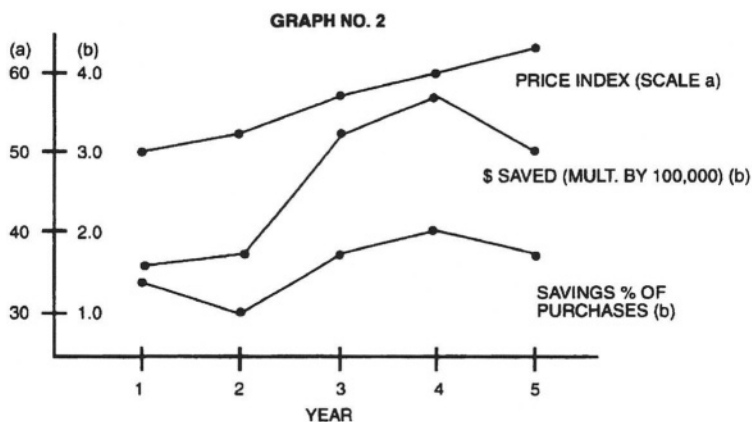
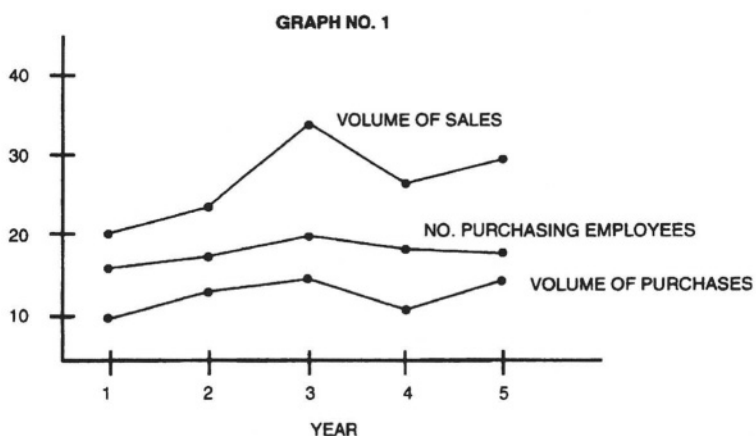


Figure 19-1. Graphical View of Performance Metrics

Statistics may be tracked and reported graphically as well as in tabular form as above. A number of graphs may be constructed from such data, as it is much easier to see trends when they are graphically depicted. For example, Figure 19-1, graph No. 1 shows that when the volume of sales and purchases dropped in the fourth year, purchasing personnel were reduced. Increased productivity by the purchasing personnel could be used as an argument to obtain pay increases or bonuses for the more effective buyers.

Figure 19-1, graph No. 2 shows that the company-market-basket price index advanced, showing higher prices are being paid, despite an increase in purchasing savings. The inevitable question is “Why?” Seeing this relationship, the alert purchasing manager will investigate and be able to explain to management the relevant factors affecting prices and savings achievements.

There is no way of predicting how any given company’s statistics would chart or what indicators or questions would be evident. However, no one would know more about the statistical measurements of the purchasing operation than the purchasing manager. The proper interpretation and use of these statistics are a measure of managerial capability. In the process of keeping these IPEs, various aspects of good or poor performance will become evident, so changes can be made. The efficiency of a purchasing operation cannot be measured in terms of such data alone. Quality of material bought, reliability of sources, service rendered, and suggestions for reducing costs are some other considerations.

While other buyer attributes such as personality, integrity, and intelligence are extremely important, they cannot be charted, as they are subjective personality traits that even the trained psychologist finds difficult to measure effectively. We are interested in the *results* of these traits that can be measured using available statistical data.

Such charts help to show whether the department is maintaining a reasonable level of performance. It’s important to differentiate between workload and job effectiveness. “Workload” refers to the quantity rather than the quality of work. It is possible to have extremely efficient buying with light workloads yet have far too many employees. That’s why the term “indicators” is preferred over “measurement.” An analysis may prove that the question raised by an IPE is fully justified.

When the last out of the World Series is made, each player’s batting average will be recorded for all to see. It’s either a badge of pride or embarrassment. Surprisingly, the difference between the league-leading hitter and an average professional ballplayer is relatively small. Take a player sporting a .310 batting average compared to the average of .250. So, that player gets only one hit every 20 times at bat more than most others; yet, his salary is about four times that of the others. The difference in ability of

the professional buyer and an average one is likewise small, though it's not common practice to compensate in a manner similar to that used in baseball! Is this because of the difficulty of judging the score on good buying?

3. BENCHMARKING

The desire to provide meaningful measures has led the ISM to promote *benchmarking* as an indicator of relative purchasing performance. Benchmark information identifies how the subject compares to others in a specific dimension and will enable the users to find ways to improve their performance. A benchmark is defined as a standard or point of reference in measuring or judging quality or value.

Measurements are possible on the following types of activities:

- Internal processes, performance and people
- Competitive activities, within a company's industry or business
- Functional activities
- Noncompetitive activities, outside a company's industry

The objective is to assess current performance and find new ways to improve processes. Specific goals should be set to make improvements.

CAPS, the joint effort of ISM and Arizona State University, has collected non-price data on many companies' purchasing practices and methods. CAPS Benchmarking reports are available on many industries such as aerospace/defense, food, and government buying—and these are available at no charge to ISM members.

ISM defines three phases in the benchmarking process, and these are outlined below:

- In Phase I, a benchmarking team decides what to benchmark. The team collects and analyzes the data, and evaluates a way to monitor processes on a continual basis. The team also gathers purchasing performance benchmarking reports from selected companies.
- Phase II consists of identifying the "best-in-class," by selecting organizations that most closely parallel your type of purchasing operation, or are at least reasonably comparable. For example, a bank's purchasing management will want to compare its metrics with those of other banks.
- Phase III involves optional visits to best practices sites. The objective of the visit is to understand the methods used to achieve the superior performance. While the best practice itself may be impractical to

duplicate, the understanding of alternate ways of achieving superior results may be of significant benefit.

Individual items benchmarked by CAPS include many ratios and workload measurement IPEs. Newer additions include the percent of purchases received by minority or woman-owned companies, the percent of purchases actually made by the purchasing department, and others too numerous to list.

Information gained from benchmarking allows comparisons of results of an individual company to a range for an industry. Groupings have been made of television, semiconductor, goods/services, and petroleum companies. Most companies will be included in one of the 30 representative groups. Data submitted are treated confidentially and individual companies are not identified. The ISM encourages use of benchmarking, and it has become a common and accepted practice.

4. THE TREND MEASUREMENT SYSTEM

To sort out the measurement confusion, the TREND concept was created and first published in 1966. That's significant, as TREND has withstood the test of time, and it's as valid today as when introduced. TREND, or "Total Recognition of Environmental and Numerical Development," evolved from the earlier development of Indicators of Purchasing Performance as discussed above. It is a strategic approach to measurements and similar to the way JIT philosophy applies to inventory.

The TREND philosophy may be summarized as follows:

- Purchasing can and should be measured.
- Comparison with another purchasing operation can be helpful if it's possible to benchmark with success.
- The trend of performance today with respect to past performance is a useful measure.
- Measurements should be made in three basic areas: Conceptual, Behavioral, and Resultant.
- Measurements should be in quantitative terms that are easily recognized by management.
- Accomplishments should be reported in terms of their total effect on the business.

Most numerical measurements, by themselves, only partially indicate the job being done. The three distinct areas for measurement are shown in Figure 19-2. All three areas have to be evaluated.

If the PM looks at these as three separate yet interdependent areas, it is clear, it's not enough to analyze results only. It doesn't show *how* improvement can be made.

Step 1 is, in effect, "How well has the PM achieved an understanding of effective purchasing with the buyers, and how well have they studied what makes buyers want to buy well?"

Next the PMs see in Step 2 what their buyers *do*! Is it what they say they'll do, and the manager believes they should?

Finally, the PM, like all managers, is interested in Step 3—Results. So he or she tries to measure the end product of performance.

If Step 3 end results are not what we'd like, it can be changed by feedback to steps 1 and 2. For example, if savings are too low, and it's clear that buyers don't understand or use cost and value analysis, then a buyer development program might be implemented. Through a process of planning, acting, measuring and then feedback to repeat the three-step cycle, improvement should result.

No wonder there is confusion about measurements. Some say, "Measure by objectives," and another, "You must measure by results;" while still another says, "Modern purchasing techniques must do the job." Some managers say, "It's a matter of having good people, and they will provide the best results." But how do these people *know* they're getting results? Each is right, but only partially. Areas can always be found that are not being measured that may be just as important to the operation.

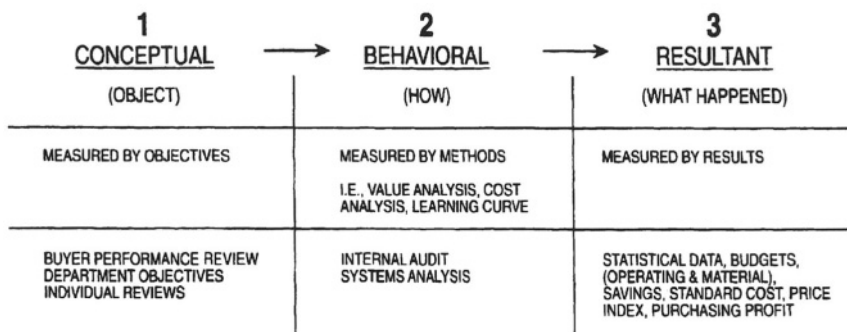


Figure 19-2. TREND Three-step Measurement System

TREND, the three-step purchasing measurement system, shows that no universal yardstick will ever be the final answer; rather, many areas for improvement will need to be considered. All have a positive or negative effect on purchasing performance. Emphasis on any one TREND step to the exclusion of the other two can only produce partial results.

Something is pushing the CPO to measure his operations. Using the TREND concept, the CPO can segregate the functions of purchasing and supply management into the three schools of management. In chart form, Table 19-2 shows that the concept a person holds influences the behavior on the job, and so the all important results. *The basic purpose of any standard of measurement is to make an improvement; otherwise, it is wasted effort.* A performance standard must be high, but not so high that it is beyond reach. Patience is needed. There will be delay between a change and its results, so it is important that the result is measured after the change has had the opportunity to affect the result.

By studying the department effort in its entirety, any deficiencies in the three steps that can be corrected *will affect the overall department in some manner.* When the concept or understanding of the buying job's global role is clarified, the results will improve.

Table 19-2. Management Overview Using the TREND Concept

Concept	Behavior (how done)	Results
Change sourcing relationships	Use alternate supplier Adjust volume among suppliers	All methods result in combination of the following:
Change design requirement	Perform value analysis Substitute material or part Standardize Redesign	
Change buying method	Negotiate concessions Forward buy Use long-term commitment Make or Lease Vs buy Subcontract manufacture	
Change delivery method	Select best freight term Change shipment quantity Deliver to point-of-use Use alternate shipper	Lower total cost Lower cost of ownership Higher profit and ROI
Change buying volume	Consolidate purchases Reduce set-up time and cost Negotiate volume discount	
Change inventory policy	Change safety stock level Reduce lead time Implement JIT practices Supplier stocks or consignment	

5. STANDARD COST AS A PERFORMANCE MEASUREMENT

Variance from “standard cost” is used by many organizations as a measure of purchasing performance. The standard is set in advance of the year to be measured. Whether prices paid are higher or lower than the standard, purchase variance (PV) is said to indicate whether buyers have done a good or poor job. Most PMs and buyers are familiar with how standard costs are established, but if there is any question, it would be wise to review the more complete description of standard costs in Chapter 11.

There are two substantial areas of concern when using purchase variance as a measure of purchasing performance. First it is a measure only of buyer performance in managing prices paid, not in the control of total cost. Secondly, the baseline for the measure is the standard cost, which was established based upon an estimate of the expected price. If buyers are expected to manage the supply base to reduce total cost below the previous total cost, a PV measure can actually create incentives leading to the opposite result, lower price and higher total cost.

Tracking PV measures the combination of ability to control price rises, and the ability to foresee the same. A manager is not able to separate the two from the PV report. The focus on price alone distracts from, and even contradicts, major cost improvement opportunities in acquisition. So, the use of PV measurement methodology alone, without other measurements as further described below, is not recommended.

6. HOW THE PURCHASING DOLLAR IS SPENT

Here is a measurement system to consider that has been successfully used for many years. Productivity is very simple conceptually, the ratio of total output to total input. In practice, both the output and the many inputs to a process must be quantified, and to be a useful tracking tool, the resultant relationship must be measurable.

Purchasing can be an important contributor to the profitability and growth of the company through procurement programs that are proactive rather than reactive. Forward-looking procurement productivity programs help. Buyers must make things happen in “getting the most of every dollar you spend!”

Nearly all of the *Fortune* 1000 corporations track labor efficiency and productivity. Only a few have documented a valid tracking system for measurement of how well their company spends its dollars. For purchasing, here is one answer to the question of “What is productivity?”

6.1 Computing a Company's Productivity

The fact that markets are described as either a buyer's or seller's market offers some sense of the difficulty of buying. How can a management determine whether reported cost savings or price reductions are good? In inflationary times, the prices paid should never rise as fast as the inflation rate. When market prices fall, are buyers keeping ahead of the decline? If buyers can consistently control their actual prices paid, so they are lower than the market movement, these measurements give some indication of control of the buying activity, at least to the extent of controlling price.

If we look at the three cornerstones of evaluating price savings, they can be identified as:

- The *marketplace* in which the buyer operates—the external environment
- *Documented cost reductions* that are made
- The *actual prices paid*, which is the net sum of all the extras as well as cost reductions

Understanding of these three areas gives us an insight not otherwise possible. There is a correlation between the marketplace in which the buyer buys, the savings made, and the actual prices paid. It is from this background that this productivity measurement evolved.

Buyers, of course, are not in control of all marketplace events. However, they do have a say on prices paid and savings resulting from effective buying. Any measurement of materials price trends does not reflect only buying activity. Rather it shows a composite of all influences that affect prices paid—engineering, manufacturing, quality control, and of course purchasing negotiations.

If buyers are not paying some or all of the price increases accepted by others, then lower prices are being paid than would be expected in that market. Conversely, if the company market basket (CMB) index is going down, indicating lower market prices, but lower prices are not being reported, and the buyers make little or no savings, that could be an indication of poor performance. Perhaps greater savings should have been achieved, as the buyer did not take advantage of decreases available in the market.

The market can be defined by an index that is the composite of the supply situation indicating the difficulty of buying under the conditions at that time. Economic and industry price statistics are published by many sources. Among them are the Producer Price Index (PPI) and Consumer Price Index (CPI) published by the Bureau of Labor. When the published indices are converted to a company market basket index (CMB), as explained in

Chapter 11, this gives a composite of marketplace price trends that affect your buying activities.

Some other useful sources of information for forecasting the state of the economy are:

- Money Supply is designated as M-1. It represents the most liquid of currency, plus all checking accounts. Each Thursday afternoon the Federal Reserve publishes new M-1 statistics. Where money chases supply of goods and services, prices are affected.
- Prime Rate is an economic barometer of the interest rate the major banks charge the largest borrowers, primarily major corporations, for the use of borrowed money.
- Index of Leading Economic Indicators is compiled by the Department of Commerce at each month's end and considers new construction permits, wholesale orders, and new company formations, etc.
- Treasury Bill yields are reported Monday night, and set the rates of other short-term investments such as 6-month CDs and money market funds.
- Unemployment Rate is another indicator of economic activity.
- Dow Jones Industrial Average is based on the prices of 30 blue-chip stocks. The composite index adds 15 utility and 20 transportation stocks.

The calculations used for purchasing productivity are based on: the rate of change of market prices, minus the rate of change of prices paid, divided by the base year's performance on the same attributes. The base year used is the previous completed year that is acceptably accurate.

Mathematically, then, purchasing's price control productivity (relative to the base year) can be expressed by the formula:

$$((C-A) + 100)_i \div ((C-A) + 100)_{i-1}$$

Where: C = Company Market Basket index (CMB) forecast,

A = Actual rate of change of prices paid,

And i = Current measurement year (i - 1 = previous, or base year).

On the left side of the chart shown in Figure 19-3 are plotted the PPI, CPI, and your CMB index. Remember, the company index is a weighting of the PPI for the items it buys. The data shown were that actually reviewed by the company management on a monthly basis, as the facts became known. So, there is a confidence in the base year data.

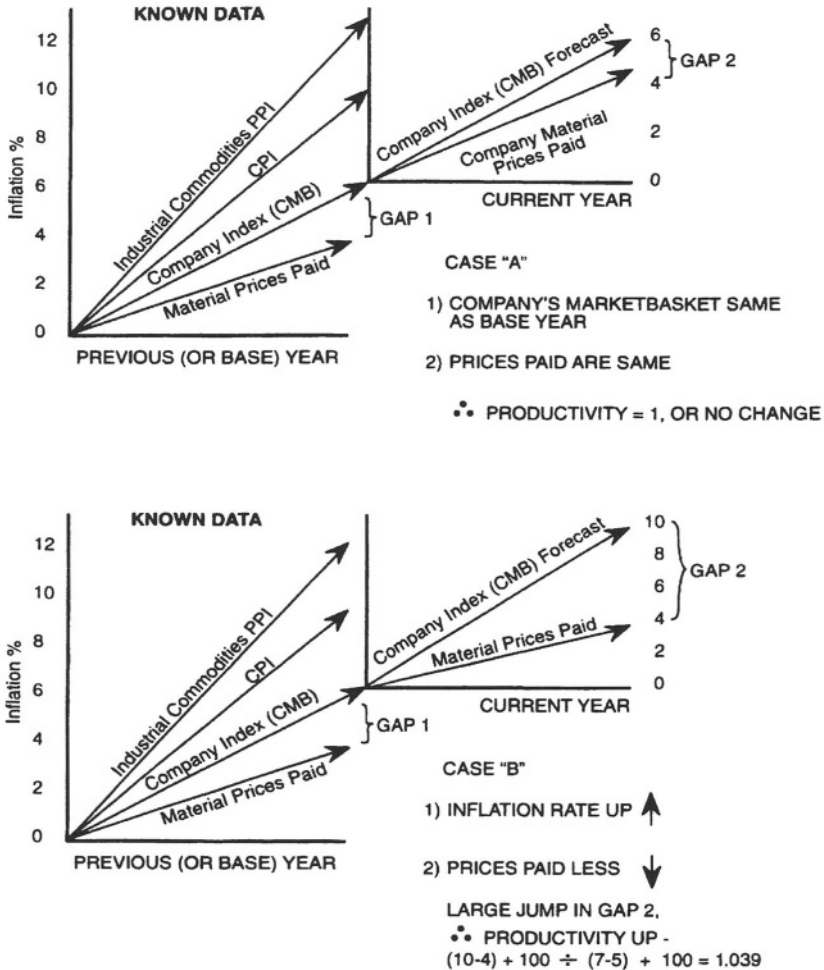


Figure 19-3. Price Productivity for Purchased Materials

To explain how it worked on-the-job, Case "A" shown at the top of the chart assumes that the CMB is predicted to be the same +6.0% as in the base year. On this expectation that inflation will continue the same as the year just completed, and the prices paid are at the same rate of change, the productivity = 1.00. That's derived from $((6 - 4.5) + 100) / ((6 - 4.5) + 100) = 1.00$. A productivity ratio of 1.00 is neutral. That is simple enough, but seldom is the following year exactly the same as previous year.

Less than 1.00 is unfavorable, and that would cause questions regarding the trend. Let's consider a case not shown, where the market basket inflation of 6% is expected to remain steady, but the prices paid will be up 7% as compared with the base year's 5%. In this case, the measurement is less than 1.00, computed as $((6 - 7) + 100) / ((6 - 5) + 100) = 0.98$ productivity indicator.

Above 1.00 is indicative of good price management performance depending on the magnitude of the number. Case B further assumes that last year's market index forecast was a 7% increase, while actual CMB prices paid rose 5%. Case B further assumes inflation will rise to +10% based on economist, management, and buyer judgment. That increase is programmed into the company's cost system, the percentage varying with different items bought. As the year unfolds, the actual prices paid are increased by +4%, for a larger "gap" than before. Here the productivity is up, computed as $((10 - 4) + 100) / ((7 - 5) + 100) = 1.039$. Before giving into the temptation to think this is too theoretical to be practical, realize that this case represents an actual performance by the senior author's department during the highly inflationary times in the early 1980s, with the actual 1980 base with projection for 1981. Recall 1982 had the largest jump in industrial prices in many years, reaching up to 28%. This methodology remains valid today!

In practice a chart of 3 years plus the coming year for three indexes—PPI, CPI, and the CMB—were kept. As expected the CMB more closely tracked with the PPI than the CPI. There is no reason this measurement won't work in any year for any company.

The above can be simplified by showing only the CMB predictor, and plotting the monthly prices paid as the year unfolds.

In practice, a company can plot its data monthly to not only follow the trend of prices paid compared to the indices, but also to give a measurement of the effectiveness of the buying effort. The correlation of these three areas, and the experience gained from reviewing, give us an understanding not otherwise possible. To recap, these measurements are (1) the price indices, (2) the actual prices paid, and (3) the "gap" or difference between the two, which is compared to the base year.

7. REPORTS TO MANAGEMENT

A report to top management is an important business communication. Important reports should be written to be effective and allow less chance of misinterpretation. The best report to management is one favorable to purchasing that is given by other departments. But, in the event that is not a

regular occurrence, many PMs find written reports necessary to keep management apprised of purchasing's potential and accomplishments.

Poor reports or attempts to get unwarranted attention aren't well received. Some company cultures encourage on-the-spot reports over more formal periodic reporting. PMs might consider what their management would prefer to receive.

A good report should serve a threefold purpose: first, to convey facts to the person(s) responsible for acting on them; second, reports help management to judge how effectively a job is being done; third, reports assist PMs in doing their own job. If nothing else, the preparation helps to clarify their thinking, and forces them to analyze problems. Reports help develop and establish goals, review accomplishments, and sell ideas.

What should be reported? Put yourself in the top manager's shoes and look at the report as he or she might. Think of what management will find important, not necessarily what is easy and pleasant to report. Certainly most management people want information about any large increase or decrease in the price of major purchases that impact strongly on profit. Report cost improvements in the language of management whenever possible, such as impact on earnings per share, return on investment, or net operating income. News about any benefits from purchasing action or as a member of improvement teams is also worthwhile, and should be reported as well.

Having each buyer give the PM a report, following a prescribed outline, is a good start. This activity causes buyers to reflect on what they've done. If there is not much to report, perhaps this is a motivator to get going. This input, filtered with the PM's overview and grouped in familiar sections will let the reader choose what is most interesting. Remember, when reading the sports page most of us pick out the headings to read about our interests.

Reports should be simple with a positive outlook, objective, and as interesting as possible. Timeliness is important, so favor electronic distribution systems over hard copy. Be brief and to the point. Frequently it may be appropriate to include supply management issues in other internal news or management information documents, to emphasize the importance of the supply base to the enterprise.

A sample report (primary topics reported) used by several companies that have sound reporting procedures follows:

Report to: President, Vice President, and Department Managers. Also Director, Managers, Buyers and select purchasing and supply personnel.

— Highlights: [For example]

- a) Improved engineering service and liaison by assigning a buyer to the engineering area. Eliminates friction and speeds up placing of orders by 48 hours.
- b) Savings of \$180,000 made through application of learning curve to new order for heat exchangers.
- New Supplier Agreements and Special Business Conditions
- Leadtime and Delivery Improvements
- Cost and Price Analysis Savings
- Process Improvement Projects Status
- Prices and Supply Market Trends
- Strikes Affecting Production
- Problems Encountered and Solutions Offered
- New Programs and Suggestions

By consistent reporting the chance to call attention to a situation is available without making a federal case of it. As an example, consider a situation where the boss has not been actively supporting purchasing in its cost reduction program. It's better to report, as a reminder, the relevance of such a program to the company's overall profit performance, with evidence of the benefits already achieved and those anticipated.

8. SUPPLY MANAGEMENT PROCESS MEASUREMENT

The preceding sections have dealt primarily with the realities of measurement in the world of purchasing and supply management. Because price was the single statistic most readily available and the most difficult to question, it has been the standard of purchasing measurement for a very long time. Most financial management people wanted nothing to do with "soft" savings such as cost avoidance or reduction in overhead cost because they are nearly impossible to measure with any accuracy or consistency. But, as discussed in Chapters 8 and 11, too strong a focus on price can actually lead to counterproductive behaviors when it comes to total cost. More importantly, focus on price can hinder the performance of the extended enterprise in the eyes of the final customer.

The development of process analysis tools such as six-sigma, lean manufacturing and activity-based-costing have brought with them acceptable ways to account for process savings with reasonable accuracy. The astute PM has recognized this opportunity to break away from the focus only on prices paid, and has exploited the chance to measure supply management contributions in many new ways.

For example, the measures below are now being used by many progressive supply organizations:

Supply base management practice measures such as:

- Actual price compared to target price (better yet actual cost to target cost, using total cost evaluation)
- Percent of suppliers serving enterprise needs worldwide
- Percent of suppliers delivering on a JIT basis
- Percent of purchase dollars conducted under published procurement plans
- Percent of new designs conducted with direct supplier participation

Process effectiveness measures such as:

- Percent of purchase dollars under long-term agreements and strategic alliances
- Percent of purchase transactions conducted electronically (EDI or e-commerce)
- Percent of suppliers, or parts, certified to be delivered without incoming inspection
- Percent of parts with an established cost target
- Internal customer satisfaction surveys
- Supplier surveys for ways to grow as a preferred customer

Supplier performance metrics such as:

- Supplier delivery performance
- Supplier quality performance
- Reductions of supplier average order-to-shipment leadtime
- Reductions of supplier minimum lot size
- Supplier set-up time/cost reductions

Asset management metrics such as:

- Average raw material inventory or raw material inventory turns
- Purchasing cycle-time reduction
- Application of six-sigma, ISO 9000, or equivalent, project participation

This list is neither all inclusive of the range of items that may be measured nor is it necessary to use all of those listed. Rather it is offered to prompt thought as to what is truly vital to any specific organization. With consideration for what is to be measured, look for benchmark data to indicate a target value to achieve a world-class level of performance. As indicated earlier, most measures are more meaningful if the trend is tracked over a period of time. When the rate of improvement slows, consider

whether to look for another tactic to revive progress in this area or to move to another measure to bring performance up in that area.

Don't try to work too many dimensions at the same time as focus may be lost and resources spread too thin. Most find that six to eight measures are a reasonable number to stress at one time.

Another valuable tool in using metrics to drive improvement is the "radar diagram." Figure 19-4 shows how a radar diagram is constructed showing several dimensions being tracked simultaneously. The benchmark or desired value of each measure is assigned a value of 100 and is shown graphically at the outer extreme of that leg of the diagram. The current level of that specific measure is shown as a percent of the desired value. Progress is tracked by updating the present level of each dimension.

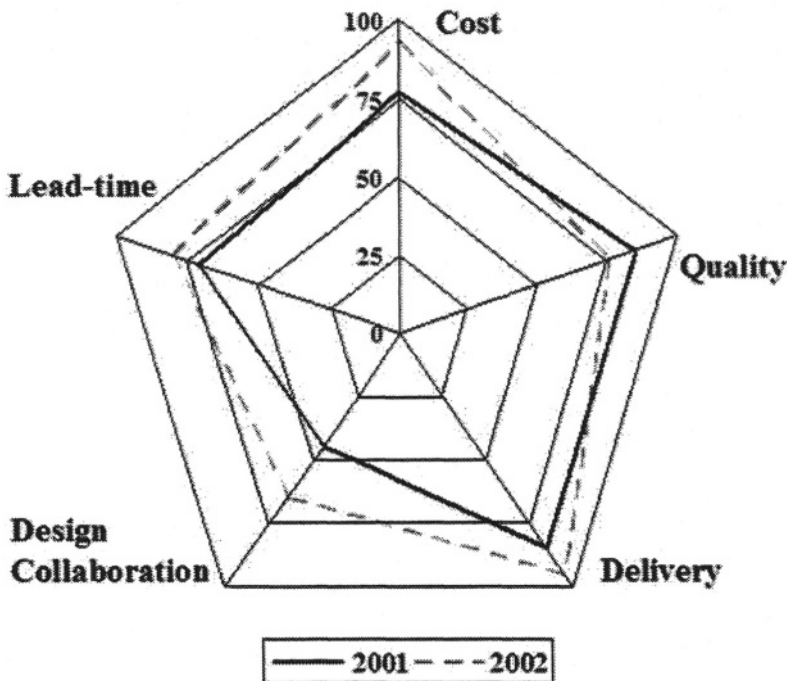


Figure 19-4. Radar Chart of Multiple Supplier Performance Measures

If one dimension increases while others decrease, this will be very visible on the radar plot. The particular benefit of such a display is that it will discourage large gains in one measure perhaps at the expense of lost ground on another. For example, if the supplier is pressured to reduce cost, he may

cut corners in making the part and lower the quality performance. The radar plot in Figure 19-4 shows how this might look visually as changes in performance occur between 2001 and 2002. Performance in all dimensions has improved with the exception of quality, which has deteriorated. The metrics showing the largest improvement are cost and design collaboration, and the dimension with the greatest remaining opportunity for improvement is design collaboration.

In conclusion, it is clear that performance measurement is vital to assuring an effective procurement activity. There are many areas of potential measurement from which to choose; use those that will provide the incentives for the behavior and results desired. Focus not only on results but also on the concepts and behaviors to achieve them. Track trends in performance to ensure satisfactory progress. Use benchmarks to determine where you are relative to others and to determine world-class performance levels. Track and report progress regularly and openly. If the dimensions being tracked truly represent the best interests of the organization, others will want to help when progress falls behind expectations.

Chapter 20

A LOOK INTO THE FUTURE

This book began with the observation that purchasing is indeed an unusual job—operating at “the vital intersection between buyer and seller where supply and demand forces meet.” Looking ahead, this will remain as true as ever. Purchasing will remain an exciting and challenging profession that will continue to evolve.

Though forecasting the future can be dangerous, as the reader will enjoy the benefit of hindsight in reading this years from now, it is still worthwhile to speculate as to where the profession is headed. The extent to which our speculation is insightful will influence readers’ abilities to improve their competitive advantage in the marketplace.

It is reasonable to believe that professional purchasing managers and buyers will continue to advance along *managerial* lines. The clerical role has been diminishing, a trend promoted by information technology and the automation of many of the administrative processes required in purchasing. Advances in data processing and computer technology, both software and hardware, have provided significant productivity tools for the profession. MRP II, ERP, EDI and e-procurement are becoming commonplace as these systems’ productivity enhancements have become widely known and documented. These trends will continue. Increased automation will have the positive effect of freeing up purchasing managers and buyers to do more important work managing the acquisition processes and controlling the supply chain in its broadest sense.

Like all attempts to predict future events, time has proven that there will be surprises. As one example—and not intended to be a critical one—the rosy scenario for Europe’s cohesiveness has not fully emerged as foreseen in the book Megatrends 2000. However, one trend that is unmistakable is the growing globalization of the economy, a trend that is here to stay. Attendant

Notwithstanding the importance of a global view, dependence on local suppliers will continue as well. Even with the advent of virtual meetings, already available from services such as WebEx, purchasing people will still visit suppliers' facilities and meet face-to-face with their management. Coordination is a vital role in the purchasing and supply management process; and in the true spirit of partnership, positive and continuous communications will always be required in the buyer-seller relationship.

1. SIGNIFICANT TRENDS

Among the most significant trends already under way that will impact the Purchasing and Supply Management job are:

- methodolgy

ensuring continuous manufacturing and minimizing material inventory impact.

- Shorter manufacturing cycles and lower inventories will make even minor supply disruptions intolerable.
- Reorganization and reengineering of work is resulting in redeployment of capital and human resources, fewer employees, and a new demand for worker flexibility.
- Increasing use of global partnerships and alliances will require a truly strategic purchasing orientation, more than ever before.
- There is an ever-increasing need for cost control to achieve competitive advantage and market leadership.
- Countertrade is becoming a necessity for many firms in conducting global business.
- Trade agreements such as NAFTA and EC92 are changing the competitive equation by dropping trade barriers within those economic regions.
- Multinational global manufacturing is leading to global supply management in order to meet requirements around the world.
- Energy availability and cost will be a major factor in determining the balance of economic power not only for individual companies, but also for entire countries.

1.1 The Realities of a Global Economy

Purchasing doesn't exist in a vacuum and current events shape the future. By their collective decisions, the worldwide purchasing community has an impact on the economies of all countries involved in world trade. Jobs are created where the work is performed, and the work is performed where buyers choose to buy, so buyers have an influence on the world employment picture as well. The question posed here is, "Does the buyer have any role in encouraging employment in any particular region or country by his or her sourcing decisions?" Normally not, but for large dollar buys this could well become the case.

There are those in society who believe the United States imports too much, and these people point to the flood of imports that has impacted many American companies and eliminated jobs. So it is not surprising that the issue of "fair trade" has in some cases replaced the concept of "free trade" among some business executives, diplomats and politicians. Protectionism and free trade are two conflicting extremes that must be balanced to achieve the stated objectives of fair trade. While most trade experts believe in tearing down trading barriers, there is currently no international umbrella of trade rules. A movement in this direction would be positive as a leveler of competitive advantage for all countries.

The 1990s saw a global reawakening of American ingenuity and resourcefulness. Over the decade, American factories improved productivity, cut costs, modernized, reduced work forces, and reduced wage rate escalation. As a result, many of these same companies today are in a better position to compete in world markets. Proponents of a comprehensive trade policy in the U.S. point to the need to create and protect jobs. Advocates succeeded in 2003 in their call for a cabinet level Department of International Trade to put real teeth into trade policy enforcement.

But the imposition of a strict trade policy brings additional questions that must be considered by our political and business leaders as we forge an improved environment for fair trade in the years ahead:

1. Should we distinguish between products made abroad by U.S. owned companies or joint ventures, and goods produced domestically by foreign owned companies?
2. Should we try to discourage offshore countries from owning plants here in the U.S.?
3. Does it matter who provides work for American workers?
4. To what extent does buying offshore really cost jobs at home?
5. Should businesses seek free trade or protection from unfair competition?

1.2 Buyers Should Avoid Chasing Low Cost Labor

As we look ahead, it would be shortsighted not to recognize the loss of U.S. jobs and plant closings as a result of rapidly expanding outsourcing. What are the solutions to widespread outsourcing that sometimes results in plant shutdowns that can devastate a community? Traditionally, tariffs on imports have been utilized to protect against such job losses, but the U.S. understandably does not want to cause a trade war by imposing or increasing a tariff aimed against any of our current trading partners. Historically, America has championed free global markets and therefore favors avoidance of tariffs on imports, as to do otherwise would directly affect the U.S. buying companies' current supply chains.

Some believe it is folly for the U.S. to continue to promote the free trade philosophy that other nations sometimes exploit. They believe the U.S. is still not faring well in today's world economy. Unions fear low labor cost competition from China and Mexico, to name just two examples. But, it isn't simply cheap labor that leads to economic success. We must also recognize that this issue is not solely an American problem, as evidenced by the example that Mexican jobs are currently fleeing to China at an alarming rate.

For years our American policy has reduced duties to encourage purchases from the developing countries. In the 1970s and 1980s American companies

pushed to develop foreign suppliers and teach them how to produce goods. The increase in outsourcing has expanded to include other labor-intensive jobs such as software code creation, with India as an example in this regard. This has been the trend and will continue as such, as it's easier to move the technical expertise than to physically move the workforce.

Job losses have been driven in many cases by the opportunity for productivity gains. In a globally competitive environment, companies locking into domestic production could risk closure of the entire business or the possibility of having itself moved offshore. The debate will continue, but a compromise needs to be found, and the purchasing and supply management function must be aware of the issues at stake.

The authors earlier cautioned, "Buyers having a global outlook does not mean their objective is to buy offshore. Rather, the buying decision must be made considering quality, cost, delivery, and other global supply factors." The key point is that buyers and managers who do not pursue worldwide opportunities can't know if they have the best buy! And, that's what purchasing is all about.

2. CHANGES IN THE PROFESSION

Because of the rapidly changing context of global supply chain management, there are three profound changes already well underway in purchasing and supply management:

1. *Strategic (very long range) and tactical (day-to-day) activities are becoming separated within the organization.*

There are very good reasons for this. Strategic work in the form of supplier development activities, cultivating strategic relationships, outsourcing non-essential work and managing a global supply base are now a necessity. Expectations of suppliers' contributions to the strategic and long-term success of the enterprise are rising continuously. At the same time, Purchasing is tactically accountable for the suppliers' performance in meeting customer needs for quality, leadtime, delivery and total cost. The day-to-day oversight of supplier deliveries and quality will not wait for tomorrow, and strategic work will not get done if it is assigned to the same individuals having the tactical responsibilities.

2. *Continuous improvement activities have become a normal part of the work of supply professionals.*

In-house process improvements using six-sigma or similar methodologies are already common in most companies, although many have not yet seen it as part of the purchasing role. And even in those cases where these

initiatives are in place, there are huge opportunities remaining for most supply organizations—as an example, in addressing cross-functional cooperation. Even fewer purchasing organizations have tackled the vast potential of process improvements among trading partners, even though such collaboration can have significant benefits for the team. For example, consider that Wal-Mart recently told its top 100 suppliers to provide all products with radio-frequency identification (RFID) tags to track their movement in the supply chain by January 1, 2005. Such joint supplier-customer improvement efforts present a major challenge, but when accomplished they provide an inherent competitive advantage to the participating firms.

3. *The education and training of purchasing and supply management professionals has changed dramatically.*

Because of the changes above, skills development now includes analytical methods, project management, technical areas such as engineering, information systems and sales, and relationship building skills such as facilitation, writing and presentations. The expanding importance of the supply chain in delivering the products and services that customers demand will drive the need for ever more refined skills for purchasing people to manage resources (human and capital) both inside and outside the company's own boundaries.

2.1 Strategic Development Becomes Critical

Strategic development of the supplier base is a much larger task than simply choosing a supplier to fulfill a particular requirement. The supply manager will need to determine how a particular supplier “fits within the planned supply structure.” Because the supply chain in this context is to be viewed as a critical part of the extended enterprise, suppliers should be made to feel, “We are in this together.” The buyer may want to ascertain of the suppliers, “Do you value my business? Will you work with me?” Proficiency in strategic skills will be called for in areas such as analytical and problem-solving abilities, technical product and process knowledge, relationship building and dealing in different global cultures.

Supplier relationships are not defined solely by the terms of a contract or a purchase order. To the contrary, the relationship will evolve from many person-to-person exchanges between members of the selling and buying organizations. The key elements of such long-term supplier development efforts include joint market opportunity assessments, shared business opportunities and risks and joint process improvements.

Collaboration is being undertaken across enterprises to remove cost and time from key customer support processes. In managing inventories, it is not

sufficient to simply move the carrying cost from the buyer to the supplier thereby resulting in no net improvement; the inventory needs to be reduced in the supply system so that greater flexibility and lower cost can be offered to the final customer. Similarly, supply managers need to work with suppliers across a wide number of issues, processes, designs, manufacturing methods and e-business systems.

In leading companies, the number and collective capabilities of suppliers is being managed on a global scale to better suit the needs of the enterprise. These companies are defining and developing the specific supply base they will need to optimize supplier performance for goods and services and to meet worldwide competitive requirements.

As described in Chapter 3, an important element of developing the desired supply base is the analysis of current spending patterns and of future supply needs. Only then can a supply chain structure be created that will address the specific needs of the enterprise. Information Technology applications already provide major improvements over the manual approaches of only a few years ago. These systems will surely become more capable and more flexible in creating highly customized solutions.

To construct this strategic model, most companies have found it is very helpful to categorize suppliers based upon how each fits into the supply structure. Those suppliers with whom the plan is to expand the relationship and to do more business are called *preferred suppliers*. Another group, where the business relationship is vital to success but where expansion is not desirable might be termed *necessary suppliers*. If neither of these applies, we could simply call a supplier used for a particular requirement or for a limited time an *opportunistic supplier*. Of course the methods used to work with each of these groups will differ significantly.

In a similar fashion, some sellers have begun to analyze their customers to determine which offer the sales potential with the greatest opportunities for the supplier to thrive. Suppliers armed with this information will decide which customers warrant their confidence and collaboration, and those they prefer not to serve in the future. Beware; the implications are obvious and dire for a customer that is hard to please and provides little support to suppliers!

2.2 Tactical Methods Remain Important

Process improvements will become the norm in buyer-supplier interactions. Sometimes this will involve the buyer guiding the supplier toward a particular area of concern with the supplier's performance. In other cases the supplier and buyer will collaborate to jointly attack a problem. A working knowledge of the tools of six-sigma problem solving methods, lean

manufacturing practices and e-procurement systems will be valued inputs to the proactive procurement team.

Buyers are likely to find themselves faced with much more complex daily work activities, requiring the ability to plan workloads, share work tasks and do these within very short timelines. Project management training may be helpful in addressing the growing demands for the organization and execution of these new challenges. The tactical purchasing professional may learn additional languages and travel extensively.

Supplier performance tracking and reporting are a vital part of the leading procurement organizations' portfolio of tools today. Electronic systems have made it possible to capture quality, delivery and cost information in real time. It is no longer necessary to wait until the end of the quarter or the year, or to manually tally the supplier's record of performance, as now it can be tracked with every delivery and incident. Data can be monitored continuously and trends and exceptions highlighted for buyer attention the moment they occur. Not surprisingly, suppliers have consistently demonstrated that negative performance reports will get immediate attention, rather than risk the potential loss of business.

While many buyers still focus shortsightedly only on price and price reduction, many others have turned to analysis of total cost to guide their sourcing decisions. Process mapping and activity-based costing have permitted the inclusion of the value of peoples' time in analyzing total cost. In many cases this has helped bring to light the common sense belief that "soft" or non-price savings are real and of substantial value to the organization. So another dimension of procurement contribution has been made available to the learned practitioner.

3. FULFILL THE VISION!

Becoming a globally oriented supply chain management expert offers the purchasing manager a direct shot at joining the company's top planning councils. The ability to oversee the global supplier network and understand the financial implications of sourcing decisions is vitally important. Purchasing's role will continually shift as supply and demand forces change. Unfortunately, scarcity of materials will cycle again and again over the foreseeable future. As in the past, higher prices will be needed at times to reduce consumption as the world's resources are being devoured.

As companies meet the challenge to better compete and sell worldwide, corporate strategy will naturally focus on the quality of products and services, manufacturing capabilities, total cost of operation, and supply chain management. Those companies that can deliver a quality product *anywhere*

at the lowest possible cost will survive and grow, while others will fall behind. Contributing to the achievement of economic supply assurance requires an expanded purchasing outlook, and how well this is accomplished will help to determine every company's survival in the marketplace.

Global buying requires a forward look. Purchasing must *foresee* and anticipate the performance of the supplier community. Economic power must be used to contract for and ensure supply first, seeking and finding the best sources on a global basis. This need to look ahead, to plan and to manage, will continually engage purchasing and supply management professionals.

Fortunately, the buyer is used to dealing in the future. He or she negotiates not for today, but for the circumstance that will exist when goods are delivered tomorrow. Buyers must be planners to be effective and successful. On the job daily, the buyer is future-oriented—today! It remains for buyers to continue to broaden the vision, capability, and experience to cope with—or better yet, *master*—the challenges ahead. Within their own companies, buyers are expected to work with every other department to some degree. In fact, buyers must continually relate to different people with varying temperaments both *within and outside* their companies.

The key to purchasing's future lies in creation of the appropriate leadership role to be played within the individual company. As much as we might not want to admit it, the fact is that top management is not primarily focused on the optimization of the purchasing profession! Facing that reality, we acknowledge that top management is looking for the supply management team to contribute to the key business strategies and objectives—profits and growth, or such others as are pertinent to the overall business.

We conclude with the prediction that Purchasing's star will be higher in the business firmament tomorrow than it is today. The opportunity is ours. As we move into the future, let's consider the importance of fulfilling our leaders' vision, "a greater contribution of suppliers to achieve our business goals." In Chapter 1, we began with the analogy of the Apollo spaceship rocketing into the heavens and we on board looking back at the Earth from a perspective never before seen. Remember that when our astronauts reached the moon, through TV's eye we shared the experience to see an "Earthrise." What a vision!

As "Purchasing and Supply Management" is redefined in today's complex and dynamic global environment, purchasing people will need to proceed with flexibility and creativity. To fulfill the vision will require a continuously improving supply chain management process, both in its definition and in its execution. The world of Global Purchasing and Supply Management will be extremely challenging but highly rewarding for those

willing to accept the challenge! Are you? Are you ready to “Fulfill the Vision?”

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B - Biographies of the Authors

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The recipient of the Shipman Gold Medal, the highest national honor in purchasing, Mr. Pooler held many National Association of Purchasing Management posts, including the National Professional Certification board chairman, and national Vice President. He served as an adjunct professor at Syracuse University and its International Management School where he taught and lectured on procurement and materials management. The author writes from an industrial and commercial background, and also has wide experience for military type government contract buying. Mr. Pooler has published over 60 articles, and is the author of the following:

1997, Purchasing and Supply Management: Create the Vision, 1st ed. Chapman and Hall, New York, 382 pages.

1991, Global Purchasing: Reaching for the World. Rutledge, Chapman & Hall, (Originally Van Nostrand Reinhold) New York, 266 pages.

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1970 & 1980, Contributor to: AMA Management Handbook, and to McGraw-Hill's Purchasing Handbook.

1967, "Listen in on Purchasing." AMA training recording and manual, American Management Association, New York.

1964, "Developing the Negotiation Skills of the Buyer. *AMA Bulletin #50*, American Management Association.

1964, The Purchasing Man and His Job. American Management Association, NYC, 288 pages.

(The first purchasing management book that was published in several languages and used by the Japanese for many years.)

25 years, Associate Editor, *Journal of Purchasing and Materials Management*, National Association of Purchasing Management Association, Tempe, AZ.

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"International Buying Outlook" *Purchasing* magazine, Cahner's, 1986 - 1991.

"Management Perspective" *Purchasing* magazine, Cahner's, 1966 - 1970.

Mr. Pooler lectured extensively for many years. Traveling to over 30 countries, he has presented programs throughout Europe, Scandinavia and India. He has conducted seminars for numerous corporations and lectured for universities, as well as having developed programs for the World Trade Institute at the World Trade Center, National Association of Purchasing Management (now Institute for Supply Management). American Management Association, and The American Supply Education Foundation.

David J. Pooler is currently Chief Operating Officer of QinetiQ Technology Extension Corporation, a U.S. Division of QinetiQ, a United Kingdom based leading business and technologies solutions provider. Mr. Pooler is the co-founder of this US based operation, launched in 2002.

Prior to joining QinetiQ, Mr. Pooler was the Vice President - Global Business Development for Transitional Analysis of Component Technologies, Inc. ("TACTech"), a computer services firm based in Yorba Linda, California. In this capacity, he was responsible for expanding the company sales into international markets, and was one of the principals responsible for overall general management of the company. During his tenure, the company became the world leader in the field of obsolescence management software solutions.

Prior to joining TACTech in 1996, Mr. Pooler held senior management positions within both Textron Marine and Land Systems and General Dynamics Corporation. Most recently with Textron, he was the Director of International Offset and Trade Development, where he was responsible for the negotiation and execution of the company's worldwide offset and countertrade obligations.

Mr. Pooler's background with Textron was preceded by fifteen years experience with General Dynamics in both international business

development and purchasing capacities. His purchasing background is extensive, having conducted buying missions around the world, and coordinated purchasing activities across this diverse \$10 billion corporation. Beginning as a buyer of electronic components, Mr. Pooler ultimately achieved the position of Corporate Director of Procurement and Subcontracts for General Dynamics. In this capacity, he was responsible for worldwide purchases in excess of \$5 billion annually, and coordinated the buying activities of twelve major manufacturing divisions.

Mr. Pooler holds B.S. in Business Administration and Masters of Business Administration degrees from the University of Maine.

Prior publications as a co-author include:

1997, Purchasing and Supply Management: Creating the Vision, Chapman & Hall, NYC. Div. Of International Thomson Publishing, London, England. 382 pages.

1981, "Purchasing's Elusive Conceptual Home," *Journal of Purchasing and Materials Management*, Summer issue, pp. 13-18, NAPM.

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Mr. Farney is a life member of the Institute for Supply Management (ISM) and has served with three local affiliates and at the national level. He has led workshops and addressed many audiences on leading-edge supply chain management strategies and best practices for audiences including ISM's international conferences, The Conference Board and the Florida Sterling Quality Conference. Sam was adjunct professor of purchasing for Tompkins, Cortland Community College, has lectured at Babson College and Ithaca College and has written case study materials for the Darden Graduate School of the University of Virginia.

At UTC Mr. Farney was a senior member of the corporate supply management team where he led the global UTC supply organization in supplier development, team facilitation and training in all facets of supply management, with emphasis on process improvement and electronic commerce. He served on the in-house training development team for lean manufacturing, and led teams in benchmarking and total quality

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Earlier, he held several positions in purchasing and engineering with Carrier, where he was responsible for strategic procurement planning, production purchasing, material management and the purchasing of private label, MRO and field assembled systems.

Mr. Farney's published works include:

2003, "Metrics Drive Supply Chain Collaboration," *Inside Supply Management*, July, Institute for Supply Management, pp. 21-23.

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