



CHAPTER ONE

FRAMING AND REPOSITIONING MANAGEMENT OF THE HEALTH CARE SUPPLY CHAIN

With purchased goods and services accounting for the second-largest dollar expenditure in American hospitals (see Figure I.1),¹ the supply chain is a major component of the health care delivery system and accounts for a burdensome toll of expense. Supply-related savings could come from many different supply chain management strategies. Industry analysts believe a hospital can reduce its overall expenses by at least 2 percent through the deployment of better inventory and distribution processes.² This represents a percentage of total expenses, not just the amount providers spend on supplies and pharmaceuticals.³ Nationally, increasing process efficiencies could result in an annual savings of approximately \$16.5 billion.⁴ This figure targets process costs alone and does not even consider the ever increasing purchase prices of goods and services. Given that materials reflect such a wide spread, those at the high end of the cost continuum have much to gain through effective management of the supply chain.

Those who wish to contribute to the development of an effective supply chain must possess the capability to clearly observe the supply chain in action, analyze the dynamics of supply chain processes, and craft solutions that will be acceptable to both internal and external stakeholders. This chapter provides a series of frames, or lenses, for understanding the current environment that characterizes the health sector supply chain and achieving managerial success.

The Current State of Supply Chain Management in Health

The world of health sector management is continually being challenged and undergoing change. At the end of the twentieth century, there was a growing consensus that the strategies associated with managed care were no longer bringing continued savings and cost reduction to the delivery of health services. The growing cost of care and pharmaceuticals, increased hospital acuity, and new technological developments led to unacceptable annual increases in health care costs. This was also a period when some leaders in the field, associated with the National Center for Health Leadership, were questioning the extent to which senior management in the United States was truly prepared to assume responsibility for the complexities of health care delivery.⁵ Major professional associations, such as the American College of Healthcare Executives, were rethinking the competencies that would ground leadership for the future. While this questioning led to debates about where new leadership might find appropriate training and how to structure the management of education and practice, many progressive systems are leading change by demanding improved performance and strategic thinking from their managers. In these systems, there is a recognition that the management of the supply chain is one of the candidates for change.

External Influence

What is leading change of managing supply in hospitals and systems? As candidates from other sectors of the economy are recruited into the management of the materials function in hospitals, there is an increased presence of managers who have experienced environments in sectors of the economy where supply chain management occupies a central position in an organization's strategy for competitive advantage. Their exposure to supply chain is grounded in industry research and organizational experience in which materials and inventory are seen as a strategic asset. In industries outside health care, the assets have the potential to be manipulated in ways that increase organizational performance. In most instances, the factors associated with the management of the internal nonhealth sector supply chain are dramatically different than they are in hospitals where purchasing is influenced by clinicians.

Furthermore, scrutiny of the hospital balance sheet encourages consultants and other influential leaders to begin to give the health care supply chain some of the attention it has received in the manufacturing and retail industries. Information system companies such as Dell, manufacturing companies such as Toyota, and retail providers such as Wal-Mart proclaim that much of their success is

attributable to strategically managing their suppliers, distribution, and inventory. While it is generally concluded that the health care supply chain is immature compared to other industries,⁶ consulting firms, health information technology providers, and a new cadre of executives in the health sector are coming to believe that new strategies for improved supply chain management will bring lower costs and greater efficiencies to their organizations. In addition, supply chain managers believe that they can contribute to the demand for greater safety in hospitals as well as improved outcomes. For the first time, there is a growing belief that materials matter.

Barriers to Change

There are still many obstacles and barriers to change in the industry of supply chain. Health care is described by almost every commentator as highly fragmented and relatively inefficient. There is little evidence of a clear strategy or structure for managing the health care supply chain. Transaction costs continue to be relatively high, and variation in prices across the system is substantial. While those who finance health care services (both private insurance and government) have taken an interest in a more disciplined purchasing of services, they have expressed little interest in developing incentives to eliminate the supply-related inefficiencies that inflate health sector costs.

Although outside influences have brought a positive new focus on the supply chain, low executive expectations still exist on what can be accomplished, perhaps due to the failure of other faddish business principles once introduced into the health sector. In fact, looking outside the health sector is not new for hospital and hospital system executives. Urged to rethink their approaches to the provision of health care, they have, in the past, frequently looked toward the nonhealth sector for guidance. Some observers have even joked that hospital management can best be thought of as the implementation of the latest managerial strategy, frequently at a time when other sectors have already applied the new principle and moved on to other management strategies. Observers often reprimand health sector executives for desperately jumping “from one of these ‘savior’ recipes, with its attendant gurus, to another, and then yet another.”⁷ Many managerial fads and fashions, even when successful in other sectors, have led to disappointing results when applied in the hospital. A recent analysis of strategic management applied in health care points out that over the past decade,

healthcare providers consistently and universally adopted “faddish” structures and programs, most of which produced unrealistic expectations that ultimately were not often fulfilled. These included the legitimization of the so-called

integrated systems' acceptance of the strategic rationale for hospitals and/or physician management companies purchasing physician practices and the ready adoption of "hot" management techniques (e.g., total quality management, reengineering, and corporate restructuring).⁸

Techniques developed in other sectors, such as Total Quality Management (TQM) were touted to be applicable to the health sector. Yet "the few studies that emerged after TQM diffused widely either suggest that it did not realize the promises made on its behalf, or focus only on hospitals that claimed successful adoption."⁹ Perhaps this is because the techniques were not customized to the unique needs and diversity of health care organizations. The research reported here confirms that the supply chain is in need of careful examination and consideration of alternatives for transformation. Managerial strategies from other sectors are not likely to be quick-fix strategy for successful health sector performance improvement.

Except in the most progressive hospitals, executives' expectations of the impact of supply chain management are low. Perhaps inattention to this function accounts for the fact that the supply chain function is somewhat less vulnerable than other areas to managerial intervention and may account for low levels of hospital and system investment in performance improvement. The ASU/CHMR study's interviews with leaders in the hospital industry indicate that they frequently define the supply management function as transaction focused and substantially outsourced through group purchasing organizations (GPOs) and distributors. Few understand that a significant portion of purchasing functions, even if outsourced through membership in GPOs or distributors, are functions requiring careful management.¹⁰ Study 1, "The Value of Group Purchasing in the Health Care Supply Chain," reports on an extensive set of interviews regarding GPO utilization and services to members by ten major hospital systems across the United States. The findings reveal that GPOs have been seen as organizations that are parallel to the hospital's own purchasing function and not as trusted purchasing partners, and that there is a great deal of variability in utilization of GPO contracts and duplication of GPO functions.¹¹ When the interviewers asked hospital and system supply managers about their use of group purchasing and costs associated with the purchasing process, the managers experienced difficulty in developing even a list of expenditure areas and expenditures amounts. One can interpret this as the failure to recognize the area as substantially under their control with or without a GPO relationship. The absence of information also raises the issue of their inability to routinely benchmark their own performance against other hospitals and systems.

What Is Strategic Management of the Supply Chain?

As managers assess how to best work with purchasing partners or to engage internal clients such as physicians, it is critical to clarify the role of supply chain management and to develop a tool box of frames, or lenses, to view the system. Supply chain management in the health sector has traditionally been viewed as a transactional activity, with supply chain managers understanding their work as a set of encounters, both internal and external, to source, purchase, and deliver goods to the point of service. The transactional frame, although operationally important, is insufficient by itself for taking advantage of the ways supply chain can bring value to a hospital or system. Managers must ask themselves, “What is meant by managing the supply chain?” and more important, “What does ‘supply chain management strategy’ mean?”

The Health Care Perspective on Supply Chain Management

In the Introduction, we defined *supply chain* as the “parties involved, directly or indirectly, in fulfilling a customer request.”¹² When considering the role of hospital supply chain management and specific managerial mandates, this customer-centric perspective extends the limited view of a purchasing department as restricted to developing better and more responsive suppliers.¹³ Jonathan Byrnes points out:

Hospital managers are making significant progress toward mastering the buying portion of procurement, but this is just the tip of the iceberg. They need to master extended supply chain management, downstream to the complex networks that are being created, and upstream to the major distributors who are providing their products and manufacturers who are producing their products. The huge potential gains that will flow from supply chain rationalization can provide desperately needed resources to offset major cost pressures coming from obligations such as indigent care.¹⁴

How one views a supply chain depends on where one sits in the process. From the supplier’s perspective, hospital and health system supply chains are predominantly downstream from their own operations. The downstream supply chain incorporates the distributor and proceeds through the provider institutions, which include clinics, hospitals, hospital systems, integrated delivery networks (IDNs), and the final customer.¹⁵ Sometimes the final customer in the health care supply chain is the patient, such as when a patient orders a medical device over the Internet. However, with patients having a relatively minor voice regarding what

products they consume during a hospital stay, the true customer is frequently the nurse, physician, or other hospital worker.¹⁶

When viewed from the perspective of the hospital supply chain manager, the supply chain's focus is most fundamentally on managing the processes associated with securing products. From this viewpoint, the supply chain must consistently be seen as a series of sourcing, procurement, and distribution services that satisfy a very specific set of customer needs, especially clinicians who work at the point of service. It is the "service-centric" aspect of the supply chain emphasized throughout this book that distinguishes the health sector as more complex than supply chains in other fields.¹⁷

Supply management, or "materials management," is frequently seen as the function in which a single manager is "responsible for planning, organizing, motivating, and controlling all of those activities principally concerned with the flow of materials into an organization." The key functions for such a manager are:

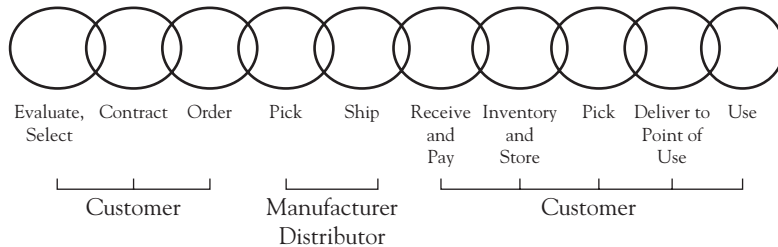
- Anticipating material requirements
- Sourcing and obtaining materials
- Introducing materials into the organization
- Monitoring the status of materials as a current asset¹⁸

The application of these four basic functions includes those tasks identified in Figure 1.1. This model fails, however, to reveal the enterprisewide complexities that exist in the supply chain.

Supply Management Versus Supply Strategy

Health sector supply chain refers to the information, supplies, and finances involved with the acquisition and movement of goods and services from the supplier to the end user in order to enhance clinical outcomes while controlling costs.¹⁹ The term *supply chain management* refers to the traditional materials management function of product selection, procurement, and distribution. Operationally, the supply chain management functions combine "related functions such as purchasing, inventory, control, and stores under the authority of one individual," who is charged to "solve materials problems from a total system viewpoint rather than the viewpoint of individual functions or activities."²⁰ It includes the upstream aspects of purchasing that require planning, "forecasting, and scheduling material flows from suppliers" and downstream aspects that include internal "distribution channels, processes, and functions that product passes through on its way to the end customer."²¹

FIGURE 1.1. SUPPLY CHAIN MANAGEMENT FUNCTIONS AND RELATED PROCESSES.



1. Identify product need and equivalencies (via value analysis teams and other sourcing schemes).
2. Assess volume and anticipated contract compliance (assessing physician use patterns, commitment to contract compliance, and the extent to which substitute products are anticipated in the market).
3. Assess risk.
4. Match product and anticipated volume to product pricing, strategic sourcing, and contracting strategy.
5. Make commitment to resources to carry out strategic sourcing and contracting strategy (for example, GPO, self-contracting, fact-based negotiation).
6. Determine transportation, distribution, and storage and warehousing strategy on the basis of product type and considerations such as consignment inventory (for example, commodity versus physician preference).
7. Consider options for receiving, picking, and distribution of goods.
8. Track utilization.
9. Determine product effectiveness and assess replenishment strategy.

Note: Nine processes associated with completing interlocking functions as identified by Schneller, E., and Smeltzer, L. Unpublished study in collaboration with HCA, 2002.

Source: Ten interlocking functions identified by Kowalski-Dickow Associates, Inc. (1994). *Managing Hospital Materials Management*. Milwaukee: American Hospital Publishing.

Supply chain management also includes internal functions associated with transforming the inputs from suppliers into units that could be applied at the point of service.²² Senior management rarely recognizes this as a complex role requiring an individual who has extraordinary human relations, operations management and research, informatics, and financial skills. As the hospital becomes more complex, it also requires an individual who can shift perspectives. Effective managers will understand their role in facilitating transactions concomitantly and understand the more strategic aspects of supply chain management. Therefore,

it is important to differentiate between tasks associated with supply chain management and more critical cognitive or thinking aspects of strategic supply chain direction. This more strategic role includes giving attention to the variety of internal and external actors who come together in a modern hospital or health care system to gain advantages through “cost reduction, technology development, quality improvement, cycle time reduction, and improved delivery capabilities to meet customer requirements.”²³

Supply management strategy is a term used to reflect the decisions and actions that supply management professionals take in the course of their work to improve organizational performance. This focus reflects the fact that “managers have been pressured into constantly seeking new methods of adding value, either through improved performance of their product or through the development of the ‘service package’ and service delivery system that surround it.”²⁴ Successful implementation of supply strategy requires a new overarching and differentiating logic. For the sophisticated supply chain executive, the vision must be very broad to facilitate “the integration of supply activities within firms in dyadic relationships, in chains of firms and in inter-organisational networks.”²⁵ Finally, supply management strategy is a perspective that allows managers to capture change and understand the importance of repositioning the supply function to meet the organization’s mission.²⁶

Luke, Walston, and Plummer’s review of writings about management strategy suggests that strategy consists of the “key concepts and ideas that organizations use (or have used) to achieve and sustain competitive advantage over their rivals.”²⁷ Hospitals and hospital systems, in seeking to achieve and sustain competitive advantage through supply management, develop strategies that extend to their current and potential purchasing partners. These partners include suppliers, distributors, GPOs, and information management and technology vendors.

Burns suggests that purchasing partners represent a complex set of stakeholders, each having impact on the organizations they are intending to serve.²⁸ Just as hospitals have gone through mergers and acquisitions and changed many of their services in the face of new technology and reimbursement schemes, hospital and hospital system trading partners have become more strategic in their thinking and more diversified in their offerings. There is a growing need for supply chain executives to be linked to both the business aspects of supply strategy (such as e-commerce and improved distribution models) and the quickly changing clinical terrain (such as the introduction of new products, for example, drug-eluting stents). Success for progressive systems appears to rest on a new set of managerial competencies that are highly strategic and applied in an environment that in the past has been characterized as “transactional” (Table 1.1).²⁹ While progressive systems are working vigorously to develop strategies to improve the knowledge and performance base of the supply chain

TABLE 1.1. SUPPLY CHAIN MANAGEMENT ORIENTATION.

Supply Management Orientation, 1999	Supply Management Orientation, 2009
Product, commodity oriented	Process focused
Price focused	Total cost oriented
Operational expense	Outcome and revenue focused
A silo perspective that sees departments and units as the principal focus	Information based
Material manager	Supply strategy management
Inefficient process	Efficient processes
Many points of contact	Paperless
Decentralized	Centralized

Source: Schneller, E., and Smeltzer, L. Unpublished study in collaboration with HCA, 2002.

workforce, the absence of a clear vision for supply chain management continues to serve as a barrier.

Repositioning Strategic Supply Management Leadership

The reporting level for purchasing managers reveals a great deal about the importance of purchasing.³⁰ Few purchasing managers occupy a seat at the vice-presidential level. The majority of purchasing managers in centralized purchasing departments report “directly to the executive officer responsible for profitable operation—president, executive vice president or general manager.”³¹ In the majority of health organizations, purchasing, even if reporting to a vice-presidential level, is removed from operations. Supply management has not yet reached the point where it is part of the executive management team. From ASU/CHMR focus groups with senior system managers, it is apparent that only a minority of chief executive officers or chief operating officers attribute importance to this area when they articulate their hospital or system’s values, vision, or mission.³² Research reveals significant differences in perceptions by senior executives and supply chain managers regarding problems, achievements, and opportunities in the supply arena. This suggests a disconnect between how management views supply chain and how supply chain managers see their work (Table 1.2). Yet there is somewhat greater convergence (Table 1.3) regarding how they assess the future.

What accounts for this positioning of purchasing at a lower level? Interviews carried out for the ASU/CHMR study reveal that many CEOs and CFOs value their materials management departments as providing a series of necessary but rather routine and uncomplicated procurement transactions. Supply chain

TABLE 1.2. VIEWS BY HOSPITAL EXECUTIVES AND SUPPLY CHAIN MANAGERS ON RECENT SUCCESS.

Rank of Recent Success Area	Executives	Supply Chain Managers
Involving clinicians in standardization	1	5
Reducing operating room costs through standardization	2	2
Investing in information technology	5	3
Reducing labor due to automation	6	3
Improving demand forecasting for the operating room	7	7
Lowering cost due to GPO contracts	3	1
Lowering the operating room cost through improved processes	4	6

Source: McKesson and Healthcare Financial Management Association. "Resource Management: The Healthcare Supply Chain 2002 Survey Results." Chicago: Healthcare Financial Management Association, 2002. http://www.hfma.org/resource/focus_areas/scsurvey.pdf.

TABLE 1.3. VIEWS BY HOSPITAL EXECUTIVES AND SUPPLY CHAIN MANAGERS ON FUTURE OPPORTUNITIES.

Future Opportunities	Rank of Opportunity Area by Executives	Rank of Opportunity Area by Supply Chain Managers
Involving clinicians in standardization	1	1
Reducing operating room costs through standardization	2	2
Investing in information technology	3	4
Reducing labor due to automation	4	7
Improving demand forecasting for the operating room	5	3
Lowering cost due to GPO contracts	6	7
Lowering the operating room cost through improved processes	7	6

Source: McKesson and Healthcare Financial Management Association. "Resource Management: The Healthcare Supply Chain 2002 Survey Results." Chicago: Healthcare Financial Management Association, 2002. http://www.hfma.org/resource/focus_areas/scsurvey.pdf.

managers express the view that their overarching goal and expectation from purchasing partners has been to simply obtain demanded materials at the lowest price possible.³³ Advancing the role of supply chain in the managerial hierarchy requires recognition that the area can contribute to the bottom line and improve clinical performance in ways that are directly related to the organization's quest for competitive advantage.

Framing the Health Care Supply Chain

Achieving savings through supply management in hospitals and systems is dependent on the rethinking of the field to a point that deemphasizes the transactions between suppliers and hospitals and redirects management focus to a comprehensive view of asset use and deployment. To move in this direction, a unitary framework for understanding the supply chain is probably not a reasonable aspiration. Rather, there must be the development of a set of frames for understanding supply chains and recognition of the value they can provide, individually and in concert, for system improvement.

A *managerial frame* is a lens or set of lenses employed by individuals to better understand the world of how to view the supply chain and serves as a basis for managerial action.³⁴ A manager who tends to look at problems through a political frame will operationalize problems differently from a manager who sees the issues through a frame grounded in an organization's culture or human relations. The ability to see problems through multiple frames provides managers with the ability to become more analytical in designing solutions.

Smeltzer and Manship document the extent to which manufacturing industries see the supply chain as the function that represents their most important competitive weapon.³⁵ Since hospitals and hospital systems are highly heterogeneous, analytical frames from other industries should be cautiously applied in the health sector. Without a perspective or frame, one can manage only toward the problems of a given moment, in a highly reactive manner. The challenge of finding the right way to frame the health care supply system has always been difficult, but the need to do so has become overwhelming in the turbulent and complicated world of the twenty-first century. Forms of management and organization that proved effective only a few years back are now obsolete.³⁶

The ASU/CHMR research reveals that supply chain managers draw on a number of rather specialized frames for assessing their environment and world of work:

- *Supply chain as transaction.* The transactional frame judges activities, actions, and actors (individuals) on the basis of their ability to facilitate the movement of goods and services from manufacturer to the point of service. This frame lends itself to quantitative analysis and benchmarking that tracks products over time and workers on the basis of completed contracts, goods received, and procedures completed. Ease of access and price, rather than contribution to the larger enterprise, is key to transaction analysis. As a frame, transaction pushes the supply chain manager to think strongly in terms of tactics and the need to complete the job at hand.

- *Supply chain as service.* The service frame, which is dependent on the transactional frame, aligns the supply function with ensuring satisfaction for internal customers (for example, clinicians) across the hospital and the system. Materials in this scenario are satisfiers for highly valued processes, which could not be undertaken without materials. They also provide satisfaction to specific workers by meeting their preferences and ensuring few inconveniences to workforce participants. In this frame, supply chain is generally reactive, although it can become part of a larger system's goals, such as improving patient satisfaction through purchasing better raw materials to increase service quality.

- *Supply chain as orchestration.* The supply chain function in the modern hospital and hospital systems represents the intersection of many customer demands and broader system requirements for knowledge. Success requires orchestration: working to bring together, through sourcing decisions, contracting, and logistics, combinations of products that enhance performance. This orchestration frame is operational when supply chain executives can channel their decisions to support organizational goals that transcend a single procurement order. A focus on safety, for example, might lead supply chain managers to prefer "sharps" products that work well together to avoid needle sticks or, when used together, promote reduced length of stay (which is associated with reduced patient injuries).

Materials executives now have at their disposal a variety of metrics, such as total supply expenses percentage of patient revenue, GPO total spend, total supply expense per adjusted patient day, and surgical supply expense per adjusted discharge. Such information allows them to take a broad view of how different products come together, in different hospital settings, to contribute to the care of patients. When data on individual hospitals and systems are available, materials executives are also able to benchmark their own organization's performance within their system and against other systems. Using such information, the orchestration lens provides a broad view of the supply function in the organization. It leads to understanding that while materials must be present (transactions must have transpired), there is much more to understanding the organization than the sum of transactions. As demonstrated in our discussion of value analysis teams and standardization, supply chain as orchestration is much more complex than the service orientation.

- *Supply chain as transformation.* The transformational frame has a strong dependency on the transactional frame; it tends to judge products on the basis of their contribution to some organizational or clinical goal (such as improved safety) and individuals on the basis of their ability to advance the goals of the organization. The transformational frame thinks of materials as one input into improving organizational performance. It assists managers in seeing resources as assets and not just pass-through or potential liabilities. In this frame, materials are

synergistic. They allow procedures and processes to be completed more effectively. Materials in the transformational model are selected because they lead to better services, outcomes, and new ways of working. Materials processes are selected on the basis of their sustaining the hospital's agility and adaptability in a quickly changing environment. The transformational lens is sensitive to both the changes in the health care delivery environment and the ongoing changes in the supply chain environment. Within this idea of supply chain as transformation, there are a number of subthemes, including supply chain as value and supply chain as quality. These are the principal ingredients of transformation.

Managing with Frames

No one frame is sufficient for effective health care supply or strategy management. Progressive supply chain leadership should be judged by the extent to which its activities are continually adding value. In the broadest sense, value is multidimensional: reducing supply cost, improving clinical outcomes and safety, improving service quality, and increasing customer satisfaction. Those who employ such frames in managing the supply chain must be simultaneously coordinators, advisers, information brokers, relationship brokers, and knowledge and information managers.³⁷ They must manage the organization's risks, collaborate with professionals, engage in collaborative relationships with trading partners such as GPOs, and adjust the organization's supply design as new challenges arise.³⁸

Orchestration requires working closely with physicians, nurses, technicians, and a wide range of nonhealth professionals to manage the products and the technological innovations that characterize modern hospital practice. As in other industries, the management of such an environment requires skills associated with motivating and leading with technical professionals, managing innovation, providing leadership in the innovation process, managing knowledge as it relates to work, and designing organizational processes for innovation.

Many organizations find it difficult to use frame analysis and change their view on a set of issues that has long been defined as a service area. The health sector supply chain has been "viewed largely in supplier-centric terms, with a focus on distribution, logistics and purchasing products into the user base."³⁹ The inadequacy of such a definition rests in the fact that while everyone knows that health care providers cannot work without materials, the transaction frame does not let managers transcend questions regarding price of goods. If one begins to see health sector supply chain as a "provider-centric model," it is possible to view the supply chain as a pipeline to products and services.⁴⁰

The customer-centric view of supply chain management in hospitals and systems demands "a holistic approach to managing operations within collaborative

inter-organizational networks allowing the formation and implementation of rational strategies for creating, stimulating, capturing and satisfying end customer demand through innovation of products, services, supply network structures and infrastructures in a global, dynamic environment.”⁴¹ This suggests a robust set of ideas to approach the area of supply and materials for producing excellence in health care. The idea of supply within a set of interorganizational and intra-organizational networks makes it possible to see the supply function through frames for analysis. It also becomes much easier to see the supply chain through a frame that considers the value of supplies or materials as potential assets within the organization. The task of management is to search for a mix that brings value to organizations.

In recognition of the potential for the supply chain to contribute to the organization’s success and of the complexity related to managing supply strategy, a few bright trends are emerging that indicate the environment for supply chain management is changing. In the hospitals and systems that are recognized by the ASU/CHMR, the supply chain management position is elevated to a strategic role. In addition, there is an active effort to recruit more highly qualified professionals for these positions. The importance of managing this issue is receiving attention in the executive suite as more technology expenditures are being allocated to the supply function, and a few hospital executives are beginning to define the outcomes of the supply process in terms of assets rather than only expenditures. As a result, search firms are challenged to identify candidates who have both highly developed supply chain management skills and the ability to deploy strategic frames.

Contingency theory is based on the notion that there are no universal prescriptions in management.⁴² Contingency theory posits that the correct management principle or technique to be applied should be related to the existing set of circumstances or situation. The theory envisions good management as the ability to perceive the significant or limiting factors in a situation. Table 1.1 identifies a number of the contingent issues that organizations must grapple with as they attempt to improve organizational performance.

Successful managers, recognizing the contours of given circumstances, apply multiple management frames and develop consequent strategies for obtaining value from the supply chain.⁴³ The idea of multiple frames for envisioning the supply chain is consistent with the contingency theory precept that there is no one best way to manage, but as circumstances demand, there may be best approaches to problem solving. Thus, a supply chain manager interested in understanding more fully how to satisfy physician demands might employ the service frame in seeking a solution. When interested in working with physicians on standardization, to improve outcomes and safety, as well as to reduce costs, the transformational frame might be a more powerful perspective.

The Complexity of Value

The overarching purpose of the ASU/CHMR project, as identified in the Introduction, is to identify progressive practices that add value through effective management of the supply environment within hospitals and systems. But what is value? Is it reduced cost? Or is it assurance that the correct supplies are available when needed? Some would say that value is defined as the correct supplies at the right place at the right time at the best possible price. This perspective on value is extremely general. An even more general definition is what value is worth to the organization in its attempt to meet organizational objectives. Does this mean that the hospital system should decrease the amount spent on a particular type of supply? Or that supply chain management should increase safety, improve customer service, or improve value in providing leading-edge health care?

These questions are not easy to answer because value varies depending on the organization and the product or service involved. If the product is a highly technical and unique medical device such as a specialized pacemaker, the supply process is much different than if it is an order of bed linens or even standard pharmaceuticals. Whereas the supply chain manager may have a level of comfort exercising judgment in the purchase of linen, the purchase of the clinical preference item will require close attention to medical staff preferences, new developments in the technology marketplace, and technical and service requirements. Also, a facility maintenance service such as housekeeping differs vastly from temporary nursing services, where there must be great vigilance in the selection of individuals who will assist to produce the expected levels of clinical outcomes. The risk of poor housekeeping is low customer satisfaction. The risk of poor nursing can be disastrous to the well-being of a patient. Similarly a capital expenditure such as MRI equipment, given its special requirements for shielding, electricity, and acceptability to clinical staff, cannot be considered the same as a capital expenditure for desktop computing.

New technologies, such as desktop analyzers for tests, have the potential to significantly affect the nature and flow of supplies away from laboratories to the point of service. Accompanying this kind of change may be the ability to change the entire protocol for patient care from multiple visits to a single visit for an episode of care. Different supplies derive a different value for the hospital.

To add to the complexity pertaining to value, the significance of a product is not evaluated the same from organization to organization. Hospitals differ in many ways, such as their mission, size, and geographical configurations. Table 1.4 suggests that value may be affected by both product and hospital differences. Large systems or specialty hospitals, for example, may be able to purchase products in a large volume at a reduced price. This may lead to a system seeing the product as an asset, that is, contributing to revenues for certain kinds of surgical procedures.

TABLE 1.4. VALUE DIFFERENCES DERIVED FROM PRODUCT AND HOSPITAL DIFFERENCES.

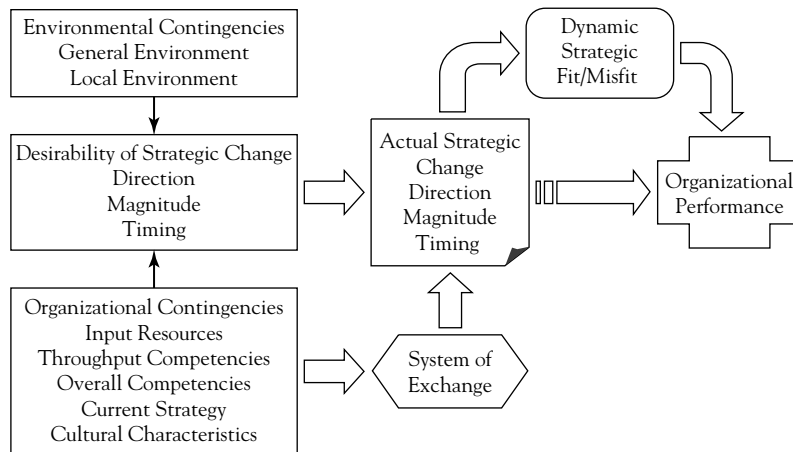
Hospital or System Differences	Product or Service Differences
Mission: specialties, research, academic	Commodities
Size	Medical surgical devices
Geographical concentration or dispersion	Physician preferences
Stakeholders	Capital equipment
Physician relationship	Support services
Managerial capability	Technology
Ownership	

An academic health center with well-trained surgical teams may have the expertise to use a complex surgical product. A surgeon performing the same kind of surgery in a community hospital may value a product for its ease in application.

Not only do different organizations and people value different products in different ways, hospitals and systems have developed diverse strategies in solving their supply chain challenges. Some have decided to manage the entire process internally. Others outsource as many functions as possible. Many systems involve physicians and other clinicians intensely in their purchasing deliberations, while others keep clinical staff at an arm's length. Among organizations that are considered progressive (effectively managing and sourcing information and relationships), many different combinations are observed. Contingency management is necessary to respond to this complex environment.

Strategic Fit and Misfit

It would be naive to think that all managerial lenses produce equally desirable outcomes for organizations. A physician-led organization may, for example, differ from a nonphysician-led organization across a wide number of dimensions that reflect aspects of culture, power, and human resources. Mayo Clinic, one of the systems studied in the course of the ASU/CHMR research, employs the vast majority of its medical staff and relies on physician-led committees to drive decisions across the Mayo system. Implementation of decisions reached in such a way is not nearly as significant a problem as it is in other systems. At the same time, Mayo's strong clinical culture and commitment to physician autonomy may mean that it, like other systems, experiences difficulty achieving consensus on product selection. Discussion of cosmopolitan and local physician orientations in Chapter Three provides important insights into the ways medical staff are oriented to collaboration. Managerial decisions must meet the demands of the organizations in which they

FIGURE 1.2. THE DYNAMICS OF ACHIEVING STRATEGIC FIT.

Source: Adapted from Zajac, E. J., Kraatz, M. S., and Bressler, R.K.F. "Modeling the Dynamics of Strategic Fit: A Normative Approach to Strategic Change." *Strategic Management Journal*, 2000, 21(4) 429–455.

are employed. The idea of strategic fit can be drawn on to explain how different solutions may represent progressive practices in different organizations.⁴⁴

The positioning of strategic fit considerations in determination of decisions regarding supply performance improvement is detailed in Figure 1.2. Outsourcing and insourcing decisions regarding an area such as distribution provide a succinct example for understanding the idea of strategic fit. The University of Nebraska Medical Center, a nationally recognized leader in academic practice, has made the decision to outsource its entire inventory and distribution process to a single distributor. While this appears to be a successful strategy for a single-site academic health center that can establish a successful and trusting relationship with a distributor, such a decision may be unworkable for a multisite, multicity system where it would be difficult for the distributor to meet, equally, the demands of all of the different entities within the system. The same system also made the decision to outsource a great deal of its purchasing through its group purchasing organization, Novation, which provides the opportunity to participate in an exchange system for the purchasing of many of their goods. For the University of Nebraska, these decisions are seen as consistent with the centrality of its educational goals. Throughout the book, a great deal will be said about the systems of exchange in which hospitals and systems participate. Chapter Seven revisits the "system of exchange" idea to reveal that there are options for hospitals and systems as they engage the marketplace for materials, supplies, and services.

Strategic fit and misfit reflects the alignment with the vision and values of a hospital or hospital system and its culture. Whether set by the CEO of a large investor-owned or integrated delivery system or by the government, vision and values provide the orientation, which is a calculus for judging the advisability of opportunities as well as frames for understanding threats. To better understand the issue of strategic fit, the ASU/CHMR study assessed the relationship between vision and value in the English National Health Service. “Value for money” is one overarching theme guiding the National Health Service. This theme is linked to a vision of a series of expectations for the system to which supplies, in addition to price, can be judged by:

- Contribution to successful clinical outcomes in the eyes of patients
- Contributions to successful clinical outcomes in the eyes of providers
- The extent to which the product results in increased use (for example, as a result of emergency room turnover)
- Improved access as a result of savings
- Improved safety to the patient
- Improved employee safety
- Reduced total expenditures per admission

Study 2, “Clinician, Supplier and Buyer Working as One to Improve Patient Outcome” (all studies are placed at the end of the book) explains how a large hospital in Plymouth, England, has been able to capitalize on vision, extraordinarily strong management, and physician collaboration to effectively manage one of the more expensive supply areas associated with cardiology.

In the United States, no common set of values drives health policy and, consequently, delivery. Many of the items listed above resonate with how progressive supply chain leaders in the United States view their roles. In an ASU/CHMR focus group, over ten U.S. health systems indicated that the Institute of Medicine study on patient and hospital safety, *To Err Is Human*, is a “burning platform” for the supply chain manager in his or her attempts to shape the materials environment.⁴⁵ In addition, as the introduction of new technologies into the practice arena accelerates and stresses even further the ability of the hospital to achieve a positive bottom line, attention will be paid to the issue of materials.

Summary and Conclusion

Effective and efficient supply chain management represents an opportunity to add value and decrease costs in the U.S. health care system. To accomplish this end, it is necessary for top-level executives and supply chain managers to reframe and

transform their approach to the supply chain. Each hospital or system must determine what value can be achieved through the supply chain and structure itself to meet its goals. This will vary depending on product, organization, and environment. Study 3, “Metropolitan Hospital System: A Hybrid Organizational Design,” outlines how one large U.S. hospital has organized itself successfully to meet its supply challenges.

The objective of supply chain management is to maximize the overall value of the product or service while reducing costs. Supply chains are dynamic systems⁴⁶ that must be designed to fit the product or service involved if they are to reduce costs.⁴⁷ To ensure that the supply chain design fits the product, the processes integral to the industry must be considered. “The ultimate competency,” Fine argues, “is the ability to choose capabilities well.”⁴⁸ For managers to achieve competitive advantages, they need to adapt and incorporate elements responsible for supply chain success in their industry.⁴⁹ Industries that do this well understand their own “clockspeed.”⁵⁰ This idea proposes that there are various rates of change and demand posed by different industry-related products, processes, and organizational design. Information management companies where technology is changing quickly are characterized by a faster clockspeed than automobile manufacturers. The health sector overall is characterized by a fairly slow clockspeed. However, different departments and specialties are characterized by distinctive rates of change. Rapid innovation in cardiology implants and medical imaging, for example, require an agile supply chain due to their fast clockspeed. In contrast, mental health services change at a much slower pace.

How well hospitals and systems are able to judge their clockspeeds and adjust accordingly requires careful scrutiny. Smeltzer and Ramanathan have questioned the extent to which the health care sector can learn from other industries, especially manufacturers, as they seek the right advantage.⁵¹ Their work suggests seven key areas for comparison between hospital and other industry supply chains including differences associated with: (1) customer, (2) task, complexity, specialization, and professionalism, (3) organizational structure, (4) organization-employee relationship, (5) product, (6) markets, and (7) information management. The following chapters are attentive to these comparison areas, with the hope that those now managing and making contributions to supply management strategy will find success.