Understanding and Managing the Services Supply Chain

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BACKGROUND
In recent years, services have become an increasingly important force in the U.S. economy. Services have taken on an escalating level of importance as manufacturing became “hollowed out” in the 1980s and 1990s due to outsourcing to Asia, Mexico, South America and Eastern Europe. Today, the United States is a service economy. As of 2001, services-sector business accounts for about 84 percent of the United States’ gross domestic product and non-farm private-sector employment (U.S. Department of Commerce 2003). Yet, from academic and practical standpoints, the emphasis in purchasing and supply, supply chain and operations management is still strongly skewed toward the manufacturing sector.

Indeed, in popular textbooks in operations management, purchasing and supply management, and supply chain management, the topic of “services” is often a chapter, rather than being integrated throughout the book. The operations (Slack, Lewis and Bates 2004; Sampson 2001; Allen and Chandrashekar 2000), supply chain (Akkerman and Vos 2003; Nie and Kellogg 1999) and marketing literatures (Vargo and Lusch 2004a, 2004b) have all been criticized for their manufacturing-centric focus. The examples, models, research and anecdotes used in academia tend to center on the manufacturing sector.

Supply chain management has numerous definitions, but they all tend to be focused toward a physical transfer of goods. The supply chain definition used here is:

Supply chain management is the management of information, processes, goods and funds from the earliest supplier to the ultimate customer, including disposal.

A common theme in services is that human labor is a significant element of the total value delivered. Human performance is unique regardless of training and background, which makes precise management and control

Services have become increasingly important as the driving force in the U.S. economy. However, there has been little research to date on services supply chains. It is believed that service businesses can benefit by applying some best practices from manufacturing to their processes. However, the inherent differences in services create a need for supply chain management tools specific to the services sector. This article documents the growing importance of the services sector and of services purchasing. Next, it develops a supply chain framework appropriate for a services supply chain by comparing and contrasting the applicability of three product-based manufacturing models: Global Supply Chain Forum Framework, SCOR and Hewlett-Packard’s Supply Chain Management Model. Finally, this research describes the challenges for procurement professionals managing purchases for a services supply chain and provides suggestions for use of supply chain management theory, and practices for improvement.

SUMMARY
The authors wish to thank Dr. Doug Lambert, participants in the 15th Annual North American Research/Teaching Symposium on Purchasing and Supply Chain Management and the anonymous reviewers for their insightful comments, which helped improve this article. This article is based on the paper, “What Is the Services Supply Chain?” presented at the 15th Annual conference.
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One reason that the services sector has received less attention than manufacturing is that the U.S. economy was built on the manufacturing and farming sectors, whereas the services sector has been emerging over the past three decades or so. Figure 1 shows the relative contribution to gross domestic product of manufacturing, farming and various services-sector businesses for the United States for 2001. In some cases, these categories are so broad that they are not very meaningful, as in the case of the category “other private services.” The lack of attention given to the services sector extends to the purchasing of services. Services are often more difficult to visualize and to measure. Historically, “service level agreements” and “statements of work” have not been as precise and finely tuned as specifications for manufactured goods. There is a general belief that service performance is not as easy to measure as product functionality and tolerances. All of this has added to the mystique of services and the services sector, and slowed research progress and management of services.

Figure 1

SERVICES SECTOR AS A PERCENT OF GDP IN THE UNITED STATES, 2001

Table I

THE SERVICES DIVISION OF THE SERVICES SECTOR

- Certain agricultural services (including, most importantly, landscaping and horticulture)
- Hotels and other lodging places
- Personal services (such as dry cleaning, hairstyling and tax preparation)
- Business services (such as temp agencies and computer software)
- Automotive services
- Miscellaneous repairs
- Motion pictures
- Amusements and recreation
- Healthcare
- Legal services
- Private education
- Social services
- Museums, botanical gardens and zoos
- Membership organizations (such as associations or churches)
- Engineering and management services (including consulting)
- Miscellaneous services

Source: Goodman and Stead (2002), p. 4
The diversity of the services sector and the lack of uniformity in reporting services spending by categories make it difficult to understand the impact of services spending and develop a unifying services framework. The service-producing sector is essentially defined as everything except manufacturing and farming. This includes the following divisions: transportation, communication and utilities; wholesale trade; retail trade; finance, insurance and real estate; public administration; and finally, services. Table I lists the main groups of industries in the services division of the services sector. This illustrates the diversity of services-sector businesses. It is difficult to find the common thread among them.

Another factor contributing to the lack of formalized approaches for managing services supply chains is the fact that services are often not procured and managed centrally. It is common practice for each unit and function within an organization to procure its own services for its own purposes with little reference to what others within the organization are doing. When spending is fragmented over numerous organizational units, it tends to make the overall spend appear insignificant and warrant less attention than other categories. This lack of a unified approach makes services management difficult and perpetuates the belief that services are difficult to manage. In fact, 75 percent of participants in a recent CAPS Research study indicated that services are difficult or very difficult to buy compared to goods (CAPS Research 2003).

GOALS OF THIS ARTICLE

There are several related goals for this article. One thesis is that because services have not been well managed and understood from a supply chain perspective, the purchase of external services also has not been well managed and understood. This article begins by linking the growth in the services sector to the growth in services purchasing. Subsequently, the lack of a supply chain management framework for the services sector is linked to the lack of control over services purchases. Because the services sector is so broad, this study specifically focuses on the professional services supply chain and the purchasing of professional services. The category of professional services is a broad one, including “any services of a recognized profession” (Anonymous b 2004) such as management consulting, engineering, accounting, information technology and more.

Next, after establishing the growing importance of the services sector, existing supply chain management frameworks, such as Hewlett-Packard’s model (Lee and Billington 1995), the Supply-Chain Operations Reference model (SCOR) (Supply-Chain Council 2004), and the Global Supply Chain Forum Framework (Croxton, Garcia-Dastugue, Lambert and Rogers 2001), are applied to the services sector. The relevance of these product-based models to the services sector is then described. Based on this discussion, a framework for exploring the services supply chain is presented along with specific services-sector applications. Finally, viewing the purchase of services from a supply chain perspective is suggested as a means for improving the management of service purchases as well as improving outcomes in the services supply chain.

THE IMPORTANCE OF THE SERVICES SPEND AND SERVICES SUPPLY CHAIN

Historically, management focused on the supply chains for manufactured goods. Manufacturing of goods was viewed as the core activity of most companies and of the economy. Even service firms have focused more on managing the costs of the purchase of goods than the purchase of services. A recent CAPS Research study titled “Indirect Spend” (Carter et al. 2003) supports that there are many areas of service purchases in which purchasing has limited participation. These areas include real estate, management systems, travel, facilities, temporary labor, and advertising.

Yet services are extremely important, and growing in importance to the economy. In the United States, 97 percent of the job growth from 1988 to 2000 came from the services sector, with over half of that growth coming from the services division of the services sector (Goodman and Steadman 2002). The services division includes diverse industries such as healthcare, entertainment, finance, insurance, temporary agencies and business consulting (Goodman and Steadman 2002). In 2001, the services sector accounted for approximately 84 percent of the United States’ GDP and about 84 percent of the private, non-farm employment (U.S. Department of Commerce 2003). In 2001, a record 95 million jobs were attributed to the services sector (U.S. Department of Commerce 2003). The services sector is important not only domestically but also globally. In 2002, global service trade was $1.6 trillion, not insignificant compared to $6.3 trillion in global merchandise trade (International Trade Statistics 2003). The services sector is sizable and growing. Trade in services also positively offsets the deficit trade in U.S. goods, with the 2002 impact around 12 percent (U.S. Department of Commerce 2003).

As a result of the lack of focus on the services sector, research in, and analytical management of, the services sector is relatively immature. Further, there has been a significant increase in the outsourcing of organizations’ internal functions to specialist firms, converting these company functions into procured services. Service outsourcing, also referred to as business process outsourcing (BPO), is growing very rapidly (Allen and Chandrashekar 2000; Adler 2003; Crockett and Ante 2004). For example, the outsourcing IT services niche will rise 8 percent, to $121 billion in 2004, according
to the Gartner Group (Crockett and Ante 2004). In some areas such as India, Manila, Shanghai, Budapest and Costa Rica, outsourcing has created the new back office for corporate America (Engardio et al. 2003).

Outsourcing for some service organizations has developed into a core competitive advantage (Engardio et al. 2003). Companies already adept at managing a global workforce, and outsourcing to domestic companies for technical support, customer service support and product design, are simply taking outsourcing one step further, into the global marketplace (Engardio et al. 2003). These organizations now have access to and the ability to utilize the world’s best and brightest resources (Clark 2004). Also, customers can be supported round the clock, while simultaneously keeping costs in line. As long as organizations are not giving up core competencies, business controls, and continue to improve on abilities to coordinate and control a global enterprise, the outsourcing of services can continue to be a core competitive advantage.

The bottom line is that historically the services spend has not been managed well. It has been managed in an ad hoc way outside of the domain of sourcing professionals. Figure 2 illustrates the level of formal involvement of purchasing professionals in key outsourced services. In some areas such as legal and advertising, which are heavily outsourced, purchasing control is quite limited (CAPS Research 2003). This problem is significant because companies spend a considerable amount of money on services. A recent CAPS Research benchmarking study of 115 firms across a variety of sectors indicated that services is about 33 percent of the total purchasing spend for the firm (CAPS Research 2002). These firms were from North America and Europe, with over half in the manufacturing sector and the rest fairly equally spread among services, government and utilities. In addition, there is an increase in the outsourcing of professional services such as accounting and information technology that is expected to accelerate rapidly over the next five years and beyond (Engardio et al. 2003). Thus, the need to understand and manage the services spend and the services supply chain will grow in importance in the coming years.

The problem with purchasing’s lack of participation in key areas of services spend is that there are missed opportunities for improved management and control of the services supply chain. Recent news highlights the potential problems when the services spend is not controlled and managed. The big four accounting firms are being sued for hundreds of millions of dollars for overbilling their clients for travel (Weil and Low 2004).

Figure 2

SUPPLY MANAGEMENT INVOLVEMENT IN MANAGEMENT OF OUTSOURCED SERVICES

Note: The size of the bubble represents the relative amount of spend. Source: CAPS Research 2002, 2003
Companies such as Hewlett-Packard have discovered serious problems with controls and overbilling in a variety of service contracts, including professional services (Ellram and Billington 2002). One study indicated that nearly 70 percent of companies that have undergone outsourcing are unhappy with one or more aspects of their relationship with suppliers (Kakabadse and Kakabadse 2002). Another study showed that only one-half of IT outsourcing contracts delivered the promised 20-30 percent savings (Kessler et al. 1999). Yet, in order to better manage spending on services, a better understanding of the services supply chain and the processes involved in creation and delivery of services is required.

**APPLYING MANUFACTURING FRAMEWORKS TO THE SERVICES SUPPLY CHAIN**

This article takes the perspective of a buyer of services, considering how a purchaser of services can better understand and manage the professional services supply chain. To date, little work has been done in creating a comprehensive framework for understanding and managing the services supply chain, from the standpoint of either a provider of services or a buyer of services. Allen and Chandrashekar (2000) provided a specific comparison of managing outsourced manufacturing versus outsourced services. Swank (2003) applied the principles of lean manufacturing to the insurance business to show how manufacturing tools can be applied to the services supply chain. Kakabadse and Kakabadse (2002) examined the trends in outsourcing services in the United States versus Europe. Yet none of this research examines the fundamental similarities and differences in the services versus manufacturing supply chain, and what that means in terms of managing these supply chains. Before examining differences in managing outsourced goods versus outsourced services, the fundamental differences and similarities in the supply chains for goods versus services need to be examined.

**Product-Based Models**

The rationale for applying well-established models from the manufacturing sector to services is that the underlying issues are the same: How can we design and manage a supply chain, controlling its assets and uncertainties, to best meet the needs of the customers in a cost-effective manner? Since the late 1980s or early 1990s, practitioners and academics have been studying and developing models of product manufacturing supply chains. One such model proposed by Lee and Billington (1995) and employed by Hewlett-Packard (H-P) is depicted in Figure 3. This shows that suppliers, factories and customers are linked in the flow of goods in an uncertain environment, and that multiple inventory stocking locations provide the buffer for that uncertainty. As pointed out by Davis (1993), it is uncertainty that makes managing a supply chain difficult.

Another model is the widely accepted SCOR model developed by the Supply-Chain Council. The SCOR model is a tool for charting supply processes and activities. SCOR utilizes a business process reference model...
that links process description and definition with metrics, best practice, and technology (see Figure 4) (Supply-Chain Council 2004). SCOR is organized around five primary management processes of plan, source, make, deliver, and return.

Yet another such model is the one depicted by Croxton et al. (2001), which is based on the concepts in Porter’s Value Chain model (1985). This model, referred to throughout this research as the Global Supply Chain Forum Framework (GSCF), conceptualizes a supply chain that includes three elements: the business processes, the management components, and the structure of the chain (Croxton et al. 2001). The processes cut across the functions within the firm and also across other firms within the supply chain (Figure 5). Customer relationship management and supplier relationship management are links in the chain. Within the model, the supply chain includes participants from raw-material providers to the final customer. Product and processes flow through the chain, with consideration given to the return process flow as well. Coordination and integration of information throughout the supply chain improve the overall effectiveness and performance of the chain.

Both the SCOR model and the GSCF model focus on processes that link the supply chain. The commonality among all three of these models is that they focus on depicting the physical flow of goods among members of a supply chain. All manufacturing supply chains have in common a movement of goods from suppliers to manufacturers, possibly through a distributor and then to the customer, with potential issues related to returns and end-of-life disposal. The manufacturing chains can vary in that they may have multiple levels of suppliers, manufacturers, and distributors, with goods flowing in various directions. Yet manufacturing supply chains have the common link of managing the physical flow of goods.

This obvious common link is lacking among services supply chains. Because services vary significantly, this research focuses on one segment of the services division of the services sector: professional services. Table I
presented the organizations included within the services division of the services-producing sector. Even within the services division of the services sector, the outcomes or economic activity generated varies greatly. For example, for miscellaneous repairs, the output is physical; for education, the output is intellectual; for churches, the output is spiritual; and for motion pictures, the output is experiential (Goodman and Steadman 2002). It seems that each one of these would need a different supply chain model, as the supply chains depend on different types of inputs and are defined by different types of outputs. The focus in this study is on the supply chain for professional services. This is one of the fastest-growing employment sectors in the U.S. economy (Goodman and Steadman 2002).

Table II provides a summary of the key characteristics of the supply chain models presented above, including their applicability to the services supply chain. In looking for ways to apply the product-centric supply chain models above to professional services, one commonality between manufacturing and services is the high degree of uncertainty in supply chains. The professional services supply chain is wrought with uncertainty, a critical factor in the H-P supply chain model. Because services cannot be inventoried, applying this model requires a focus on capacity levels and flexibility versus inventory buffers. Capacity is defined as the supplier’s ability to produce to meet the customer’s needs. The H-P model cannot easily address the differences in the quality of services. However, it allows consideration of the trade-offs between capacity levels within the service provider and the resulting variability in customer waiting and service times.

In looking at the SCOR model from a services supply chain perspective, the plan-source-make-deliver-return cycle does not fit services as a whole. While planning is important, there may not be a need to outsource if the service can be delivered using existing staff. The
The make-deliver process is really one process, as the service is created and consumed as part of the delivery process. In professional services, there is nothing to return. For example, if a firm hires information technology service providers to configure a network and it does not perform to the firm’s satisfaction, the firm cannot return the network for a refund. Rather, if the network is not to the customer’s satisfaction, there may be rework or additional work performed. The customer may simply refuse to pay and hire a different professional service provider to complete the work. The SCOR supply chain model does not accommodate such issues in a services supply chain.

The GSCF model presented by Croxton et al. (2001) takes a process view of supply chain management, demonstrating how common processes cut across various members of the supply chain as well as functional areas. While the functions and processes may differ between the professional services supply chain and the manufacturing supply chain, the same basic issue exists: there are a host of processes that take place in the supply chain, and they must be effectively coordinated across organizations and functions in order to best meet the uncertain demands of the customer. In the case of professional services, the ultimate customer is generally, but not always, a customer that is internal to the organization. The GSCF model appears to provide the best fit for application to the services supply chain.

**TRANSLATING TO A SERVICES SUPPLY CHAIN MODEL**

Earlier in this article, supply chain management was defined as the management of information, processes, goods and funds from the earliest supplier to the ultimate customer, including disposal. This definition fits without modification to some areas of services, such as retail trade and miscellaneous repairs. However, in professional services, there is no transfer of goods per se. It is the transfer of the service utilizing the supplier’s service assets and staff. In essence, buying a service represents a transfer of the service supplier’s capacity to its customer in the form of a service. Thus, the supply chain definition is modified for professional services as follows.
Supply chain management is the management of information, processes, capacity, service performance and funds from the earliest supplier to the ultimate customer.

The term “service performance” was chosen rather than just “services” or “service delivery.” Making sure that you get what you believe you contracted for is a true test of effective supply chain management of services. Similarly, capacity in the services sector takes the place of goods in the manufacturing sector. Capacity is a services supply chain replacement for inventory in that it allows a supply chain to increase its level of production to respond to customer demands. Adding capacity in services thus has similar effects as increasing safety stocks in goods: both have a buffering effect, allowing the supplier to be more responsive and flexible to meet increased customer demands. Both are expensive if customer demand is lower than planned.

Given that a process model applies well to services, the next step is defining which processes need to be managed. Based on the above definition, the flows cutting across the services supply chain include information, service performance, cash flows and other processes. Like the manufacturing supply chain, customer relationship management is important, as is demand management. The supplier relationship is also a process that requires careful management. Closely related to the procurement of services is the process of service delivery management. How is this being monitored? Who is doing the monitoring? Is the monitoring of the service built into the contract, or does it come as an afterthought? The new services model is shown in Figure 6. Each of the flows identified is related more closely to the services supply chain below.

**Service Processes**

Each of the key service processes and flows is presented below. The service processes are presented in an interrelated context.

**Information Flow.** Information flow is critical in terms of identifying demand, sharing information, establishing expectations through a service level agreement or statement of work, and clearly defining the scope of the work, the skills required of service providers, and feedback on the performance. It is also critical in monitoring

<table>
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<th>Table II</th>
<th>COMPARISON OF H-P, SCOR AND GSCF MODELS</th>
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<tr>
<td><strong>H-P Model</strong></td>
<td><strong>Concept</strong></td>
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<tr>
<td>Suppliers, factories and customers are linked in the flow of goods, information and money, in an uncertain environment.</td>
<td>Focus on depicting the physical flow of goods among members of the supply chain.</td>
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<tr>
<td>Multiple inventory stocking locations and possibly “excess” capacity provide the buffer for that uncertainty.</td>
<td>Focus on recognizing and managing uncertainty.</td>
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<tr>
<td><strong>SCOR Model</strong></td>
<td><strong>Focus</strong></td>
</tr>
<tr>
<td>Tool for charting supply processes and activities.</td>
<td>Focus on processes that link the supply chain.</td>
</tr>
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ongoing performance to help determine when payment is required, as well as payment amount. Information flow is the foundation of any effective supply chain and reduces the uncertainty that can make all types of supply chains very risky and reactive (Lee and Billington 1995; Davis 1993; Scott and Westbrook 1991).

**Capacity and Skills Management.** Like a manufacturing supply chain for goods, the service provider must make investments in its organization, processes, assets and staff. Service providers can differentiate themselves based on the availability and quality of staff or the lack thereof (Bitner 1995). For example, the airlines have segmented themselves into “full service” airlines such as Swissair and Virgin Atlantic Airlines and “no frills” airlines such as Southwest Airlines, with customers selecting which level of service is most suited to their needs and budgets, though a clear definition of what comprises “full service” is difficult to find. All of these airlines have been very successful by focusing on meeting the needs of certain customer segments. Other examples are obvious in the banking, automobile rental, and printing segments.

**Demand Management.** The focus of demand management for goods is forecasting customer requirements and attempting to match capacity with demand through production, inventory buffers, outsourcing production, and flexible systems (Davis 1993). Likewise, demand management in the professional services sector focuses on how to meet, and in many cases how to generate, customer demand. The demand management process focuses on managing the impact of demand variation. The services sector has less flexibility to deal with uncertainty due to the inability to inventory services. Thus, demand management requires the service provider to understand its own capacity and productivity, current commitments, potential to absorb additional work through hiring and overtime, and to match these with its efforts to sell additional services. As emphasized in the SCOR model, planning is critical (Supply-Chain Council 2004). Those whose job it is to sell professional services to potential customers need to have an excellent understanding of their current workloads and capacity available. The H-P model emphasizes that customer demand is the greatest source of uncertainty in the supply chain (Lee and Billington 1995; Davis 1993).

**Customer Relationship Management.** Customer relationship management (CRM) entails developing a good understanding of what the customer needs as well as focusing efforts on meeting those needs (Srivastava and Shervani 1999; Bitner 1995). It includes customer segmentation and requires monitoring the relationship for customer satisfaction to ensure that the customer’s needs are met, and changing behaviors as needed to better meet these needs (Zeithaml and Bitner 2003). The key measurement in this area is customer profitability. Linking CRM to supply chain management and new product/service development has been shown to increase shareholder value (Srivastava and Shervani 1999). Linking supply chain management to CRM and supplier relationship management has also been shown to improve firm performance in terms of improving communication, trust and supply chain responsiveness (Wisner 2003). In some ways, CRM is the mirror image of the process of service delivery management for the customer.

**Supplier Relationship Management.** From the buyer’s standpoint, the process of procuring professional services should always begin with the identification and specification of a need, just as in the case of the purchase of goods. Ideally, once the needs are clarified, potential suppliers should be identified and qualified. Then, offers are solicited based on the statement of work and a clear understanding of the scope of work. A supplier is selected and contracts are negotiated, signed and executed. The contracts should include clear service level agreements (SLAs), based on the statement of work (Ellram and Billington 2002). The H-P model emphasizes supplier performance as one major source of uncertainty (Davis 1993). Good SLAs can reduce uncertainty in performance expectations. Service delivery management is closely intertwined with supplier relationship management and takes over to ensure that contractual demands and service level agreements are met.

**Service Delivery Management.** Service delivery management is the buyer’s side of customer relationship management. From the supplier’s perspective, service delivery management is about making promises to the customer, enabling service providers (internal or external) to meet those promises, and meeting the promises (Zeithaml and Bitner 2003; Bitner 1995). The mirror image from the buyer’s side is clarifying expectations through a good statement of work or SLA, enabling the supplier by managing the scope of the work, and finally monitoring SLA compliance, providing supplier feedback and determining when payment should be made. Service performance must be monitored and compared to the contract for compliance and to avoid scope creep. Performed properly, this process should reduce uncertainty in supplier performance outcomes and reduce the likelihood of any severe contract overruns.

**Cash Flow.** Cash flow essentially entails the flow of funds between parties in the supply chain, also termed payment. In most professional services agreements, payments are made periodically based on performance (CAPS Research 2003). The party or parties responsible for service delivery management should determine the appropriateness of the timing and the amount of payment made, based on actual performance toward the goal.

**Summary of Processes.** The processes presented here represent the ideal situation. The customer, or buyer of the service in the services supply chain, has a large
impact on services supply chain performance (Fawcett and Magnan 2002). The buyer is a major source of uncertainty; has a huge impact on information flow, the firm's capacity needs and stability of those needs; and has a direct impact on demand (Davis 1993). Further, the customer (buyer) is the focus of the supplier's customer relationship management, which directly affects the organization's relationships with its suppliers, interfaces with the organization in service delivery management, and directly affects the level and timing of incoming cash flows. Thus, buyers of services must be aware of the impact of their activities on the supply chain and their service providers. Each of these processes, if performed properly, reduces the inherent uncertainty in the supply chain, leading to improved outcomes. However, there are many reasons why the ideal services supply chain is not actually executed, as explained below.

ISSUES FACING THE SERVICES SUPPLY CHAIN

This section explores some of the reasons why the ideal situation of professional services process management presented above rarely occurs in practice.

Many professional services agreements are executed without clear specifications.

All unspecified service level agreements create a crack in the business control system, resulting in value leakage. Business control systems provide the checks and balances in businesses that encourage performance to meet goals, and discourage dishonest or ineffective behavior. One example of a business control system is requiring a second signature on purchases of a certain dollar magnitude. While not foolproof, this helps create a check on the reasonableness and validity of a large purchase transaction. In the services supply chain, value leakage may represent paying more than expected for the contracted services and/or receiving less than expected for the contracted price. A number of reasons for this value leakage are related to lack of business controls. The first is that without clear specifications and SLAs, it is impossible to objectively determine whether a service provider is doing its job as agreed. Customer satisfaction truly is in the eye of the beholder. This is unfair to the customer, who may believe that the service provider is reneging on agreements, or adds additional fees for each request that the customer believed were considered in the contract. It is unfair to the service provider, if the customer keeps demanding more and is not willing to pay for it.

Second, from a cash-flow standpoint, the services purchasing system generally lacks proper controls. Financial control of services procurement is very immature. Accounts payable systems are typically designed with a three-way match control system in mind. Control of physical goods is provided by the match of an invoice, purchase order and shipping document. In services, there is usually only a two-way match, which includes the invoice, summarizing the service provided, and a purchase document. If the service was not delivered to the committed quality, how would this be identified, tracked or controlled? The accounts payable systems were not designed nor are they staffed to successfully perform this control function. The result is often huge value leakages in outsourced supply chains. Hundreds of in-depth audits of services procurement relationships in a number of large companies suggest that the typical Fortune 500 company is "overcharged" nearly 5 percent of contract value for the services it procures (Amaral, Billington and Tsay 2004). Such large overcharges can cause these issues to become legal or shareholder issues, as mentioned earlier in the case of travel by the big accounting firms.

Service specifications are often difficult to develop.

Companies often outsource business processes, such as human resources, accounting, payroll and engineering, because they are not managing them well or believe someone else could provide better performance and a lower price. If a company cannot manage and evaluate its own performance in a specific area well, how can it expect to manage the performance of a third party that provides that service? For example, if a company outsources all of its information technology because it has been unable to effectively manage and evaluate its internal IT function, how can it expect to be able to understand and manage a third-party provider of information technology? On what basis will it develop the statement of work and service level agreement, when it does not understand what it really needs to perform effectively? In order to effectively manage the supply chain, one must understand it and in all cases provide resources to control the expenditures. This may be a problem, given that a recent survey found that 70 percent of respondents noted that buying services is more difficult or much more difficult than buying goods (CAPS Research 2003).

A service faces the challenge that it must be specified and evaluated via service level agreements and controlled through an accounts payable system. SLAs are a challenge to specify and very difficult to measure. For analogy, we must all ask ourselves: Are we getting the Internet connectivity speed we were promised by our service provider? How do we know? Do we have the capability to measure the speed? Is it cost-effective for us to do so?

Significant opportunity exists for service providers to profit unfairly in the current system.

Drawing on the literature from agency theory, the buyer is the principal and the supplier is the agent in performing the assigned services to the principal’s specifications. The agent performs with self-interest, based on the incentives that the principal is providing (Narayanan and Raman 2000). It is in the agent's interest to withhold information that it can use to
glean greater profit from the contract. This is known as moral hazard. Examples of this could be a consulting firm that signs a contract with a customer based on its previous successes utilizing a particular team. It fails to inform the customer that the team has split up, that key players will be working with other clients, or of something else that might make the customer less likely to sign the agreement. The new team may be less proficient, may take longer and may essentially be learning at the customer’s expense.

Further, without clear SLAs, scope creep is inevitable and favors the supplier. It can continue to expand the amount of work needed as it “finds” more problems. It is easy to justify expanded scope given that initial expectations were vague. It is uncertainty, whether in demand, scope or service level, that makes the supply chain difficult to manage. Yet organizations repeatedly set themselves up for untenable supplier performance management situations when they enter into unspecified service contracts.

**Lack of recognition of a problem in services management.**

In many cases, services are simply not managed professionally. Figure 2 showed the relatively low percentage of purchasing involvement in the services purchasing arena. Services are frequently purchased by the end user, with no input from supply professionals regarding how to negotiate a contract, develop SLAs, provide progress milestones for payment and so on. This creates a lack of control and visibility that magnifies the problems discussed above.

**Other issues.**

Additional issues that differ in managing the purchase of services versus goods are shown in Table III. The next section explores how to improve the management of the services supply chain from the buyer’s perspective.

**Improving Management of the Services Supply Chain**

Economic efficiencies are a primary reason that companies outsource services. However, it is expensive to specify, select and control outside service providers. Outsourcing to specialist firms can create significant advantages in scope and scale, but these advantages must be carefully balanced by the increased costs associated with financial controls, service level management, and procurement department costs. Costs of communications increase, especially face-to-face communications. Control and monitoring systems need to be duplicated at third-party locations. Outsourcing may require greater monitoring and management by finance and procurement than would internal operations. The greater the distance between the customer and the outsourced service provider, the higher the associated costs. As such, the decision-making process to outsource to China, India and other low-cost regions needs to carefully measure and consider all costs — the visible and the hidden.

It is important to clearly define SLAs, to keep them current, and to audit transaction history for all issues identified above. In addition, the SLAs should include a provision to audit the service provider transactions, so that they will take more care in their billing processes and controls.

There are several types of behavior that result in firms paying more for purchased services than they expect. The authors suggest that procurement professionals specifically consider the following.

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**Table III**

<table>
<thead>
<tr>
<th></th>
<th>Manufacturing</th>
<th>Services</th>
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<tbody>
<tr>
<td><strong>Expectations</strong></td>
<td>Precise Specifications</td>
<td>Vague Service Level Agreements</td>
</tr>
<tr>
<td><strong>Quality</strong></td>
<td>Measurable, Pre-Specified</td>
<td>Subjective, User-Dependent</td>
</tr>
<tr>
<td><strong>Predictability of Demand</strong></td>
<td>Dependent on Forecast, Final Customer</td>
<td>Vary With Project Scope</td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td>Pre-Negotiated, Per Unit</td>
<td>Dependent on Changing Scope and Requirements</td>
</tr>
<tr>
<td><strong>Verification of Contract Completion</strong></td>
<td>Physical Evidence in Shipment</td>
<td>Internal Sign-Off</td>
</tr>
<tr>
<td><strong>Payment</strong></td>
<td>Match Receipts With Purchase Orders, Verifiable</td>
<td>Bills Submitted Without Tangible Evidence, Pay as You Go</td>
</tr>
</tbody>
</table>

Adapted from Allen and Chandrasheker (2000), p. 26
1. **Usurping procurement leverage.** When service firms demand payments from subsuppliers in the form of rebates, prebates, “ordering fees,” etc., they are in essence taking some of their customers’ procurement leverage and associated preferential treatment. This may be an easy way to increase supplier margins but is very difficult to measure and control.

2. **Hidden cost adders.** A common practice is to charge for all services provided not explicitly addressed by an SLA. These hidden charges can be significant in aggregate. For example, if a leasing firm takes a significantly long period of time to assign a vehicle to a lease resulting in high fees, it is adding a hidden cost.

3. **Cost of money.** It is not uncommon for service providers to hold payments to subsuppliers for long periods of time, up to 100 days. This adds a significant cost to subsuppliers that typically gets added to the cost of their goods and services.

4. **Billing and calculation errors.** Duplicate invoices and rate and fee calculation errors are significantly higher in procured services than in procured materials. Often these types of errors are greater than 2 percent of total expenditures. It is not unusual for rate tables to be ignored and for overhead charges to be incorrect.

5. **Substitution of lower-skilled staff or inputs.** Because of the difficulty in determining quality levels of human services, it is not unusual for service providers to misrepresent the quality levels of the staff providing the services, resulting in costs that are higher than represented. One of the authors found that a manufacturing service provider had unknowingly lowered the standard of plastic used in a critical part and kept the difference in material cost. The inferior part created potential failures several years after the product was sold, resulting in a significant brand and economic liability.

6. **Providing levels of service below commitment.** Related to the point above, the difficulty in measuring service outcomes also creates a temptation for service providers to misrepresent the quality levels of the service below what was committed. Anyone who has managed a large software project probably has experienced these hidden costs.

7. ** Bundling of services with other services or goods.** Suppliers like to provide unique “package” deals so that it is difficult to compare the cost of their offerings to that of other suppliers or to understand the pricing for individual elements of a service offering.

8. **Summary invoicing.** Summary invoicing for large numbers of service transactions hides costs and creates control challenges. Summary invoices are often only inspected by busy managers, resulting in controls that are not accurate or effective at ensuring billing accuracy. It is recommended that firms create control systems, such as buy-sell or retrospective audits, for all significant service categories that inspect service transactions at a detailed level.

Control and management issues are critical in any outsourcing arrangement. It is impossible to effectively control services spend when it is not visible. In addition, service purchases need to be managed following a professional process, just like the purchase of goods. Many organizations have chosen to control the purchase of goods by having a centralized procurement and supply management organization. At the same time, the control must not be too tight. If the internal users of services feel disempowered by the system, and if they see poor decisions being made, they will work to undermine the system. A balance needs to be struck between control and accommodation of user needs.

The purchasing professionals assigned to services that make up the organization must become experts in the supply chains for these services. They should understand the market, cost structure, competitive forces, trends and the firm’s relative strength in that market. They also need to understand the unique needs of the users and respond to them. Failure to be sensitive to user’s needs will motivate users to sabotage the procurement system. This is the case with “renegade buying,” where purchasing has set up a contract for the organization to use for a particular type of purchases, and the users go around the system because it does not make sense to them, buying outside of the contract. For example, in one Fortune 50 company, procurement had a requirement that in order to be reimbursed for travel, the flyer was required to use the lowest-cost airline. In the problem situation, there were two airlines that flew from Milan to Rome. One had 12 flights per day, while the carrier that was $5 US less expensive had two (mid-morning and early evening). Thus, the procurement staff was blindly forcing the sales staff to fly the less expensive airline (because of the procurement metrics), while destroying salesforce productivity. If a proper balance isn’t made between cost and effectiveness, firms can get poor results and cross-functional friction. With the growing weight of the services spend, it is time that organizations professionally manage their service purchases.

**MANAGERIAL IMPLICATIONS**

Services play an important role in the U.S. economy, accounting for a large proportion of GDP. However, the historical focus for both academics and practitioners has been on product-based manufacturing, improvements to internal production processes, and cost reductions for components. After all, the U.S. economy was built on the manufacturing and farming sectors. Services have been largely ignored in supply chain research.
Understanding and Managing the Services Supply Chain

Services are difficult for people to visualize and measure. The major reason for this is that human labor is a significant element of the total value delivered in a services supply chain. The value of these human resources can fluctuate according to the local economic environment, which makes accurate cost control difficult. Globalization of services, or offshoring, adds even more complexity into the services supply chain.

This research attempted to develop a unifying framework for understanding the services supply chain. By better understanding the supply chain for services, firms can develop better processes and controls for managing them. The services industry is diverse, and services are not typically procured and managed centrally in an organization (CAPS Research 2003). Business units and functions find it more expedient to procure services specific for their purpose. For example, the use of IT consultants might be procured and managed through the IT department; payroll through human resources; and travel done independently.

At the same time, services are becoming a larger part of the organizational spend, necessitating more attention and controls than in the past. Lack of leverage and contract uniformity for services suppliers can cost the organization many millions of dollars. On the other hand, centralization and well thought-out, uniform policies can create significant rewards. For example, Intuit, a software provider, has centralized and standardized its services purchasing, contracting and management under its procurement organization. As a result, it has accrued cost savings to the bottomline, mitigated supply chain risk, improved procurement employee job satisfaction, and improved communication with suppliers (Ellram and Tate 2004). Understanding and controlling the services supply chain will improve outcomes and positively impact the bottomline of the organization.

Finally, there are many hidden cost adders in the services supply chain, which if controlled could significantly and favorably impact organizational savings. The eight common problems associated with services

<table>
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<th>Table IV</th>
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<tr>
<td>STRATEGIES FOR MITIGATING SERVICES OUTSOURCING RISK</td>
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<tr>
<td>Principle</td>
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</table>
| Increase visibility and relative strength of services supply chain management | • Install central oversight and coordination of procurement  
• Foster competition among service providers  
• Formalize obligations and accountability upfront | • Helps minimize cost of money and late payments to second-tier suppliers  
• Helps reduce the impact of bundling services  
• Encourages accurate billing by suppliers  
• Reduces the risk of substitution of lower-quality labor than promised  
• Encourages supplier to understand and meet service commitment |
| Revisit the division of labor | • Bring some activities back in-house  
• Avoid concentrating too many responsibilities | • Helps reduce the impact of bundling services  
• Reduces the confusion created by large summary invoices |
| Align incentives (or at least make them explicit) | • Design contract structures that minimize conflicts of interest  
• Enhance trust between parties | • Helps avoid usurping purchasing leverage  
• Reduces the risk of substitution of lower-quality labor than promised  
• Encourages supplier to understand and meet service commitment |
| Install business controls to improve visibility into outsourced activities | • Document actions and record transactions  
• Monitor ongoing performance  
• Perform periodic or continuous audits | • Helps avoid usurping purchasing leverage  
• Identifies hidden cost adders  
• Identifies billing and calculation errors early  
• Identifies the substitution of lower-quality labor than promised early  
• Improves review process of summary invoices |

Adapted from Amaral, Billington and Tsay (2004)
contracts identified here should serve as red flags to managers as they develop service agreements. Table IV shows four major strategies for improving control of the supply chain for outsourced services. Note that each strategy addressed several of the eight issues in services outsourcing. For example, increasing the visibility and relative strength of services supply chain management involves centralizing control and oversight, creating more competition among service providers and formalizing supplier obligations. This could include requirements regarding how soon suppliers pay their suppliers, reducing the cost of money impact on subtier suppliers. Accountability and visibility can also reduce the impact of bundling services, encourage accurate billing, reduce the risk that the supplier will substitute lower-quality labor than committed, and help ensure that the supplier meets its service commitment. Likewise, thoroughly analyzing how labor and tasks are divided among suppliers as well as internally versus externally can reduce the impact of service bundling and large, difficult to understand summary invoices.

Improving the alignment of incentives for suppliers can help encourage them to meet their commitments and avoid the opportunism of usurping purchasing leverage. For example, Intuit developed a standard template for its contracts for service providers. This helps to ensure that all the potential problem areas have been considered and creates uniformity in dealing with suppliers. It also helps both internal and external communication and clarifies supplier performance expectations. The contract includes monetary incentives and disincentives for the supplier based on actual versus planned performance, reinforcing the importance of meeting expectations (Ellram and Tate 2004).

Finally, installing improved business controls closes the loop on supplier accountability and performance to expectations. Documentation of expectations, monitoring performance of suppliers and periodic audits can ensure that suppliers are not usurping their purchasing leverage, getting rebates and other benefits that they do not pass along. Audits also help to identify hidden cost adders, billing errors, labor substitution and other issues that are not in alignment with the letter of the spirit of the contract. Supplier audits like those conducted on parts suppliers should be extended to service suppliers, so that buying organizations can better understand the supplier’s supply chain and associated processes. This should include a review and understanding of the key processes shown in Figure 6, with an emphasis on how the buying organization affects the supplier’s processes.

Managers can utilize the information presented here to better understand the nature of the services supply chains of their suppliers in order to develop better contracts and manage the service delivery process more effectively. Increasing the visibility of the services supply chain, the division of labor, improving incentives and improving controls can significantly improve the performance of supply chains for purchased services. These strategies work together to create a systematic approach to improving the management of the outsourced services supply chain. While doing any one of these will help improve performance, the authors encourage companies to implement all four strategies to achieve the maximum benefit.

LIMITATIONS AND FUTURE RESEARCH

Future research should concentrate on developing additional data emphasizing the importance of services to overall business spend and how the procurement function can be utilized to improve the delivery and control of the service process. The model presented here should be tested for its applicability and generalizability to multiple service environments. Can this model be used outside of professional services purchasing? Or do the special characteristics of services indicate that multiple models might be more effective? Do the current “best practices” of service purchasers and offshoring experts embrace the processes shown in this services supply chain model? The information gathered would help further define and develop the services supply chain model.

Analyzing other manufacturing models and techniques, such as Six Sigma and lean practices, might indicate that further improvements to the services supply chain can be made through these “best manufacturing practices.” Many of these models and techniques have been thoroughly tested for product-based manufacturing but have only been applied to services on a limited scale. Are additional methods currently being used to understand and control the services spend?

CONCLUSIONS

Services are significant, and the spend is large and growing. Attention to the services supply chain by practitioners is necessary for improvement, cost control and minimization of value leakage. Similarly, more attention to the services supply chain is needed by academics as they educate future practitioners and conduct research. Disseminating information on best practices and trends in managing the services supply chain and services purchases could help businesses retain their competitive advantage in the growing global economy. Improved management of services spending could represent the next major area of cost reduction and value enhancement for organizations. Supply management academics and practitioners can play a significant role in this improvement strategy.
REFERENCES
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For additional information, contact Debbie Maciejewski at CAPS Research, 800/888-6276 or 480/752-6276, extension 3046, or dmaciejewski@capsresearch.org.

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Information is also available at www.ism.ws.
Each year, the Institute for Supply Management™ (ISM) awards two Senior Research Fellowships for support of outstanding research in purchasing and supply management. The intent is to award two fellowships of $5,000 each to candidates who are conducting research in purchasing or related fields.

OBJECTIVES
The objectives of these grants are: (1) to help support emerging, high-potential scholars who teach and conduct research in purchasing and supply management, and (2) to help produce useful research that can be applied to the advancement of purchasing and supply management.

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The ISM Senior Research Fellowship is intended to support emerging scholars: in general, this will mean those who are assistant or associate professors (or of equivalent status) at their institutions and have demonstrated exceptional academic productivity in research and teaching. An assistant professor should have three or more years' post-degree experience. The candidate must be a full-time faculty member (within or outside the United States) to be eligible for the fellowship. Current or past members of ISM committees, groups, forums, or affiliated organizations are eligible to apply. Previous awardees are ineligible.

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Fellowships are paid directly to the awardees and are nonrenewable. It is expected that the ISM Fellows will present the results of this research in an ISM forum (e.g., research symposium, ISM Annual International Supply Management Conference, and/or an ISM publication such as The Journal of Supply Chain Management). Fellowships for the year will be announced by mid-June.

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2. Research proposal of no more than five pages, including problem statement or hypothesis; research methodology, with data sources, collection, and analysis; and value to the field of purchasing and supply.
3. Curriculum vitae, including works in progress.

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- Impact of globalization on purchasing
- Identification of educational/training tools and skills for purchasing/supply management
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- Forecasting methods
- Measuring purchasing effectiveness
- ERP and purchasing
- Historical analysis of trends in purchasing
- Alliances
- Objective measures of supplier performance
- Supplier development
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Grants are paid directly to the awardees in three equal installments. The first one-third payment is made upon receipt of the final research proposal approved by the candidate’s dissertation committee; the second payment upon receipt of a written statement from the dissertation committee verifying that the research is approximately 50 percent completed; and the third payment upon receipt of the completed, bound dissertation that has been accepted by the candidate’s dissertation committee. No payment shall be made after three years from the grant award notification date.

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ISM doctoral grant candidates must submit the following items in one complete package to ISM by January 31 (which will remain the deadline every year):

1. Letter of application, signed by the candidate, which includes the following information:
   - The date candidate has completed or will complete doctoral courses
   - The date candidate has taken or will take doctoral exams
   - The date candidate expects to receive the doctoral degree
2. Official transcripts from the candidate’s current university.
3. Proposal abstract, maximum 25 pages, including a literature search and a research design. The proposal must specifically discuss:
   - Problem statement or hypothesis
   - Research methodology, including data sources, collection, and analysis
   - Significance/value of the research in purchasing/supply management
4. A letter from the candidate’s major advisor, stating that the dissertation topic is acceptable.
5. Three letters of recommendation (one letter may serve as the letter requested in #4 above) from professors or administrators familiar with the applicant’s research capabilities. The letters should be sealed independently within the application package.
6. A curriculum vitae, which may include a list of research in progress, accomplishments in academe, honors, awards, and relevant work experience.

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QUESTIONS?

For more information, contact Joseph L. Cavinato, Ph.D., C.P.M., ISM, by phone at 800/888-6276 or 480/752-6276, extension 3029; by fax at 480/752-7890; or by e-mail at jcavinato@ism.ws. Or, visit the ISM Web site at www.ism.ws.

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|---------------------|---------------------|                                                                     |                         |                                      |
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| Name                | University          | Title                                                                 | Institution             | Impact on an Organization’s Supply Chain |
|---------------------|---------------------|                                                                     |                         |                                      |
| Elliot Rabinovich, Ph.D. | Arizona State University | “Determinants of Service Sourcing Decisions: A Study of Fulfillment in Internet Supply Chains”  | Michigan State University | $5,000                                |
| George A. Zsidisin, Ph.D. | Michigan State University | “Supply Continuity Management”                                     | Michigan State University | $5,000                                |

For more information on the ISM Doctoral Dissertation Grant and Senior Research Fellowship Programs, see pages 34-35 of this issue.