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**Commodity Sourcing Strategies:  
Supply Management in Action**

**31 January 2005**

**by**

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# Abstract

This research report discusses the transformation occurring in the procurement and purchasing function, specifically as it applies to developing procurement strategies and the implementation of commodity strategies as an application of strategic sourcing. The literature review presents the theoretical framework surrounding the transformation of purchasing to supply management along with its major developments such as integrated supplier relationships, total ownership costs, cross-functional teams, supply chains, e-procurement systems, and strategic sourcing strategies. Strategic sourcing and developing sourcing strategies are discussed and include the Kraljic model for determining the best type of procurement strategy for specific products or services. Commodity sourcing strategies are discussed in conjunction with Lasseter's seven-step process for developing commodity sourcing strategies. The application of strategic sourcing in the commercial sector is discussed using examples from industry, along with applications within the Department of Defense. Some challenges to strategic sourcing identified in the report include access to the required spend data, highly fragmented supply base, and government procurement goals. The report also identifies best practices such as establishing common processes and tools, using cross-functional teams, ensuring adequate team sponsorship and authority, and aggressively managing purchasing requirements. The report concludes that strategic sourcing initiatives have resulted in significant cost reductions, increases in productivity, quality improvement, and return on investment. DoD's strategic sourcing initiatives have also resulted in significant savings, albeit with some obstacles and barriers yet to overcome.

**Key Words:** Purchasing, Supply Management, Procurement, Sourcing, Commodity Strategies.

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# Introduction

Organizations are operating in an environment characterized by countless economic and political disruptions to their sources of supplies and services. In order to survive in this turbulent marketplace, these organizations must continually monitor their competitive position as well as their internally controllable processes—especially the procurement process. The Department of Defense is no exception. The DoD annually procures billions of dollars worth of systems, supplies, and services in support of the national military strategy. The Fiscal Year 2005 proposed budget included \$143.8 billion for RDT&E (research, development, test and evaluation) and procurement of defense-related supplies and services (Cahlink, 2004). Faced with the challenges of the Global War on Terrorism and the fiscal battles of budget cuts and resource constraints, the DoD must monitor its procurement process to ensure a continuous flow of critical supplies and services. The DoD procurement process will continue to increase in importance as it acquires mission-critical and complex supplies and services.

As part of its “Procurement Transformation initiative,” the DoD’s procurement process is currently undergoing a transformation similar to the transformation being experienced by the commercial sector. This transformation is changing the way DoD manages its procurement function—to include its people, processes, practices, and policies. The DoD’s procurement function is currently transforming from a transaction-oriented perspective to a strategic-oriented enterprise.

No longer viewed as a tactical, clerical, or administrative function, the procurement function is gaining enhanced status and importance as leading organizations, including the DoD, understand and realize procurement’s importance in achieving organizational strategic objectives and procurement’s impact on competitive advantage. Furthermore, organizations are including procurement objectives in the development of corporate strategy and have placed great emphasis on developing corporate procurement strategies.

This research report will discuss the transformation occurring in the procurement and purchasing function, specifically as it applies to developing procurement strategies and the implementation of commodity strategies as an application of strategic sourcing. First, the theoretical framework surrounding the transformation of procurement will be discussed, along with its major developments. Second, corporate procurement strategy and procurement strategy development methods will be discussed. Finally, the use of commodity strategies and commodity teams as methods for implementing focused procurement strategies will also be discussed; this discussion will then identify lessons learned, best practices implemented, and recommendations for the Department of Defense.

## From Purchasing to Supply Management

The transformation of the purchasing and procurement function from a passive, administrative, and reactive process to a proactive, strategic, boundary-spanning function was predicted back in the early sixties' purchasing literature when Henderson stated that the procurement function would gain increased importance in corporate management (1975, p. 44). As we begin the fifth year into this new millennium, the purchasing and procurement transformation continues to build up steam and reap benefits for leading-edge organizations. The procurement transformation reflects a new approach to purchasing and procurement that embraces the other supply chain management functions of materials management, logistics, and physical distribution—this new approach has been labeled "supply management" by many organizations and industries (Bhote, 1989). In fact, the premiere professional association for the purchasing profession officially changed its name from the National Association of Purchasing Management (NAPM) to the Institute for Supply Management (ISM) in 2002 to reflect the changing nature of the profession. Additionally, many of the leading purchasing textbooks have changed their focus, and of course their titles, to reflect the broader focus of supply management (Burt, Dobler, & Starling, 2003).

This supply management focus requires organizations to adopt a strategic orientation to their procurement function and to look more at the total supply chain management process and its effect on the organization's competitive strategy. More specifically, the supply management focus involves linking the organization's procurement, or sourcing, strategy with its corporate competitive strategy. This requires supply managers to become active participants in developing their organization's strategic business plan, which now includes the integration of supply, marketing, finance, and conversion strategies (Burt et al., 2003).

Supply management has been described as a new management concept that integrates the company's purchasing, engineering, and quality assurance functions with the supplier, working together as one team early in the procurement process to further mutual goals (Bhote, 1989). Of course, the supply function has always existed in all

organizations ensuring that all needs are met in terms of quality, quantity, delivery, cost, service, and continuity. However, the traditional view of supply focused more on the function's operational or "trouble avoidance" contribution to organizational objectives. The new concept described focuses on supply management's strategic contributions to organizational objectives, such as the opportunistic or profit-maximizing aspects. In addition, this concept of strategic supply management differs from the traditional approach in the fact that the organization becomes integrated with selected suppliers, working as one team toward mutual goals. This concept also differs significantly from the traditional adversarial approach to supply management in which suppliers were kept at an arms-length distance from the organization. Traditionally, purchasing managers' performance was measured based on their ability to reduce the purchased price of supplies and services, their ability to keep the production line running, and their ability to reduce the cost of the purchasing department. With the new supply management focus, organizations are looking to the supply management function to focus on value-adding outputs such as quality, total ownership cost, time to market, technology, and continuity of supply. Other major developments in the transformation of purchasing to supply management include the breaking down of functional walls with the use of cross-functional teams, the development and management of supply chains and supply alliances, the use of electronic procurement systems, and the adoption of strategic sourcing approaches (Burt et al., 2003). The next section of this research will focus on strategic sourcing as implemented by supply management and the integration of procurement strategy with corporate strategy.

## Strategic Sourcing

Strategic sourcing is probably the most significant aspect characterizing an organization's transformation to supply management. It is also this aspect of supply management which provides some of the most value-added benefits to the organization. Sourcing, one of the major steps in the procurement process involves the identification and selection of the supplier whose costs, qualities, technologies,

timeliness, dependability, and service best meet the organization's needs (Burt et al., 2003).

Strategic sourcing involves taking a strategic approach to the selection of suppliers—an approach that is more aligned with the organization's competitive strategy. Strategic sourcing reflects the integration of procurement or sourcing strategy with corporate strategy. The integration of procurement and corporate strategy is reflective of the transformation of purchasing to supply management. The next section of this research report will review the literature on strategic sourcing.

Initially, the concept of integrating procurement with corporate strategy formulation was neglected within procurement research circles. It was not until the early 1980s that the subject began to receive increased attention. In his article "Corporate Long-Range Planning Must Include Procurement," Adamson summarizes various ideas on how to integrate procurement with corporate strategy formulation (1980). These ideas include Rasmussen's linear programming theory, Loughridge's dynamic programming techniques, Wheelwright's rate priority values, Ramsey's objectives flowdown system, and Kiser and Rimber's product life cycle approach. Adamson recommends the development of a contingency approach for choosing procurement strategies and integrating procurement with corporate strategy (Adamson, 1980).

Speckman expands on Adamson's discussion by presenting a general model illustrating the integration of procurement-related information with the corporate planning process (1988). His premise is that the procurement manager must identify strategic contingencies and incorporate these factors into the sourcing process before a competitive strategy can be responsive to the procurement function. Thus, the procurement manager must develop a strategic orientation to the procurement process and identify the internal and external factors that can affect the firm's ability to gain a competitive edge in the marketplace. Internal factors are those factors within the buying organization that affect the choice of sourcing strategy; these include the strategic importance of procurement in terms of value-added by product line, quality, the need for

material control, and cost containment objectives. External factors are those outside the buying organization that will affect the sourcing strategy—such as complexity of the supply market, the amount of vertical integration within the industry, scarcity of supply, and the technology involved (Raedels, 2000).

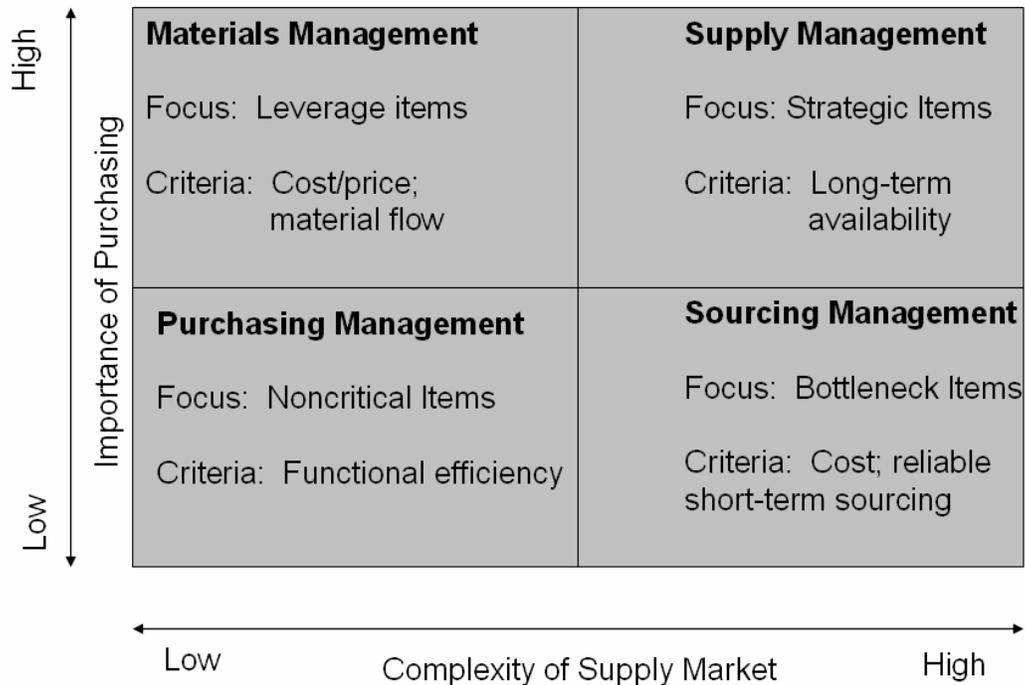
Adamson's recommended approach for determining procurement strategies emphasizes the incorporation of these factors into the strategy formulation process (1980). The fact that procurement strategies should be tailored to the specific situation was stressed by Corey in his text on procurement management. Corey stated that procurement strategies vary from one purchasing situation to another because of each situation's uniqueness. Every strategy should be tailored to the type of product being purchased, the stage of the procurement cycle, the past purchasing history, the nature of the supply environment, and the buying company itself (Corey, 1978). The next section of this research report will focus on the development of strategic sourcing strategies.

## Developing Sourcing Strategies

Focusing on the specific internal factor of strategic importance of purchasing and the external factor of complexity of the supply market, Kraljic developed a practical and applications-oriented model for developing procurement strategies for individual items and materials (1983). Kraljic's approach provides a systematic framework for incorporating environmental and other strategic factors into corporate procurement strategy formulation for purchased products and material. The use of the Kraljic approach results in a contingency-based model for formulating the appropriate procurement strategy for specific products. The Kraljic model is based on the foundation that a company's supply focus for purchasing specific products/services is dependent on two factors: (1) the strategic importance of the product line for the company, and (2) the complexity of the market for the product. The criteria for determining purchasing importance include value added by the product line, percentage of product in total costs, and the product's impact on the company's profitability. Supply market complexity can be determined by supply scarcity, current advances in technology, availability of substitute products, logistics requirements, and ease of market entry for suppliers.

The use of the model requires the classification of the company's purchased product groups in terms of the two criteria mentioned above: importance of purchasing and supply market complexity. Kraljic's classifications for purchased product groups in reference to the two criteria are illustrated in Figure 1.

**Figure 1. Kraljic Purchasing Model**



(Adapted from Kraljic, *Purchasing Must Become Supply Management*, Harvard Business Review, Sep/Oct 1983)

Products that are rated as high purchasing importance/high supply market complexity are classified as Strategic items; products rated as high purchasing importance/low supply market complexity are classified as Leverage items; products rated as low purchasing importance/high supply market complexity are classified as Bottleneck items; and products rated as low purchase importance/low supply market complexity are classified as Noncritical items. The major premise of the classification process focuses on the implication that each of the four categories of product groups requires a distinctive procurement strategy, depending on the product group's strategic importance.

Strategic items require extensive market and vendor analysis, accurate product forecasting, and the establishment of long-term supplier partnerships. The procurement

strategy for these items may also include a supplier certification process for controlling supplier's performance and monitoring continuous improvements.

Bottleneck items require a strategy focused on insurance of product delivery, contract management to monitor vendor production, and adequate product inventory.

Procurement strategies for Leverage items should take advantage of the buying company's purchasing power to negotiate desirable contract terms and conditions with suppliers. This strategy involves spreading the purchase quantities over a variety of qualified suppliers, staying in touch with new suppliers in the market, pressing for price reductions and greater discounts during negotiations, and insisting on low or zero inventories. The strategy should also include spot purchases from a variety of qualified suppliers for ensuring an adequate supply of products.

Noncritical items will require procurement strategies based on inventory optimization models, product standardization programs, and efficient purchase order processing.

Thus, the use of the Kraljic approach provides a practical tool for determining the type of procurement strategy for specific products/services. It should be noted that changes in market conditions, such as new suppliers entering the market, the availability of new products or substitute products, and changes in the company's market focus will change the classification, and the resulting procurement strategy, of products. Therefore, the use of the Kraljic model demands continuous monitoring and updating to continue its effectiveness.

As can be seen from Kraljic's model for developing sourcing strategies, certain supplies or services, based on importance of purchasing and criticality of the marketplace, require a specific sourcing strategy to ensure the organization's procurement strategy is integrated with its competitive strategy. An example from Kraljic's model is the procurement strategy for Leveraged items (high importance of purchasing/low complexity of supply market). The Leveraged items require a sourcing strategy based on leveraging the buying organization's procurement power to negotiate

desirable contract terms and conditions, as well as to consolidate requirements and reduce the supplier base for that specific commodity or category of supplies/services. The implementation of this type of sourcing strategy can be seen in the use of commodity strategies and commodity teams, which will be discussed in the next section of this research report.

## Commodity Strategies

The commodity sourcing strategy focuses on developing a specific sourcing strategy for a category or group of supplies or services. This is just one application of strategic sourcing: the development and application of a carefully crafted strategy for the procurement of quality supplies and services at the lowest cost (Gabbard, 2004). It should be noted that the term “commodity” should not be associated with traditional commodities such as copper, ore, cotton, or barley, nor should it be associated with non-complex supplies or services. The term “commodity” is used solely to refer to categories or groups of supplies or services. The success of commodity strategies is based on maximizing the cost-reduction advantages of leveraging combined buying power for volume discounts, utilizing market experts to formulate a sourcing strategy, and finally, forming strong relationships with preferred suppliers (Reed, Bowman, & Knipper, 2005).

Commodity sourcing strategies require a distinct strategy planning process developed for that specific group of supplies or services. Lasseter’s Balanced Sourcing Model reflects a generic commodity strategy planning process involving the following seven activities: (1) Spend analysis, (2) Industry analysis, (3) Cost/performance analysis, (4) Supplier role analysis, (5) Business process reintegration, (6) Savings quantification, and (7) Implementation (Lasseter, 1998). The remainder of this section will briefly highlight each of these seven activities.

## Spend Analysis

The spend analysis is the first step toward integrating an organization's sourcing strategy with its competitive strategy. It is this critical step that forces an organization to analyze all the goods and services that are purchased and are forecasted to be purchased in the future by the organization (Carter, 2000, 85-86). This involves aggregating total purchases across all organizational divisions both for supplies and services and by supplier. Additionally, the spend analysis should also reflect the total cost of ownership, not just the purchase price of the supply or service, as well as the various end-users throughout the organization (Lasseter, 1998). The output of the spend analysis is a complete, documented understanding of the organization's past and future purchases for supplies and services, segregated by users and suppliers.

## Industry Analysis

The second step of the commodity strategy process is an examination of the supply industry to determine the major suppliers of the specific supply or service by market share and geographical region (Lasseter, 1998). The industry analysis should also consider the various competition dynamics using Porter's Five Forces of Competition—customer power, supplier power, inter-company competition, threat of substitution, and new market entrants (Porter, 1998). The result of the industry analysis should reflect a diagram of the supply industry for that specific supply or service, highlighting the flow of product from key suppliers to major customers, as well as the different roles each company plays, such as assembler, manufacturer, or distributor (Lasseter, 1998).

## Cost/Performance Analysis

Identifying and documenting cost and performance drivers is the third step in the commodity strategy process. The buying organization must have a thorough understanding of the cost drivers and other important performance metrics such as quality, level of technology, flexibility, and timeliness. A suggested approach for implementing this step is to map the manufacturing process and document the

technology options at each stage to get further insight into the cost and performance drivers for the specific supply or service (Lasseter, 1998).

### Supplier Role Analysis

This phase of the commodity strategy process entails segmenting the supplies or services across a set of differentiated supplier roles. The purpose of this phase is for the buying organization to determine the type of suppliers needed and the roles the suppliers should play in terms of supply management. This may involve thinking in terms of sub-commodities or end-users, or by stages of the product life cycle. Whichever method is used, the important point is to segment the spend by suppliers reflecting the cost drivers identified in the previous phase. The different cost drivers, sub-commodities or life cycle may indicate the need for a separate sourcing strategy for each sub-commodity or life-cycle segment (Lasseter, 1998).

### Business Process Reintegration

When the supply/service cost drivers and performance metrics are identified, and the supplier types and roles have been determined, the next step is to confirm whether the buying organization's business processes are properly aligned, prioritized, and integrated. The focus here is to use the analysis of cost drivers and supplier roles to realign business-process priorities to reflect the desired degree of integration with selected suppliers. The result of this phase is a determination of which business processes should be realigned to achieve better integration with suppliers, thus committing to a cooperative relationship and creating a competitive advantage (Lasseter, 1998).

### Savings Quantification

This critical phase of the commodity strategy planning process ensures that the resulting commodity strategy results in measurable savings, and uses those saving targets as a metric for not only measuring the process of the strategy, but also for "selling" the resulting commodity strategy to senior organizational management.

## Implementation

The final step in developing the commodity strategy is to implement the plan. This entails translating the planned strategy into a set of tasks that will result in the targeted savings. The tasks should reflect activities, resources, and milestones for achieving the savings targets. Various project management tools such as work breakdown structures (WBS), Gantt charts, network diagrams, and critical paths are useful tools for implementing the plan and monitoring its progress.

Once the commodity strategy plan is in place, the organization must continually monitor its progress to ensure the strategy remains effective and responsive to the changes in the internal and external environment. This continual monitoring should include identifying supplies or services that are (or will be) strategic in the future and identifying changes in the supply environment threats and opportunities. In addition, the organization must also continually monitor critical and current technologies that must be pursued, as well as take action to minimize the possibility of supply disruptions and price increases (Burt et al., 2003).

Lasseter's commodity strategy planning process provides an effective template for developing a commodity sourcing strategy for a specific group of supplies or services. The next section of this research report will discuss the application of strategic sourcing and commodity strategies in the commercial industry.

## Commercial Applications

The development and implementation of commodity strategies as part of strategic sourcing has been considered a future trend and purchasing best practice of leading organizations. A 1998 research study conducted by the Center for Advanced Purchasing Studies (CAPS) identified strategic sourcing as one of eighteen trends that will influence the purchasing function within the next ten years (CAPS, 1998). Specifically concerning strategic sourcing, the CAPS study indicated that:

Strategic sourcing will drive supply chain management initiatives.

Comments from the focus group participants indicate that there are two related but distinct trends occurring. First, supplier assessment metrics will become more detailed and precise as purchasing spends more and more time examining finer and finer levels of detail in performance. Second, the metrics will become more individualized as companies specialize the metrics for individual supplier performance. Companies will create supply strategies to achieve cost and technology advantages. These two trends will increase the level of complexity involved in managing supplier evaluation and assessment systems. Over the next 10 years, there will be an intellectual fight over designing metrics that are very specific for particular chains. However, the metrics cannot be so complex that they are difficult to manage on a corporate level. There is no strong trend occurring to reduce complexity and standardize as much as possible by applying one metric throughout a supply chain. (1998, p. 28)

Additionally, the CAPS research also identified purchasing strategy development—the linking of procurement strategy with corporate strategy—as another trend influencing the transformation of the purchasing function. The CAPS study indicated that:

It is likely that there will be increasing linkages between supply chain and business unit/companywide strategy as supply chain strategies become more focused and formalized, and as firms look for innovative sources of competitive

advantage. As supply chain management becomes more advanced, cost, technology, quality, and time drivers throughout the supply chain will become better identified. Performance of the supply chain will be measured more effectively, and executive performance will be linked to both internal and external supply chain performance. (1998, p. 30)

Furthermore, in a 2001 purchasing study, the researchers identified twenty purchasing best practices which have been successfully adopted by leading purchasing organizations. Two best practices include having a written sourcing strategy for every supplier and every part/commodity and implementing strategic planning and administration (Nelson, Moody, & Stegner, 2001). According to the research study, the commodity strategy best practice has been implemented by Honda, Toyota, EMC, and Sun Microsystems. These companies have dedicated commodity teams that watch market trends and develop reaction scenarios to take advantage of those market changes. Leading organizations that have implemented strategic planning and administration include Harley-Davidson, Honda, John Deere, and SmithKline Beecham. These organizations have increased the role purchasing plays in strategic planning by developing a strategy for each supplier and for each commodity. In these organizations, commodity team members are continuously gathering commodity information and technology capabilities three to five years into the future.

A review of the top purchasing organizations indicate that strategic sourcing and, specifically, commodity strategies are elements of a total purchasing transformation effort that has laid the groundwork for tremendous cost reductions, increases in productivity, quality improvement, and return on investment. Because of their great strides toward integrated supply management, IBM, Deere, Lucent Technologies, Cessna Aircraft, and Hewlett-Packard have all been awarded the Purchasing Magazine Medal of Professional Excellence. This coveted honor is awarded to organizations that epitomize the best in purchasing excellence and professionalism (Morgan, 2004). The following discussion summarizes these companies' implementation of strategic sourcing and commodity strategies.

## IBM

IBM significantly turned its purchasing operation upside down in the mid 1990s when it transformed from a tactical purchasing focus to a strategic focus—where procurement is now mission critical. IBM's implementation of strategic sourcing included centralizing its purchasing function and creating 17 commodity councils as a method for leveraging its corporate buying power. These commodity councils combined the requirements (such as drums, microprocessors, monitors, and electronic cards) of all of IBM's divisions and negotiated long-term contracts with suppliers, resulting in lower prices. These commodity councils also resulted in a major reduction in IBM's supplier base with related cost savings. In 1993, IBM had about 4,900 production suppliers, in 1999; about 85% of IBM's \$17.1 billion production buy was with only 50 suppliers. IBM's procurement transformation saved the company hundreds of millions of dollars during the mid-1990s and was instrumental in helping IBM return to profitability (Carbone, 1999; Reed et al., 2005).

## Deere & Co.

Deere & Co., the world's famous equipment manufacturer, implemented strategic sourcing and commodity councils by developing procurement strategies for four materials classifications: unique products, critical products, generics, and commodities. The four categories represented 49 direct materials and 15 indirect materials. These best practices have allowed Deere to reduce the number of MRO suppliers from 1675 to 20, and cut costs by 13% (Smock, 2001).

## Lucent Technologies

Lucent Technologies implemented strategic sourcing by developing and implementing sourcing strategies for about 70 different commodities ranging from metals to memory chips. By taking a commodity approach to sourcing, each commodity team identified the top suppliers, looking at each of their financials, global capacity, location, and technology advantage as well as their competitors'. Lucent was able to reduce its number of suppliers from over 3,000 in 2000, to fewer than 1500 in 2002. About 60 suppliers now account for over 80% of Lucent's spend. This is a drastic

change from 1999 when more than 1,000 suppliers accounted for less than 40% of the spend. Furthermore, Lucent has experienced significant improvement on component prices, and in some commodities, Lucent has been able to reduce prices by 50% (Carbone, 2002).

### Cessna Aircraft Co.

Cessna Aircraft Co. has also implemented strategic sourcing by creating long-range strategic plans and cross-functional commodity teams that have worked to rationalize the company's supplier base. These commodity teams are made up of representatives from supply chain, manufacturing engineering, quality engineering, product design, reliability engineering, product support and finance departments. These teams are responsible for developing commodity strategies that directly support the corporate strategic objectives. Based on its strategic sourcing efforts, Cessna has realized an 86% improvement in supply chain quality, 28% improvement in material availability, 113% improvement in production inventory turns, and a significant cost takeout throughout the supply chain (Avery, 2003).

### Hewlett-Packard

Hewlett-Packard's (H-P) strategic sourcing initiatives have resulted in savings of \$1 billion in materials costs. Through its extensive spend-analysis program and its database of spend data, information can be sliced and diced by commodity, supplier, region, and by business unit. With all of the H-P buyers having access to this information through a secure website, they can have the advantage of negotiating better prices or better terms and conditions on all commodity procurements. Furthermore, H-P uses commodity teams—consisting of procurement engineers, product marketing, and research & development specialists—to focus on new-product introduction and on how new products and suppliers are performing. These commodity teams are responsible for sharing product plans with suppliers, determining which supplier has the technology and products that will be needed and then formulating sourcing strategies for these products. H-P's commodity teams have been instrumental in reducing its supply chain costs as a percentage of revenue by 22%, cutting inventory by 21%, and reducing H-P's

logistics cost per box by 11% in 2004. Finally, H-P's strategic sourcing programs have resulted in more collaborative and less transactional relationships with suppliers (Carbone, 2004).

Each of these world-class purchasing organizations has successfully implemented strategic sourcing and commodity procurement strategies and has reaped the benefits of transforming its purchasing function to a strategic integrated supply-chain process. Based on these successes, many government agencies are now beginning to implement and adopt strategic purchasing best practices. The next section will discuss initiatives within the Department of Defense to implement strategic sourcing, and specifically, commodity strategies.

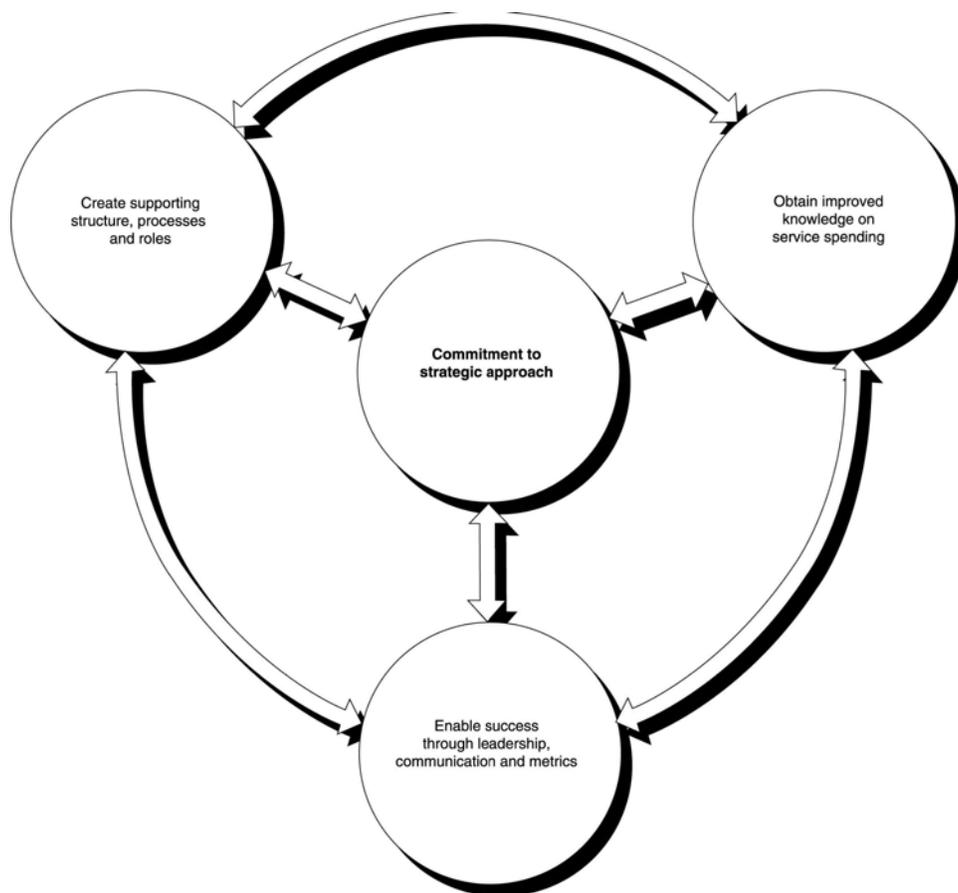
## Department of Defense Initiatives

As discussed at the beginning of this research report, the DoD's procurement process is currently undergoing a transformation similar to the procurement transformation being experienced by the commercial sector. This transformation includes changes to DoD's procurement processes, policies and practices. The strategic sourcing initiatives, and specifically the commodity strategy processes, successfully implemented by the commercial sector are now being considered and implemented by the DoD.

Many of these transformation initiatives were previously recommended by the Government Accountability Office (GAO). Recent reports by the GAO have recommended the strategic approach to procurement taken by the leading companies could serve as a general framework to guide DoD's services contracting initiatives (GAO-02-230, 2002). In addition, the GAO also recommended that the DoD adopt the spend analysis best practices successfully implemented by the commercial sector, and use the resulting information as one of the key elements of implementing a strategic approach to procurement (GAO 03-661, 2003). The GAO also identified key elements of the strategic sourcing approach taken by leading companies, which are illustrated in Figure 2 (GAO-02-230, 2002). Finally, the GAO recommended that the DoD establish a

management structure that adequately promotes a strategic orientation across the departments by setting performance goals, including savings goals, and ensuring accountability for achieving them (GAO-03-935, 2003).

**Figure 2. Key Elements of Strategic Approach Taken by Leading Companies**



Source: GAO  
Report GAO-02-230, Jan. 2002

The DoD has taken action to implement the GAO's recommendations of taking a strategic approach to its procurement function. In February 2003, Michael W. Wynne, Principal Deputy Under Secretary for Acquisition, Technology, and Logistics (USD/AT&L), stated:

"I am challenging DoD's acquisition community...to take advantage of this opportunity to initiate dramatic improvements to the procurement process...I request you establish a concurrent effort in your respective organizations and

interact with our task force as we generate value-added changes to the rules and our processes.” (DoD Procurement Conference, May 27, 2004, p. 36)

Additionally, at the biennial Department of Defense Procurement Conference held in May 2004, Deidre Lee, Director of Defense Procurement and Acquisition Policy, identified DoD-wide strategic sourcing and commodity councils as procurement processes that are designed so more could be done with less by migrating large contracts to regional centers and consolidating like services (Defense AT&L, Sept-Oct 2004). Thus, the DoD is poised to begin reaping the benefits of transforming its procurement process to reflect an integrated strategic supply management perspective.

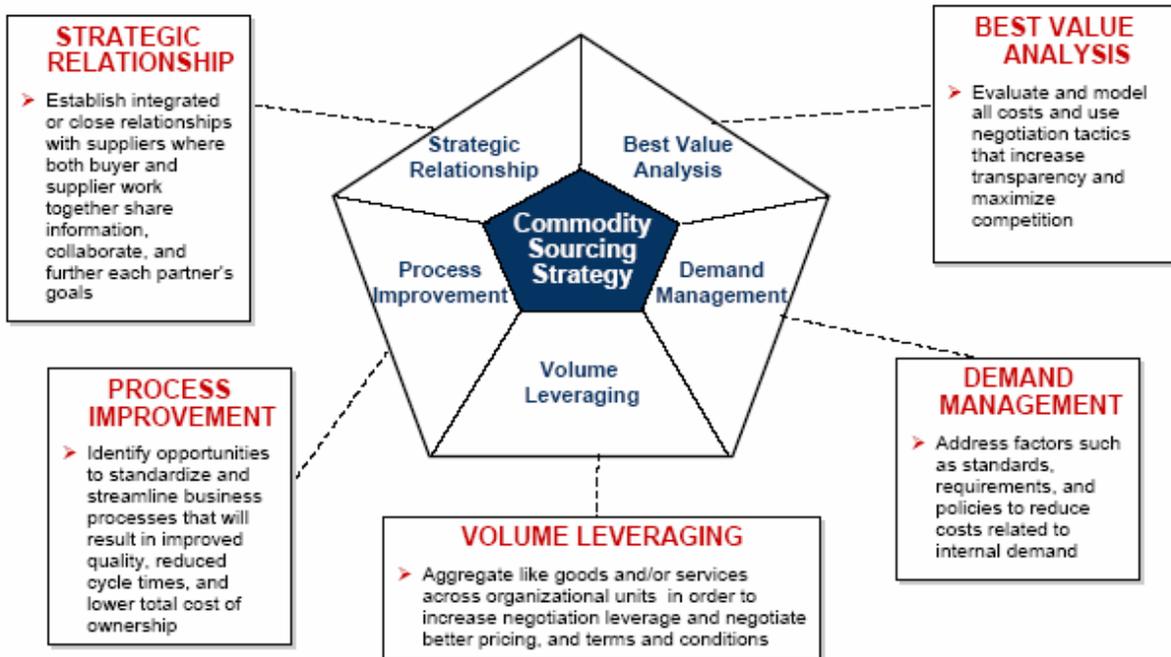
DoD’s current initiatives are focused on the strategic sourcing of services, and specifically, on the establishment of service commodity teams. Through its DoD-wide Services Sourcing Program (DWSS), the department is trying to achieve the following objectives:

- Develop department-wide cross-functional acquisition strategies in order to improve Total Cost of Ownership for acquired services
- Address improvements in meeting socio-economic goals through the use of strategic sourcing
- Leverage commercial best practices in order to streamline and standardize DoD acquisition business processes
- Improve overall skills of DoD acquisition staff through the utilization of commercial tools and processes

(DoD Procurement Conference, May 27, 2004, p. 6)

Although the heart of DoD’s strategic sourcing initiatives are based on commodity sourcing strategies, the other elements supporting strategic sourcing include Strategic Relationships, Process Improvement, Volume Leveraging, Demand Management, and Best Value Analysis, as depicted in Figure 3.

**Figure 3. Strategic Sourcing**



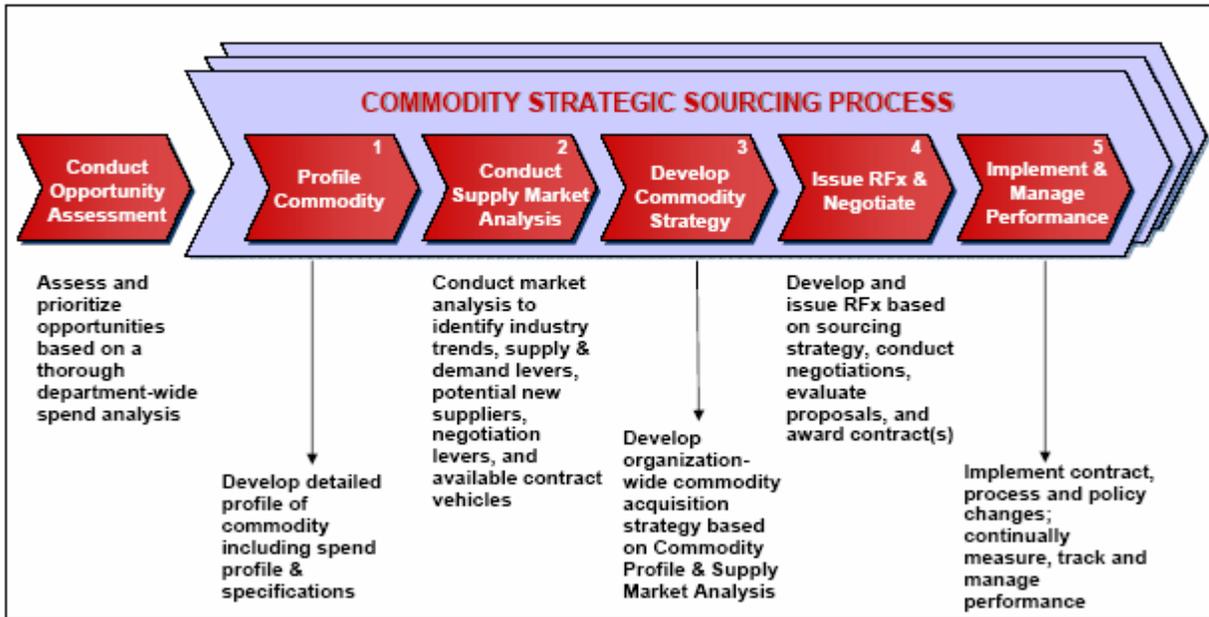
Source: Strategic Sourcing and Spend Analysis Briefing  
 May 27, 2004  
 Censeo Consulting Group

As of May 2004, the DWSS had established the following pilot programs with the services. These programs will initially review the commodity areas of Miscellaneous Professional Services, Management /Advisory Services, and IT services. The following discussion highlights some of the DoD's components' more notable efforts in implementing strategic sourcing and commodity strategies.

### Department of the Navy

As part of the DWSS program, the Navy has launched a commodity team for the purchase of administrative support services, which is comprised of support functions such as translation, courier services, and word processing. Using the five-step strategic sourcing process illustrated in Figure 4, the Navy is currently conducting its spend analysis for its service's spending in order to assess and prioritize opportunities for commodity sourcing strategy.

Figure 4. Strategic Sourcing Process



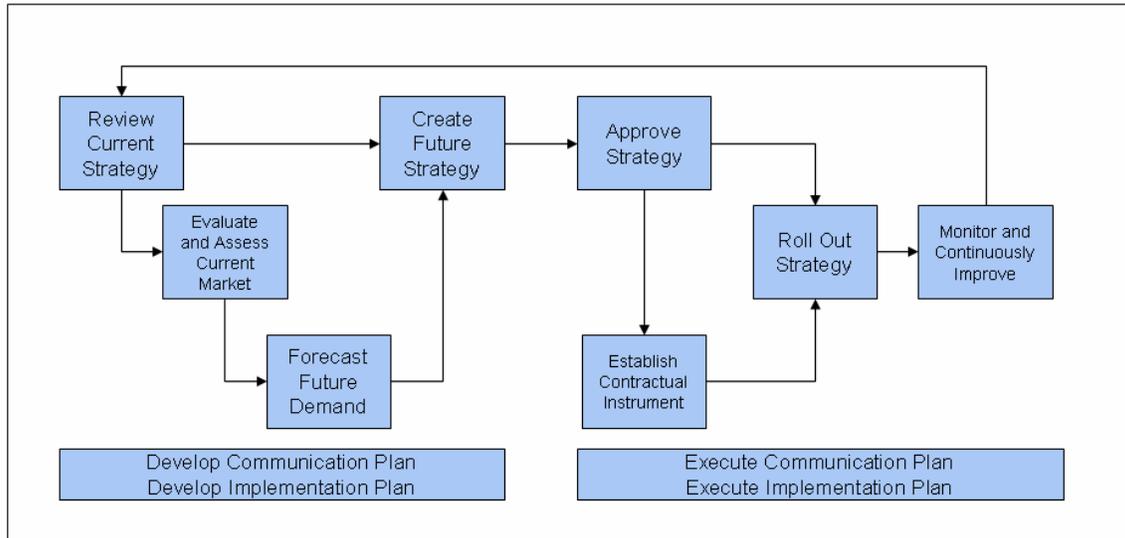
Source: Strategic Sourcing and Spend Analysis Briefing  
May 27, 2004  
Censeo Consulting Group

## Department of the Air Force

The Air Force kicked-off its strategic sourcing initiatives in FY 03 with its first commodity council—the Information Technology Commodity Council (ITCC). The Air Force’s commodity council process, as illustrated in Figure 5, included an extensive spend analysis which identified the top three configurations for computers—one for desktops and two for laptops. Taking advantage of these configurations throughout the Air Force major commands (MAJCOMS), the Air Force was able to leverage its buy on these standardized computer products. In August 2003, after conducting an initial competition, the Air Force awarded a \$7.5 million contract to Dell for the purchase of 12,500 computers. The savings on this procurement allowed the purchase of an additional 2,500 computers from the original planned procurement (Temin, 2004). In December 2003, the Air Force completed another commodity buy saving over \$4 million, with the purchase of 14,863 desktops and 763 laptops for three different major commands (AFMC Command News Service, December 9, 2003).

Figure 5. Commodity Council Process

## AF Commodity Council Operations Process



Source: Informational Guidance, AFFARS 5307.104-93

Based on these recent successes, the IT Commodity Council is developing a commodity strategy for digital printing and imaging products such as printers, scanners, and faxes. Other Air Force commodity councils in development include Air Force Medical Services (professional services, clinical support services, facilities, and maintenance support and contingency services), Force Protection (gate security and vehicle inspection), and Office Supplies. The Air Force is also developing commodity sourcing strategies for aircraft landing gear/tires/breaks, accessories, and support equipment (DoD Procurement Conference, 2004, p. 46-48).

### Defense Logistics Agency

The Defense Logistics Agency (DLA) has also implemented some of these procurement transformation initiatives, specifically strategic sourcing and strategic alliances. Through DLA's Strategic Material Sourcing (SMS) program, a spend and

demand analysis was conducted on over 3.4 million hardware items. Currently, 224,000 items are being sourced through long-term contractual arrangements, leveraging DoD's buying power. DoD's objectives in the Strategic Supplier Alliances (SSA) program is to move away from transactional, one-time buys and to establish more long-term contractual arrangements. Through SSAs, DLA has been successful in achieving overall price reductions of 20% for the items under long-term contracts, with initial efficiencies aggregating \$55 million savings from FY 1999 to FY 2003 from one-time inventory reductions (Gottlieb, 2004).

## Challenges to Strategic Sourcing

DoD's procurement transformation initiatives are not without challenges to implementation. Not only do the same barriers that affect the commercial sector also impact DoD's transformation initiatives, but also some unique Government obstacles affect the transition. These include multiple sources of data, inconsistent or erroneous item identification and supplier identification, and lack of qualified resources (Gabbard, 2004).

A significant obstacle to implementing strategic sourcing activities, specifically commodity councils, is accessibility of the required spend data for a commodity group of supplies or services in order to conduct a valid spend analysis. The DOD currently has limited insight into what it buys and from whom it buys (at the enterprise level), thus resulting in many obstacles. In addition, each military service and agency procures similar supplies and services across the DoD, with little coordination between procurement offices. Furthermore, current existing procurement data resides in numerous disparate applications located throughout the DoD (DoD Procurement Conference, 2004, p. 55).

One obstacle to conducting a spend analysis includes the highly fragmented supply base supporting the DoD, along with the numerous contracting offices throughout the DoD awarding contracts. The DOD has Air Force, Army, and Navy contracting offices scattered all across the globe, each office conducting its own

procurement for services and supplies. Having access to the detailed types of information needed to assess its spend data is one area in which the DOD is facing challenges. Another obstacle includes the numerous problems associated with the DD Form 350—Individual Contracting Action Report. This report, submitted every time a contract is awarded which obligates funds, is used to collect data on contract placement statistics within DoD. The data gathered by means of the DD 350 are used for reporting the size and distribution of DoD procurement actions, as well as other procurement statistics. The DD 350 Form has frequently been plagued with coding or data entry errors, insufficient details or incomplete data. These data errors and deficiencies have always existed, but now they are impacting the DoD's ability to access current and accurate procurement data, which is critical for conducting an effective spend analysis. The DoD is responding to the challenge of accessing valid spend data with its Acquisition Spend Analysis Pilot program. This pilot program will develop a net-centric spend analysis capability that can be scalable across the DOD, prove the possibility to reduce the complexity of data integration across the DoD, and demonstrate key net-centric attributes by pulling data from disparate data sources, mapping and transforming the data to a common model, and producing DoD enterprise spend reports. The pilot program will produce the following seven spend analysis reports—total spend, total number of contracts, average dollars per contract, geographical dispersion, supplier concentration, supplier diversity, and total dollars by supplier. The pilot will also produce an ad hoc capability than can be leveraged in strategic sourcing activities (DoD Procurement Conference, 2004).

The fact that DoD's procurement processes are governed by public law and are focused on achieving public goals and objectives results in another category of challenges and obstacles in implementing strategic sourcing and commodity strategies. As stated in the Federal Acquisition Regulation (FAR), the vision of the Federal Acquisition System is to deliver on a timely basis the best value product or service to the customer, while maintaining the public's trust and fulfilling public policy objectives (FAR, 2000). Federal procurement contracts are used as vehicles for implementing social programs that promote dispersion of wealth by providing economic opportunities for small business and disadvantaged business as well as other classes of protected

groups (Thai, 2001). Some of these public policy objectives include maximizing competition and providing maximum opportunities for small and disadvantaged businesses. The implementation of strategic sourcing and commodity councils has the potential to restrict competition and limit opportunities for small businesses. Thus, there are multiple stakeholders involved in, and who have an influence on, the DoD procurement process. These multiple stakeholders may eliminate the possibility of an optimized procurement solution—such as a strategic sourcing strategy that leverages the buying power of the DoD, but may limit or exclude small businesses from the procurement.

Finally, an additional challenge to implementing strategic sourcing is the DoD's ability to evaluate and analyze the return on investment (ROI) of strategic sourcing initiatives. Obviously, the instant savings realized from large-quantity leveraged buys of specific commodities, such as IT products, provide an initial assessment of dollars saved per procurement. However, the long-term implications to life-cycle cost (LCC), also known as Total Cost of Ownership (TCO), have yet to be determined or quantified. The ripple-effect resulting from standardizing the configuration of procured supplies (for example, computer desktops) and procuring in high volume for an increased number of customers, as it relates to system supportability and maintainability, have yet to be balanced with the additional costs of implementing strategic sourcing, such as training and infrastructure costs.

# Best Practices in Strategic Sourcing

Strategic sourcing, and specifically commodity sourcing strategies, has been successfully implemented by commercial companies as well as by DOD agencies. The best practices and key elements that have proven to be critical success factors in strategic sourcing initiatives are common throughout both sectors. These best practices and critical success factors include the following:

**Common Processes and Tools.** Since commodity strategies focus on leveraging the purchasing power of the entire organization, with all its various geographically separated sub-units, one best practice involves the development and implementation of common purchasing processes and purchasing tools. The establishment of a standard commodity-strategy process and the implementation of spend-analysis tools to determine the what, who, where, and when of organizational spending is certainly a critical success factor in strategic sourcing (Buckenmayer & Noland, 1998; Reed et al., 2005).

**Cross-Functional Teams.** The use of cross-functional teams, more specifically: trained and educated purchasing teams, is also considered a critical success factor in implementing commodity strategies. These teams consist of the various functional representatives having a stake in the item or service being procured. These team members are educated and multi-skilled in all aspects of the commodity such as requirements analysis, cost analysis, purchasing and supply chain management, and negotiations. Critical to the establishment of cross-functional teams is the inclusion of end-user customers and technical experts in the decision-making process. Such inclusion would more likely effect successful customer participation and collaboration (Buckenmayer & Noland, 1998; Reed et al., 2005; DOD Procurement Conference, 2004).

**Team Sponsorship and Authority.** Especially critical to the success of commodity teams and commodity strategies is the sponsorship of the strategic sourcing initiative; likewise, the level of authority given to the sourcing team is vital. The

commercial and defense sector's experience indicate that proper governance and strong sponsorship of commodity teams are essential elements to ensuring the success of the commodity strategy. The sponsor's role includes providing goals and resources, as well as being an advocate of the sourcing initiative and knocking down obstacles and barriers. Equally as critical is the authority given to the commodity team. By being held accountable for meeting the sourcing goals, and by being given the authority to make decisions, the team will keep from becoming a "committee reduced to offering hopeful recommendations" (Buckenmayer & Noland, 1998, p.4; DOD Procurement Conference, 2004).

**Requirements Management.** Commodity strategies involve consolidating all of an organization's requirements for a specific supply or service into one or a few standardized configuration requirements. This typically receives negative responses and push-back from end-user customers. This is one area where the team sponsor must take an active role. How an organization manages the specification of the supply or service being procured determines the degree of leverage power that organization has in the marketplace. Successful strategic sourcing will require stern specification management on the part of the commodity team, and full backing by the sponsor, with justice for "maverick spenders" (Buckenmayer & Noland, 1998; DOD Procurement Conference, 2004, p. 9).

## Conclusions and Recommendations for Further Research

This research report discussed the procurement transformation within the commercial and DoD sectors, specifically as it applies to developing procurement strategies and the implementation of commodity strategies as an application of strategic sourcing. The theoretical framework surrounding the transformation of procurement was discussed, along with its major developments. Corporate procurement strategy and procurement strategy development methods were then discussed, along with the use of commodity strategies and commodity teams as methods for implementing focused procurement strategies. Commodity sourcing strategy lessons learned, best practices implemented, and recommendations for the Department of Defense were also identified. The implementation of strategic sourcing initiatives within the commercial sector has resulted in significant cost reductions, increases in productivity, quality improvement, and return on investment. The DoD's strategic sourcing initiatives have also resulted in significant savings, albeit with some obstacles and barriers yet to overcome.

Strategic sourcing in the DoD is still in its infancy and has a way to go before it becomes a mature core competency. As DoD continues to adopt strategic sourcing more adeptly, each military service will successfully be implementing commodity strategies for services and supplies for its specific military department. This will include conducting spend analysis and commodity management within the specific military service's organizations.

The next step in realizing the full potential of the DoD's buying power is the implementation of joint strategic sourcing initiatives, including the use of joint commodity councils across the DoD agencies. The DoD's Services Sourcing Program (DWSS) initiative will be instrumental in developing DoD-wide cross-functional acquisition strategies, thus achieving improved Total Ownership Costs (TOC) for acquired supplies or services. As the DWSS initiative continues, additional research will be needed in the areas of conducting spend analysis for multiple DoD organizations, defining

standardized configurations for supplies or services acceptable to DoD-wide customers, and finally, implementing strategic sourcing initiatives which leverage the buying power of the DoD. Furthermore, additional research exploring the implications of the DoD's strategic sourcing and other procurement transformation initiatives on the Department's management infrastructure (such as procurement workforce transformation, training and education of commodity teams, and the establishment of commodity team or sourcing program management offices) will be needed.

## References

- Adamson, J. (1980). Corporate long-range planning must include procurement. *Journal of Purchasing and Materials Management*, Spring, Vol 16, No. 1, 25-32.
- Avery, S. (2003). Cessna soars. *Purchasing Magazine Online*, September 4, 2003. Retrieved from <http://www.manufacturings.net/pur/index> on November 6, 2004.
- Bhote, K.R. (1989). *Strategic supply management: A blueprint for revitalizing the manufacturer-supplier partnership*. New York: AMACOM.
- Buckenmayer, R.H., Noland, C.H. (1998). Strategic Commodity Management: lessons From a Major Implementation (Presentation at the 1998 NAPM International Purchasing Conference). Retrieved from <http://www.ism.ws/ResourceArticles/1998/98cp10.cfm> on October 3, 2004.
- Burt, D., N., Dobler, D. W., & Starling, S. L. (2003). *World class supply management: The key to supply chain management*. New York: McGraw-Hill Irwin.
- Cahlink, G. (2004). Seeking services. *Government Executive*, August 15, 2004, 46.
- CAPS Research Study (1998). *The future of purchasing and supply, A five- and ten-year forecast*. Tempe, Arizona: Center for Advanced Purchasing Studies/National Association of Purchasing Management, Inc., September 1998.
- Carbone, J. (1999). Reinventing purchasing wins the medal for big blue. *Purchasing Magazine Online*, September 16, 1999. Retrieved from <http://www.manufacturings.net/pur/index>, on November 9, 2004.
- Carbone, J. (2004). Hewlett-Packard wins for the 2<sup>nd</sup> time. *Purchasing Magazine Online*, September 2, 2004. Retrieved from <http://www.manufacturings.net/pur/index> on November 6, 2004.

- Carbone, J. (2002). Lucent's supply chain focus fattens margins. *Purchasing Magazine Online*, September 19, 2002. Retrieved from <http://www.manufacturng.net/pur/index on November 6>, 2004.
- Carter, J. R. (2000). Development of supply strategies. In J.L. Cavinato & R.G. Kauffman (Eds.), *The Purchasing Handbook: A Guide for the Purchasing and Supply Professional* (pp 81-98). New York: McGraw Hill.
- Corey, E.R. (1978). *Procurement management: Strategy, organization, and decision-making*. Boston, Mass: CBI Publishing Co. Inc.
- Department of Defense Procurement Conference, (2004). Strategic sourcing and spend analysis, May 27, 2004. Retrieved from [http://www.acq.osd.mil/dpap/about/Procurement2004/presentations/D\\_BoydConsolidatedPanel.pdf on November 12](http://www.acq.osd.mil/dpap/about/Procurement2004/presentations/D_BoydConsolidatedPanel.pdf on November 12), 2004
- Federal Acquisition Regulation* (2000). *FAR 1.102*. Retrieved from <http://farsite.hill.af.mil/VFFARa.HTML>
- Gabbard, E. G. (2004). Strategic sourcing: Critical elements and keys to success (Paper presented at Institute of Supply Management International Conference, Tempe, Arizona), April 2004. Retrieved from <http://www.ism.ws/ConfPastandOnlineDaily/Files/Apr04/HA-Gabbard.pdf on November 12>, 2004.
- General Accounting Office. (2002). Best practices: Taking a strategic approach could improve DOD's acquisition of services, (GAO-02-230). Washington, DC.
- General Accounting Office, (2003). Best practices: Improved knowledge of DOD service contracts could reveal significant savings, (GAO-03-661). Washington, DC.
- General Accounting Office, (2003). Contract management: High level attention needed to transform DOD services acquisition, (GAO-03-935). Washington, DC.

- Gottlieb, D. W. (2004). Military declares war on spend. *Purchasing Magazine*, May 20, 2004, 44-48.
- Henderson, B.D. (1975). The coming revolution in purchasing. *Journal of Purchasing and Materials Management*, Summer, Vol 11, No. 2, 44-46.
- Kraljic P. (1983). Purchasing must become supply management, *Harvard Business Review*, September/October, 109-117.
- Layton, E. (2004,). Director, defense procurement and acquisition policy holds procurement conference. *Defense AT&L*, September-October, 90-95.
- Lasseter, T. M. (1998). *Balanced sourcing: Cooperation and competition in supplier relationships*. Jossey-Bass Publishers: San Francisco.
- Morgan, J. P. (2004). Book of winners. *Purchasing Magazine Online*. Retrieved from <http://www.manufacutring.net/pur/index> on November 9, 2004.
- Nelson, D., Moody, P.E., & Stegner, J. (2001). *The purchasing machine: How the top ten companies use best practices to manage their supply chains*. New York: The Free Press.
- Porter, M.E. (1998). *Competitive strategy: Techniques for analyzing industries and competitors*. New York: The Free Press.
- Raedels, A. R. (2000). *The supply management process*. Tempe, Arizona: National Association of Purchasing Management.
- Reed, T. S., Bowman, D.E., & Knipper, M. E. (2005). The challenge of bringing industry best practices to public procurement: Strategic sourcing and commodity councils. In K.V. Thai, A. Araujo, R.Y. Carter, G. Callander, D. Rabkin, R. Grimm, K.R.E. Jensen, R.E. Lloyd, C.P. McCue, and J. Telgen (Eds.) *Challenges in Public Procurement: An International Perspective*. Boca Raton, Florida: PrAcademic Press.

- Smock, D. (2001) Deere takes a giant leap. Purchasing Magazine Online, September 6, 2001. Retrieved from <http://www.manufactring.net/pur/index on November 6, 2004>
- Speckman, R. E. (1988) Strategic Suppliers Selection: Understanding long-term buyer relationships. Business Horizons, July-August, Vol 31, No. 4, 75-81.
- Temin, T. (2004). Air force council saves on first PC commodity buy. Government Computer News, August 27, 2003. Retrieved from [http://www.gcn.com/vol1\\_no1/daily -updates/23299-1html on November 6, 2004](http://www.gcn.com/vol1_no1/daily -updates/23299-1html on November 6, 2004).
- Thai, K.V. (2001). Public procurement reexamined. *Journal of Public Procurement*, 1 (1), 9-50.

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