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# Optimizing Causes of Procurement Cost Through Strategic Sourcing: The Impact of Rate, Process, and Demand

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Monterey, California. Naval Postgraduate School

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# EXCERPT FROM THE PROCEEDINGS

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OF THE  
TENTH ANNUAL ACQUISITION  
RESEARCH SYMPOSIUM  
LOGISTICS MANAGEMENT

**Optimizing Causes of Procurement Cost Through  
Strategic Sourcing: The Impact of Rate, Process,  
and Demand**

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Michael E. Knipper, United States Air Force, and  
John Fallon, University of Maryland, University College**

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# Preface & Acknowledgements

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Welcome to our Tenth Annual Acquisition Research Symposium! We regret that this year it will be a “paper only” event. The double whammy of sequestration and a continuing resolution, with the attendant restrictions on travel and conferences, created too much uncertainty to properly stage the event. We will miss the dialogue with our acquisition colleagues and the opportunity for all our researchers to present their work. However, we intend to simulate the symposium as best we can, and these *Proceedings* present an opportunity for the papers to be published just as if they had been delivered. In any case, we will have a rich store of papers to draw from for next year’s event scheduled for May 14–15, 2014!

Despite these temporary setbacks, our Acquisition Research Program (ARP) here at the Naval Postgraduate School (NPS) continues at a normal pace. Since the ARP’s founding in 2003, over 1,200 original research reports have been added to the acquisition body of knowledge. We continue to add to that library, located online at [www.acquisitionresearch.net](http://www.acquisitionresearch.net), at a rate of roughly 140 reports per year. This activity has engaged researchers at over 70 universities and other institutions, greatly enhancing the diversity of thought brought to bear on the business activities of the DoD.

We generate this level of activity in three ways. First, we solicit research topics from academia and other institutions through an annual Broad Agency Announcement, sponsored by the USD(AT&L). Second, we issue an annual internal call for proposals to seek NPS faculty research supporting the interests of our program sponsors. Finally, we serve as a “broker” to market specific research topics identified by our sponsors to NPS graduate students. This three-pronged approach provides for a rich and broad diversity of scholarly rigor mixed with a good blend of practitioner experience in the field of acquisition. We are grateful to those of you who have contributed to our research program in the past and encourage your future participation.

Unfortunately, what will be missing this year is the active participation and networking that has been the hallmark of previous symposia. By purposely limiting attendance to 350 people, we encourage just that. This forum remains unique in its effort to bring scholars and practitioners together around acquisition research that is both relevant in application and rigorous in method. It provides the opportunity to interact with many top DoD acquisition officials and acquisition researchers. We encourage dialogue both in the formal panel sessions and in the many opportunities we make available at meals, breaks, and the day-ending socials. Many of our researchers use these occasions to establish new teaming arrangements for future research work. Despite the fact that we will not be gathered together to reap the above-listed benefits, the ARP will endeavor to stimulate this dialogue through various means throughout the year as we interact with our researchers and DoD officials.

Affordability remains a major focus in the DoD acquisition world and will no doubt get even more attention as the sequestration outcomes unfold. It is a central tenet of the DoD’s Better Buying Power initiatives, which continue to evolve as the DoD finds which of them work and which do not. This suggests that research with a focus on affordability will be of great interest to the DoD leadership in the year to come. Whether you’re a practitioner or scholar, we invite you to participate in that research.

We gratefully acknowledge the ongoing support and leadership of our sponsors, whose foresight and vision have assured the continuing success of the ARP:



- Office of the Under Secretary of Defense (Acquisition, Technology, & Logistics)
- Director, Acquisition Career Management, ASN (RD&A)
- Program Executive Officer, SHIPS
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- Program Executive Officer, Integrated Warfare Systems
- Army Contracting Command, U.S. Army Materiel Command
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# Logistics Management

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**Optimizing Causes of Procurement Cost Through Strategic Sourcing: The Impact of Rate, Process, and Demand**

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Michael E. Knipper, *United States Air Force*  
John Fallon, *University of Maryland, University College*



# Optimizing Causes of Procurement Cost Through Strategic Sourcing: The Impact of Rate, Process, and Demand

**Timothy Reed**—Reed is principal director of Beyond Optimal Strategic Solutions. Reed assists federal agencies, such as the U.S. Air Force Strategic Sourcing Group, the Department of Energy, and the DoD's Rapid Fielding Directorate with sourcing strategies. He assisted federal agencies, such as the Navy, Army, Housing and Urban Development and Veterans Affairs, and the Executive Office of the President with the creation of sourcing strategies, and he provided the training necessary to implement those plans. He served at the Pentagon as Deputy Chief, Procurement Transformation Division, responsible for implementing strategic sourcing and commodity councils for the DoD and Air Force. [tim@beyondoptimal.com]

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**John Fallon**—Fallon served as a senior procurement analyst with the U.S. Department of the Treasury from 2004 through 2007. He also served as the department's lead on the government-wide FAR council. At the Defense Acquisition University, Fallon taught Level II and III contracting and program management courses, as well as targeted, tailored training to the DoD AT&L workforce. Fallon is currently a principal at Censeo Consulting Group, where he leads the firm's training business. He has developed and delivered strategic sourcing and supply chain management curriculum for private and public sector clients. He earned his PhD from Walden University, where his research focused on the application of private sector, commercial best practices within the federal sector. [JWF3257W@gmail.com]

## Abstract

The benefits of strategic sourcing have been realized by private industry for over two decades. Despite the compelling business case presented, the adoption of strategic sourcing tenets in government procurement has been slowed by a lack of leadership and committed resources (GAO, 2012). We believe that advancing the ability to identify, capture, and communicate cost savings that accrue from strategic sourcing activities will allow government procurement leaders to better articulate the value of such programs. Enhanced communication will enable leaders to pursue the appropriate resources to sourcing teams. In order to tell the story in a more effective manner, leaders must understand the types of cost they are incurring and the drivers of cost that they can impact, and they must ensure that their teams take credit for the total spectrum of cost that they affect. This paper examines the various types of savings that may accrue to an organization pursuing strategic sourcing strategies and recommends the grouping of savings into rate, process, and demand categories. In addition to introducing the types of cost, examples of cost and scenarios whereby organizations have achieved cost savings are presented.

## Introduction

Strategic sourcing offers a myriad of practices, models, and processes that are typically targeted at a specific cost driver and/or cost pool. Although strategic sourcing and its potential impact are far reaching, it consistently aims to drive efficiencies and savings across an organization. After briefly detailing some of the potential cost savings and efficiency areas across the supply chain, we will specifically hone in on an organization's





ability to affect the following cost groups: rate, process, and demand. These cost groups will be defined, explained, and supported with examples to illustrate the potential impact that sourcing strategies can have when directly applied to them. In the current fiscal climate, it is imperative that any DoD procurement strategy be supported with tangible metrics and a calculated return on investment (ROI) so that an effective business case can be made to ensure leadership support and follow-on execution. The recommended approach of applying strategic sourcing strategies targeted to achieving efficiencies in the rate, process, and demand cost groups significantly advance procurement leaders' ability to develop a compelling and comprehensive business case.

### **Types of Strategic Sourcing Cost Savings**

The broad spectrum of cost in the supply chain includes manufacturing, administration, warehouse, distribution, capital, and installation cost (Pettersson & Segerstedt, 2012). By considering all phases of the supply chain, strategies formulated by strategic sourcing teams influence the cost drivers in each of these cost pools.

Strategic sourcing activities have the ability to impact each of these key cost areas. As we shall discuss, standardized configurations can reduce manufacturing costs. Bulk ordering can reduce distribution cost. Just-in-time delivery can reduce or eliminate warehouse cost and capital cost. Enterprise-wide contracts can reduce installation costs. Although these steps may help reduce external costs, focusing on the procurement activity itself can reduce process costs in the administration cost pool.

It is interesting that private industry organizations have dedicated tremendous effort and focus on the management of internal cost (Cokins, 2001). However, they spend much less time attempting to influence the internal behavior of vendors in their supply chain in any way other than price negotiations. To the small extent that government procurement exerts influence on supplier behavior, it is constrained to proposal and contract policy and small business regulations. In the converse of industry behavior, government spends comparatively little effort in attempting to understand and enhance their internal processes. Both industry and government can benefit from improved understanding and involvement in supplier behaviors and vendor cost drivers; and government could see tremendous value in an examination of the internal processes and cost associated with procurement.

Of course focusing on cost "numbers" is of limited value. As Cokins (2001) put it, in describing successful cost managers, "You do not really manage costs, you understand the causes of cost" (p. 28).

The recent history of cost management has utilized several different tactics. In the 1970s, direct product profitability (DPP) was utilized. This system focused on the costs associated with a particular product (Cokins, 2001). In the 1980s, total cost of ownership (TCO) emerged. TCO examined the entire cost to acquire, use, and dispose of an item, rather than just considering the purchase price (Ellram, 1994). Activity-based costing (ABC) gained popularity during this time as well. ABC places cost in categories related to organization activities or objectives (such as business development or presentation preparation, rather than aggregate categories such as labor cost). As a result, use of ABC provides insight into the cost of specific organizational activities. As is the case with most of these cost systems, ABC has an inward-looking focus (Cokins, 2001).

From a strategic sourcing perspective, leaders should be focused on both internal and external causes of cost. Further, the causes of cost of concern should be those that the strategic sourcing team can affect. We recommend classifying the causes of addressable procurement cost into three distinct cost groups that can be impacted by sourcing strategies: rate, process, and demand.



## **Rate**

In almost every case, an organization's first efforts to implement strategic sourcing are aimed at attempts to reduce the cost paid per item for a particular good or service. These initial efforts often are of the "leveraged buying" variety. A clear example of leveraged buying is presented in the scenario wherein consumers purchase 50 rolls of paper towels in bulk at a shopping club outlet to achieve a reduced cost per item. Leveraged buying allows an organization to achieve rate cost savings. Simply put, the cost per unit paid for the same product or service is reduced by developing and implementing rate savings related strategies. Implementing leveraged buying strategies can achieve quick wins for the sourcing organization and prove particularly successful in straightforward commoditized product or service groups. However, rate savings are just one type of cost that organizations can impact through strategic sourcing.

## **Process**

Although the savings realized through rate reductions are often finite, they are often substantially realized in the short term. The more complex buckets, process cost and demand cost, have potentially higher savings over a longer period of time. Process cost is the cost that is required for an organization to buy a product or service. This cost includes all facets of the procurement process from requirement definition through contract management and closeout. In organizations utilizing decentralized buying, similar items are purchased in small quantities at many locations on a repeated basis. The cost for each transaction is repeated with each buy. Organizations can reduce this cost by pursuing strategies that put a common buying process in place and allow purchases to be repeated at multiple locations on a recurring basis (Reed, Bowman, & Knipper, 2005).

Consider a web-based shopping service that allows customers to compare prices and load buying data and delivery information one initial time. On subsequent visits, the customer might simply select an icon to purchase the same item again, thus reducing the cost in time and personnel required to complete the transaction. In federal purchases, moving away from single transactions to utilizing pre-negotiated blanket purchase agreements or multiple-award contracts can reduce the front-end labor requirement and streamline the buying process. In fiscal year (FY) 2012, the DoD conducted 14,263,469 transactions (accessed at [usaspending.gov](http://usaspending.gov)). Potential savings from process cost reduction by eliminating some of these transactions and transitioning from complex contract execution to ordering off strategic vehicles where possible can yield millions of dollars in process cost savings.

## **Demand**

A third type of potential savings is demand savings. Demand savings focuses on reducing the total number of units purchased. Switching from incandescent light bulbs to LED bulbs is an example of reducing demand cost. By seeking out solutions that reduce the total number of products or services required in order to meet the mission, the DoD can reduce demand cost. Demand cost reduction can occur in multiple cost pools depending on the item. In addition to the item procured, it could also include maintenance time, inventory support, and other logistics cost that may be reduced (Reed et al., 2005).

## **Examples of Cost Savings in Air Force Strategic Sourcing**

We now turn to an example of an Air Force (AF) sourcing strategy to illustrate the placement of cost causes into the three recommended categories. The AF Civil Engineering Support Agency (AFSECA) identified the conversion of taxiway lights to LED as a strategic sourcing opportunity in 2010. The AF had over 30,000 taxiway lights, which illuminate the edges of runways and taxiways at AF bases. One third of AF taxiway lights had already



been converted to LED by independent bases. However, there was no enterprise-wide approach to bulb conversion. As a result, the AF was not leveraging its purchasing power (rate-related cost). It was not incurring standardized inspection, electricity, and maintenance costs (demand-related causes of cost). Finally, it was inefficiently conducting procurement transactions (process-related causes of cost).

In early 2010, the newly formed Civil Engineering Commodity Council (CECC) took on the challenge to strategically source LED taxiway lighting with an enterprise-wide strategic approach. A cross-functional team of acquisition and operational professionals was formed. Base-level civil engineers, airfield managers, and flight operations were identified as the affected requirement owner's subject-matter experts. Program managers, data analysts, and contract specialists from the AF Enterprise Sourcing Group led the multi-functional team. The AF completed the sourcing strategy in October 2010 (Quinter, 2012). We examine the forecast reductions in causes of cost in the next section.

### ***Rate Cost Efficiencies***

The rate cost efficiency is based on the reduction in the price per unit paid for each LED type light. With more than 10,000 lights being replaced over the last year, energy savings are being realized. From a cost savings perspective, since being awarded, the contracts have been utilized to provide replacement lights at 18 AF installations in 10 states. Cost savings of 50–60% were anticipated, based on past spend for incandescent lamps. Although actual cost savings are still being calculated for the last quarter, \$300,000 in cost savings has been confirmed (Quinter, Wilkins, Bell, Bowling, & Tungate, 2012). As we have discussed, leveraging buying power to reduce the price paid per unit is most often the initial focus for sourcing strategy teams. Although these savings can be significant at the outset, the source of enduring savings is in understanding and affecting the causes of cost in the process and demand categories.

### ***Process Cost Efficiencies***

By having a centralized contract vehicle, AF buying offices can now place orders off existing contract vehicles rather than creating new contracts or orders for each purchase. This reduces the amount of effort required to acquire taxiway lighting. The AF utilizes a process cost model to calculate process cost savings based on the number and type of transactions avoided as a result of new strategies.

### ***Demand Cost Efficiencies***

Demand cost efficiency in this example can also be seen as anything that occurs as a result of the strategy that reduces or changes consumption related to the item. In this case, two primary benefits were realized by the AF from moving to LED lighting. The first cause of cost that is affected by the strategy is energy consumption: The LED fixtures are designed to use 60% less energy than conventional lighting (Quinter et al., 2012). The AF validated energy savings by separately metering airfield lighting installed at one AF base and using the achieved reduction calculation as the per-unit energy savings factor. Total savings are calculated using an aggregation of expected energy savings multiplied by the number of units installed.

The second, cause of cost affected by the strategy is maintenance labor cost. The LED lights have an average life expectancy of more than 100,000 hours, compared to the 1,000 hours provided by the previous incandescent fixtures (Quinter et al., 2012). Due to the longer life of the LED fixtures, the airfield maintenance (inspecting and replacing burned out bulbs) is dramatically less. Because the incandescent bulbs burn out and need to be replaced much more frequently than the LED fixtures, which are virtually maintenance free,



the task of maintaining the fixtures is all but eliminated (except due to damage). Calculations utilizing average labor rates and observed labor touch times were used.

## Recommendations

The adoption of strategic sourcing by government has been slowed by many factors. A significant barrier is that procurement organizations continue to be staffed primarily with single function workers with no experience in strategic procurement principles or techniques. The government is further limited by a focus on tactical execution of one requirement at a time rather, than an enterprise-wide, strategic perspective.

We acknowledge that organizational inertia in government is too powerful a force to overcome in the pursuit of changing the way these buying organizations behave. Rather, we suggest the establishment of new, multi-functional, multi-skilled organizations to create and execute sourcing strategies for the enterprise. Establishing these organizations requires a compelling business case based on the standardized identification of potential savings that are possible through strategic sourcing. Such a business case will likely demonstrate a significant ROI relative to the cost required to establish the organization.

We recommend developing a standardized methodology to identify, capture, and communicate cost causes, and subsequent savings is essential to securing the resources needed to implement successful sourcing strategies. As illustrated by the AF taxiway lighting example in this paper, using rate, process, and demand categories allows for a straightforward yet comprehensive collection of savings that result from the implementation of strategic sourcing.

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