

TACTICAL PURCHASING HELPS COMPANIES MANAGE COST AND INCREASE PROFITABILITY

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ABSTRACT

This paper focuses on strategic cost management within a purchasing department. *Antigo's purchasing department operates at a tactical level. Tactical purchasing decisions are not intertwined with the company's long-term strategy and do not control long-term costs. To maximize the effectiveness of purchasing decisions, buyers at Antigo must develop the skills to manage costs on a strategic level. Strategic purchasing analyses how money is currently spent throughout the company. Strategic purchasing decisions at Antigo extend beyond the purchase price and include other critical aspects. Strategic purchasing increases long-term profitability and customer satisfaction, and prepares for challenges lying ahead with cap-and-trade legislation.

INTRODUCTION

Strategic cost management is the process of aligning a firm's resources and cost structure with the long-term organizational strategy and the short-term tactics (Anderson 201). While strategic cost management is generally a cross-functional effort, this paper focuses solely the purchasing department since their roles and responsibilities lie at the heart of the topic. Like most organizations, *Antigo's purchasing department is currently effective only at a tactical level. According to James Carbone, tactical purchasing consists primarily of finding parts, often on short notice, at the best possible price (Carbone 38). This mode of purchasing is routine and revolves around responding to current issues vs. seeking focusing on long term problem solving. While tactical purchasing is critical to helping a company manage costs, it is effective only in the short-term. In other words, tactical purchasing decisions are not intertwined with the long-term strategy, and as a result, are usually not effective in controlling long-term costs.

In order to maximize the effectiveness of purchasing decisions, buyers at Antigo must develop the skills to manage costs on a strategic level. Strategic purchasing is a methodology, which realizes the greatest amount of benefit to the company, while still effectively managing the costs associated with the acquisition of materials and operational components (Ray 24). Strategic purchasing often begins with a thorough analysis of how money is currently spent throughout the company. This initial step remains important in determining which purchasing processes to alter to achieve maximum efficiency. Also, strategic purchasing decisions at Antigo extend beyond the purchase price and include other critical aspects including: lower total cost of ownership, the development of effective employee and supplier relationships, and quality improvement.

BRIEF HISTORY OF ANTIGO AND THE POWER GENERATION INDUSTRY

In the current economic climate, most utility companies really struggle in the quest for profitability. First, the economic downturn affected Antigo's revenue stream from two angles. Growing unemployment naturally made it difficult for Antigo to collect incoming revenue from its residential customer base. As consumer demand for goods and services plummeted, many businesses sought to reduce costs by cutting production and eliminating entire shifts. Since the local commercial and industrial base consumes approximately 61% of Antigo's electricity, eliminating entire shifts drastically reduced Antigo's revenue stream (Antigo Utility Holdings, Inc. 2009).

Antigo's situation worsened in January of 2009 when a massive ice storm ripped through its service area and left over half of its customers without power for several days. During this time, Antigo's employees and outside contractors worked around the clock to restore service. In total, Antigo spent approximately \$20 million on labor and materials to fix the damage caused by the storm. While it is reasonable to expect Antigo to plan for many unexpected events, it is nearly impossible to completely prepare for a storm of this magnitude coupled with a recessionary economy.

Next, in an effort to reduce emissions and comply with potential cap-and-trade legislation, Antigo has recently invested heavily in key infrastructure. Examples of these investments include a \$410 million scrubber installed in Antigo's Warrick Plant, and \$10 million for a wind farm in Benton County (Electric Rate Case Fact Sheet). While both investments remain critical for sustainability, the costs are clearly substantial. As regulations on cap-and-trade become tighter, investments in emission reducing infrastructure and renewable energy continue. Barring any future significant technological advancements, these increased costs continue to trickle down to the customer.

The culmination of these unfavorable events led to Antigo filing a request to the Indiana Utility Regulatory Commission for a base rate increase on December 11, 2009. If approved, the rate increase will help Antigo by both increasing and stabilizing its revenue stream. However, elevating revenues solves only half of the equation in ensuring Antigo's future profitability. On the other side of the coin, Antigo's quest for profitability depends on its ability to effectively manage operating costs and minimize wasteful spending. Bearing this in mind, this paper focuses on how Antigo's purchasing department can develop a strategic cost management plan, and increase the company's sustainability in the power generation industry.

CURRENT ROLE OF ANTIGO'S PURCHASING DEPARTMENT

In the past, the purchasing department's low staffing levels did not allow them to play a significant role in controlling costs at Antigo. With only a few buyers for the entire company, purchasing employed a simple to a two-step process. First, plant personnel (engineers, electricians, chemists, and maintenance staff) decided what materials or components they needed, obtained a quote from the supplier of their choice, and create a requisition. Second,

purchasing received a quote from the supplier, created a purchase order from the requisition, and worked with the supplier to ensure timely delivery. Due to the volume of requisitions, buyers rarely sought alternate vendor sources to ensure Antigo paid a fair market price. Instead, time and attention focused primarily on processing purchase orders in order to fulfill the fundamental needs of the various facilities under their responsibility.

Recently, Antigo reassessed the role of the purchasing department, and chose to considerably increase staffing levels. This increase assigned a single buyer to each facility, and allows the purchasing department to assume a larger tactical role at Antigo. For instance, working at the power plant allows a buyer to communicate directly with plant personnel and receive regular feedback on the tools and equipment purchased. Also, focusing on only one facility provides each buyer the time necessary to seek alternate sources for tools, equipment, and services with the end goal of controlling operating costs. Furthermore, by having a buyer on site, the purchasing department plays a heavier role in the planning of various plant specific projects, which account for an extremely large portion of the capital budget.

Overall, tactical purchasing provides great benefits for Antigo. For instance, rather than purchasing the same items from the same short list of local vendors plant personnel used for decades, buyers introduce competition by establishing relationships with new suppliers. Naturally, Antigo's buyers immediately discovered suppliers drastically reduce markup when realizing the purchasing department received competitive bids. This approach maintains a vendor's honesty and ultimately results in significant cost savings for Antigo.

At Antigo, buyers achieve a savings when the purchase price of an item obtained from a newly sourced supplier is less than the price offered by its most recent supplier. For example, suppose an electrical planner asks a purchasing agent to obtain competitive bids on three identical transformer pumps. After receiving the desired specifications, the buyer contacts three or more suppliers to request quotations. Suppose the current supplier provides a quote of \$27,500 each, while the competing quotes return \$12,750 for Vendor B and \$9,555 for Vendor C. In this case, Antigo requires the three pumps be purchased from Vendor C, and the company would record a cost savings of \$53,835 $[(\$27,500 - \$9,555) * 3]$. Antigo can cite numerous examples of similar cost reductions ranging from nuts and bolts to service contracts.

Overall, the cost reduction efforts by Antigo's purchasing department in 2010 far surpassed the expectations initially set by management. For example, while a buyer's 2010 performance is based primarily on an annual operation and maintenance (O&M) savings initiative of \$100,000, many buyers already achieved this target through the end of March. Despite this success, it is important to note that Antigo's current tactical approach to purchasing focuses mainly on short-term cost control. Therefore, each buyer creates professional development objectives designed to assist in increasing the future effectiveness of Antigo's purchasing department. Rather than focusing purely on purchase price, development objectives involve several topics including: spend analysis, lowering the total cost of ownership, and promoting quality. When combined, the objectives create a strategic cost management plan, and aid Antigo in producing a quality and reliable service at the lowest possible cost.

SPEND ANALYSIS

Spend analysis involves “the process of collecting, categorizing and evaluating expenditure data.” (<http://whatis.techtarget.com>) Basically, spend analysis examines how money is spent, and typically reveals which supplier or contractors receive the spend, which internal customers or departments require the spend, and what type of commodities or services are purchased with the spend (Heath 40). The first step requires gathering necessary historical spend data for the entire company into a single database. For medium and large size companies with multiple divisions or subsidiaries, which use many different enterprises, resource-planning (ERP) systems, acquiring and synthesizing the data remains the greatest challenge (Avery 44). Unfortunately, Antigo fits this mold. For instance, buyers at the power plants possess quick and easy access to historical spend data for their facility through the Antigo’s enterprise resource planning system, Avantis. However, they do not currently have access to spend data from Antigo’s various other divisions or subsidiaries due to each division using different ERP systems. Therefore, acquiring companywide spend data requires a collective effort from the many buyers located at each of Antigo’s facilities. Once acquired, spend data from each facilities needs manual copying and pasting into an aggregate spreadsheet. Depending on Antigo’s success with spend analysis, it could be cost effective to invest in a software package automating the data collection and aggregation process. However, a cost-benefit analysis would be necessary to make this determination.

Antigo’s spend data would reveal the company’s many facilities and subsidiaries share similar categories of spend. For example, buyers at each power plants, coalmines, and service stations purchase similar safety equipment, tools, machinery, office supplies, and other parts. Furthermore, a buyer at a single facility pays a higher price for these items since individual order volume provides only a fraction of Antigo’s overall category spend (Anonymous, 18). On the other hand, by aggregating Antigo’s companywide spend in a particular category; the purchasing department has far more leverage to negotiate with a supplier for more favorable pricing. In some cases, companywide spend in a particular category is not significant enough to a large supplier to warrant a volume discount. Antigo faces this situation with Babcock & Wilcox (B&W), an extremely large conglomerate supplying expensive, proprietary pulverizer components to each of Antigo’s power plants. Alcoa faces a similar situation with B&W. Therefore, in efforts to realize a cost savings from B&W, Antigo’s purchasing department currently works with Alcoa to create a strategic alliance and obtain a volume discount.

A recent survey concluded that implementing an effective spend analysis strategy reduces a company’s spend by an average of 12 percent (Heath 40). Impressively, Lucent Technologies actually achieved a 35 percent reduction in material costs by consolidating its spend among numerous facilities in 30 countries (Anonymous 19). However, a reduction in material cost purports only one of many benefits Antigo gains from implementing an effective spend analysis program. For instance, by consolidating spend with fewer suppliers, Antigo’s buyers process significantly fewer purchase orders. Likewise, the number of invoices passing through the accounts payable department shrinks considerably. Finally, using fewer suppliers allows Antigo to optimize delivery routes, which significantly reduce freights costs. Therefore, in addition to

lowering the purchase price of goods and services, spend analysis denotes successful tool used to reduce overhead costs (19).

Once Antigo's purchasing department builds an extensive history of spend data, it should be shared with its suppliers. Trends in this data provide a forecast for suppliers allowing each one to appropriately stock warehouses resulting in shorter lead times to Antigo. It could significantly reduce non-critical spare parts inventory. All else equal, a reduction in Antigo's inventory would increase its inventory turnover ratio and reduce the amount of money required by Antigo to finance inventory. For Lucent Technologies, a reduction in material and inventory cost resulted in a 10-15 percent gross margin increase despite price erosion of 15-20 percent (Porter 28). Antigo must ensure a decrease in inventory levels will not affect the level of power generated; an efficient use of inventory could realistically lead to increased profitability despite its current drop in revenues.

While the focus on spend analysis is cost reduction, the purchasing department should impart extra consideration to suppliers who demonstrate a commitment to quality. According to one study, failing to account for supplier quality leads to a 20 percent increase in prices (energy rates) or a reduction in revenues by as much as 30 percent (Stundza 45). While Antigo currently does very little to track quality among its suppliers, buyers are well aware of which vendors consistently over-promise and under-deliver. Furthermore, Antigo measures its suppliers' commitment to continuous improvement by giving special consideration to those adopting business quality strategies such as Six Sigma, Lean, or ISO 9001. As shown later, utilizing suppliers committed to quality can increase Antigo's efficiency by minimizing the risk and costs associated with unplanned downtime.

Without a doubt, buyers can realize significant savings by conducting routine spend analysis. For example, Antigo's purchasing department recently began working toward consolidating companywide spend in the tools category. As expected, the buyer at each of Antigo's facilities maintains loyalties and preferences to different suppliers. While one buyer prefers to purchase the majority of facility's tools from Vincennes Industrial, other buyers tend to purchase tools from Grainger, MSC Direct, McJunkin, along with many other suppliers. After gathering and consolidating data, each supplier submitted a bid based upon the overall company volume. Although purchasing department managers are still negotiating with a few suppliers, early indications suggest Antigo will realize a total reduction on future tool spending of approximately 20 percent.

In addition to reducing purchase prices and inventory levels at Antigo, spend analysis provides a stepping-stone for purchasing in the quest toward becoming a true strategic partner. For instance, the vast majority of employees at Antigo's A.B. Brown facility have 20 or more years of experience. Antigo understands the benefits experienced employees provide, it also understands experienced employees may create a culture resistant to change. As a result, Antigo met difficulty in initial attempts to funnel all purchasing decisions through the purchasing department. Many employees attempted to sabotage the system by simply ignoring the new purchasing guidelines. However, as the company's overall cost reductions from spend analysis and tactical purchasing efforts continue to receive recognition by corporate executives, it has been easier to obtain the commitment from lower-level managers and plant personnel. The

development of a trusting and effective relationship between buyers and plant personnel remains critical as the purchasing department looks beyond purchase price, and instead, bases decisions on a part's total cost of ownership (TCO).

TOTAL COST OF OWNERSHIP

When a buyer makes a purchasing decision, it is helpful to visualize an iceberg. For instance, just as only 11 percent of an iceberg is above the water, the purchase price of typical industrial equipment represents only 12 percent of the total cost of ownership (Oster 1). Figure 1 on page 11 provides a visual depiction of this analogy. Calculating the TCO for a part at the power plant requires the buyer to acquire all direct and indirect costs associated with a particular product or piece of equipment (Heilala 47). In addition to the purchase price, TCO includes, but is not limited to the following: engineering costs, delivery costs, inventory carrying costs, installation costs, operating costs, energy consumption, maintenance costs, cost of quality, and disposal costs (Carsten 32). TCO follows the concept of full cost accounting, which attempts to uncover all costs associated with a product or service. Essentially, instead of focusing on short-term costs, TCO equips the buyer with the necessary information to make an informed decision yielding the greatest value over the lifetime of the product (Humphries 23).

For an example of calculating the total cost of ownership, consider the economizer at A.B. Brown. In 2010, one of Antigo's power plants needed to replace its economizer; it was outdated and had been in service since 1980. An economizer represents a non-critical, tubular heat transfer mechanism which preheats boiler feedwater before it enters the steam drum by capturing the heat from flue gasses, which

Figure 1: Total Cost of Ownership



Graphic Courtesy of Gates: <http://www.savemoneywithgates.com/tco.htm>

would have otherwise been lost when released in the atmosphere. According to the manufacturer, Babcock & Wilcox, the economizer results in less fuel (coal) consumption by increasing the efficiency of the boiler by 7.375 percent (Stultz 19-1). Based on purchasing data, Table 1 denotes lifetime costs associated with this device as approximately \$3,302,500. Note the purchasing price represents only 19.15 percent ($\$632,500/\$3,302,500$) of the total cost of the economizer. Clearly, basing a purchasing decision on partial information easily translates to a recipe for disaster. However, in this case, replacing the economizer led to the right decision since increasing efficiency of the boiler

Table 1: Economizer Life-cycle Costs

<u>Type of Cost</u>	<u>Life Cycle Cost</u>
Purchase Price (Delivery Included)	\$632,500
Engineering	\$800,000
Installation Labor	\$720,000
Maintenance Labor	\$950,000
Spare Parts	\$200,000
Total	\$3,302,500

resulted in an estimated \$92,645,040 decrease in coal consumption over the 30 year life of the economizer. For Antigo, importance lies in maintaining an efficient operation for two specific reasons. First, it reduces unnecessary costs, allowing Antigo to increase its profitability. However, running an efficient operation also significantly assists customers by controlling energy rates.

In the case of the economizer, the buyer decided whether or not to purchase a particular item. However, TCO also assists a buyer in deciding between two competing products. As an example, suppose an entity required its buyer to obtain a quote on a non-critical 400 horsepower, 3,600 RPM motor. After contacting several vendors, the buyer received quotes ranging from \$16,400 to \$38,600. Without a deep understanding of motors, the buyer most likely confirms the fit, form, and function matches the application, and purchases the motor for \$16,400 due to it representing the least expensive option.

Following the decision to purchase the most inexpensive motor, the buyer reads an article in Purchasing Magazine titled, "Scrap Your Energy-Hogging Motors". According to the article, a standard efficiency motor's purchase price represents only 2 percent of its total lifetime costs, while power usage represents approximately 97 percent (Applied 55). Equipped with this valuable new information, the buyer quickly realizes energy efficiency considerations did not factor into their previous purchasing decision. As a result, the buyer reconsidered all quotes received, and noticed the \$16,400 option was a standard efficiency motor, and the \$38,600 option was a NEMA premium efficiency motor. After conferring with the motor manufacturer's technical team, they noted the identical functionality of the two options, except the high efficiency motor would consume approximately 25 percent less energy than a standard efficiency motor. With this information, the buyer constructs the TCO analysis below in Table 2. In this instance, a high efficiency motor provides a lifetime savings of \$176,650 (\$820,000 - \$643,350) compared to the standard efficiency motor. Although the buyer initially made a poor purchase decision, he can draw from this experience and work more closely with plant personnel to make more informed decisions in the future.

Table 2: Motor Total Cost of Ownership Analysis

Costs	Motors	
	Standard Efficiency	High Efficiency
Purchase Price	\$16,400	\$38,600
Shipping	\$100	\$100
Installation Labor	\$200	\$200
Energy Consumption (\$820,000 * 97%) and (\$795,400 * 75%)	\$795,400	\$596,550
Maintenance	\$7,875	\$7,875
Disposal	\$25	\$25
Total Cost of Ownership	\$820,000	\$643,350

IMPORTANCE OF QUALITY

In the previous examples, the results of the TCO analyses indicate purchasing and acquisition decisions dramatically influence lifetime ownership costs of non-critical operating items (Carsten 32). While purchasing a critical component at the power plant requires similar lifecycle cost analysis, it is important to account for the cost of quality. According to the American Society of Quality, the cost of quality does not denote the price of creating a quality product or service; instead, it focuses on the cost of **not** creating a quality product or service (Stundza 45). These costs include, but are not limited to lost revenues resulting from unplanned downtime and the loss of reputation among customers.

Currently, Antigo's spend analysis focuses on low price versus quality. Likewise, Antigo's current resource planning software does not possess the capability of tracing all of the various lifetime costs, such as the cost of quality, back to a particular product or entity. For instance, consider the mechanical maintenance department at A.B. Brown, it currently debates on whether to replace or repair the shaft on the induced draft (ID) fan motor (in service since 1996). The motor shaft is critical to operations and has a useful life of 10 years. However, in most instances, the power plant ignores the useful life and simply runs a piece of equipment until failure. In 2006, the power plant experienced two days of unplanned downtime when an inspection revealed a significant split on the shaft of the ID motor. Rather than purchasing a new shaft for \$15,000 and paying \$1,250 for a one-day installation, the mechanical maintenance department believed sought the most cost effective route and repaired the shaft for \$1,000. Data since the 2006 maintenance depicts a repaired shaft fails bi-annually, thus resulting in an additional two days of unplanned downtime for maintenance and repair. By ignoring the cost of quality, and extending the shaft repairs to match the 10-year life of a new shaft, repairing the shaft appears the logical and economical choice. Table 3 illustrates repairing the shaft appears to reduce Antigo's long-term costs by \$11,400 (\$19,650 - \$8,250).

Table 3: Replace v. Repair Ignoring the Cost of Quality

Lifetime Costs	ID Motor Shaft	
	<u>Replace</u>	<u>Repair (x5)</u>
Purchase Price	\$15,000	\$0
Shipping	\$150	\$0
Installation	\$1,250	\$0
Inspection (\$300 annual inspection cost * 10 years)	\$3,000	\$3,000
Maintenance Labor (\$1,000 bi-annual shaft repair * 5 repairs)	\$0	\$5,000
Disposal	\$250	\$250
Total Cost of Ownership	\$19,650	\$8,250

Clearly, these results are misleading due to the ten days of unplanned downtime resulting from repairing the shaft five times. For instance, if the power plant does not generate power, a negative impact results on Antigo’s revenue stream. Although the significance of the impact depends on the price per megawatt during the downtime, a conservative estimate from a senior plant manager portrays Antigo losing out on approximately \$125,000 in revenues for every day a generating unit is down. Including this information, maintenance and purchasing could work together in order to reach a solution providing the greatest value to Antigo in the long term. Table 4 revises TCO analysis of whether to replace or repair the shaft while considering the cost of quality. This analysis clearly indicates replacing the shaft of the motor will generate the lowest TCO. Note the true cost of quality is quite complex and often very difficult to quantify. For instance, unplanned downtime temporarily interrupts the service of Antigo’s residential customers, which directly results in a loss of reputation. Also, it causes

Table 4: Replace v. Repair Accounting for the Cost of Quality

Lifetime Costs	ID Motor Shaft	
	<u>Replace</u>	<u>Repair (x5)</u>
Purchase Price	\$15,000	\$1,500
Shipping	\$150	\$0
Installation	\$1,250	\$0
Inspection	\$1,500	\$1,500
Maintenance Labor	\$0	\$5,000
Cost of Quality (\$125,000 * 1 day of unplanned downtime) and (\$125,000 * 10 days of unplanned downtime)	\$125,000	\$1,250,000
Disposal	\$250	\$250
Total Cost of Ownership	\$143,150	\$1,258,250

large monetary impacts on Antigo’s industrial customers by disrupting operations. To render a complete perspective, recent estimate by plant managers indicate companies such as SABIC might have lost up to \$1 million (\$125,000 * 10 days of unplanned downtime) in revenues during Antigo’s most recent unscheduled outage. While Antigo does not bear financially

liability for the losses of its industrial customers, the losses do impact future industrial rate negotiations.

Despite the superior performance in controlling costs and promoting quality, buyers at Antigo struggle to currently apply TCO on a wide scale. Sixty-five percent of purchasing managers indicated in a survey conducted by Purchasing Magazine, one major barrier rests with the lack of readily available data and support required for measurements (Milligan 31). This completely impacts subjective measurements such as quality and extraordinary service, which Antigo's information systems do not currently capture. In addition, Antigo's traditional accounting system often buries costs of ordering, delivery, receiving, and inspecting into overhead accounts, which leads to difficulty in calculating the true total cost of a component. Next, some professionals purport that while TCO often justifies higher initial prices based on increased quality and lower lifetime costs, the performance evaluations and incentive packages of managers and executives are based on their ability to control short term costs and increase profitability (Porter 18). Also, from a buyer's perspective, purchasing goods and services at higher initial prices often results in an unfavorable purchase-price variance, which would negatively affect performance ratings. Furthermore, due to the current economic climate of declining revenue streams, it becomes difficult to substantiate a significant increase in the purchase price of goods and services.

SUMMARY

In summary, despite the obstacles currently standing in the way, the purchasing department confidently anticipates they will play a strategic role in Antigo's future. However, buyers must realize they cannot accomplish all objectives in near term. Instead, successfully implementing an effective cost management system requires both time and attention to short term objectives. Similar to buyers currently receiving recognition from top management for tactical purchasing efforts, the purchasing department can seek expand their influence and gain further support by achieving substantial cost reduction through supplier consolidation and spend analysis. Furthermore, as the support of top management grows, buyers gain a great deal of credibility among lower level managers and plant personnel. Developing these relationships provides the purchasing department with greater access to vast amount of information and data necessary to calculate the total cost of ownership of certain critical components. As the economy recovers and revenues stabilize, managers at all levels of the organization will be more receptive to providing the additional funding necessary for buyers to make decisions promoting quality and ultimately lowering the total cost of ownership. In addition, Antigo could appropriate funding to purchase a software package allowing buyers to apply the TCO methodology to a much wider range of goods and services.

Antigo's mission statement is, "We will be the industry leader in helping our customers manage their energy costs. We will achieve top-quartile performance levels in safety, customer satisfaction and productivity. We will deliver superior investor returns (Paul)." With increasing energy rates and power outages including the ice storm of 2009 fresh in the minds of many customers, an easy generalization might note Antigo's current performance does not meet its own standards. However, with ample support and funding from management, the purchasing department could improve operations and allow Antigo to reach its goals and aspirations. For

instance, by promoting quality and minimizing the total cost of ownership, Antigo could produce a quality and reliable service at the lowest possible cost. Furthermore, this strategic approach to cost management coincides with an increase in long-term profitability and customer satisfaction, while also preparing for challenges lying ahead with cap-and-trade legislation.

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* Company name has changed for confidentiality purposes