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Staff Paper

Evaluating Food Commodity Procurement Strategies

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Evaluating Food Commodity Procurement Strategies

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We use a case study approach to determine the primary factors affecting food manufacturers' commodity procurement decisions, as well as to examine the strategic nature of commodity procurement departments. The research fills a gap in both the commodity and procurement literature. A large literature exists on commodity marketing; however, very little exists on the topic of commodity procurement. Existing procurement literature tends to focus on non-commodity products rather than commodity products. The results suggest a model for the strategic role of commodity procurement departments within food manufacturers. The initial procurement strategy must be supply maintenance, which once accomplished, allows the commodity procurement department to progress to a profit-focused strategy, which is generally cost-based. Finally, the role of the commodity procurement department can expand by offering additional services to customers, such as designing promotional programs.

43 pages

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Introduction

The food industry is a dynamic and ever-changing industry. One significant impact on this industry is the highly competitive environment that exists for both manufacturers and retailers alike. Competition has increased due to factors such as consolidation, new entrants, new retail formats, and globalization. Food manufacturers must also contend with power shifts in the channel that favor retailers and create service improvement and cost containment pressures. Finally, changes in consumer demographics, such as more single parent households, an aging population, and greater ethnic diversity, encourage new product development efforts which can be a risky proposition, given that only 1 in 11 new product ideas/concepts achieve commercial success in the market (Booz, Allen and Hamilton, 1982). As such, food manufacturers face a challenging prospect where service level, quality and price expectations from retail customers and end consumers continue to be high and even on the rise.

In order to remain competitive, food manufacturers have much to contend with. One of the many critical factors for food manufacturers to concentrate on is developing an effective procurement strategy. Procurement is a key factor in a company's profitability (Finkin, 1988), manufacturing efficiency, product quality, and overall corporate strategy (Spekman, 1981). For the typical food manufacturer, procurement occurs across two types of products – commodity and non-commodity products. The key difference between these two types of procurement activities is that commodities meet broadly defined standards so they are not differentiated, while non-commodity products are highly differentiated, branded, and/or have value-added characteristics. An example of a commodity product is number 2 yellow corn and an example of a non-commodity food product is marinated chicken breasts (e.g., the chicken could be differentiated by flavor, branded, and/or have added value provided by pre-cooking). While both

types of products are important to manufacturers, the literature base in procurement tends to focus much more of its efforts on non-commodity procurement. Commodity procurement is often overlooked in the academic literature. Literature examining commodities is generally only from an agriculture producer perspective concerning selling or marketing commodities.

Non-commodity procurement costs are large for most manufacturing firms. As such, the bulk of the procurement literature focuses on non-commodity procurement. Further, non-commodity procurement is usually contract-based and can include highly specific requirements, so it is perceived to be a more complex procurement process, and has garnered more attention within procurement departments and in the academic literature. However, commodity procurement also has many unique characteristics that add complexity to the procurement function. In dealing with commodities, buyers face not only the risk that supply will meet demand, but also the price risk inherent in volatile/seasonal commodity markets. As such, commodity procurement represents an untapped area in the literature and a possible significant opportunity for food manufacturers to focus on for cost and profit improvement and service/quality enhancement.

This research provides a step toward filling the gap in the procurement literature with respect to commodity procurement strategies. The overall goal of the research is to use the knowledge gained to improve commodity procurement strategies in the food industry. The objective of this research is to provide an empirical study on commodity procurement by food manufacturers, examining what procurement strategies are used and how commodity characteristics affect the selection of commodity procurement strategies.

There are several objectives of this research. The first objective is to discover different commodity procurement strategies being used by food manufacturers. The next objective is to

identify what product and service characteristics influence the choice of commodity procurement strategy. The final objective is to determine which strategy, based on the presence of these characteristics, a food manufacturer selects for procuring various commodities.

Literature Review

The first, and most basic function, of a commodity procurement department is to maintain the supply of commodities in order to meet a manufacturer's production demands. A commodity is defined as "widely traded raw materials and agricultural products such as wheat, corn, and rice" (Seitz 1994 pg. 435). Commodities have general quality standards that must be met in order to be classified in a certain category of commodity (Seitz 1994). Within a category, a commodity is not differentiated by quality. This is contrasted with non-commodity procurement, which would focus on differentiated products.

A commodity procurement department must consider several issues regarding methods for maintaining supply. According to Kingsman (1985), there are five key factors involved in maintaining and/or determining the level of supply:

- First, future quantity requirements of the commodity must be determined and subtracted from supplies already in inventory or ordered.
- Second, future requirements must be converted into a schedule of future purchases, specifying the timing and the size of each commodity purchase.
- Third, financial and operational constraints must be considered to determine the minimum and maximum lead-times needed for manufacturing in order to determine what forward pricing mechanisms, if any, can be used.
- Fourth, the time line for the actual buys must be determined with the constraints of the buying time period. The actual buy and the buying time periods can be exactly the same, or if accurate price forecasts are available, purchases can take place in different time periods to take advantage of price swings.
- Fifth, buying strategies for each commodity must be developed and connected to scheduled orders with appropriate on time deliveries to allow efficiency at the manufacturing plant.

The second function of a commodity procurement department is to minimize the cost of procuring commodities used as inputs into finished products. Theoretically, a firm is expected to minimize the per-unit cost of inputs in order to maximize profits; this is the expected behavior for a food manufacturer to survive in a perfectly competitive environment (Hayenga 1979).

Commodity Procurement Options

Once a commodity buyer evaluates the volume needed and its associated costs, then the appropriate buying strategy for each commodity should be determined. The two primary categories of procurement strategies are (1) spot (i.e. cash) market transactions and (2) forward purchasing mechanisms. The optimal strategy depends on a variety of factors. For example, perishable items have limited shelf life and, thus, must be procured in a manner that ensures freshness. Less perishable commodities offer more flexibility regarding strategic choice. Both categories are examined below.

Spot Market

The traditional commodity procurement instrument is the spot or cash market. The spot market is defined as buying the commodity on the cash market and immediately taking possession (Ferris 1997). When using the cash market, food manufacturers have no direct contract with a supplier. Rather, manufacturers buy from the supplier with the lowest cash price at the time when the manufacturer wants to take possession of the commodity. In food manufacturing, this strategy is often used as a simple replenishment strategy – e.g., when inventory drops below a pre-determined threshold level, a repurchase order is generated.

There are several reasons why the spot market is a widely used strategy. The first reason is that it involves no development of more sophisticated strategies or market analysis; rather it merely involves monitoring current supply and reordering (Arthur 1971). Another advantage of buying on the spot market is that it minimizes inventory costs, because there is no need to store commodities if the purchase is tightly coordinated with production needs (Arthur 1971). Further, the spot market is a very applicable tool when (1) there is very little price movement and, hence, little risk of price fluctuation; or (2) price movement cannot be predicted limiting the ability to minimize price risk through other strategic means.

While the spot market is often a viable procurement instrument, there are disadvantages to using the spot market exclusively for commodity procurement. There is the inherent risk that a manufacturer may not be able to procure the necessary volume when it is needed, thus leading to inefficiencies in manufacturing (Arthur 1971). Further, relying only the spot market may eliminate opportunities to purchase commodities at lower prices since the buyer is a price-taker accepting whatever price is offered at the time of purchase.

Forward Purchasing Mechanisms

Some commodity procurement instruments can be categorized as forward purchasing mechanisms and are used by firms to secure commodities needed for future production. Mechanisms of forward purchasing include forward buys, futures markets, and forward contracting. All require the buyer to predict the commodity's future quantity requirements. A discussion of each mechanism follows.

Forward Buy

A natural extension of the spot market is a forward buy (in the spot market); buying higher volumes when prices are lower, and lower volumes when prices are higher. A forward buy occurs when a manufacturer purchases and takes possession of a commodity in advance of manufacturing needs. As Hayenga (1979) discusses, manufacturers are then able to establish their per-unit commodity price, set the price of the final goods and, hopefully, capture desired profit margins. It may be advantageous to establish the per-unit commodity cost on anticipated volume since “the timing of commodity purchases has a significant influence on a firm’s costs” (Hayenga 1979, p. 351). For example, suppose a commodity price is currently low (e.g., a \$1.00/unit cost) and is forecasted to increase to a \$1.10/unit cost. If the storage costs are less than \$.10/unit, then a forward buy could improve total cost performance.

A disadvantage of a forward buy is price risk. There is a chance that the commodity price could decrease after the food manufacturer makes a forward purchase. For example, suppose a food manufacturer purchases a large quantity of wheat in July, when prices are projected to be low and stores the wheat for production later in the year. After the purchase is made, there is an unexpected increase of supply on the market so the price of wheat decreases even further. The result is the food manufacturer paid a higher price for the commodity by using a forward buy, as compared to the spot market price at the time of production. In addition, the manufacturer incurred additional storage costs for the wheat.

Variations exist on forward buys that impact who takes physical possession of the commodity at the time of purchase. This is a major consideration, especially if storage space is limited (Kingsman 1985). If storage is limited, for example, it is advantageous for the

manufacturer to have the supplier retain possession until the manufacturer requests delivery.

Futures Market

A futures contract is an obligation to buy or sell a given quantity and standard quality of a commodity at a designated future time (Ferris 1997). Futures are generally used to “hedge” a cash purchase that will take place in the future (Bittman 2001). For example, a food manufacturer hedges a future purchase by taking an opposite position in the same commodity futures market. The food manufacturer sells contracts (short position in the market) in the futures market now and then buys (a long position in the market) in the cash market when the commodity is needed for manufacturing, simultaneously buying futures contracts to close out their position in the futures market. A purchasing hedge is used when price forecasts indicate that prices will be increasing, essentially allowing a buyer to “lock-in” the current market price (Bittman 2001). Thus, the primary use of the futures market in commodity procurement is to minimize price risk for future purchases.

Suppose, for example, it is forecasted that sugar prices will increase. A candy manufacturer, who requires a constant source of sugar to maintain its production facility, wants to lock in the current price as long as possible. However, the manufacturer does not necessarily want to take possession of the sugar immediately (e.g., due to inventory carrying costs, perishability/spoilage, limited warehousing space, etc...). In this case, the manufacturer could buy a futures contract at the current low commodity price and hold that contract until additional sugar inventory is needed. When inventory is needed, the manufacturer buys sugar on the spot market (at the higher price) *and* sells its futures contract (hopefully at that same higher price). In essence, the futures contract enables the buyer to postpone the possession of a commodity, but

lock in the lower purchase price. Theoretically, at least, the futures contract can be made at the lower price and sold at the higher price – assuming prices for the commodity on the cash and the futures market both increased.

There are drawbacks to participating in the futures market. One drawback hinges on the fact that hedging a commodity purchase is designed to minimize risk rather than to maximize profit. Certainly, the futures and cash markets may not move in the direction forecasted. In the above example, sugar prices could go down locking the buyer in at the higher original price. Further, the cash market price could be higher than the futures price at the point when inventory is needed. Hopefully, the futures price would be higher at the time of sale than at the time of purchase (so a profit is made), but the selling price still may not be high enough to match the cash price paid to take possession of the inventory. Finally, when the futures contract is initially purchased, the buyer has to invest money or seek financing for the purchase – essentially paying for the sugar before taking possession. While there is no commitment of inventory, there is still an opportunity cost in that capital is tied up in that contract investment. Finally, not all commodities have functioning futures markets.

Forward Contracts

A third forward purchasing mechanism used by manufacturers is a forward contract. A forward contract is a contract that a manufacturer has with a supplier specifying delivery of a commodity at a certain future date (Ferris 1997). Such contracts typically stipulate all of the transactions details, including the quantity to be traded, the quality of the commodity, delivery time and place, and price determination. Either the specific price or the price determination method will be detailed in the contract. For example, a deli meat processor who makes roast beef might forward contract with a beef packer for specific poundage of boxed beef. The

contract will itemize the particular quality grade, such as USDA Select, Choice or Prime or alternatively some agreed upon private standard. The contract will also specify where the supplier should deliver the boxed beef and will likely stipulate storage requirements en route. Lastly, the forward contract for boxed beef would either specify a privately determined price per pound or would detail the price determination process, often a per pound price based on the spot or futures market price at the time of possession. The forward contract offers the purchaser the opportunity to procure commodities for future processing with the desired qualities without holding physical inventory and with little or no payment until the commodity is actually delivered. A disadvantage of a forward contract is that the possibility always exists that the supplier will not be able to deliver either the desired quality or the desired quantity. However, the likelihood of contract default is small and legal recourse is available.

Factors Influencing Commodity Procurement Strategies

In order to select the optimal procurement strategy, various factors must be considered. The following section reviews the main characteristics, discussed in the literature, that affect commodity procurement strategies. A hypothesized procurement strategy is provided given the nature of the characteristic – and assuming all other characteristics are held constant. In reality, any particular commodity may be impacted by multiple characteristics so certain characteristics may have an overriding influence on the procurement strategy chosen. The commodity characteristics fall into three broad categories: product constraints, company constraints, and service requirements. A discussion of the characteristics within each category is below.

Product Constraints

Product constraints are related to the distinct characteristics of the commodity that may require special attention. Some product constraints derive from the physical characteristics of the commodity. Other product constraints are related to the economic characteristics of the commodity's market. Examples of product constraints for commodities are discussed below.

Market Efficiency

Market efficiency, in this context, refers to the speed at which commodity markets react to new information and incorporate that information into market prices. In the words of Petzel (1997), "Market information is an important economic good that is valuable to the immediate participants in a trade and to others who operate in related areas. Good information guides efficient production and allocation decisions" (p. 256). A market with a high degree of market efficiency reacts very quickly to new information. An example of a highly efficient market is number two yellow corn. The USDA publishes current price information and relevant quantity estimates. Number two yellow corn is widely traded with open market access and futures contracts for this commodity are traded on the Chicago Board of Trade. This creates an environment where the market reacts nearly instantaneously when new market information becomes available.

The expectation is that the more efficient a commodity market, the less likely forward purchasing mechanisms will be implemented. When a market is highly efficient, it is more challenging for a commodity procurement department to forecast future actions in advance of market changes in order to "beat" the market. In an efficient market, market information is widely disseminated and quickly incorporated into the price signal. Thus, once buyers have information, it is likely that the market has already reacted to that information. On the other

hand, in less efficient markets, it is more likely that a commodity procurement department holds an asymmetric information advantage and may execute a forward pricing mechanism before the market is able to react. This hypothesis is based on information collected in pre-test interviews. For example, in an inefficient market, a forward contract enables a commodity procurement department to develop a relationship with its supplier(s), and, through this relationship, information leads to better coordination.

Perishability

Perishability refers to the length of time before the commodity decays or spoils and can no longer be used in production. Perishability plays a major role in commodity procurement strategies for food manufacturers because perishability determines the amount of time that a commodity can be purchased in advance. A high degree of perishability refers to a commodity that has a relatively short shelf life before spoilage.

It is expected that a manufacturer would tend not to use the spot market with a commodity that is highly perishable. Essentially the transaction costs are very high for perishable commodities, and when transaction costs increase, manufacturers move away from open markets (Williamson 1975). Because a highly perishable commodity cannot be stored long, a manufacturer would also not want to make a standard forward buy that requires storage of a commodity. The risk of commodity spoilage and costs associated with lost product is too high. As such, with highly perishable commodities, it is likely that the manufacturer will develop a forward contract with a supplier in order to ensure fresh supply is available when needed to minimize risk. A commodity that has low perishability has greater forward buy opportunities.

Seasonality

Seasonality is the degree to which historic price swings (highs and lows) occur across growing seasons (supply side factors). For example, most commodities exhibit the lowest price of the year/season when the commodity is harvested since supply is at the highest level of the year/season. A high degree of seasonality means that there is very strong and predictable pattern for a commodity's prices. Many commodities are highly seasonal due to the growing patterns on the supply side (e.g. sweet corn in the Midwest), but commodities can also exhibit seasonality in demand patterns as well (e.g. turkey sales increase around Thanksgiving).

When purchasing highly seasonal commodities, it is more likely that manufacturers will consider forward purchase mechanisms, such as a forward buy, in order to take advantage of seasonality by buying large volumes of commodities when seasonal prices are low and holding product in inventory (Kingsman 1985). Commodities may also be purchased ahead of time when seasonality indicates that a price increase is likely. This may occur when factors, such as drought or flood, are forecasted to affect harvest levels.

Storage Requirements

Storage requirements of a commodity focus on the physical environment needed to preserve the commodity's quality. An example of a special storage requirement would be refrigeration. Storage requirements are an important factor for a commodity procurement department to understand since these requirements are often more costly to provide. It is expected that commodities with high storage requirements are less likely to be purchased with forward pricing mechanisms, such as a forward buy (Kingsman 1985). When a manufacturer cannot accommodate special storage requirements, taking possession of inventory in advance of production needs may not be practical. Further, since these storage requirements may be costly

(either for the manufacturer to provide or to outsource), any financial gains generally available from a forward buy, may be eliminated. Thus, the tradeoff between reductions in unit price and increases in storage costs must be considered and are likely to favor a spot market strategy or a forward contract where delivery is taken close to time of production.

Value of Commodity in Final Product

The value that the commodity plays in the final product is determined by the extent that the cost of a final product is impacted by the price of the raw commodity. When a large portion of the cost of the final product is tied to the cost of a particular commodity, it is expected that manufacturers will use forward pricing strategies for procuring that commodity. This is due to the risk of price variability in spot markets. When commodity value is high, a manufacturer will seek to minimize price risk in order to ensure profit margins (Hayenga 1979). Further, forward pricing mechanisms allow a manufacturer to set a stable final product price so radical price fluctuations do not occur for the final good.

Company Constraints

Company constraints are those transaction characteristics that arise from the distinct characteristics of the purchasing firm. Some company constraints come from financial characteristics of the firm, while others are rooted in the firm's managerial and organizational characteristics. The nature and size of the markets in which the firm participates also play a role in creating company constraints. Several examples are discussed below.

Budget Constraints

Budget constraints, in the context of this study, refer to the degree to which the budget for the commodity procurement department is limited. A high budget constraint would indicate a

limited or tight budget for a foreseeable time period for the commodity procurement department. In a strict budget environment, manufacturers are expected to be involved in fewer forward buys since they incur high execution costs. Forward buys are expensive to execute in the short run because the manufacturer has to pay for the commodity before it is needed in production (Kingsman 1985). Further, when budget constraints are high, it is expected that commodity procurement departments would focus more on cost avoidance or cost reduction. When budget constraints are more relaxed, the commodity procurement department can focus more on profit or revenue generation as measured against price risk. In other words, strategies that are riskier from a cost standpoint (e.g., forward buy) would not be attempted in strict budget scenarios.

Cooperative/Common Involvement

Common involvement refers to a situation where more than one entity is involved in the procurement decision. The most common form of this is a farmer cooperative-owned plant that buys commodities from its members. Common involvement can also occur when multiple manufacturers form a buying cooperative. It is expected that commodities procured under a common involvement process will be more likely to be purchased through a forward price mechanism. This is because nearly all of these cooperative involvements have some form of contract that commits the parties involved to a given quantity of a commodity (Royer 1995). In this sense, the manufacturer is committed to a future purchase and, thus, will want to hedge price risk via forward pricing strategies.

Limited Supply of Specified Quality

When a certain quality level is required for a specific commodity and the level of supply at that quality level is limited, it is more likely that forward pricing strategies will be used. The main strategic benefit is to minimize supply risk so that production can continue as planned, and

the supply of the final product is not affected (Hayenga 1979).

Price Risk

Price risk refers to volatility or how much the price of the commodity varies over time. Volatility is measured in percentage terms and annualized to evaluate the historical volatility of a commodity (Bittman 2001). For example, if a commodity varies from \$1 to \$1.10 over a year, it has an annual volatility of 10%. The time frame over which this volatility is measured varies with each commodity.

High price risk commodities are those with high volatility, while low price risk commodities have a relatively consistent price. If the commodity price is relatively volatile, it is expected that a manufacturer will implement a risk management instrument in the form of a forward pricing mechanism, such as a forward buy. Without an advanced price mechanism, there is a risk of paying a significantly higher price on future purchases made on the spot market. If there is little price risk, the spot market is generally sufficient.

Sales Forecast Accuracy

Nearly all manufacturers base their procurement volumes for input supplies, at least to some extent, on the sales forecast of the final products. The accuracy of the sales forecast refers to the degree to which forecast sales deviate from actual sales. It is expected that the higher the degree of sales forecast accuracy, the more the manufacturer will participate in forward pricing mechanisms. Greater accuracy means volume risk is minimized, so a manufacturer can be more aggressive and focus on minimizing price risk. For example, a manufacturer is not as likely to use forward buying, as a form of a forward pricing mechanism, when sales forecast accuracy is poor, because there is a large probability that inventory availability would not meet required demand (or might exceed required demand).

Storage Availability

Storage availability is the amount of space available for commodity storage. It is hypothesized that manufacturers with relatively high storage availability are more likely to participate in forward buying activities since ample space is available for storing the procured commodity (Kingsman 1985). Moreover, manufacturers with a relatively low amount of storage availability are limited to pricing activities that do not require taking possession of the commodity in advance of production, such as spot markets or forward contracts. The other option for a manufacturer with limited store availability to outsource storage space from a third party, but this adds costs and may eliminate gains from participating in a forward buy strategy.

Traceability

Traceability refers to the ability of the manufacturer to trace the source of a commodity and other pertinent product information, such as where and how the commodity was grown (e.g., what herbicides were used on the field). A high degree of traceability refers to a commodity that can be completely traced back to its origins and where many details about the production environment of the commodity are known.

It is expected that when a high degree of traceability is required, a forward pricing mechanism, such as a forward buy, is more likely to be used. As traceability is integrated into a commodity, the transaction costs increase (Hobbs 1996), moving a manufacturer away from the spot market. In addition, commodities bought on the spot market do not have traceability attributes since spot market commodities meet certain minimum requirements (e.g., number 2 yellow corn). Traceability is currently not considered a “minimum requirement,” but rather would be viewed as a “premium” feature.

Volume

Volume is the amount of a commodity needed within a given time frame to fulfill manufacturing requirements. A high volume commodity requires a large quantity to be procured within a given time interval. It is expected that a manufacturer would seek some type of forward pricing mechanism for high volume commodities since the risk of not having the required volume available at the appropriate time has a high cost. When manufacturers lack sufficient levels of high volume commodities, it delays production and incurs significant cost (Kingsman 1985). For low volume commodities, it is more likely that a manufacturer will buy the commodity on the spot market in order to save storage costs.

Service Requirements

Service issues impact commodity procurement departments in two ways. First, service requirements may be attributed to the service that the manufacturers' customers (e.g., generally retailers) demand. For this paper, the service requirement examined is promotional expectations that a retailer may have as part of its marketing strategy for the manufacturer's finished product. Second, service requirements may be attributed to the service standards that the manufacturer sets for its suppliers. The first service requirement impacts the manufacturer as the *seller* of a finished good, while the second service requirement impacts the manufacturer as a *buyer* of a commodity product. Each of these service requirements is discussed below.

Special Promotions

While most special promotions are based at the retail level, the end result is an increase in production quantities for the manufacturer – translating into an increase in the volume of the

required commodity. Special promotions also put price pressure on commodity procurement departments. If the final product is discounted at retail, the base commodity must be purchased at a lower price in order to maintain profit margins. Based on pre-test interviews, described later in the paper, it was apparent that this is a key characteristic, particularly in highly price-competitive industries. However, it is not a characteristic cited frequently in the academic literature.

A special promotion is expected to encourage a manufacturer to investigate forward pricing mechanisms. Two reasons for more advanced pricing include the need to: (1) ensure sufficient supply exists to produce the desired amount of final product forecasted for the special promotion; and (2) protect profit margin needed to make the promotion worthwhile and successful for both the manufacturer and retail customer.

Supplier Service Level

Supplier service level refers to services available from a commodity provider, and can range from providing market forecasts to on-time delivery. The service level of a supplier was one of the top five purchasing concerns of procurement departments (Monczka and Trent 1995). Commodities with a high service level requirement are more likely to be purchased through forward pricing activities. A high service level implies a relationship generally exists between the two parties, and more information is shared allowing for forward pricing activities to be executed (Kingsman 1985). It may indicate a higher level of trust and cooperation exists between the two parties. Thus, manufacturers are more willing to listen to supplier ideas with respect to forward pricing opportunities. Also, suppliers are more likely to work closely with manufacturers and assist in activities (e.g., cost reduction programs) to ensure preferred supplier status. Finally, since a spot market implies no relationship exists between buyers and sellers, this procurement strategy will not be as beneficial when a high level of service is required.

Methodology

As the food manufacturing industry continues to become more price competitive, many food manufacturers are facing a very serious price squeeze. Given that commodity procurement departments play a critical role in supplying materials to a manufacturing plant and impact production costs (and, thus, final product costs), a good commodity procurement strategy can provide many benefits. The most obvious benefit that a good commodity procurement department provides is the potential to reduce the procurement budget, lowering overall product costs. This can be accomplished by: (1) buying commodities at reduced prices; (2) improving the timing of purchases to increase production efficiency; and/or (3) improving logistics efficiency between the manufacturer and its supplier base. With a better understanding of commodity procurement strategies, food manufacturers can ease the competitive pressures on prices and, potentially, improve profitability.

This research examines commodity procurement strategies used among food manufacturers. Table 1 summarizes the commodity procurement characteristics and the expected purchasing strategy that results. Since the commodities specific to this study had no futures market available, forward purchasing mechanisms considered will include only forward buys and forward contracts. The remaining portion of the paper will describe the research undertaken to investigate this model and the empirical results.

Table 1. Procurement Characteristics and Expected Purchase Strategy

Characteristic	Spot Market	Forward Pricing Mechanism
Product Constraints		
Market Efficiency	High	Low
Perishability	Low	High
Seasonality	Low	High
Storage Requirements	High	Low
Value of Commodity in Final Product	Low	High
Company Constraints		
Budget Constraints	High	Low
Cooperative/Common Involvement	Low	High
Limited Supply of Specified Quality	Low	High
Price Risk	Low	High
Sales Forecast Accuracy	Low	High
Storage Availability	Low	High
Traceability	Low	High
Volume	Low	High
Service Requirements		
Special Promotions	Low	High
Supplier Service Level	Low	High

Case study methodology was used for this study. Case studies are appropriate when exploring “what” and “why” questions, and when the research has no control over the outcome (Yin 1989). For this research, both “what” and “why” questions are relevant. As stated in the objectives, this research examines the procurement strategies used and the rationale for these strategies. Since the researchers had no control over the outcome, case study methodology was deemed most appropriate.

The first step of the research included a thorough literature review. This review examined typical procurement strategies used for commodity purchases, as well as product characteristics that affect strategy choice. Based on the literature review, a case questionnaire was developed (Appendix 1). The questionnaire was pre-tested on several academics and industry representatives familiar with commodity marketing and commodity procurement in the food industry. Through this pre-test process, the questionnaire was refined and additional procurement characteristics were included.

Sample Selection

Food manufacturers were examined for inclusion as potential interviewees for the study. Requirements for participation included involvement in food commodity procurement as well as the use of both spot market and forward purchasing mechanisms across different agricultural commodities. After contacting many companies, three companies were selected and agreed to participate in the research interviews. Interviews were conducted on-site at the firms’ facilities with two companies. Each interview required approximately one day on site. A third company was interviewed over the telephone. A total of twelve commodity procurement personnel were interviewed. Interview participants included agricultural commodity buyers, as well as managers

in the commodity procurement department, at each participating food manufacturer. All personnel that were interviewed were asked the entire questionnaire.

Once interviews were complete, survey results were then compared with the hypothesized behaviors shown in Table 1. The number of interview participants that considered a certain characteristic when forming commodity procurement strategy and to what degree the characteristic impacted their decision was assessed. Many participant responses confirmed the hypothesized expectations. However, several responses differed from initial hypothesized expectations as discussed below.

Research Results

The three companies that participated in this study all had similarly organized commodity procurement departments. The basic structure was to have one overall Manager or Director of commodity procurement. Specific commodity group responsibilities were assigned to buyers that reported to the Manager or Director. In one of the companies, there was a business support individual to assist each buyer.

All participating companies had buyer responsibilities allocated by related commodities. For example, one buyer would have responsibility for all dairy commodities. Organizing responsibilities by related commodities allows the buyer to specialize in one group of commodities and enables the food manufacturers to take advantage of the buyer's expertise in that commodity area. The number of commodity buyers at each firm ranged from 3 to 12 buyers, and the commodities ranged from corn to fresh vegetables. In general, the individual buyers had authority to make the final decision on how to procure each commodity, unless the buy involved a significantly large amount of money. Then, the approval of the Manager or Director was required.

Strategic Role

There was very little consistency across the three companies with regard to the strategic role of the commodity procurement department. Perceived strategic objectives included controlling supply to the production plant, minimizing inventory, finding new suppliers, assisting the marketing department, improving/maintaining quality standards, assuring traceability, reducing cost, serving as a profit center, providing service or value to customers (e.g., retailers), minimizing risk, and taking advantage of opportunities in volatile markets. These various strategic roles can be organized into three main categories: supply-focused, profit-focused, or customer-focused.

Supply-focused commodity procurement departments are mainly concerned with maintaining supply to the production facility. Profit-focused commodity procurement departments examine potential profit opportunities in the market by making well-timed purchases. Service-focused commodity procurement departments concentrate on providing value to their customers (generally to retailers). An example of a service-focused activity occurs when a food manufacturer assists a retail customer by jointly planning and implementing a special product promotion. This is considered a service element because it requires the manufacturer to ensure the necessary finished product is available to fulfill the additional demand from the promotional lift.

Table 2 summarizes the results of the case studies. The table illustrates how many buyers considered the commodity characteristic important to their procurement decisions as well as whether or not the characteristic impacted the procurement strategy (i.e., spot market or forward buy) as hypothesized.

Table 2**Procurement Characteristics: Rate of Consideration and Agreement with Hypothesis**

CHARACTERISTIC	CONSIDERED	Agreement with Hypothesis
PRODUCT CONSTRAINTS		
Market Efficiency	10 of 12	10 of 10
Perishability	12 of 12	12 of 12
Seasonality	12 of 12	12 of 12
Storage Requirements	3 of 12	3 of 3
Value of Commodity in Final Product	2 of 12	2 of 2
COMPANY CONSTRAINTS		
Budget Constraints	5 of 12	5 of 5
Cooperative/Common Involvement	1 of 12	1 of 1
Limited Supply of Specified Quality	3 of 12	3 of 3
Price Risk	12 of 12	10 of 12
Sales Forecast Accuracy	12 of 12	12 of 12
Storage Availability	0 of 12	0 of 0
Traceability	3 of 12	3 of 3
Volume	7 of 12	7 of 7
SERVICE REQUIREMENTS		
Special Promotions	9 of 12	9 of 9
Supplier Service Level	12 of 12	0 of 12

Market Efficiency

Ten of 12 participating buyers said that they considered the efficiency of the commodity market when determining procurement strategy. Market efficiency refers to the speed that the market reacts to new information. An efficient market reacts more quickly than an inefficient market to new information. The buyers indicated greater profit opportunities existed in markets that were relatively inefficient. Buyers and sellers may have different information in many economic transactions (Carlton and Perloff, 1989). Here, buyers believed they held an asymmetric information advantage over other players in the market, likely attributable to the associated expertise that comes from frequent participation in the market. With this additional information, there were more opportunities to forward buy commodities or use other forward pricing mechanisms to reduce cost, thus improving profits.

Perishability

All participants agreed that perishability must be considered when deciding how to procure a commodity. In spite of this, many of the buyers in this sample dealt primarily with frozen products, so perishability was not a very large concern. A high degree of perishability eliminated most forward pricing alternatives, especially forward buy options with storage. Rather, buyers preferred to implement forward contracts to ensure supply, but not require additional storage. Another option for buyers was to pursue forward buys, but with shorter time horizons. All the buyers were concerned about making too large a forward buy (e.g., production would not use the commodity before it spoiled).

Seasonality

All participants in this study considered seasonality when making procurement decisions. This is a logical response since seasonality directly affects the two main functions of commodity procurement departments: maintaining supply for the production plant and reducing cost. When the main strategic function of the commodity procurement department was maintaining supply, seasonality was considered because many commodities have very seasonal supply. In these cases, the procurement department must understand seasonality and ensure that enough of the commodity is purchased when it is available. This tends to lead to forward pricing mechanisms, often involving forward contracts. When these forward pricing mechanisms are exercised, the supply of the commodity is assured for the entire manufacturing cycle. This is especially important when a poor crop results for a given commodity.

Commodity procurement departments that are profit-focused also consider seasonality. Buyers can execute a forward buy in order to procure commodities when prices are low to avoid paying seasonally high prices. If this predictable rise and fall of prices is relatively consistent, buyers can take advantage of this profit opportunity.

All the buyers that participated in this study agreed that higher seasonality would result in more forward pricing opportunities being executed. Seasonality is a major factor that is considered in the timing of commodity procurement decisions. Due to the cyclical nature of many commodities, buyers that have expertise with a certain commodity are able to time their purchases accordingly to take advantage of seasonal swings in volume availability and price.

Storage Requirements and Storage Availability

Neither storage availability nor storage requirements were characteristics that were considered by many of the participating buyers. Storage considerations entered the procurement

decision for most of the buyers as an indirect cost. As such, the buyers did not focus specifically on storage costs. The amount of storage space available was not very important to most buyers because storage space is available for rent if needed.

Storage requirements were only considered by buyers who were procuring frozen or refrigerated goods. This was because the amount of frozen/refrigerated storage is often limited and expensive. In cases where frozen storage was considered, all buyers agreed they were more likely to use the spot market versus a forward buy in order to avoid the search costs of finding additional storage and the high cost of leased storage.

Value of Commodity in Final Product

A characteristic that was not considered by very many buyers was the value of the commodity in the final product. Only 2 of 12 buyers participating in this study consider this characteristic. The primary reason for not considering this characteristic was that it was not the buyer's concern; rather the buyer's concern was procuring the correct volume of the commodity at the lowest possible cost to the company. How the commodity was used in manufacturing was not a responsibility for these buyers.

When the value of the commodity in the final product was considered, the buyers agreed that the higher the value of the commodity in the final good, the more likely a forward pricing mechanism would be used. The primary focus in these situations was to maintain supply and forward pricing mechanisms reduced risks associated with supply.

Budget Constraints

Budget constraints were only considered by 5 of 12 of the buyers interviewed for this study when determining a procurement strategy. In most cases, buyers were more concerned with the risk required in order to get an expected return. If the return was adequate, then the budget constraint was not a concern.

When a budget constraint existed, buyers agreed forward pricing options were limited due to the high cost of purchasing a large quantity of a commodity in advance. When there is a very strict budget constraint, the spot market was more likely to be used. In this case, the company postpones the purchase as long as possible then uses the spot market to buy the commodity close to the time of production. This allows cash flow to be conserved and reduces the chance of purchasing larger quantities than needed.

Cooperative/Common Involvement

Only 1 of 12 buyers that participated in this study used cooperative involvement to procure any commodities. Some of the buyers mentioned that they had attempted to participate in cooperative buying agreements, but those attempts were not successful. The buyer that did have cooperative involvement indicated that all procurement is done via forward contract. The food manufacturer commits to buying a certain quantity and quality at the beginning of the growing season. The buyer then purchases the commodity at harvest time and stores this one buy for an entire year to fulfill production.

The primary reason behind the failure to use cooperative buys was the high cost of coordination and developing a common buying plan. In essence, the transaction costs were too high to make the cooperative buying activity a profitable option. These transaction cost include philosophical differences regarding how the commodity should be procured.

Limited Supply of Specific Quality

Having a limited supply of a certain quality was only considered by 3 of 12 buyers in this study. The main reason for this was most commodities had to meet basic standards to be marketed as a commodity. The buyers assumed that all the commodities being marketed met the same quality standards. While not very many of the buyers considered limited supply of a given quality, the buyers that did indicated that it was a very important characteristic. Buyers also indicated that they were more likely to forward buy a commodity if they feared there was a limited supply of the quality needed. The predominant reason why these buyers executed forward buys was to ensure a quality level above the general commodity which resulted in a competitive advantage in the marketplace for the final product.

Price Risk

All twelve participating buyers considered price risk to be a very important characteristic when determining how an agricultural commodity was procured. This characteristic was a key factor when the procurement department's strategic role was more profit-focused. In order for the commodity procurement department to take advantage of price fluctuations and to impact profit, the price of the commodity must be volatile. If the price is volatile, the commodity can be purchased when the price is low and then held as inventory until the time it is needed for production (forward buy). When there is no price risk, there is no need for purchasing product in advance of production so a spot market strategy is sufficient.

The majority of participants (10 of 12) in the study agreed that a high degree of price volatility would tend to encourage a forward pricing strategy assuming other factors, such as perishability, are not contradictory. This is an attractive strategy when the buyer recognizes that the commodity price is at a very low level.

The buyers who indicated that high price variability did not lead to a forward pricing strategy, viewed price risk as a distraction to forward buying for fear of making the buy at the wrong time (e.g., when prices may be higher). These buyers were concerned with minimizing their risk and believed that using the cash market was the best way to achieve the goal.

Sales Forecast Accuracy

All the buyers agreed that the accuracy of the sales forecast of the final product was very important to consider. With an accurate sales forecast, commodity buyers could be more aggressive regarding buying strategies in order to capture price swings because the exact volume of the commodity would be known with greater certainty. On the other hand, inaccurate sales forecasts increase risk to the buyer and discourage forward pricing mechanisms.

All participants agreed that commodities with a high degree of sales forecast accuracy are more likely to be purchased via a forward pricing strategy. Accurate sales forecasts also help buyers to determine the timing of the commodity buys since the quantity needed for each time period is known. Accurate sales forecasts are even more important for highly perishable commodities, since they are already relatively risky because the commodity cannot be stored for an extended time period.

Traceability

Traceability was a characteristic that was either very important or not important at all to commodity buyers. This is confirmed by the fact that only 3 of the 12 buyers participating in this study considered traceability, but those three indicated that traceability was a very important characteristic of an agricultural commodity. The differentiating factor was the emphasis the company placed on ensuring traceability in their final products.

The buyers that considered traceability as a very important characteristic were in firms

that marketed traceability in their final product. The buyers that considered traceability agreed that when a high degree of traceability is required, forward pricing mechanisms, specifically forward contracts, are used. The main reason for this is to ensure the desired quality and characteristics exist and the product origins can be traced throughout the supply system.

On the other hand, many buyers involved in this study do not currently consider traceability when making commodity procurement decisions. The primary reason behind this is that consumers of the final products do not demand traceability. In other words, traceability does not provide a specific competitive advantage in the marketplace. As such, the existing quality, provided by the spot market, is sufficient.

Volume

Only 7 of 12 participants considered the volume of the commodity when deciding a procurement strategy. When buyers considered volume, it was clear that a higher volume would encourage a forward buy. Generally, these buyers found high volume commodities were usually core ingredients for final products, so the goal became maintaining supply.

Several respondents indicated that they first concentrated on larger volume commodities since these commodities potentially have the highest impact on profitability. In cases where profit was the strategic role of the commodity procurement department, buyers were more likely to develop a unique buying strategy for large volume purchases.

The buyers that did not consider volume viewed all commodity purchases as profit opportunities. Therefore, these buyers were more concerned with the return to the investment than just the volume. Also, these buyers noted that the value of the commodity (volume

multiplied by price) was more important than volume alone. When the value was high, these buyers were more likely to use forward buys.

Special Promotions

Most of the commodity buyers in this study (9 of 12) indicated that special promotions play a role in their commodity procurement strategy. Special promotions are sales promotions that the food manufacturers are running in cooperation with retail customers. The manufacturer needs to work with the customer to determine the appropriate promotions and the procurement that needs to take place in order to fulfill the additional demand. If the special promotion is known far enough in advance, the buyer knows to increase the purchase volume of a commodity in time to take advantage of more advanced strategies. As such, sales forecast accuracy for the promoted commodity is critical. Finally, knowing the commodity purchase price needed to maintain the commodity's margin also helps the buyer make the promotion a profitable one.

Due to the reasons listed above, all the buyers that considered special promotions in their procurement strategy agreed that having a special promotion increased the likelihood that a commodity would be procured via a forward pricing mechanism. Mainly because buyers wanted to ensure that enough volume is procured to maintain sufficient supply during the promotion. Also, as mentioned earlier, the buyer wants to achieve the targeted margin to make the promotion profitable. Buyers do not want to risk that the spot price of the commodity will increase, between the time the promotion is proposed and the time the promotion is executed. If the price of the commodity were to increase it would threaten the profitability of the promotion.

Supplier Service Level

Service provided by the supplier was one of the most interesting characteristics in the study. All the buyers interviewed mentioned that a supplier must provide the services the food

manufacturer demands as a prerequisite to a business relationship with their firm. Some of the services that the buyers expected included maintaining supply, providing on time delivery, having knowledge of the market and the buyer's firm, exhibiting cooperation, and offering market opinions. While all the buyers indicated that they expected a high level of service, none said it would have an effect on the strategy used to procure a commodity. Basically the service was expected before a supplier would even be considered.

Summary of Strategies Implemented

The spot market was more widely used as a procurement strategy than forward purchasing mechanisms. When forward purchasing mechanisms were used, most commodities were purchased via a forward contract. The forward contract obligated the supplier to deliver a given quantity of a commodity to the food manufacturer on an agreed upon date. In some cases, quantity and date were the only specification in a contract, but other contracts had more detail, such as quality specification and traceable records.

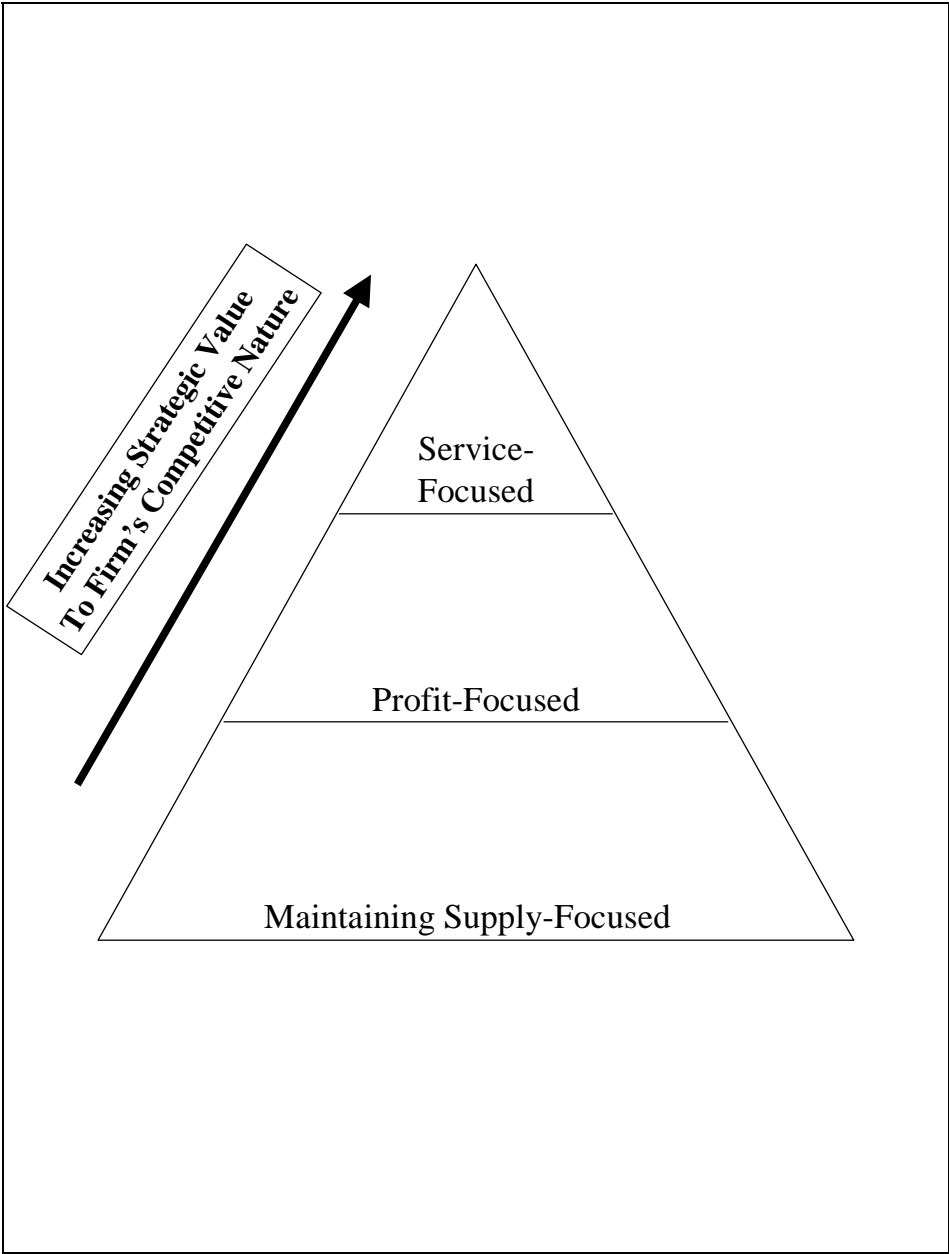
The primary factor that determined whether buyers used a spot market or a forward pricing mechanism tended to revert back to the strategic role of the commodity procurement department. When considering what procurement strategy to use, buyers evaluated which procurement strategy best fulfilled the strategic role given the key characteristics for each particular commodity. The best example of the commodity procurement department being guided by the company's strategic philosophy occurred regarding commodity traceability. Companies that place a high emphasis on traceability translate that expectation into a responsibility of the commodity procurement department. The commodity procurement department must provide fully traceable supplies. As such, this drives the commodity procurement strategy – generally requiring the development of a forward contract.

Role of Commodity Procurement Departments

Since it became apparent that many commodity procurement decisions were a direct result of the strategic role of the commodity procurement department within the food manufacturer, this result was further investigated. Commodity procurement departments seemed to follow an evolving path with respect to their strategic focus. The first role of a commodity procurement department is to maintain supply – ensuring production demands were met and keeping production on schedule. Once maintaining supply was achieved, then a commodity procurement department could begin to examine ways to add more value to their company by making a profit on commodities by taking advantage of market opportunities. This is a consequential step since it would be illogical for a commodity procurement department to focus on profitability if they are not efficient at maintaining supply.

Once efficiencies in profitability are achieved, a commodity procurement department can look to add value to the company by providing service to customer. This is accomplished through relationship building, for example, that leads to increased sales from improved planning of retail promotions. Again, this level of strategy results from being able to maintain supply to ensure production demands can be met, while remaining profitable. This sequential path is visually presented in Figure 1. This research proposes that a commodity procurement department must first be efficient at the lowest level of the triangle before it proceeds to higher levels. A commodity procurement department can provide increased value to the competitive nature of the firm as strategies move up the triangle.

Figure 1. Strategic Roles of Commodity Procurement Departments.



Supply-Focused

In order to maintain supply, the commodity procurement department must reduce the risk of stocking out to essentially zero. There are many ways to manage this task and commodity procurement personnel will continue to find more innovative and cost saving ways of protecting supply. As an example, the research showed ensuring sufficient volume to fulfill manufacturing demands was the buyer's first concern. Often, a potential supplier without the necessary volume was not considered, in spite of a lower price.

A popular means of obtaining this goal is to have contracts to ensure supply. In some cases, the contract price is set when the contract is signed. Others included some type of formula that tied the contract price to the market price of that commodity at the time of delivery. The formula contracts allow commodity buyers to ensure their supply while also developing buying strategies that can be profitable.

Profit-Focused

In order for a commodity procurement department to be profitable, it must do more than just eliminate supply shortages. Commodities, by their nature, do not generally follow stable prices. Thus, there is inherent price risk in commodity procurement. A commodity buyer must design a plan to increase profitability without increasing the price or supply risk. Buyers must develop a risk-reward tradeoff to determine how much price risk they are willing to take in order to achieve expected profits. In most cases, it is nearly impossible to consistently buy a commodity at the lowest market price and likewise to consistently avoid buying when the market is at its highest.

The risk-return question is often answered by the nature of strategic role of commodity procurement department within a food manufacturer. If the primary strategic role of commodity

procurement department were to be a profit center, buyers would be more likely to take additional price risk to try to maximize profit opportunities in the market (e.g., forward pricing mechanisms). On the other hand, if the strategic role of a commodity procurement department is to reduce risk (both supply and/or price), buyers will be much less likely to seek maximum returns on a commodity purchase.

Service-Focused

The role of providing service is the highest level that commodity procurement departments can ascend to. This service role is providing the food manufacturers' customers with more services than just filling product orders. In order to implement additional services to customers, commodity procurement departments must first be efficient in maintaining supply and being profitable. If a commodity procurement department cannot fulfill these strategic roles, then is it unlikely they can successfully provide additional services for their customers.

An example that is demonstrated in this research is when food manufacturers work with their retail customers on special promotions. Representatives from the food manufacturer, including a commodity procurement buyer, help the retailer design and implement the promotion. The role of the commodity procurement representative is to ensure that the increased quantity demanded could be obtained at a price that allows the promotion to be profitable.

Conclusions

There is a large literature on commodity selling, but very little on commodity procurement. This study contributes to the literature on commodity procurement in two ways. First, the study summarizes factors considered in previous literature as important in commodity procurement. Second, the study empirically evaluates those characteristics as to their importance

in selected firms' commodity procurement departments. This case study approach can be expanded in future research via quantitative research. Some of the factors that the literature suggested are important in procurement decisions were very important empirically. There were other factors that the literature indicated were important in procurement decisions that varied greatly across this study (e.g., storage costs).

The role of commodity procurement departments appears to be changing. This research summarizes these changes in Figure 1. This model implies a commodity procurement department must first maintain supply. Only once the commodity procurement department has mastered maintaining supply, then progress can be made toward being profit focused, and finally service-focused.

Food manufacturers need to evaluate their commodity procurement departments and determine what strategic role they need to play. Managers need to consider what additional value their commodity procurement departments can add to their company. This can come in several forms including improving profitability and providing greater service to customers.

Commodity procurement departments must understand what the expectations are within their company and each buyer must translate these expectations to his/her individual performance goals. Once expectations are understood, buyers need to determine what procurement strategies can be implemented to best meet these expectations. This can be accomplished by evaluating which characteristics are the driving force behind each commodity being procured.

The commodity manager must determine at what focal point the department is operating at (e.g., supply-focused, profit-focused, service-focused), and whether or not this is the appropriate focus given overall company strategy. If the department is not operating at the

proper focal point, the commodity manager can develop a transition plan and assess the likely impact on buying strategies (e.g., spot market versus forward pricing mechanisms).

Research Limitations and Future Directions

There are several drawbacks to the case study method used in this study. The most obvious is that in a qualitative study there is no quantitative data to compare to existing research for validation purposes. While this is a drawback, it was not the intent of this study to develop such quantitative results. Rather, the focus of this study was to better understand the “what” and “why” of commodity procurement since so little information exists regarding this activity.

Another limitation of this study is that the sample size was small. As such, it is unclear if results can be generalized to larger populations. Furthermore, this sample focused on food manufacturers. It is unclear if results can be generalized to other types of manufacturers who purchase commodity products.

The first extension of the research that can be applied is to extend this study to replicate the research using a larger sample size. This could provide additional insights on commodity procurement for food manufacturers and provide a test for further investigating Figure 1. In addition, this study did not evaluate different sized commodity groups and different dollar values across commodities. Examining food manufacturer’s procurement decisions relative to the amount spent on each buy is another future research project that would provide “rules of thumb” concerning the risk-return trade-off that must be evaluated and could provide answers regarding when it is worth developing an advanced buying strategy.

Another perspective that would add a great deal to this area would be to examine the impact that decisions at the retail level have on commodity procurement personnel. A suggestion

by one of the professionals that was interviewed was to perform a game theory study on retail promotions within a commodity group and trace the buying patterns from that commodity to evaluate how the promotion changed the procurement of that commodity. Since retail sales ultimately drive food manufacturers and, thus, the commodities procured, this type of study makes a great contribution. There are many other ways that the relationship between retailers and food manufacturers could be evaluated.

Another possibility for future research is to examine the strategic value of a commodity procurement department as suggested in Figure 1. Research could be performed to confirm the existence of the three strategic values presented in this study and to evaluate what factors encourage or discourage movement to higher strategic roles.

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Appendix 1. Questionnaire

1. Could you please provide me with some background on your company's procurement structure and its relationship to overall company structure?
2. Describe how your commodity procurement group is organized and how buying responsibilities are assigned.
3. What strategic role does commodity procurement play with your company?
4. Is the trend within your company to have more or less commodity buyers? Why?
5. Are the buyers organized by specific commodity groups or more decentralized across various commodities?
6. What are the different commodity buying strategies that you use?
7. Who decides what commodity buying strategy is used?
8. What determines what commodity buying strategy is used? Why?
9. How have these commodity strategies changed in the last 5 years? Why?
10. What advantages/disadvantages have you seen with these changes?
11. How do you see commodity buying strategies changing in the next 5 years? Why?
12. What do you see as the potential advantages/disadvantages of these future changes?
13. What materials are you using to train employees on different buying strategies?
14. How is price risk involved in a procurement decision?
15. If price risk is high what type of strategy does this generally lead to?
16. How is volume of commodity purchased involved in a procurement decision?
17. If volume of commodity purchased is high what type of strategy does this generally lead to?
18. How is commodity perishability involved in a procurement decision?
19. If perishability is high what type of strategy does this generally lead to?
20. How is the accuracy of sales forecast involved in a procurement decision?
21. If there is a high degree of accuracy of sales forecast what type of strategy does this generally lead to?
22. How do special promotions become involved in a procurement decision?
23. If there is a large special promotion ahead what type of strategy does this generally lead to?
24. How does the amount of space required for storage of a commodity involved in a procurement decision?
25. If the storage requirements are high what type of strategy does this generally lead to?
26. How does the amount of space available for storage of a commodity involved in a procurement decision?
27. If the storage availability is high what type of strategy does this generally lead to?
28. How does the cost storage of a commodity involved in a procurement decision?
29. If the storage costs are high what type of strategy does this generally lead to?
30. How does the efficiency of the market of a commodity involved in a procurement decision?
31. If the price discovery mechanism for a commodity is highly developed what type of strategy does this generally lead to?
32. How is a budget constraint involved in a procurement decision?

33. If there is a tight budget constraint what type of strategy does this generally lead to?
34. How does seasonality of a commodity involved in a procurement decision?
35. If the seasonality is high what type of strategy does this generally lead to?
36. How does traceability of a commodity involved in a procurement decision?
37. If the traceability is high what type of strategy does this generally lead to?
38. How is cooperative involvement involved in a procurement decision?
39. If the cooperative involvement is high what type of strategy does this generally lead to?
40. How does the value of the commodity in the final good involved in a procurement decision?
41. If the value of the commodity is high in the final product what type of strategy does this generally lead to?
42. How is the service level of the commodity supplier involved in a procurement decision?
43. What types of services do you expect from your suppliers?
44. If the service level from the supplier is high what type of strategy does this generally lead to?
45. How are quality specifications of a commodity involved in a procurement decision?
46. If there is a very limited supply of specific quality of a commodity what type of strategy does this generally lead to?
47. Are there any other major factors that you consider when making commodity procurement decisions?