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# Supply Chain Management in Perishables: A Produce Application

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The objective of supply chain management (SCM) is to remove time and cost from supply chains, improving profitability and/or competitiveness. It is possible through conceptual advances, utilization of computer hardware and software, and other advances in electronic technology. Business literature is used to define the concept. Most applications and benefits have resulted from alliances between large retailers and large packaged goods vendors. Specific applications of SCM in the produce industry, with emphasis on factors such as perishability and production variability, are discussed. Firm-size implications are important. While small and mid-sized growers may find the cost to be high, the innovation of logistics provided by outside suppliers is an alternative. A third-party provider was interviewed; its approach and services are documented; and industry implications are discussed.

Concentration, integration, coordination, and industrialization are terms that have been used with regularity in recent years to describe changes in various segments of the food system. These concepts provide a context for what is happening, for the rate of change, and at least partially, for why change is occurring. At the same time, the business community has been remolding models of competition, especially with respect to the notion of arms-length transactions between firms that operate within a product supply chain. To reduce system-wide costs, firms are using conceptual advances and technological sophistication to pursue new alternatives regarding "how." In today's business vernacular, the term most commonly used to describe the system-wide approach is supply chain management (SCM).

As an initial working definition, Coyle, Bardi, and Langley (1996) define SCM as both information management and the physical flow of raw materials and finished goods—the "mechanism allowing a supply chain of multiple entities to be managed as a single, profit-maximizing firm." SCM is the term used here to encompass those activities associated with achieving efficiencies in a supply chain. Efficient consumer response (ECR) is a related food industry application (Kurt Salmon Associates, 1993). The ECR initiative focuses on selected elements within the broader SCM concept.

Since setting the pace in terms of logistics efficiency during much of the mid-century, the food industry has lagged other industry components in improving system efficiency (Kurt Salmon Associates, 1993). Meanwhile, general merchandise mass retailers were removing time and cost from the dry goods product categories. The traditional logistics function has been refined into SCM and is an area of interest in terms of both application and research.

In theory, SCM is a seamless system in which everything from raw materials to finished product is produced on demand and delivered "just in time" to the next stage of production. Seasonality, perishability, and the time lag between planting and harvest associated with crop production complicate the application of SCM to fresh produce. In addition, weather affects yields and causes quantity supplied to deviate from optimal levels.

## Objectives and Methodology

The purpose of this paper is twofold. The SCM paradigm will be reviewed, particularly with reference to implications for the food industry and the produce sector. Then, third-party logistics—one of the innovations associated with SCM—will be presented in terms of a specific company application. Methodologically, the paper's first component will use relevant business literature to define SCM and to suggest implications for the food industry. For the second component, a leading third-party provider of logistics—one with a traditional produce focus—was interviewed to ascertain its use of SCM innovations, the kind of services that it provides, and the kinds of customers that it has been able to attract.

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## Evolution and Definition of Supply Chain Management

### *Supply Chain Management Defined*

Ross (1999) breaks the evolution from business logistics to SCM into four phases. A focus on internal efficiencies by function meant that the firm's transportation and logistics function was responsible for receiving raw materials and shipping finished products. A focus on internal efficiencies across functions followed as production was coordinated with the logistical aspects of the firm. Then, in the search for efficiencies across firms within the chain, informational flows were needed to coordinate firms into behavior as a single profit-maximizing entity. Last and ongoing is a visionary process by the members of one chain to identify potential opportunities—utilizing the core competencies of the chain in alliance with firms (or chains) outside the existing chain—to develop new product or service chains, which could create a dominant presence in the newly identified market.<sup>1</sup> An example of this last phase might be the Internet-based grocery stores, where orders are placed with a company online and then picked and delivered by employees or other service providers.

Ross (1999) explicitly recognized the need to adapt to an ever-changing business environment:

... a continuously evolving management philosophy that seeks to unify the collective productive competencies and resources of the business functions found both within the enterprise and outside in the firm's allied business partners located along intersecting supply channels into a highly competitive, customer-enriching supply system focused on developing innovative solutions and synchronizing the flow of market-place products, services, and information to create unique, individualized sources of customer value. (p. 34)

Ross (1999) considers SCM a business philosophy that incorporates, but goes beyond, traditional supply-channel management techniques, such as TQM and JIT. Metz (1998) offers five success factors that provide a metric against which to measure supply chain performance. These are:

- an “overriding pervasive customer focus.” Every participant in the chain must have access to information about what consumers want and when they want it, through advanced use of information technologies, and must incorporate this information into the decision-making process.
- facilitating collection and sharing of information and data on a real-time basis from the retail site backward. Chain participants would manage logistics and production to minimize inventories, share data across firms, share firm-level costs, and minimize chain response time.
- quantitative performance measurement, to be measured against the goals established for the chain and not just individual firms. Kuglin (1998) suggests measuring the process with customer satisfaction, quality of deliveries to the customer, and order-to-delivery cycle time. The final measure is the supply chain cost. The order-to-delivery cycle time is a cash flow measure. Activity-based costing (ABC) provides the necessary details in determining the total costs (Kahn and McAllister, 1997)
- use of cross-functional teams. Coordination of activities associated with the production and marketing of a product or service requires enhanced communication between functional groups, within and between firms, to improve the overall efficiency.
- attention to human factors and organization dynamics. Both Ross (1999) and Kuglin (1998) place significant emphasis on human resources. Ross argues that “ultimately, what a company or a whole supply channel is really selling their customers is not products and services but the enrichment value of the skills and knowledge possessed by the people who work within the organization and outside in its partner companies and suppliers.” (p. 291)

The alliances required for successful SCM are a challenge because they imply a higher-than-traditional level of trust and information-sharing.

### *Incentives for SCM Adoption by Food Retailers*

Rapid adoption of SCM in the grocery sector came with the entry of multi-line discount mass

<sup>1</sup>Evolution is evidenced by Blackwell and Blackwell (1999).

merchandisers into the food category (Kurt Salmon Associates, 1993). These retailers rapidly gained market share and growth through cost-cutting, largely based on the early adoption of logistics advances. Wal-Mart, an example of Ross' fourth phase, experienced a successful, industry-sponsored vendor-partnering program in the early 1980s. This program was focused on specific clothing items and was designed to reduce cost and stock-outs. The experiment increased the level of in-stocks and other key measures more than expected, and Wal-Mart moved toward the SCM model across merchandise lines. Its entry into food merchandising in the late 1980s, and its rapid market penetration through the 1990s, signaled the importance of this new paradigm in maintaining competitiveness in food retailing. Wal-Mart rose to third largest food retailer in the United States, with sales of about \$32 billion in 1998 (AIFD, 1999). The Kroger Company retained the top position only because it acquired another grocery chain.

The period of the mid- to late 1990s was a significant merger/acquisition period for the retail food sector. The combined effects of the entry of firms like Wal-Mart and stagnant sales have caused firms to search for higher profits through achieving economies of both size (mergers/acquisitions) and scope (SCM) in order to ensure survival. As a result, retailers generally are perceived to have gained market power within the food system and are the driving force for the implementation of SCM (*Progressive Grocer*, 1996).

## Supply Chain Management in Fruits and Vegetables

### *Physical and Market Characteristics of Produce That Affect SCM Potential*

An overview. In terms of SCM, consider the differences between the produce sector and an industrial manufacturing line. In manufacturing, a signal from a bar-code scanner can stimulate the order for, and production of, its replacement. Generally, raw material and other product inventories are storable and almost always are available. Work processes can occur on a year-round basis, which facilitates planning on inputs, such as labor. Production inputs arrive on a just-in-time basis. Output typically is sold in uniform weight packages. In produce, production is seasonal and includes the risk of disastrous weather events. The crop must be harvested within

a defined window of maturity and has a fairly well-defined storage and shelf life. The potential for product deterioration and physical damage during storage, handling, and delivery adds another layer of risk to the system. At retail, as long as price look-up (PLU) codes are used, data entry and other errors will affect the need for back-up inventory.

In addition to the physical characteristics of produce, the structure of the industry at the grower/shipper level affects SCM implementation in produce. Until recently, production of these commodities would have been described as fragmented, or comprised of many (mostly small) producers in many growing regions, with little vertical coordination. In recent years, production of the major produce items has become concentrated in increasingly fewer, but larger, farms (Wilson, Thompson, and Cook, 1997). The *1997 Census of Agriculture* identified 53,727 producers of melons and vegetables. Potatoes were grown by 10,523 farmers, and there were 106,069 orchard operations. For both fruits and vegetables, more than 60 percent of the producers were utilizing less than 15 acres for those crops. However, nearly 30 percent of orchard acreage and more than 30 percent of the vegetable acreage was associated with farms producing 1,000 acres or more. In total, the large operations represent about 1 percent of the grower population. Many of the largest producers have some form of vertical integration. These operators are the early adopters of SCM because they have the capability to meet the product and technical demands of alliances with the largest retailers.

A significant portion of production continues to be handled through a number of alternative marketing methods ranging from direct marketing to direct store delivery. This includes the use of wholesale markets at both shipping and receiving points. Historically, wholesale markets established prices. However, the spot market now determines price, based on established grade and size standards, for most of the volume in day-to-day sales.

Coordination implies relationships within the chain that extend beyond the spot-market transaction. Informal relationships within the spot market do occur, but the new environment leads to more formal agreements that tend to downplay the personal side of relationships. Further, prices negotiated in formal agreements are not reported in the public domain. As long-term agreements cover a greater share of the volume, publicly reported prices will become less representative of market conditions.

Due to the nature of the spot market, consumer demand information gathered by retailers often is not formally shared with other firms in the supply chain. Further, given the large number of items in the typical produce section, retailers are not likely to have very detailed information on consumer preferences beyond grade and size for many stocked items. Hence, current price signals based on grade and size may not accurately reflect the full range of consumer preferences.

The lack of adequate information increases the market risks for growers and shippers of seasonally produced crops. Seasonal production provides little opportunity in the short run to adjust inventories or to change product specifications. Highly perishable crops are further affected by the need for immediate shipment, regardless of price. Diversion to a processing market, where one exists, can result in returns that do not cover the cost of harvesting.

An additional complication is that product quality may not be maintained through the system. Some product deterioration occurs in transit and again in the hands of the retailer. Prices and shipments publicly reported at the f.o.b. level reflect neither price adjustments due to product deterioration nor the physical losses associated with that deterioration.

This discussion suggests that the application of SCM in perishables, such as produce, is more difficult compared to packaged grocery items. Perishability of these products always has resulted in prompt handling. Now, the SCM model used in other product categories provides additional guidance.

Retailers are perceived to have market power through sheer size and through the belief that information about consumer preference is asymmetric (where retailers have this information but producers do not). To remain competitive, food retailers have been pushed toward adoption of SCM. Producers who would serve the large retailers also seem to have little choice and, thus, are moving quickly to form partnerships and to invest in technological advances.

Enhanced performance areas. Application of SCM to the horticultural sector appears to require at least three enhanced performance areas: communication, coordination, and service.

(1) *Communication.* Traditionally, the flow of information from producer to consumer and back has been less than perfect. Information

from the producer level regarding volume and quality has been aided by USDA crop reports, so the retailer has some expectation of potential volumes to move during the market season. Historic shipping patterns, crop reports, and anecdotal information about local and competitors' planting decisions and growing conditions often are the best information available to producers.

Prices for different product grades tell producers which grades and sizes of fruits or vegetables are most preferred and have been the most direct market signal received by growers and shippers. Direct market signals are based on time-honored traditions; however, the embodied information may not reflect preferences adequately in terms of either breadth or depth because, as this qualitative information passes through market layers, it can become distorted by motives of players in the system.

Information moving from producer (product availability and characteristics) to retailer also appears to be incomplete and/or unused. Shippers' manifests may include several crops, varieties, grades, and sizes. In a spot-market environment, a buyer's concern is availability and price today. From a seller's perspective, sharing any information beyond that will only occur if it is to their advantage. Hence, the guiding rule for the transfer of information from shipper to buyer is likely to be "need to know." The development of informal relationships in the spot market probably improves the flow of information. However, those informal relationships do not appear to have the strength of commitment around which to build longer-term marketing strategies. To the seller they mean repeat sales, and to the buyer, they mean greater confidence in availability and quality.

SCM has the potential to overcome some of the communication difficulties inherent in the spot-market environment. The timely delivery of the right product to the retailer's distribution center requires that sales data be available to shippers on a real time basis. Also, sales histories may be captured for use by the production sector. Better data make it easier to forecast and plan warehousing and shipping activities for stored products and to tailor production plans for all crops, including those with limited or no storage capability.

Another SCM premise is that a chain's competitive position will be maintained primarily by continuously improving product quality. Product improvements involve appearance and eating quality (*Fresh Trends*, various issues), but services provided by shippers are another quality component. Baseline quality data generally are not available to producers in the detail necessary to serve today's increasingly segmented market. Internal product characteristics and the production practice changes needed to impact those characteristics are one example. Low-volume commodities are especially susceptible to this problem.

- (2) *Coordination.* At the grower-shipper level, coordination efforts range from none to full vertical integration. Anecdotal information across crops and across regions suggests that coordination is lowest in those areas and for those crops where production and grower size are small. For major commodities available year-round, coordination is occurring (see Wilson, Thompson, and Cook, 1997, for example).

Growers will be affected by new coordination approaches. In a managed supply chain, shippers will play a greater role in specifying crops, varieties, production practices, harvest timing, and production levels. For example, Washington apples are available in a wide range of sizes and grades. The warehouse may find it beneficial to restrict the range of sizes and grades accepted from growers.

One area in which communication is likely to remain problematic for the horticultural sector is the identification and segmentation of consumer preferences. Few major produce firms have the capability of developing and marketing test potential new varieties or new strains of old varieties. Some industry organizations, such as the Washington Apple Commission (WAC), do have that capability. The collection and dissemination of information—regarding consumer preferences by a third party, such as WAC, to all of its paying members—raises some interesting questions. Most pertinent to this discussion is the willingness of other links in the supply chain to provide information that will likely be shared among all suppliers. One of the benefits of data-sharing is that generated information can boost the effectiveness of new product introductions.

- (3) *Service Level.* The service level in SCM leads to the right price, quantity, place, and time to make the sale. From each level of the system, a set of services associated with the sale to the next level may be required. While the attributes of fruit and vegetable products are difficult to improve after the crop is produced, the real-time information flow—to avoid out-of-stock conditions, to provide product to the customer in the right amount, or to exchange data electronically in order to reduce keypunching and other clerical costs—can be continually upgraded.

To illustrate the increased provision of service, shippers traditionally have paid to load a container or truck while buyers have arranged and covered the cost of transportation. In SCM, the supplier may accept the additional responsibility of ensuring on-time delivery. Over time, a formal relationship might commit a transportation provider to standards for product pick-up and delivery.

Category management is another service increasingly provided by both wholesale firms and trade associations. The Washington Apple Commission, for example, can assist retailers with space allocations based on its own historical sales data and annual marketing plans developed with input from both the shipper and the retailer.

Another service now broadly accepted in some produce supply chains is "stickering." A sticker placed on each piece of product has a PLU code to identify (and advertise) the variety and to relate the sale to the retailer's inventory.

In principle, SCM assigns activities to the level in the chain that best enhances efficiency. While the issue of allocating costs and returns is assumed to be easily resolved, retail consolidation appears to have shifted market power toward the retailer. This shift could make it difficult for the shipper to be compensated for services such as stickering. An alternative view is that the provision of services by the supplier is a cost of partnering and that benefits provided by the alliance will offset its costs.

Apples are one of the most important items in the produce section, yet the largest warehouse in the largest producing state cannot supply all of the fruit needed by any of the top 10 retailers in the United States.

While the absolute volume handled by the largest warehouse may equal or surpass the amount sold by the largest retailer, that volume includes all grades and sizes. Since the retailer does not buy all grades and sizes, it must buy from several warehouses to meet its needs. In Washington, strategic alliances are forming among warehouses, but in every case, a key element has been the merging of sales operations. In a recent example, an alliance among three warehouses (WSFC, 1998) connects a major volume shipper, a firm that specializes in winter pears, and a third that specializes in low-volume, new varieties and specialty packs. This particular alliance broadens the manifest and improves production efficiency in the warehouses as each focuses on a core competency. These alliances enhance market presence and help counter some of the market power lost to retailers. Generally, to provide acceptable service levels to large customers, warehouses and other suppliers must identify ways in which their services and people can enhance value.

#### **Alternative SCM Implementation— The Third Party Provider**

Another kind of company—the third party logistics provider—has extended the potential benefits of SCM to firms of all sizes. We summarize the approach of one such company—C.H. Robinson (CHR, 1999)—based on information from its web site and from an interview with a company official (Lemke, 1999).

CHR describes itself as a non-asset-based company, generating sales of about \$2 billion in 1998. Its customers select from a menu of services. As asset-based services are needed by CHR, it contracts with asset owners, such as trucking companies. The company commissioned development of proprietary computer software. By spreading its value-added services over the logistics needs of many companies, CHR can acquire and use such advanced technology and can incorporate up-to-date ideas about the reduction of logistics costs. These costs are spread across all CHR customers who get the advantage of the knowledge base of a produce company and the contacts and relationships that it has built over time. The customer's activities, for example, might include implementation of its strategic plan

for retail merchandising and marketing, and it would then choose from CHR's menu of services for other needed functions.

In the produce industry, CHR basically acts as:

- (1) a procurer of produce items. CHR is a market middleman—procuring, taking ownership at the shipper's dock, and selling at the customer's warehouse. Produce is sourced domestically and internationally, packaged as appropriate, and transported, and
- (2) a third-party, full-menu, logistics provider.

As a complete logistics provider, CHR would prefer to serve all of its customer's needs. In that scenario, CHR would handle all activities from purchasing from the grower or shipper to product display in the retail case. The customer would receive a single invoice. Between purchase and display, CHR activities might include production contracting, co-packing, transportation and warehousing services, and category management in the store. As an example of its breadth, CHR can use contract processors of prepackaged salad to fill orders from its 200 stock-keeping units (SKU).

Size enables the company to serve the largest customers and to provide flexible service to small companies that otherwise might deal in small volumes at high cost. Size also provides the financial capability to access sophisticated control systems that include computer hardware and software, GIS tracking of supply and product locations, and other components of an advanced logistics system. At its most sophisticated level of application, CHR provides category management for the retail produce section in selected regions for a national mass merchandiser. Data-handling procedures, development of supply chain intelligence, and the subsequent use of this information to make decisions about origins, modes, warehouse destinations, and timing of delivery to stores are included, as are decisions about product display in the retail case. While this is a unique customer, CHR has a few other customers that are large enough to employ SCM at this level.

CHR's produce sales are about equally balanced between the retail channel and the foodservice channel. Implementation of information systems that generate data sufficient for management of the store and supply system has occurred more quickly with retail customers. To remain competitive, retailers are pressured toward SCM adoption.



### *CHR Customers' Use of Electronic Data Interchange (EDI)*

The use of bar-code scanning to speed checkout has been in place for years. All CHR retailer customers have this data, but the proportion of data users is between 50 percent and 75 percent. Among these users, relatively little of the available information is a component of their decision-making framework. Generation and use of this kind of information among foodservice customers is lower. These firms generally are more traditional in terms of business practices. Their customers vend products to the final consumer; the base is more stable; and demands are more predictable.

One of the benefits of bar-code scanner data is the ease of transmission to partners. Use and application of that data vary depending on the customer's commitment to SCM:

- (1) at a minimal level, some customers collect and transmit data on formats, such as floppy disks. Historical records useful for forecasting then are created by CHR.
- (2) some stores/chains generate, on a daily basis, one or two EDI reports. After electronic transmission, CHR manually converts these into reports that provide useable sales information.
- (3) the maximum application of SCM is the retail customer with a secure online presence. There, vendors [such as CHR] can get system information, determine appropriate steps to provide the required level of service, and take action, such as the creation of purchase orders. With these customers, there is a contractual agreement to provide a set of services.

Even with the most sophisticated customers, SCM procedures and processes are not completely automated. Currently, product replenishment orders for the next order period are created by manual review of available information. The company is building historical files as the basis for computer-generated ordering for units, such as stores, warehouses, and production lines. Factors that would be included in the analysis are price points, promotional commitments, and observed inventory levels.

### *Nature of Partnership/Alliance Agreements*

Some CHR business relationships are with long-standing customers but involve few activities in the supply chain. These customers choose individual items from the service menu and have relatively little concern about SCM. They typically are smaller customers, and CHR is interested in continuing these relationships. Wholesale terminal market customers are an example.

Larger customers usually have contractual arrangements with CHR. On the supply side, a co-packer agreement might specify volume expected during the contract period and a method of specifying price. On the consumer side, contracts that specify price and volume with the receiver tend to be those through which an alliance is formed. The agreement could be viewed as a business plan, specifying what each party will do. This kind of CHR customer might have applied SCM successfully in other product categories, but it recognizes that its core interest in produce handling is not logistics. Choosing to hire a third-party provider may release resources to address other areas of need. These customers tend to use additional services from the CHR menu, including sourcing and category management. Contracts are more common with the foodservice customers.

### *How CHR Reduces Cost*

One of CHR's stated business strategies is "no asset ownership." This is a key to reducing costs because it permits optimization to the supply chain rather than to owned assets. Then, size enables the company to receive favorable rates from the full range of transportation alternatives. Based on these volumes and the geographic breadth of customer locations, transportation costs can be managed to reduce empty back-hauls and trip segments. This cross-customer optimization of loads from multiple origins and customers to multiple destinations and customers provides savings. Software that can be used to make the selection of shipment and transportation routes routine is being developed. Relationships with grower/shippers reduce the amount of higher-cost, short-, or spot-market buying. Value-added processing is done through a co-packer contract. These factors allow CHR to offer packages of services at attractive prices. Savings can occur in several other areas. Reduced inventory levels, normally held as a hedge against risk, may be possible.



CHR has not documented such savings but feels certain that they exist. Another area of savings to a customer is a reduced number of employees because CHR is providing the service.

#### *SCM Adoption by Produce Suppliers*

Growers, according to CHR, have generally been slow to react to SCM. Recently, a few larger firms have allied themselves with large retailers and foodservice customers. This can be a source of information to the grower about the customer base, and they then might buy or try to develop EDI capability. Growers usually do not provide transportation services. In contrast, another approach by individual growers and organizations, such as cooperatives, has been value-adding activities, such as the placement of sales representatives in major markets and the provision of retail category management programs.

From the perspective of CHR, the survival of smaller and mid-size grower/shippers and warehouses is questionable. They lack the size and financial strength to initiate expensive SCM applications and are not likely to remain competitive. Their options are to partner with similar operations, with marketers, or with customers. According to CHR, mid-size and small orange marketing associations—which cannot provide store-level analysis, automatic replenishment, or other SCM value accumulations—are an example of this situation.

#### **Concluding Remarks and Implications for Research**

This discussion addressed the nature of SCM and some difficulties with its implementation in fruits and vegetables, focused largely on the delivery system that is common to the major commodities. The guiding principles behind SCM were presented through material found in the general business literature and trade publications. This discussion provided the general outline of SCM implementation by large business organizations. The third-party provider approach, as exemplified by discussion of the C.H. Robinson Company, is an alternative organization of the supply chain that can serve the largest retailers but is flexible enough to serve small and medium-sized supermarket firms.

It seems clear that the SCM model is being implemented by business because its technological

sophistication can help reduce costs. As the adoption of firms becomes more competitive, others are strongly encouraged to do the same by the marketplace.

There are research implications about the direction and rapid rate of change in the food industry. An important issue is whether the cost of SCM implementation will enhance the competitiveness of large organizations at the expense of smaller ones. The implications of this new paradigm appear to be negative for small producers, distributors, and wholesalers. The coordination requirements implied in SCM suggest that retailers will find advantages in minimizing the number of suppliers. The outlets that will be available to small business, other than direct marketing and supplying localized niche markets, are not clear. A competitive retail environment encourages grower/shippers in the major producing regions to build organizations that can deliver year-round through storage and/or through contracts with producers across geographic regions. The system for low-volume commodities seems less coordinated. How this change in chain linkages will affect existing market structure in those sectors of the produce industry remains unanswered.

It is a commonly accepted view that the balance of market power in the produce supply chain currently favors the retailer. If true, retailers might require that additional services be provided at shipper expense. Market access for specific products is another issue. The role of summer fruits and melons in retail marketing plans creates access for those crops, but without this kind of leverage, access might not be maintained easily for other less well-known crops, or even well-known crops that are produced in limited quantities.

If increased market power has accrued to retailers, identification of conditions that could balance that power is of policy interest. Other topics include the ease of finding cooperators as SCM is accepted more broadly. The role of USDA grades and standards in an SCM-based system is of interest because long-term, well-specified relationships may make grade standards superfluous.

Given the breadth of SCM, many other researchable topics could be identified. With the decline in the number of players at both the first-handler level and the retail level, today's competition is different but keener. The primary objective here has been to direct the reader's attention to the nature of SCM. The relative importance of issues

probably varies from one commodity or group of commodities to the next, and from one region of the country to another. Also, readers' rankings of the relative importance of these issues may be a function of their intellectual predilection.

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