Grocery Industry Collaboration in the Wake of ECR

Robert Frankel
East Carolina University

Thomas J. Goldsby
The Ohio State University

Judith M. Whipple
Michigan State University

Efficient Consumer Response (ECR) is an industry-wide initiative that is commonly believed to have fallen far short of its promised efficiencies and value. Many believe that unrealistic expectations among grocery industry participants are primarily at fault for this shortcoming. The level of internal and external change required to make desired outcomes a reality have been underestimated and poorly understood by prospective participants. While change has been slower than desired, many firms have collaborated effectively and achieved significant results through coordinated supply chain activities. This research uses case studies to illustrate successful collaboration in the grocery supply chain and explores the success factors inherent in such efforts.

Over the last several decades, dramatic changes have occurred in the U.S. grocery industry. Economic forces, regulatory actions and consumer preferences have strongly influenced change in both the supply and demand sides of the grocery supply chain. The early 1990s saw an industry with historically narrow margins in the grips of a recession. Already weak profitability was weakened further and mere survival became a struggle for many firms in the industry. Intra-industry phenomena, such as the rise of private label products and “mega-store” formats (i.e., warehouse clubs and supercenters), further threatened the livelihood of traditional grocery manufacturers and retailers, respectively [11].

In 1992, several grocery executives formed a voluntary group to conduct a “self examination” of the industry. This group, known as the Efficient Consumer Response Working Group, commissioned a study by Kurt Salmon Associates to identify opportunities for more efficient, improved practices in the grocery industry. The consultants returned in early 1993 with a document claiming that the industry could reduce inventory costs by 10 percent, or $30 billion [2]. Based on the potential for savings and service improvement, the Efficient Consumer Response (ECR) movement quickly gained momentum and enjoyed widespread interest and participation throughout much of the 1990s in the U.S. Other independent movements developed outside of the U.S. and today include formal initiatives in Canada, India, and South Africa as well as throughout Europe. As reported by Fernie, Plab, and Marchant (2000), the largest retailers in the U.K. have “saved millions of dollars in the late 1990s” as they applied collaborative efforts, based on ECR initiatives, as a way to increase overall efficiency as well as decrease supply chain disruptions [3].

The primary objective of the ECR Executive Committee has been and remains one of education, enlightening prospective participants of the benefits associated with the movement’s four foundations (efficient store assortment, efficient replenishment, efficient promotion, and efficient new product introduction) and the means to achieve these objectives. A multitude of documents was generated through the Committee for the
purpose of facilitating ECR implementation to support this educational mission [4]. Despite these efforts, the ECR initiative's momentum has slowed considerably in the United States.

It is widely believed that the ECR movement failed to live up to expectations. There are various reasons for this. One is that expectations may have been set unrealistically high. While general agreement exists that there remain opportunities for significant inventory reductions, there are doubts that reductions would ever reach the $30 billion mark [5]. In fact, a recent survey conducted by the Grocery Manufacturers of America (GMA) indicates that there is more inventory in the U.S. grocery supply chain in 2001 than there was in 1995 [6]. Further, a preliminary study by Brown and Bukovsky (2001) failed to show significant performance improvements for firms adopting ECR when compared to non-adopters [7].

Another explanation for some of the disappointment with ECR is that the change process itself is so complex. Within any of the four ECR foundations, there are various tools, techniques or programs in which a firm could concentrate to achieve greater efficiency. For example, efficient replenishment could include technological applications (e.g., EDI), cross-docking, consolidated multi-vendor distribution, supply chain integration, and outsourcing to third-party providers, among an array of initiatives. The vast number of options is difficult to comprehend, let alone know where to begin implementation. As an example, just the term “supply chain management” used in conjunction with the ECR umbrella has historically had various definitions and classifications which “present a source of confusion” for managers and researchers in the field [8]. Lambert, Cooper, and Pagh stated that the management of the supply chain could not be left to chance, but at the same time acknowledged it posed difficulties within the firm due to the complexity of the undertaking [9]. In spite of this complexity, in order to achieve the massive, reported benefits of $30 billion, large-scale or full implementation of ECR must be assumed a prerequisite. If management picks and chooses only a few areas or tools to implement under the wide ECR umbrella, it is hard to expect benefits to reach their highest potential.

Further, ECR requires a long-term approach as it incorporates changing traditional behaviors and mindsets. It has been reported that ECR is “80% people, 20% technology” [10]. The change process is substantial when just some of the necessary elements are considered: training; reorganization of traditional business structures; overcoming short-term financial pressures; alliance relationships developing among supply chain members; and new performance measurement systems. These elements require substantial resource commitments of personnel and time. As an example, forward buying, a traditional push approach to inventory management, has yet to give way to the suggested pull approach of ECR due to lack of knowledge on the total costs to the system and short-term financial pressures that encourage overbuying due to price discounts [11].

Finally, there is a pronounced difference between industry and individual firm-level initiatives. Industries can prescribe initiatives and support them through trade associations, conferences, and publications. In spite of this outreach effort, it is up to individual firms to implement the initiatives. Within the grocery industry, there are certainly individual firms (CVS, Nabisco, Procter & Gamble, Tesco, Sainsbury’s, Safeway, Wal-Mart, Wegman’s) experiencing significant benefits from implementing ECR and its related programs [12]. As an example, when Wal-Mart pursued a CPFR program with Warner-Lambert, it realized a reduction in lead-times from 21 to 11 days and sales of the pilot project, which focused on Listerine, increased by $8.5 million with in-stock levels improving from 87 percent to 98 percent [13]. In spite of these results, it has been argued that not enough ECR success stories have been developed and published, further limiting the progress of the movement [14].

While the U.S. ECR movement has lost momentum, the air of cooperation that it engendered throughout the 1990s remains strong in the grocery industry. Collaborative effort is the central theme of ECR as stated succinctly in the mission of “working together [among trading partners] to fulfill consumer wishes better, faster and at less cost” [15]. This research presents several instances of successful collaboration in the U.S. grocery
industry – many of which were borne out of ECR initiatives. Specifically, this research focuses on: (1) how firms started the collaborative implementation process; (2) the lessons learned through the implementation process; and, (3) the factors necessary for successful collaboration. After providing a description of the research methodology, we present the findings of the research.

Research Methodology

The research used case studies to better understand collaborative activity. The case studies were dyadic in nature, meaning that supplier and customer pairs were included in the research design. Case study methodology was selected as the most appropriate approach given that applied managerial frameworks and implications were sought. Yin compares case studies to other research methods and concludes:

“case studies are the preferred strategy when ‘how’ or ‘why’ questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context.” [16].

This research focuses on the “how and why” of supply chain collaboration. Specifically, the research examines how collaborative programs are developed across firms. The dyadic perspective captures the cause-and-effect relationship between one firm’s actions and the outcome perceived by the other. Moreover, the use of the dyad as the unit of analysis allows for a more accurate portrayal of the conditions that “make or break” collaborative efforts in the long-term [17]. In all cases studied, the initiatives of interest had progressed beyond the planning phase and were operational. The stages of implementation varied, however.

Hunt described the distinction between building and disconfirming theory in his delineation between the logic of discovery and the logic of justification [18]. The logic of discovery, the approach taken in this paper, is used to discover hypotheses, laws and theories, while the logic of justification is used to accept or reject hypotheses, laws and theories. Thus, in the context of justification, the researcher attempts to explain and predict phenomena as well as empirically test relationships through scientific methods. In the context of discovery, the researcher’s goal is to uncover phenomena through observation and speculation. Hunt stated one distinguishable difference between discovery and justification is that there is not one correct method for discovery, but, for justification, “there exists a single logic of justification which is common to all science (original emphasis)” [19]. The case method is one of many techniques for uncovering phenomena in the logic of discovery.

Gummesson concurred with the importance of case studies and stated that they are useful for “studying processes in companies and also for explanatory purposes” [20]. He indicated that the real value of case research is the holistic description of events that furnishes practitioners with tools or guidelines. According to Gummesson, this allows theories to be “grounded in actual empirical observations rather than governed by established, traditional approaches”.

Multiple sources of evidence are critical in case methodology for increasing construct validity. Multiple sources provide different viewpoints of the same phenomena that are required to achieve construct validity. Further, using multiple sources of evidence allows a “broad range of historical, attitudinal and conversational issues” to be investigated [21]. Fifteen supplier-customer pairs were involved in the research design and requested anonymity in published research. The firms were in the retail grocery industry. Overall, twenty-nine firms were included: 12 manufacturers; 12 retailers, 2 distributors; and, 3 logistics service providers. One retailer participated in two sets of interviews with respect to two different collaborative programs.

Participating firms were selected based upon their position as leaders in various aspects of collaborative activity. Leadership was determined based on three characteristics: (1) an extensive literature search; (2) trade association presentations; and, (3) identification from peer companies of firms involved in cutting-edge ECR-related programs. Confidentiality was promised to the participating firms as much of the research involved material that the firms believed was linked to their proprietary, competitive strategies.
A team of six researchers used a standardized, open-ended interview guide and on-site visits to conduct the interviews. The interview guide was developed from a review of the literature and was pre-tested with academic reviewers familiar with ECR and supply chain collaboration. Where necessary, modifications were made in the scope and clarity of questions to ensure that useful responses were generated. The on-site visits typically included a facility tour, and were one or two days in length. Two to nine managers and executives were interviewed within each firm depending on the complexity of the implementation process for the program being examined. The list of questions from the interview guide is presented in the Appendix.

Research Results

Conducting numerous in-depth interviews with successful firms in the grocery industry and the firms with which they collaborate provides the ability to generalize the characteristics and factors that make them successful. Over the course of the 29 company interviews, several factors were identified as critical to successful collaboration. The factors can be grouped into the five following themes: (1) willingness to innovate and change; (2) understanding the other’s business; (3) common goals and objectives; (4) appropriate measures and incentives; and, (5) information sharing. Each topic will be addressed in the ensuing sections. Examples drawn from the interviews illustrate key points.

Willingness to Innovate and Change

The oft-cited call for change, reengineering and renewal of the 1990s was apparent in virtually every interview. Collaborative firms realize that maintaining allegiance to the status quo is rarely a worthwhile growth proposition. Rather, the firms indicated a desire to do something creative and dramatically different from the norm. In many cases, this meant working closely with up, or downstream supply chain members – even when adversarial relations between the parties has been the tradition. In many cases, the stimuli for change were not new. For example, several retailers commented on the difficulty of managing slow moving, hard-to-handle, and promotional products on an individual basis. When troublesome SKUs could not be eliminated, retailers found that pooling these products into SKU segments managed separately from less complicated goods minimized cost and complexity. In some instances, the demand for slow-moving products was supported from unique, centralized warehouse facilities to reduce overall system stock levels.

Rethinking how work gets done and identifying the parties best suited to manage a particular work process are characteristic of the significant change implemented by research participants. Another prime example of rethinking the process is Scan Based Trading (SBT). SBT occurs when a manufacturer assumes responsibility for store shelf replenishment and “consigns” inventory to a retailer. The retailer does not pay for the product until it is actually purchased by consumers at the Point-of-Sale (POS). Manufacturers benefit by using daily POS data to replenish on the basis of actual demand rather than forecasted demand.

Several changes in process and mindset are required for SBT to operate successfully. First, retailers must be willing to allow product to enter stores without the traditional backroom check-in. Manufacturers deliver directly to the store shelf, bypassing delays associated with store receiving schedules and labor availability. Second, manufacturers can make delivery based on product considerations. For example, two manufacturers (one of chocolate products and another of ice cream) chose to deliver in the late evening or early morning when temperatures were cooler and traffic congestion was not a hindrance. This decreased the firms’ dependence on refrigeration units, while at the same time reducing delivery costs and product damage.

Although scan-based trading may not be appropriate for all products, the benefits to be gained from bypassing the backroom are widely applicable. These include better in-stock performance, higher quality (e.g., fresher) products, less in-store labor (for the retailer), and more attractive (e.g., orderly and well-maintained) merchandising. The in-stock and quality advantages translate into
improved customer service, higher sales volume, and store loyalty. In-stock performance may reach levels as high as 99 percent. In addition, delivery personnel encounter less congestion during off-peak hours, which makes them more productive. The key negotiation point for SBT is the determination of how shrink will be managed. Manufacturers will generally consider cost-sharing a prerequisite for SBT programs. Additional challenges include the liability issues associated with outside personnel performing shelf loading activities and the prospect of manufacturers requesting 24/7 delivery schedules. These are drastic departures for many retailers, requiring store-level buy-in to achieve meaningful change.

The application of lessons learned from innovative solutions to other relationships, product lines, and projects is of paramount importance. One manufacturer and retailer essentially created an alternative distribution network to achieve seasonal distribution for approximately three dozen (pre-identified) best-selling items. This could be considered a "mass customization" strategy on the manufacturer's behalf. The firm acknowledged that it learned significantly from this arrangement in terms of understanding both cost reduction and seasonal promotional planning. Specifically, there are benefits to be realized from isolating key promotional SKUs and managing them as fast-moving, specialty items that must be in stock to support store and consumer loyalty to the manufacturer brand. The retailer gained increased knowledge with regard to industry "trade" and retail operations strategy. Both firms planned to utilize their learning with respect to other key supply chain members (e.g., suppliers and customers).

An organization's willingness to change and seek innovative solutions is usually typified by the organization's leadership. In most cases, senior executives were viewed as the initiators of collaborative programs with suppliers and/or customers. Terms such as "clairvoyant" and "mastermind" were used to describe these innovative leaders. In other cases, however, programs were fostered at the operational level. In fact, one scenario illustrated a Vendor-Managed Inventory (VMI) program between a consumer goods manufacturer and mass merchandiser. Lower-level management at the mass merchandiser implemented a pilot project on a limited basis—without senior management's approval. Upon implementing the pilot project and rendering an inventory savings of approximately 50% on the affected SKUs, lower-level management felt confident that they had made the case for broader implementation of VMI at the mass merchandiser. Senior management, who had previously shunned the idea, became much more open to the program as a result of the preliminary evidence.

Regardless of the organizational level at which collaborative programs are initiated, senior management support was generally viewed as ultimately important to program success. Within the firm, senior management support is essential for effective "buy-in" among an organization's personnel. This comment was repeatedly mentioned throughout the interviews with participant firms. Senior management will usually either champion the relationship initiative, or designate others to execute their supply chain vision. When functional managers are resistant to the initiatives, the role of senior management is particularly crucial to managing such efforts. When integration efforts have been initiated at more operational levels, the support and approval of the initiatives by senior management becomes essential at the point in time when significant resource allocations are necessary to formalize and/or expand activities.

It is also important that more than one senior manager or key collaborative managers be closely involved in collaborative efforts. Too often relationships among two organizations are hinged on the relationship between a single representative of each participating firm. Should one of these individuals leave his/her respective organization, the relationship between the firms may weaken or dissolve as a result [22].

Numerous research participants noted this phenomenon was the reason for shortcomings in previous collaborative efforts. Several individuals indicated that their firm conscientiously develops multi-tacteted, cross-functional teams to ensure collaboration is not reliant on one or two individuals, reducing the risks associated with job turnover and promotion.
Understanding the Collaborative Party’s Business

It was clear that every firm that participated in the research was focused on how to build and manage better supply chain relationships. These firms had gone beyond the fundamentals of providing basic customer service and were focused instead on providing customer value. In other words, the firms were focused on innovation and creating value not only for their own firm, but for their customer/supplier as well. Understanding of the collaborative party’s business is critical toward achieving relevance and value.

One example of this concern for supply chain success was evident in how one of the retailers selected its manufacturing collaborator. Rather than selecting one of their best suppliers, this retailer actually selected one of their worst suppliers to engage in a continuous improvement program. The retailer concluded that the supplier had great products that consumers wanted, but in-stock performance was very poor. If the supplier’s product was not available on the shelf when customers came to the retail store to buy it, the consumers did not blame the supplier. They blamed the retailer. If this happened too frequently, the consumer became a lost customer for the retailer. In the continuous improvement program, the supplier was involved in formal training, which included visits by the retailer to the supplier’s plants and warehouses, and the retailer began using a “performance scorecard” to assist the supplier in tracking its improvement process.

A performance scorecard formalizes the identification and measurement of the tasks a supply chain member must execute in order to satisfy the customer. Scorecards typically comprise multiple components of logistical performance (a more thorough discussion of performance scorecard composition is provided in a subsequent section). In the time since this collaboration was initiated, the supplier has not received punitive charges for under-performance but rather has been given two performance improvement awards.

Mutual value-added activities often concern realignment of core logistics competencies to match or complement the capabilities of other supply chain participants to jointly improve performance. As a case in point, one packaged foods manufacturer bypassed its own distribution facility network and coordinated shipments of finished goods from multiple plants directly to the retailer’s distribution centers. Prior to assuming this responsibility, the manufacturer shipped full truckloads of product from a plant location to one of its distribution centers 150 miles south. The product was cross-docked there and shipped out to the retailer’s distribution centers, one of which was located 50 miles north of the original plant. So instead of moving 50 miles from plant to retail distribution center, this particular shipment ended up traveling nearly 350 miles. The supplier began shipping directly from the plant to retail distribution center, resulting in significant service and cost improvements.

In a somewhat similar situation, a medium-sized retailer often became frustrated with a major supplier that appeared to be unable to meet specific delivery requirements. The supplier not only invited but encouraged the retail customer to visit its distribution facilities to identify the causes of the delivery problems. Amenable solutions were reached that improved the supplier’s customer service. The supplier began offering Saturday deliveries, for instance, to take advantage of off-peak dock times at the retailer’s distribution center. In other instances, however, the two parties were not able to identify agreeable solutions that met the customer’s desired service level at a justifiable cost. When this was the case, the customer felt no ill will toward the supplier since all reasonable options had been considered, and the associated cost to provide the higher level of service was not warranted. Taking the time to understand the business and operations of the collaborative party made all the difference in how the firms subsequently interacted with one another. Regardless of the popularity of the expression, the customer is not always right and may often contribute to the performance problems. From the supplier’s perspective, being able to create more realistic customer expectations or having customers acknowledge the actual costs of meeting their expectations is certainly an advantage, and is more likely to accommodate a win-win solution.

Another benefit of developing enhanced understanding of the role of other supply chain members is the ability to better

Taking the time to understand the business and operations of the collaborative party made all the difference in how the firms subsequently interacted with one another.
anticipate future demands. Collaborative Planning, Forecasting and Replenishment (CPFR) programs, viewed by many research participants as an outgrowth of the ECR movement, seek to achieve this improvement. CPFR programs, which often develop from existing vendor-managed inventory programs, attempt to create supply chains that are more demand driven. Historically, forecasts of demand were created independently at every level of the supply chain. Unfortunately, these forecasts were not shared with upstream or downstream supply chain members and the subsequent forecast accuracy was often poor. For instance, stock-outs are common when the retailer decides to promote a product without informing the supplier. CPFR focuses on jointly managing and developing forecasts between the retailer and manufacturer such that any changes in demand, promotions, policies, or production plans can be incorporated into the forecast immediately without the problems of demand amplification, or the bullwhip effect. This eliminates costly performance errors such as stock-outs, cross-warehouse/store shipments, and failed promotions, among others. Since forecasts and replenishment plans are communicated, problem avoidance supersedes problem recovery. When errors or changes exist, they are acknowledged immediately and solutions can be developed quickly.

An additional strength of CPFR is the tie between the sales of finished goods and the manufacturing process. The joint plans developed leverage an enhanced category management strategy on the selling side, while improving efficiencies on the manufacturing side. When the retailer can commit to buy a specified quantity and agrees to “freeze” that order for a specified period, the order quantity can help to stabilize the manufacturer’s production and delivery system. The freeze period is essentially the time at which the supply chain cannot respond effectively to changes (either in manufacturing or delivery). In one situation, the freeze period began as five weeks, but the additional sales generated from the enhanced category plan and in-stock performance was so overwhelming, the freeze period was reduced to three weeks. The “frozen” order quantity can be directly input into the manufacturer’s DRP or MRP system. As such, the manufacturer’s order is based in part on actual sales orders with POS data driving daily/weekly delivery and replenishment.

One significant benefit of CPFR is the increase in customer service levels in regards to in-stock performance and response. As indicated above, when sales grew beyond the anticipated levels, the team was able to respond to the increase in sales quickly through changing the CPFR process (i.e., adjusting the freeze period allowed for the needed flexibility). When in-stock performance improves, there is a marked increase in the “customer’s basket” at retail level. This was particularly important for promotional, high-impulse items studied in one dyad. Given that average supermarket profit margins continue to be about one cent on each dollar of sales, any incremental sales generated from customers buying more than they expected during a given shopping trip is of critical importance [23]. Additional benefits of CPFR include the following:

- an increase in sales – as high as 13 percent for the category and 50 percent for individual items;
- a decrease in inventory levels for both the manufacturer and retailer;
- an increase in forecast accuracy as measured by the number of changes made to the sales forecast in and outside of the freeze period;
- an increase in profit dollars and margin measured at retail;
- a reduction in days of supply at the retail level by as much as 20 percent;
- a decrease in shrinkage; and
- an increase in case-fill performance.

Research participants active in CPFR initiatives indicated that these results are borne in a willingness to understand and improve supply chain activity beyond the control of the individual firm [24].

Common Goals and Objectives

The establishment of common goals and objectives for the relationship is a requirement for success. Consistent with Lambert et al’s partnership research, the goals of collaborative effort need not be monumental in scope for the expected outcome to be worthwhile and successful [25]. In fact, setting unrealistic, overly lofty goals often proves to be a cause...
for dissatisfaction in supply chain relationships. Whether small or large in scope and magnitude, common goals and objectives appear imperative for successful collaboration.

Scan-based trading provides an excellent example of the need for common goals and objectives. For instance, one of the largest barriers to beginning a scan-based trading program is to determine how the problem of shrinkage will be addressed. It is the root cause of considerable distrust between manufacturers and retailers. Serious questions arise regarding how shrinkage occurs, which party is responsible, and which party should bear the loss. Successful SBT requires a willingness to exchange financial (pricing) information as well as to monitor inventory inflow/outflow to control shrinkage. All of the interviewees concerned with SBT noted that collaborating firms had to agree to trust each other to make the program work. Defining common goals and objectives (e.g., more efficient product replenishment and merchandising) required that both parties assume that shrinkage would not be problematic, and that a mutually satisfactory solution would be reached that did not unduly place blame on one firm or the other.

When a third-party service provider is hired to represent one or more supply chain members in a collaborative effort, it is imperative that goals are communicated and common objectives established. In one case, the researchers examined a 3PL that was serving as an independent intermediary in what might best be called a multi-vendor/multi-retailer consolidation program. As noted by Stank, et al., the traditional distribution arrangement depicted in Figure 1 is inherently laden with inefficiency [26]. In the traditional scenario, the vendor manufactures the goods and allocates the inventory to a regional distribution center. The vendor then delivers replenishment quantities to the retailer’s regional distribution center. The retailer finally delivers assorted small quantities to the individual store locations. Figure 2 illustrates a multi-vendor consolidation program where several vendors (A, B and C) bypass their respective distribution centers and deliver directly to the 3PL’s consolidation facility. The 3PL then builds assorted orders for the retail customer from the stocks of multiple vendors stored at the 3PL facility; those orders still pass through the retailer’s regional distribution center. Shipment quantities found throughout the multi-vendor scenario are still largely LTL quantities. In Figure 3, however, the 3PL offers the consolidated service to multiple retailers. The unique aspect of this arrangement is the unified focus of many parties, the 3PL included, to yield service improvements such as improved order fulfillment and cost minimization as a result of less handling or inventory at fewer locations.

---

In fact, setting unrealistic, overly lofty goals often proves to be a cause for dissatisfaction in supply chain relationships. Whether small or large in scope and magnitude, common goals and objectives appear imperative for successful collaboration.
A problem commonly associated with hiring a third party in any circumstance is that once the contract is secured, the outsourcing agent fails to innovate, adapt and identify new opportunities for savings. In fact, the 3PL may be motivated to "game the system" and behave in a manner that counters the objectives of the shipping customer. It is still common for 3PLs to be compensated based on volume – including the volume of inventory stored and moved as well as the number of "touches" it places on the inventory. Left to the devices of the self-interested 3PL, it is in its best interest to hold inventories and to provide as many touches on that inventory as possible. This is contrary to the goals and objectives of a lean supply chain. In addition, many third parties are neither concerned nor motivated to identify opportunities for business growth. The scenario examined in the multi-vendor/multi-retailer consolidation case ensured that the objectives of the 3PL were consistent with those of the participating shippers: to achieve near-perfect order fulfillment at the least total cost and to identify new opportunities for service enhancements and cost reductions over time. A non-traditional reward system (illustrated in the next section) was central to this initiative.
Appropriate Measures and Incentives

The integration of measurement approaches across firms was viewed as extremely important to maintain focus in collaborative efforts. The measures must be well defined, consistently measured and related (either directly or indirectly) to the objectives of the collaboration. A solid measurement and reporting system keeps all interested parties focused on the aspects of performance that influence the success of a new or on-going collaboration. In the multi-vendor/multi-retailer example, the 3PL is compensated based upon the service performance and cost efficiency of the program. The basis for compensation is closely tied to the cost savings the 3PL generates for the shipping customers. More specifically, the level of savings is based upon the costs that the manufacturers and retailers incurred prior to the consolidation program. The 3PL had provided lucrative LTL services to these firms in more traditional distribution arrangements, as depicted in Figures 1 and 2. The company now builds consolidated truckload shipments and charges the manufacturer or retailer based upon the share of space each customer consumes in the truckload shipment. Through better utilization of truck capacity, the shippers generate greater efficiencies and savings – a share of which is passed along to the 3PL. Interestingly, the comparative revenues generated by the 3PL under the current program are lower than those preceding the program’s implementation. So why do it? The premise is a long-term one – that through improved service performance and lower cost, the customer base will grow. An increase in the number of customers will generate revenues that outpace the increases in cost.

During the pilot period of the program, the manufacturer’s shipping cost for 667 orders was $63,506 (compared to an anticipated LTL shipping cost of $141,536). Inventory turns increased by 30 to 60 percent while retail case-fill improved and order cycle time decreased. Similar results occurred program-wide. The number of orders per shipment rose from 1.3 to 3.5 orders, on average, significantly improving the utilization of transportation capacity. In addition, replenishment time for retailers was cut from 14 days to 3 days, unloading time decreased from 5 hours to less than 1.5 hours, and order accuracy has improved with over, short and damage (OS&D) claims filed approximately once for every 1,000 orders. The participating shippers’ transportation costs alone were cut by more than 50 percent. Service had improved dramatically and costs reduced considerably in turn. The program began with six manufacturers and two retailers. The program now involves 23 manufacturers serving four major grocery retailers. Appropriate measures and incentives that serve mutual parties have proven instrumental to ensure the cooperation and participation among members of the program.

Another example illustrates the importance of the conversion of metric and reward structures to match new processes. If old measures are used with a newly designed business process, old performance will result. The customer introduced a performance scorecard system to change the narrow perspective of the supplier. The supplier/manufacturer quickly realized that the retail customer was not measuring performance from only a functional standpoint (e.g., on-time truck delivery). Rather, the overall performance of the supplier was being assessed by examining measures that reflected performance of various departments within the supplier’s organization (e.g., marketing, logistics, and production). More specifically, the retailer incorporated the following measures in its scorecard: in-stock performance (retail shelf), inventory turns, average dollar investment, top-line sales growth, and gross margin. The retailer also evaluated on-time delivery, quality, and fill rates, although these measures received less emphasis and were addressed only when problems developed. As such, the supplier decided to develop key customer account teams that would include a production planner, logistics specialist, and marketing member. Rewards and merit compensation would be determined by overall team performance consistent with the scorecard measures used by the customer instead of by traditional rewards such as sales bonuses based on volume.

To further illustrate the performance scorecard logic, another manufacturer-retailer
dyad utilized volume, customer service, emergency orders, percentage of full pallets, number of direct plant shipments, truck utilization, average deductions, OS&D pallets, late charges, and promotional effectiveness. In another example, one supplier-customer dyad identified five elements necessary for measurement integration: (1) cross-functional, multi-organizational measurement vision; (2) accurate performance data shared regularly between participating firms; (3) multiple, cascading measures that capture cross-functional performance; (4) measures aligned with internal budget allocation as well as internal/external reward structures; and (5) a focus on providing end-customer value (e.g., in-stock performance at the retail shelf). In short, viewing the overall success of the collaboration is paramount to ensuring individual firm outcomes.

**Information Sharing**

As alluded to in previous sections, one of the keys to collaboration is enhancing communication between participating supply chain members. However, readily sharing information is not an easy proposition for most people or firms. Traditionally, information has been a source of power in the supply chain and, as such, it is often hoarded and protected. This occurs both within the firm as well as across external relationships. In order to develop an improved communication network, management must first examine the firm’s ability to generate accurate information, then share information internally and determine how further external information sharing can occur. As can be imagined, one of the requirements for this form of information sharing is a high degree of trust across collaborating supply chain firms.

Trust is not only important across collaborating firms, but also within individual firms. Traditionally, a disconnect has often occurred between sales and manufacturing (outbound and inbound sides of a manufacturing firm). Both of these functional areas, while operating within the same firm, often have different goals that can be conflicting at times. As an example, in an effort to increase sales volume, a manufacturer’s sales team may initiate a promotion across one or many products. Manufacturing may be focused on capacity issues and have a locked-in production schedule. Without advanced notice of the promotion and expected increase in sales, manufacturing may not have the capacity to meet the anticipated demand. One of the manufacturing firms studied, developed key customer account teams that included a production planner, logistics specialist, and marketing manager. This team approach enabled the sharing of necessary information across the firm. Sales promotion information was readily available to the production planner and could be added into the DRP system to incorporate expected growth.

When manufacturing/logistics problems occurred, the team could quickly assess the impact of these problems on the key accounts and could either solve the problem before it affected the customer or develop a contingency plan to share with the customer. This improved customer service greatly because it reduced the number of surprises that negatively affected the customer such as late deliveries, and back orders.

Information sharing need not be sophisticated to be effective. Contrary to our expectations, research participants indicated that sophisticated communication technology is not a primary requirement for effective collaboration. For example, several companies engage in CPRF through such low-tech approaches as face-to-face planning meetings, faxes of daily sales information and e-mailed spreadsheets of sales, ordering and promotional data. However, participants that were immersed in CPRF programs with several firms described how advanced technology could provide further benefits. Specifically, these participants mentioned the need for collaborative software that would enable importing/exporting data into a supply chain information system as well as downloading data into individual firms’ DRP or MRP systems. Several software packages have been released that attempt to assist in this collaborative process [27].

The goal of increased information sharing with external collaborators requires many changes. Two of these changes include the speed of information transfer and the accuracy of that information. Speed of transfer can be managed by exchanging
information electronically via EDI. However, the food industry tends to trail other industries in its acceptance of EDI communication [28]. In addition, the cost of implementing EDI may be prohibitive for small- to medium-sized firms. Further, many participants indicated that the accuracy of information needs to be improved. This is particularly important at the retail level if the manufacturer is relying upon point-of-sale data to drive the system. Inaccurate point-of-sale data can easily cause a VMI, CPR or scan-based trading program to fail.

While the means may vary, the structure and frequency of communication remain important in the development of integrative relationships. During the early stages of a collaborative initiative, representatives from the firms involved often hold formal daily, weekly, and monthly meetings to discuss goals and accomplishments. As the relationship matures, communication becomes less formal. As one retailer participant said, "Initially the partnership began with frequent meetings, but eventually the buyers realized the benefits, and the formal meetings dropped off." It should be emphasized that most participants, however, continue to hold periodic meetings at which representatives from all areas of the collaborative firms participate. Often this desire to hold regular planning meetings can be hampered by corporate downsizing and cost cutting programs. Some participants indicated that short-term financial pressures can ruin a strong collaborative program by eliminating the proactive initiatives that allow creative and new ideas to develop through face-to-face meetings.

The key point concerning information sharing is that the information must be used to make better decisions. If the information is shared but the decision process remains the same, it is not likely to provide significant performance improvements. The process must be redesigned to incorporate the improved information sharing capability or the result is automation of an antiquated system. The latter approach only assists firms in recognizing problems faster. The process redesign approach enables information to drive the system and pinpoints areas where technology will assist the collaborators in making better decisions.

Information for better decisions does not necessarily mean advanced systems sophistication. In one example with performance scorecards, information was exchanged via the Internet which allowed firms to view their performance on a much more timely basis. This allowed customer account teams to react quicker when problems did arise and enabled them to promptly analyze any changes in manufacturing planning, scheduling, and supply chain redesign. However, it is recognized that as the levels of collaboration increase and expand to network arrangements of more than two parties, the corresponding information sharing will also increase. This form of supply chain collaboration will require a new technological infrastructure that offers a variety of attributes such as low cost connectivity, flexibility, systems and channel integration, analytical tools, e-business exchange, and security [29].

Conclusions

This research suggests that there are a number of key success factors that allow firms to leverage their organizational and human resource skills to collaborate and create more efficient, effective supply chains. A characteristic common to all firms in the research was the pursuit of innovation and willingness to change. Significant among the innovations was an earnest desire to work closely with another member of the supply chain to achieve results greater than either could achieve acting in isolation. Transitioning from a traditional adversarial perspective to integrated relationships where risks and rewards are shared is no simple task. The participant firms in this research bear witness to that fact. Virtually every interviewee emphasized the considerable energy and expenditure of resources necessary to make significant, worthwhile change a reality. Eagerness for change was conditioned, however, by first understanding what needed to be done and by what means.

The pursuit of meaningful change characterized successful collaborative efforts. Common goals and objectives assure collaborative firms that win-win outcomes will supplant the traditional win-lose orientation. Common goals and objectives...
can result much faster when the collaborating parties work diligently to understand each other’s business and supply chain processes. Closely entwined with common goals and objectives are the measurement system and incentives. Measuring the financial performance of individual firms is a given. But measures must also be in place that track and reflect the operational performance of the collaboration. Moreover, they provide important feedback for corrective actions. Effort is required among collaborative participants to ensure that chosen measures are consistent with service needs, clearly defined, accurate and communicated in a timely manner.

When it comes to collaborative change, the technology is often important but not more so than the people and process. In essence, people and processes make it happen, but technology makes it easier. Integrated information processes and systems provide the input for plans that translate a strategic vision and goals into action. They also provide the structure and guidance for the integrated activities of multiple supply chain members in the areas of purchasing, manufacturing, customer order fulfillment and resource planning. Sharing strategic and operational information assures participants that the course for change is maintained. The next step for many firms concerned better incorporating cross-supply chain technology. Many firms indicated that their own internal systems could not or simply did not communicate effectively, let alone allow supplier/customer integration. Future activity in this area may come from Internet-based business-to-business (B2B) commerce software that provides an electronic trading network as well as supply chain collaboration platforms.

In sum, ECR initiatives have yielded significant gains for many participants – though the gains fall short of the monumental benefits promised at the movement’s outset. The lack of quick and obvious gains has prevented many firms from implementing their own initiatives. While many managers adopt a wait and see approach to ECR, others lack the resources or knowledge to know where to get started implementing ECR programs or techniques. This means that business will remain as usual for these firms until ECR is proven successful on a large scale and reaches a critical mass of adoption. For many firms, particularly smaller ones, the cost of adoption may need to decrease before they can generate the resources to get started. At the same time, it is precisely this critical mass that will be required before significant benefits are realized at a level necessary to prompt these firms to embrace the ECR concept – posing a true chicken and egg dilemma.

References


[24] For more in-depth information specific to CPFR and for white papers generated from pilot participants regarding their CPFR experience, visit the CPFR website at www.cpfr.org.


[29] Horvath, Laura, “Collaboration: The
Appendix
Interview Guide Questions

1. Please provide some background concerning how your relationship with <insert collaborating company name> began. Also, please discuss how the relationship has evolved over time.
2. Discuss how the decision to move to a collaborative relationship with this company occurred (e.g., Who approached whom? Where did you start? Why? What prompted this decision?).
3. At what level in the company was the approval to move forward given? Who else was involved in the initial decisions/implementation plans?
4. What was the implementation process? Did you have a formalized plan or a trial by error approach?
5. What type of information is shared in order to accomplish this program (e.g., for strategic versus operational information) and how is the information shared (e.g., paper, EDI, common systems)?
6. How formalized is this relationship? Is there a written contract? Does the contract contain provisions for performance measurement and evaluation, roles and responsibilities, termination, sharing or distribution of cost savings? If a contract exists, how important is the actual written contract in comparison to the relationship?
7. What were the initial barriers or problems when you first began this program with the collaborator? How did you overcome these barriers?
8. What are current barriers?
9. What are the plans for continuous improvement? What other improvement ideas have come from this relationship?
10. What are the key benefits of this relationship?
11. If available, do you have actual measured performance improvements (e.g., inventory turns, level of inventory, number of stockouts, sales, costs, quality)?
12. How has this relationship made both you and the collaborative company more competitive? Have you benchmarked this relationship against others in the industry?
13. What criteria are necessary to keep this relationship/program successful?
14. In hindsight, what could have made this relationship/program better or have provided results quicker?
15. What systems would you like to see implemented to measure the performance and effectiveness of this relationship? What is missing?
Acknowledgements

There are many individuals who assisted us in this research effort. We would like to thank Doug Lambert for his insight and suggestions on the preparation of this manuscript; Mercer Management Consulting for their financial support of this research; Ted Stank, Scott Keller, and David Frayer for serving as co-researchers on this project; the companies and individual participants who shared their time, ideas, and experiences with us during the case interviews; and Don Bowersox, Dave Closs, and Joe Andraski for their continued support and guidance.

Robert Frankel is an Associate Professor of Marketing at East Carolina University. He received his Ph.D. from Michigan State University. Dr. Frankel has published in a number of academic journals including the Journal of Business-to-Business Marketing, International Food and Agribusiness Management Review, The International Journal of Logistics Management, International Journal of Physical Distribution and Logistics Management, Journal of Business Logistics, and the Journal of Supply Chain Management. He can be reached at: East Carolina University, School of Business, Department of Marketing, Greenville, NC 27834. Phone: 252/328-6607. Fax: 252/328-4095. E-mail: frankelr@mail.ecu.edu

Thomas J. Goldsby is an Assistant Professor of Marketing and Logistics at The Ohio State University. He received his Ph.D. from Michigan State University and holds a B.S. in Business Administration from the University of Evansville and M.B.A. from the University of Kentucky. Dr. Goldsby’s research interests focus on logistics customer service and supply chain integration. He also has interest in the development and implementation of environmental, or “green,” business practices. He has published articles in academic and professional journals, including The International Journal of Logistics Management, International Journal of Physical Distribution & Logistics Management, Journal of Business Logistics, Journal of Operations Management, Journal of Transportation Management, Supply Chain Management: An International Journal, Supply Chain Management Review and numerous conference proceedings. He can be reached at: Fisher College of Business, The Ohio State University, Department of Marketing and Logistics, Columbus, OH 43210. Phone: 614/292-2901. Fax: 614/292-0440. E-mail: goldsby@cob.osu.edu

Judith M. Whipple is the Director and an Associate Professor of Food Industry Management at Michigan State University. She received her Ph.D. in marketing and logistics from Michigan State University. Dr. Whipple has published in a number of academic journals including Industrial Marketing Management, International Food and Agribusiness Management Review, The International Journal of Logistics Management, International Journal of Physical Distribution and Logistics Management, Journal of Business Logistics, Journal of Business Research, Journal of Supply Chain Management, and Supply Chain Management Review. She can be reached at: Michigan State University, Department of Agricultural Economics, Room 1, Agriculture Hall, East Lansing, MI 48824. Phone: 517/355-2161. Fax: 517/432-1800. E-mail: whipple9@msu.edu