Cost Knowledge: A Foundation for Improving Supply Chain Relationships

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Imagine the reaction of your company's sales force when you tell them they are losing money selling to Wal-Mart. To counter their objections, you explain the final delivered product cost exceeds the revenue generated by Wal-Mart sales. The scenario may seem unrealistic based on the sales volume of mass merchant discounters such as Wal-Mart, Kmart, and Target; however, manufacturers frequently do not know the cost to serve these merchants or the cost of the functions being shifted backwards in the supply chain. Additional services increase the cost of serving the big retail accounts and jeopardize supplier profitability. While it is understandable that retailers want to lower their costs by eliminating tasks they perform, retailers also need their suppliers to obtain a reasonable margin to ensure the availability of product from a high quality supplier. It is necessary to ensure that selling to these large retail accounts is profitable by determining the costs of serving them.

Managers in most companies know the major cost drivers such as direct labor, direct materials, and freight, but these costs alone are not enough to accurately determine customer or supplier profitability. There are additional "hidden" costs that must be identified and traced to specific customers to accurately determine profitability [1]. With detailed cost knowledge, it is possible to turn unprofitable customers around. At the very least, the knowledge will point to where customer relationships can be revised to lower the costs of serving them.

The research identifies several areas that, if addressed, will improve relationships between manufacturers and their retail customers and subsequently benefit the end consumer.

Use of Cost Information

Cost knowledge is important for two key reasons. First, it can establish a competitive advantage. Management can use cost knowledge to focus on the most important products and customers to increase profitability and customer service [2]. Second, managers must know their firm's costs during negotiations with other members of the supply chain to realize fair exchanges and equitable partnerships [3]. If the costs of serving all customers, especially the large mass merchants, are known, then better negotiations could occur and stronger trading relationships may result. These relationships should increase the efficiency of the supply chain through collaborative action and possibly a better allocation of tasks and related costs among channel members.

We will cover the key issues relating to cost knowledge and its importance in improving the efficiency of supply chain relationships. Our research focused on the supply chain relationships existing between manufacturers and retailers in the mass merchant discount channel and examined the current state of cost knowledge in these relationships. The research identifies several areas that, if addressed, will improve relationships between manufacturers and their retail customers and subsequently benefit the end consumer.

Previous research within the mass merchant channel [4] found many manufacturers did not know the costs of performing specific distribution activities, the cost to serve specific customers, or overall account profitability. Without this knowledge, suppliers may inaccurately perceive the profitability of their most

demanding accounts to be much higher than it is actually. A closer examination of the cost-to-serve these accounts may reveal the supplier has been selling to them at a loss. The examination may also reveal opportunities to improve profitability. Management can use the resulting cost knowledge to revise business practices with less profitable accounts to reduce losses or increase margins. The firm's profitability can be increased by concentrating resources and selling efforts on those accounts generating the greatest margins.

Costs and Relationships

The effect of cost knowledge on trading relationships within the supply chain remains largely unexplored and presents several questions requiring further examination. For example, can mutually beneficial relationships occur if the parties involved do not have a thorough understanding of their operating costs? If neither side is knowledgeable of their costs, emotion and inaccurate perceptions are more likely to enter into negotiations between supplier and retailer. In addition, how can equity be determined in cost sharing if accurate costs are unavailable? The lack of cost information may foster inaccurate perceptions regarding which firms have benefited or incurred costs from shifting functions in the supply chain. Are the relationships that currently exist in the mass merchant discount channel "true partnerships," forced cooperation, or somewhere in between? Balanced partnerships where both sides equally share costs and benefits are probably not very realistic; however, better relationships should achieve a competitive advantage by improving operations and reducing total channel costs.

Issues Covered

The current phenomenon of retailers pushing responsibilities back to suppliers may be driving the increased importance placed on understanding cost. The shifting of functions to members of the supply chain is usually intended to either increase the overall efficiency of the supply chain or to increase a firm's profits [5]. Functional shiftability is the potential or actual transfer of responsibility for performing specific functions or tasks [6]. Examples of functions that are shifted include inventory management responsibilities and special packaging requirements. Research by Coase, Stigler, and Mallen [7] specifically focused on issues relating to functional shiftability; however, only limited research on this topic in the retail channel has been published since 1973. Functional shiftability is not a new concept, but its increasing occurrence and impact on costs within the mass merchandising discount channel warrants further study.

The following questions were posed for examining the impact of functional shifts and retail demands on supply chain costs and relationships:

- Why do functional shifts occur?
- Do manufacturers know the costs of performing specific logistical functions?
- Do manufacturers perform detailed customer profitability analyses?
- How are costs tracked in the supply chain?
- How are channel members sharing the benefits and burdens resulting from functional shifts in the supply chain?
- What role do third-party logistics providers play in this cost issue?

Background

Two theoretical topics have particular relevance to researching the impact of cost knowledge on supply chain relationships. The first topic is the functional shifts between firms. The second topic addresses economic and position power in the supply chain.

Functional Shifts

A prevailing theoretical argument is the firm that can accomplish a function at the lowest cost should take responsibility for performing the function. Coase [8] specifically stressed the importance of low cost in the assignment of responsibility for functions. The costs of performing these functions must be known to support this argument. Many suppliers contend there is an increasing amount of pressure placed on them to perform an increasing number of functions previously performed by their retail customer. However, without cost knowledge, suppliers have little evidence to demonstrate how shifting function in the supply chain has

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affected economic value for themselves, their customers, or the consumer. The top three retailers, Wal-Mart, Kmart, and Target, sold over $115 billion dollars of merchandise in 1999 (general merchandise sales not including club stores, grocery, etc.), accounting for 77 percent of the total sales in the discount department store or mass merchant discount channel [9]. With this amount of economic concentration among the "big three," and a lack of cost knowledge, equitable partnerships between manufacturer and retailer are probably not being realized.

All channel members should analyze the profitability of conducting business with specific customers or suppliers to ensure the long-term survival and the competitiveness of their supply chain. Profitability analysis will enable the determination of whether the transaction costs and investments required for conducting business with a particular supplier or customer are too costly to warrant further business with that company. One caveat, however, is that cost knowledge may prove less useful in cases where channel power overrides logic. Some companies in the retail channel, especially the large retail customers, may be so important to the future well-being of an enterprise due to the market presence these retailers provide, they must be served despite operating at a loss. In contrast, collaborative action between the trading partners should result in more effective cost trade-offs and streamlined processes leading to reduced prices and more innovative product offerings at the consumer level.

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Most firms will not discontinue selling to the large, powerful retail customers, but they do need to understand the cost-to-serve each of them. Armed with this knowledge, suppliers should be able to better negotiate with their customers and explore alternatives to increase the profitability of these accounts [10]. Suppliers may initiate actions to effect internal cost reductions such as by cutting setup times and order processing requirements. The firm could consider outsourcing distribution for small customers. Changing incentive programs could refocus the sales force on accounts with greater profitability. The incentive program could also discourage the offering of discounts or additional services to low margin accounts. In addition, this knowledge can be a piece of total supply chain costing used to achieve the goal of lowest total net landed cost to the end consumer [11].

Power: Economic and Position

Heflebower's description of a market with competitive-like suppliers selling to oligopsony-like mass distributors [12] is of direct relevance to mass-market distribution. Strong concentration in the hands of the retailers might cause consumers to lose in the long run. Consumer loss would occur under this oligopsonistic structure

> "…only if the reduction in volume by the smaller-scale retailers were to bring about such concentration among mass distributors that the assumption that they resell in a competitive market would become untenable" [13].

Two types of power are directly applicable to the mass merchandising discount channel: economic power and position power. With economic power, a channel leader has the ability to enforce, through economic sanction, a reward and penalty system within the interorganizational structure [14]. Economic power is ultimately manifested in the concentration of capital resources.

Economic power is highly concentrated in the three largest retailers within the mass merchandising discount channel. They account for nearly 80 percent of total sales. The other retailers in this channel incur a disadvantage as a result of this concentration. Smaller retailers have fewer consumers and thus their bargaining position relative to larger firms is insignificant [15].

The key determinant in terms of position power is access to markets [16]. Geographic store coverage enables retailers to have a more powerful position than the manufacturers. Selling to the larger retail companies provides automatic national distribution and exposure for the manufacturer. The desire for full market coverage by manufacturers tends to weaken their position vis-à-vis the retailers [16]. The merchandisers are in the position to continually pick and choose from a variety of manufacturers' offerings. Position power is also especially applicable to the mass merchandising discount channel since the top three retailers account for 39 percent of the

stores in this retail segment and therefore a large portion of the market access [17]. These issues relating to economic and position power have been highlighted to show why functions can be shifted. Cost knowledge may assist in mitigating the power imbalance between retailers and suppliers by providing suppliers information on the profitability of having national coverage with the big retailers.

Research Process

A two-phase research study was undertaken to determine the impact of cost knowledge on shifting functions and supply chain relations in the mass merchandising discount channel. Phase I consisted of in-depth interviews to determine the key issues and identify candidate companies for further research in Phase II. Interviews were conducted with executive in 24 firms identified as leaders in this retail segment. These firms included thirteen manufacturers, five mass merchant retailers and six third-party providers and service organizations.

The second phase of the research consisted of a mail survey. Over 3,000 names of individuals from a variety of industries were initially identified as potential participants. The list was subsequently reduced to include only those individuals from firms selling in the mass merchandising discount channel. The selection targeted firms conducting a large amount of business rather than a random sample of companies doing smaller volumes of business. Purposive sampling ensured the research would reach the appropriate companies and would exclude in appropriate firms. A final list of 237 suppliers was verified by one of the three largest mass merchants accounting for over half of their total sales volume. Of the 237 names identified, 37 indicated they did conduct business with the mass merchant channel and were excluded from the survey; 17 indicated they would not participate; and 158 (145 manufacturers and 13 retailers) were qualified via telephone by acknowledging sales in the mass merchant discount channel. The remainder could not be contacted by telephone, but were mailed a copy of the survey. Ninety-one responses were returned resulting in an overall response rate of 45.5 percent. Of the respondents, 85 were manufacturers and six were retailers. The sales figures of the manufacturers were obtained to ensure the objective of choosing large firms was achieved. The manufacturing respondents sold over $20 billion dollars worth of product to the mass merchant discount channel annually. As a result, the objective of obtaining input from only large firms operating in this market was achieved. A breakdown of the respondents is contained in Tables 1, 2 and 3.

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Research Results

The interview and survey results showed a great deal of homogeneity. The overall responses were tested for differences across industry, firm size, or percent of business done with mass merchants. Through this testing, no statistically significant differences were identified across industry or firm size. The conclusion is that the perceptions from this research are common to all manufacturers regardless of demographic breakdowns. The functions identified in the exploratory phase as being shifted and addressed in the survey phase of the research included:

- *Building store specific mixed pallets*—eliminates the retailer from having to perform any break bulk operation on a

Table 1
Respondents Categorized by Percent of Sales to Mass Merchants

Sales Volume	Group	Range of Percent of Sales to Mass Merchants	Number of Respondents
Small	Group 4	0 to 9%	18
Medium	Group 3	10 to 15%	20
Large	Group 2	20 to 33%	20
Very Large	Group 1	33 to 98%	25

Table 2
Respondent Groupings by Industry

Industry	Group	Number of Respondents
Appliances	Industry 1	5
Chemicals	Industry 4	5
Clothing and Textiles	Industry 5	12
Electronics	Industry 9	9
Food and Beverage	Industry 11	27
Hardware	Industry 13	10
Office Equipment and Supplies	Industry 17	3
Paper and Related Products	Industry 18	3
Health and Beauty Aids	Industry 20	3
Pet Products	Industry 25	3
Entertainment	Industry 26	4

Table 3
Respondent Groupings by Title*

Title	Number of Respondents
Vice President	18
Director	28
Manager	36

*Note: The functional responsibilities for these titles included Logistics, Distribution, Materials Management, Operations, and Customer Service.

shipment in its distribution center.

- *Store delivery (DSD)*—bypass of the retailer's distribution center.
- *Building of department specific cartons or totes*—where the manufacturer configures a pallet such that the totes on that pallet all go to the same department within a store.
- *Customer specific product packaging*—examples might include bonus packs or different color packages for a specific customer.
- *Carton label preparation/application*—preparation of either retailer-specific case pack labels or variations of the UCC 128 (a serialized bar code or unique license plate for each case).
- *Case pack changes*—retailer-requested changes to the amount of product in a case. The trend is toward smaller case packs, which allow full cases to be stocked on a store shelf.
- *Inventory management (also referred to as Vendor-Managed Inventory)*—where a supplier manages their stock of products in a retail customer's distribution center and places orders against that stock as needed without retailer intervention once inventory levels are set.
- *Responsibility for financial risk (equivalent to consignment sales)*—where the supplier does not get paid until the product is sold at the retail store.
- *Category management*—in this study, this topic applies where the manufacturer is responsible for managing a product category in the retail customer's stores. This encompasses shelf planning including the addition and deletion of competing manufacturers' products in that category.

It should be noted from these definitions that the functions shifted from retailers to their suppliers range from specific, discrete activities to broad functional processes that are inclusive of several activities (e.g. inventory management).

Reasons for the Shifting of Functions

The reasons for the shifting of functions provide a key piece of information for understanding the cost implications and effect on relationships within the supply chain. Table 4 contains the reasons cited by manufacturers for the shift of functions from retailers to suppliers.

These results do not provide evidence that functional shiftability is achieving the theoretical goal of lowest supply chain cost. The manufacturers' perceptions of the reasons for this shifting clearly differ from the objective of minimizing supply chain costs in total. Approximately eight percent of manufacturing respondents indicated the shifts were the result of a push for system-

Table 4
Reasons Functions Are Shifted in the Mass Merchandising Discount Channel (Manufacturer Perspective)

Reasons Mentioned	Percentage of Mentions of Total Responses Given
Increase Retail Profits/Lower Retail Costs	37.7%
Retailer desire to push back/Power shift in channel Push/Power	19.5%
Cost of Doing Business/Meet Customer Requirements	10.4%
Retail Efficiency	9.1%
System Wide/Supply Chain Efficiency	7.8%
Partnering/Working together to share information	6.5%
Cost/Efficiency without Mention of Beneficiary	6.5%
Competition	5.2%

wide or supply chain efficiency, and only six-and-one-half percent of the respondents reported the shifts resulted from partnering efforts. Most supplier respondents contended the shifts occurred to increase retail profits.

There were no major themes in the retailer responses. The retailers' responses produced themes similar to those obtained from manufacturers. Some of the additional reasons for shifting functions to their suppliers were: "to reduce retailing payrolls," "to push work back to the vendor and lower our union labor costs," technology advances that allow suppliers to get more information from their customers and control more functions, and "to have floor ready receipts prepared by the lowest cost point of processing." This last comment does imply the lowest cost supply chain argument, but it is only one opinion.

Overall, these increases in functional responsibility without compensation reduce manufacturers' profit in order to lower retailer costs. The manufacturer executives interviewed stated they could not easily raise their prices to account for the extra responsibility and costs. The unilateral pushing-back of responsibility and cost from retailer to supplier runs counter to cooperation and partnerships. If manufacturers cannot stop this shifting, they will need to explore different approaches to ensure their profitability such as to refocus the sales force or increase the efficiency of these functions. Collaborative action with retailers may provide another set of opportunities to increase manufacturer profitability without compensation through the sharing of demand information, reducing the number of vendors, and eliminating non-value-added activities occurring between companies in the supply chain. Managers may undertake one of these actions or pursue other alternatives, but they must understand how individual customers drive costs and where to target action.

Manufacturers and retailers may have greater success by collaborating and sharing cost information to reduce landed cost and achieve a competitive marketplace advantage. They must identify the specific changes that will allow them to lower total costs or achieve a desired level of customer service. Following implementation, cost and performance metrics must be implemented to track the effect of the joint improvement efforts on their internal process costs as well as those spanning the entire supply chain. It is the cross-supply chain focus that will have the greatest impact on overall operations and produce the most benefit to the end consumer.

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There are three key issues regarding cost knowledge that relate to the mass merchandising discount channel. The first is cost knowledge—do suppliers know their costs well enough to accurately determine the costs of performing additional or shifted functions? The second is customer profitability—can suppliers determine customer profitability on a detailed basis? The third is the allocation of costs—how are suppliers determining the costs of performing specific activities and then assigning the costs to specific customers or by distribution channels?

Cost Knowledge

The most important and basic issue in the area of cost knowledge is whether the manufacturers know their current operating costs for those activities being shifted to them from their retail customers. Almost two-thirds believed they did know the costs of performing additional functions. Two-thirds of the retailer respondents believed they also knew the cost of performing current or additional functions. However, the varying level of sophistication and the cost allocation techniques used by the respondents does not necessarily mean these responses can be taken at face value. Most retailers and manufacturers do not use accurate or consistent cost assignment methods especially for distribution, sales, or customer management [19]. However, a key finding is one-third of the respondents clearly did not know their costs to perform specific functions. The large proportion of firms lacking cost knowledge will make cost sharing or the development of optimal supply chain structures difficult if not impossible. Without cost knowledge, management cannot determine how different practices affect the total cost of ownership and the contribution their customers make to corporate profitability.

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Customer Profitability

Without customer profitability analyses management cannot determine the contribution generated by specific customers or retailers. As a result, they have no visibility regarding, which customers make the greatest contribution or those that have a negative impact on profitability. All customers are not the same. Profitability is highly influenced by sales volume, price, and the amount of customer serving activities consumed [20]. Two accounts with the same sales volumes may demand entirely different requirements and consume a disproportionate amount of resources to service [21]. Each dollar of revenue does not equally contribute to net income. As a result, a relatively small number of customers generally make a major contribution to profitability. A large number make little to no contribution. Another group of customers generate a loss and are subsidized by the profitable customers [22].

Segment contribution analysis provides the most effective vehicle for determining the profitability of transacting business with specific customers, suppliers, or market segments. The segment margin is determined by subtracting the variable costs (production, marketing, logistics, etc.) that can be directly attached or assigned to this segment from the revenue generated by the segment to obtain the segment contribution margin. The subtraction of assignable nonvariable costs incurred for this segment during the period would provide the segment controllable margin. The net segment margin would be obtained by deducting a charge for the use or change in market value of assets specific to the segment during the period [23]. The segment contribution analysis requires knowledge of costs and the ability to accurately assign the costs to serve specific customers, suppliers, or supply chains in order to effectively support management decisions. Fortunately, this can generally be done without an excessive level of detail [24].

The lack of cost knowledge and customer profitability analysis is evident in the mass merchant channel since less than 40 percent of the manufacturing respondents indicated they captured customer profitability in a detailed manner by individual account. Most importantly, approximately 60 percent of respondents do not know how their customers affect profitability. On the flip side, 40 percent of retail respondents stated they did know the profitability of their suppliers' products on a detailed basis. Therefore, both manufacturers and retailers confront a general lack of cost knowledge in dealing with their trading partners' requests to shift functions, negotiating prices, or when attempting to initiate supply chain improvements.

Similar results were obtained in the in-depth interviews. A major supplier indicated the two largest discount mass merchants were the two most profitable accounts on a traditional costing basis. However, they could not determine the profitability of these customers due to arbitarary cost allocations and the many "hidden costs" of servicing these customers. This highlights the possibility that an accurate assignment of these "hidden costs" may reveal the profitability of these large retail accounts is much lower than currently being reported. For example, one large consumer

products manufacturer had a separate pick line designated only for Wal-Mart. This type of cost must be identified when determining the profitability of a customer.

As firms continue segmenting customers based on logistics needs, the need for knowledge of customer profitability becomes even more significant. Under segmentation, firms focus their efforts on what are believed to be the most profitable customers and products. In fact, it is often one of the stratifying criteria of how allocations and priorities are assigned. In the past, as long as overall profitability remained positive, detailed cost knowledge was less important. Now, customer profitability has become an imperative due to the concentration within mass merchants and the tailoring of logistics services. Customer profitability drives resource allocations, service levels, and business strategies.

Allocation/Assignment of Costs

The manufacturing respondents who reported knowing the costs of the shifted functions were asked to choose from four costing methods: DPP (Direct Product Profitability), ABC (Activity-Based Costing), one-time audit, and other. In the case studies, management identified all of these methods of tracking costs and, therefore, all of them were used in the survey.

DPP is a method of product costing that has been commonly used in the retail grocery trade. It has the objective of determining product profitability of individual stock-keeping units (SKUs). DPP was intended to improve upon traditional gross margin costing to account for the costs associated with specific products. However, a major shortcoming of DPP is that although it attempted to focus on determining the costs directly associated with the movement and handling of a specific SKU to determine profitability, it also relied on many arbitrary allocations of overhead and administrative expenses [25].

ABC takes the approach used in DPP several steps further by assigning both direct and assignable indirect costs. Perhaps due to the more robust nature of ABC, it has recently overshadowed the concept of DPP. Activity-based costing is a process that reveals the links between performing particular activities and the demands those activities make on the organization's resources. This process determines the costs per activity and then assigns them to products or customers based on the activities required to manufacture, sell, and distribute that product [26].

ABC employs a much different approach to assigning costs than the allocation techniques used in traditional costing methods:

> ABC achieves greater accuracy than traditional costing techniques by using multiple cost drivers. Traditional techniques typically rely on one to three volume-based drivers to trace overhead to products. ABC uses multiple cost drivers to reflect different relationships occurring between activities and the resources they consume. The cost drivers fall into two broad categories. The first category includes cost drivers related to production volume. The second category includes cost drivers unrelated to production volume—no direct relationship exists between production volume and the resources consumed. [27]

Even with ABC, managers must be careful they assign only relevant costs [28]. Costs that will not disappear when customer or product revenue streams disappear should not be directly assigned [29]. The research revealed most suppliers know direct costs like freight and the cost of customer-specific carton labels and software, but do not have much visibility over many indirect costs such as special picking areas, extra labor, and additional customer service or tracking and tracing for specific customers. These hidden costs frequently are not directly assigned and preclude an accurate picture of customer profitability [30]. This is where ABC offers a significant advantage.

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The most basic type of detailed costing is a one-time audit. The firm determines detailed costs on a "one-off" basis typically to search out the implications of a specific issue or action. A one-time audit includes situations where a company had the need to determine the costs of a particular product or process, but did not systematize the effort to allow future analysis [31]. Although one-time

audits are limited in their long-term benefit, they are better than no detailed costing at all.

During the interviews, managers at one manufacturer indicated they could determine customer profitability from one-time, static studies, but did not have a systematized method to track costs over time. Their cost systems were not able to capture or track logistics or customer service costs as needed. 36 percent of the survey respondents confirmed that this was also true in their companies. This lack of cost data and the inability of cost systems to capture needed financial data at the product and customer level continues to be an issue as reflected in previous research and CLM studies [32]. Many firms indicated on-going efforts to obtain a stand-alone piece of software to enable them to make better, cost-based decisions. Although several packages exist to do this, they generally require significant customization for each business situation.

A third-party logistics provider working with several major manufacturers claimed the manufacturers have very little visibility regarding their specific distribution costs other than outbound freight costs.

The information in Table 5 indicates about 54.8 percent of the respondents with cost knowledge use ABC to determine the costs of performing. The lack of activity-based costing or other systematic cost analyses by the remaining 45 percent of the manufacturers suggests a lack of financial sophistication at the channel level.

Although other methods of cost assignment are feasible, activity-based approaches appear to have the greatest potential as a consistent means for capturing process costs. DPP is becoming outdated as a result of it fully allocating fixed costs and not directly assigning many traceable indirect costs. The one-time audit does not allow the firm to continually track costs and, therefore, loses the ability to capture and identify changes over time.

Table 5
Summary of Costing Methods Used By Manufacturing Respondents with Functional Cost Knowledge (Includes Methods Mentioned Only Once)

Costing Method	Percent of Total
Activity-Based Costing	54.8%
One-time Audit	28.6%
Direct Product Profitability (DPP)	9.5%
Other	7.1%

An opinion expressed in the interview stage of the research suggested cost knowledge to be much lower than the modest level being identified by other companies in the interviews. A third-party logistics provider working with several major manufacturers claimed the manufacturers have very little visibility regarding their specific distribution costs other than outbound freight costs. This individual challenged the finding where two-thirds of the manufacturing respondents indicated they know specific costs. This third-party provider further contended the lack of cost knowledge has impeded the forming of strong channel relationships. Firms do not know the costs or benefits resulting from proposed initiatives. This comment reinforces our findings of a lack of cost knowledge and the requirement for cost knowledge as a foundation for developing supply chain relationships.

The lack of cost knowledge will impact negotiations within the supply chain. Manufacturers need to know the costs of their customers' requests to negotiate an equitable deal. The lack of cost knowledge frequently causes businesses to rely on margins as a basis for negotiations with customers and for product mix negotiations. The use of margins ignores the real costs incurred in the trading relationship and may result in a relationship that does not mutually benefit both parties [33]. The manufacturers' lack of cost knowledge precludes them from pursuing many other opportunities for achieving a competitive advantage. Since most suppliers do not have a good grasp of what internal factors drive their costs, they subsequently would not have the capability to determine how external factors, such as actions by others in the supply chain, impact their costs. Firms are estimated to control only 40-60 percent of their overall costs—the rest is driven by decisions of other members of the supply chain [34]. The achievement of greater cooperation could result in more predictable behavior between members of the supply chain. Firms can use cost knowledge to optimize corporate performance. Cost knowledge coupled with collaborative action will encourage optimization of key business processes across multiple companies.

Sharing the Burdens and Benefits of Functional Shifts

The perceived lack of equity in the sharing of costs and benefits poses a major obstacle to collaborative action or improving relationships within the supply chain. The equity issue centers on whether retailer driven functional shifts have improved the overall supply chain competitiveness or sub-optimized performance resulting in benefits only at the retailer level. Under the latter situation, the manufacturers incur the burdens with the merchants receiving the benefits. Mallen [35] offered the following view on this issue:

> The functional mixes will be patterned in a way, which provides the greatest profit either to the consumer (in the form of lower prices and/or more convenience) or the channel members with the most power (which depends on market structure).

Should one or more channel members see an opportunity to change the functional mix of the channel in order to increase profits for their firm(s), they will attempt to do so.

The research results support Mallen. Respondents were asked how the costs of the shifts of tasks or functions are shared between manufacturers and retailers by allocating 100 percent. Manufacturers reported they absorbed 81 percent of the costs involved in the shifts implying that retailers accepted only 19 percent of the costs. The retail respondents offered very different perspective—they assumed 57 percent of the costs with manufacturers responsible for the remaining 43 percent. This difference in perception indicates a need for increased dialogue between retailers and their suppliers before stronger relationships can develop.

Respondents were asked to allocate the potential benefits resulting from any efficiency obtained through a functional shift between manufacturers and retailers. The manufacturers reported the retailer received 75 percent on average of the benefit resulting from any efficiency gain. The retailers reported very similar results. They reported gaining approximately 73 percent of any efficiency gain with the manufacturers receiving only 27 percent.

These results indicate retailers are not perceived as equitably sharing the benefits and burdens resulting from efficiency gains or functional shifts within the mass merchant channel. The responses to the sharing questions imply a relatively low level of partnership development. Manufacturers and retailers do not perceive a "shared destiny" whereby risks and rewards are shared [36]. The allocation of rewards does not necessarily imply a "50-50" proposition and could vary based on competitive strategy, type of partnership, investment, risk, or benefits occurring in other areas within the firms. Retailers are perceived as both reducing their costs and increasing their benefits at the expense of their suppliers. On the other hand, the manufacturers' lack of cost knowledge may have precluded the identification any benefits resulting from off-setting cost reductions or improved asset productivity in overhead or other "hidden cost" categories.

The perceived lack of equity in the sharing of costs and benefits poses a major obstacle to collaborative action or improving relationships within the supply chain.

Manufacturers and retailers need to jointly discuss the consequences of their actions on each other. They must have some form of "open book" visibility to avoid misperceptions and to fully understand the implications of their decisions [37]. Without action from both the manufacturers and retailers, little improvement in relationships will likely occur.

Third-Party Providers

The research examined the availability of cost information when third-party logistics providers were used. Firms without accurate cost systems in place could potentially benefit from the cost visibility obtained by using a third-party logistics provider, although there are many other reasons management might use a third-party provider. The reasons mentioned by survey respondents are shown in Table 6.

Third parties can provide greater visibility and a variable cost structure if they charge on a per unit basis. The firm receives a complete description of all charges on the invoice by transaction or unit. However, if the third party does not use ABC or a similar process for assigning costs, the client may be over or under-charged for the services.

Third parties can provide greater visibility and a variable cost structure if they charge on a per unit basis.

Table 6 contains the surveyed manufacturers' reasons for using third parties. Cost reduction appeared the most frequently

as the primary reason. Increased cost visibility and better cost accounting did not appear. These results suggest that improved cost knowledge alone is not sufficient justification for the rise of a third party and may be perceived as simply an additional benefit.

The retailer responses were similar to those of manufacturers and included lower cost and space and capacity limitations.

Table 6
Manufacturer Reasons for Use of Third Parties

Reasons for Third-Party Use	Percent of Total Replies
Lower cost than in-house performance	57.7%
Flexibility/risk reduction	26.9%
Lack of capacity/space	13.5%
Not core competence/ third-party has more expertise	11.5%
Reduced personnel costs/ labor/cheaper labor	9.6%
Reduced investment in facilities and equipment	9.6%

Summary: The Importance of Costs

The research sought to determine whether detailed cost knowledge exists in the mass merchandising discount channel and the factors driving functional shifts within the channel. Improved relationships and supply chain efficiency were not perceived as the main reasons for the shifts. Over half of the respondents from manufacturing firms believed retailers used their power to delegate the shifting of functions to increase retailer profits. The retailer survey responses and interviews supported this perception.

One of the retailers interviewed expressed the need to focus on obtaining the lowest total cost supply chain and not just pushing off costs on suppliers. The retailer had requested its suppliers to provide floor ready receipts prepared by the lowest cost point of processing. The approach lowered delivered cost to the customer and improved overall supply chain competitiveness. Expanding this view could result in even greater efficiencies and competitive advantages for the supply chain; however it requires the individual supply chain members to focus on optimizing supply chain performance rather than optimizing corporate performance at the expense of the whole. Mass merchandising discount retailers may find this viewpoint difficult to adopt due to their position of power, a lack of a supply chain focus, and lack of cost knowledge. The research found the sharing of costs, burdens, and benefits does not occur.

Based on this research, little evidence exists to demonstrate that the lowest cost performer actually assumes responsibility for a function. This situation may be due largely to a lack of cost knowledge, and it has the affecting of precluding the strategic repositioning of functions to where they would yield the greatest value to the supply chain. Additionally, incentives and performance measurements require an overhaul to support the effective alignment of functions. For example, rewarding retail buyers on gross margin encourages them to buy at the lowest price, but this behavior may actually increase the consumer's total cost. The retailer may be less efficient than the supplier in preparing store-ready merchandise (e.g., hanging, steaming, and tagging a garment). These inefficiencies result in an unnecessarily higher price to the consumer and reduce the competitiveness of the supply chain. Incentives and performance measures need to be restructured to redirect decision-makers attention away from cost reduction and towards actions that maximize corporate and consumer value.

A different point of view is that the volume of production allocated to mass merchant demand is so high that it allows economies of scale in manufacturing. These economies may offset the individual costs of serving mass merchants. In this case, concerns regarding idle capacity, production in smaller lots, and the decreased purchasing leverage that result from dropping the larger volume customers might outweigh some short-term cost increases of performing additional functions. However, this trade-off cannot be determined without detailed cost knowledge. The capacity argument also ignores the identification of opportunities for cost reduction by the firm or through joint action across the supply chain.

An executive at one of the retailers interviewed suggested companies "open their books" with their supplier to increase cost

knowledge and to achieve some equilibrium regarding the cost of and responsibility for activities. An open books approach represents an example of a possible mechanism for developing stronger relationships, but the suppliers did not accept the concept. This study found respondent from manufacturers do not know their costs well enough to consider opening their books or to have accurate cost information to share. Some manufacturers also contend retailers will use this information to extract even greater concessions from them.

The research results suggest four propositions regarding the current state and use of cost knowledge in the mass merchandise distribution supply chain:

- To allow for more effective partnerships, manufacturers must become more knowledgeable about their costs of service so they can be more open and have more information to use in negotiations.
- Increased retailer profitability, not the lowest cost supply chain, is perceived as the main reason for the functional shifts that are taking place. This is a result of the economic and position power possessed by the large mass merchants.
- In the short run, manufacturers must absorb the costs of performing additional functions.
- In the long run, the entire supply chain may become more efficient if manufacturers work with retailers to identify and shift functions to the best/lowest cost performer and find some method to equitably share the rewards.

Potential Areas for Future Research

Future research should examine techniques to fix the problems contributing to a lack of cost knowledge within the supply chain. Many firms have implemented activity-based costing, and the research should explore whether any progress has -been made towards obtaining supply chain costs. This study found that mass discount merchants and their suppliers are still struggling to understand their internal costs. Cost and optimization models assume firms have accurate costs and will make objective operational decisions; however, this research found many firms require a significant improvement in the level of cost information available to them. The availability of accurate cost information should facilitate the development of supply chain costing. In addition, detailed cost information within a supply chain would enable future research to consider whether increased cost knowledge drives behavior toward functional shiftability and optimizing total performance.

More insight is also required regarding the process implementing ABC and the assignment costs across a supply chain process [38]. Future research should address how to capture and extract the detailed information needed for the accurate assignment of revenues, costs, and assets used for segment profitability analysis. Issues regarding how to ensure consistent data and cost assignment across multiple firms need to be addressed. Several firms participating in the research indicated that they were looking for a tool to help them determine specific activity costs and develop customer or supplier profitability reports.

Enterprise Resource Planning (ERP) systems hold considerable promise for obtaining the detailed information necessary to support more accurate cost assignments. ERP systems capture a significant amount of transaction-level information in retrievable data warehouses that would facilitate the accurate assignment of activity costs to specific customers or suppliers. However, few companies have yet to fully apply their ERP system's capabilities due to the relatively recent deployment of the software and the realignment of key business processes to match the software's business practices. Future research should examine how ERP systems can be used to develop segment profitability statements and how this information is used in the firm to alter performance within the supply chain. A case study approach would enable the research to explore applications in-depth and examine specific industry applications.

In the long run, the entire supply chain may become more efficient if manufacturers work with retailers to identify and shift functions to the best/lowest cost performer and find some method to equitably share the rewards.

Conclusions

The mass merchandise distribution channel is often perceived as having adversarial relations between suppliers and retailers. Suppliers view their relationships with their retail customers as "relationships by

edict" where the retailer demands and the supplier must comply. This view runs counter to the idea of close, integrated partnerships across an entire supply chain. A possible factor contributing to this lack of partnerships is a perceived imbalance in cost sharing among member firms. Another issue relating to costs is the profitability of manufacturers compared to their retail customers. Typically, retailer margins are very small, in the 2-4 percent range, with manufacturer margins usually much higher, in the 10 percent range. This was addressed in the interviews and the conclusion was that as long as retailers were competitive on a profit basis with other retailers and manufacturers were competitive with other manufacturers, the discrepancy between retail and manufacturer margins was not an issue.

Improved cost knowledge may provide a means to address this problem and to improve relationships. Suppliers must become experts regarding the internal costs of their operations as well as the cost to serve their customers. Cost knowledge will facilitate improved relationships with their retail customers by creating more accurate internal budgeting and more accurate pricing in negotiations. Identifying costs is the first step in pursuing a strategy of low cost, differentiation, or both in order to achieve a sustainable competitive advantage.

The lack of cost knowledge continues to exist despite the emphasis on supply chain management and the potential for increased competitive advantage. Manufacturers and retailers continue to rely on traditional financial systems to support key decisions. Although these measures provide valuable information regarding key financial measures, they do not provide the information needed to most effectively structure the supply chain and identify the opportunities needed to simultaneously reduce costs and increase performance. Although obtaining better cost knowledge may not have the appeal of a new product rollout or marketing campaign, it provides the information vital for managing the firm, determining the profitability of key customers, and a foundation for building supply chain relationships.

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