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Differences in the Perception of Pallet Systems between U.S. and Canadian Grocery Retailers

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Packaging logistics addresses the relationship between packaging and logistics within the supply chain context. This paper focuses specifically on the relationship between grocery retailers and their suppliers across several types of pallet systems, as perceived by thirteen U.S. and Canadian retailers. The qualitative research methodology revealed two ways to classify retailers: according to their level of integration with their suppliers, as related to pallet selection and usage; and according to their managerial orientation toward pallets. Cost-oriented and Speed-oriented retailers were found to have different approaches to managing pallets within their distribution networks and across their relationships with suppliers.

The performance of a reusable logistical packaging system can be judged, in part, by its cost implications throughout a supply chain. It can also be evaluated based on whether it fosters cooperation and trust or conflict and opportunism among its supply chain members. Packaging logistics is a new research area addressing the relationship between packaging and logistics within the supply chain context.

An important aspect of the packaging-logistics relationship deals with cooperation, or integration, between supply chain members with respect to communication, information sharing, and management. Communication as an indicator of integration not only improves cooperation but also reduces uncertainty, improves coordination, and may improve efficiency. Communication about pallet issues may be limited to the requirements for a pallet system or it may be more extensive and integral to the operational process. These relationships can range from service contracts to strategic alliances aimed at strengthening a market position or exploring new markets.

This paper addresses the nature of the relationships among the actors in a grocery marketing channel and the degree to which their management is integrated into a productive system that takes advantage of the system-wide benefits that packaging can offer. This is done from the perspective of U.S. and Canadian retailers involved in two types of transactional systems with their suppliers: recycling systems and private pools.

The recycling system, or “white wood” pallets, is commonly used throughout the United States, but this system is restricted in Canada due to safety regulations. In the recycling system, the food manufacturers buy the pallets and pass the pallet cost to the retailers, who become the owners of the pallets. The retailers use the pallets in-house or sell them to pallet recyclers. Recyclers sell the pallets back to the manufacturers, using a quality-graded system for pricing.

In contrast, the private pool systems are composed of rental wood pallets that circulate within closed pools. The Commonwealth Handling Equipment Pool (CHEP) owns the pallets in one of the available pools, which operates in both the U.S. and Canada. The Canadian Pallet Council (CPC) members are common owners within their pool, which operates solely in Canada. Efficient reuse and pallet management depends on the relationship between food manufacturers and retailers. The retailers do not buy or rent the pallets directly in either system. Such decisions are made primarily by the manufacturers who supply the grocery retailers. Yet pallets affect the operational efficiency and distribution costs of the retailers. Retailers can express their needs to their suppliers and some do participate in the pallet decision-making process, but little is known about retailers’ perceptions of or roles in pallet decisions within their supply chains.

Exploration of the retailers’ perceptions of their pallet systems will lead to better understanding of the role of pallets as elements of collaboration, negotiation, or conflict. Understanding human behaviors such as commitment, trust, and cooperation may help improve supply chain efficiency and performance.

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Retailers were chosen as the unit of analysis because they are key decision-makers and leaders in modern grocery supply chains, often with the power to promote a change in the system. Thirteen retailers (nine in the U.S. and four in Canada) were studied. These retailers represent each country geographically, and at least two of the companies operate in both countries. The selected firms allow a comparison between chains with a more vertically integrated supply chain orientation and those that employ a more traditional or “free-flow” orientation.

Background

Pallets as handling devices are essential to the efficient flow of consumer goods; they link manufacturers, distributors, warehouses, transport carriers, and stores (Singh 2000). A lack of integration and communication between departments may explain why packaging and logistical decisions have traditionally been made in isolation (Twede 1992), overlooking the power of packaging decisions to affect logistic cost operations.

The field of Packaging Logistics has emerged to demonstrate the impact of packaging decisions on the efficiency and effectiveness of logistical systems (Saghir and Jonson 2001). Most of the emerging studies focus on tradeoffs. They balance conflicting needs for low-cost packaging against protection, process integration, cubic and weight efficiencies, ergonomics and handling-abilities, environmentalism, and sales value (Prendergast and Pitt 1996; Henriksson 1998; Jahre 2000; Jahre and Hatteland 2004).

Logistic packaging affects the cost of every logistical activity and has a significant impact on the productivity systems. An integrated logistics approach to packaging can yield dramatic savings and value (Saghir and Jonson 2001; Twede and Parsons 1997; Johnsson 1998). In 1991 the Council of Logistics Management identified several customer-service opportunities: solid-waste minimization (Selke 1991; Jönson 1991), controlling distribution damage (Lowery 1991), the effect of packaging on direct product profitability (Thompson 1991), and the effect of packaging postponement on logistical costs (Howard 1991).

Technological advances, such as electronic information management and specialized software, create a better environment for improving

pallet management. Information technology has reduced risks and costs and has improved supply chain performance by reducing inventory while simultaneously lowering stock-outs (Williamson 1975; Malone and Rockart 1987). This highlights communication as an indicator of integration: it reduces conflict.

Management of both assets and information is critical. Ostrom (1990) maintained that institutions face major challenges in the outcome of “design principles,” which are more dependent on the ability of institutions to meet design challenges than on institutional attributes, such as the type of property rights they establish. Theoretical models of reciprocity and fairness would suggest that cooperating companies look for fair outcomes and treatment. These models rest upon the premise that a player’s utility depends not only on his/her own payoff but also on the payoff for other players. In contrast, economic theories suggest that a player’s utility is based solely on his/her own absolute payoff (Ostrom et al. 2002). Therefore organizations that perceive value from the pallet system are most likely to promote or support any change in the relationships or operational decisions relating to pallet usage within the supply chain (Stern, El-Ansary, and Brown 1989).

Theoretical Foundations

This study employed three theories to ground the research: relationship theory (RT), transaction cost analysis (TCA) and human behavior theory (HBT). RT can be used to explain the relationships between a retailer and its suppliers of food and pallets. Strategic relationships are growing in the food distribution industry as a way to deal with environmental uncertainty. Better relationships improve competency in the market, moving an adversarial exchange into closer, longer-term relationships (Kalwani and Narayandas 1995).

TCA maintains that the selection of governance models can affect the sum of transaction and production costs through a supply chain. Golicic and Metzger (2005) linked TCA with resource dependence, networks, social exchange theories, and inter-organizational relationship theories to support relationship magnitude as a component of the relationship structure. They correlated relationship type and relationship magnitude, where the two are

directly proportional, thus giving an infinite number of combinations for possible relationship structures depending on the integration and intensity of the relationship.

HBT helps to characterize firms and identify what they need to become stronger or more efficient. Inter-organizational behavior studies explore the channel relationship by focusing on the dependence and power relationships between manufacturers and customers. Through behavioral dimension analysis, inferences can be drawn from studies across industrial settings (Stern 1971).

Stern and Reve (1980) define a distribution channel as more than just an economic system; it is also a behavioral system, oriented to a sociopolitical perspective, and composed of dependence and power, dominant sentiments, and satisfaction (Stern and Reve 1980; Anderson and Narus 1990).

Trust and commitment have been linked to buyer-seller relationships (Mentzer, Min, and Zacharia 2000; Mentzer 2001; Rinehart et al. 2004). The outcome of a relationship would be the “relationship value,” which is the perception of benefits received versus how much cost or sacrifice the relationship causes (Golicic and Mentzer 2006).

Trust is based on the perception of cooperation. It is an essential piece in achieving cooperative problem-solving and constructive dialogue, which lead to higher levels of loyalty or commitment. Coordinated joint efforts will lead to better outcomes for both firms (Anderson and Narus 1990, 1986).

Commitment is based on the importance of the relationship and the effort required to maintain it over time. Grocery retailers have an opportunity to improve supply chain performance by coordinating the planning and management of pallets (and other reusable shipping containers). There is also an opportunity to make decisions based on total cost implications rather than on purchase price alone (Twede, Mollenkopf, and Guzman-Siller 2006).

Commitments between two firms can lead to alliances, which promote changes that benefit the system as a whole (Williamson 1975). Morgan and Hunt (1994) explained how variables such as relationship costs, benefits, market share, communications, and opportunistic behavior affect trust and commitment, which are key factors in developing cooperation between firms.

Value-seeking companies have found that recycling programs can provide a strategic advantage.

Retailers are looking to be more socially and environmentally responsible, and are willing to invest in new initiatives. Partnerships bring advantages such as reducing capital investment and uncertainty while gaining experience, improving economies of scale and sharing risk (Mollenkopf 2006).

Research Method

This research explores an area that has not been addressed previously: the relationship between pallet management and supply chain management. Its originality led to a qualitative method in order to understand the phenomenon. A qualitative research method was utilized to understand the existing situation in grocery channels and the retailers’ preferences in pallet systems. This provided information about the underlying process that retail logistics managers use to decide which pallets to use. The complexity of the systems led in turn to the use of a multiple-case study qualitative-research approach. The researchers followed the procedures proposed by Yin (1994) to ensure transparency and rigor in the case-study method in order to guarantee reliability and reduce bias in the analysis.

Case-study research represents a form of empirical inquiry that investigates a contemporary phenomenon within its real-life context, when the boundaries between a phenomenon and its context are not clearly evident (Yin 1994). The case-study method provides an in-depth understanding to explain the paradigm between the interdependency of the pallet system and the decision-making process of the retailers based on internal and external factors throughout the supply chain (Frankel, Naslund, and Bolumole 2005). One of the advantages of case-study research is that the firms can be studied in their natural settings. Qualitative data provide an understanding of the phenomenon under study, using the information collected from informants immersed within it (Golicic, Foggini, and Mentzer 2003). Key informants—in most cases, the Vice President of Logistics—were questioned in their distribution centers, where their operations could be observed.

Nine U.S. and four Canadian retailers were compared. Respondents were selected based on geography and organizational structure. In Canada, most of the companies operate on the East Coast because it contains their largest concentration of commercial

activity. One West Coast company was selected, to provide broader geographic representation. The U.S. was divided into six zones: Northeast, Southeast, North Central, South Central, Northwest and Southwest. At least one company from each zone was chosen in order to have representative data. Researchers compare those chains with a more vertically integrated supply chain orientation to those with a more traditional orientation. Each case was taken as a replication for this study. Convergent evidence was then analyzed (Yin 1994). The similarities and differences helped to explain why

and how retailers select different pallet systems. Table 1 provides a description of the participating retailers.

Retailers were chosen as the unit of analysis because they are key decision makers; retailers have the power to promote changes in the system, and they are the link between manufacturers and consumers. Even though the manufacturers pay the initial cost of a pallet, they pass this cost on to the retailers. Retailers bear the costs of quality, security, rack-ability, and ergonomic factors, which give them the incentive to demand a pallet that helps

Table 1. Description of the Companies Studied.

Company Participant	Functions	International Commerce	No. Stores	Distribution Scope (Number of States/Provinces)	Type of DC's *	Headquarters
US-1	Retailer Manufacture	Importing Exporting	2,500	35/50	Conventional Automatic	US
US-2	Retailer Manufacture	Importing	180	5/50	Conventional Mechanized	US
US-3	Retailer	Importing	550	8/50	Conventional Automatic	US
US-4	Retailer	Importing	164	5/50	Conventional Automatic	EU
US-5	Retailer Wholesaler Manufacture	Importing Exporting	1,750	14/50	Conventional	US
US-6	Retailer Wholesaler	Importing	84	3/50	Conventional	US
US-7	Retailer	Importing	165	1/50	Conventional Mechanized	US
US-8	Retailer	Importing Exporting	3,490	50/50	Conventional Mechanized	US
US-9	Retailer	Importing	158	4/50	Conventional Mechanized	US
CA-1	Retailer	Importing	1,300	10/13	Conventional	CA
CA-2	Retailer	Importing	573	2/13	Conventional	CA
CA-3	Retailer Wholesaler Manufacture	Importing Exporting	222	5/13	Conventional	CA US
CA-4	Retailer	Importing	309	12/13	Conventional Mechanized	US CA
*DC's Types	Conventional = DCs with storage space, utilizing traditional racking systems Mechanized = DCs operate primarily with conveyors; very little storage Automated = DCs with automated storage/retrieval systems					

them to improve flow and reduce overall transaction costs. Retailers also are the parties who return reusable pallets to the systems (rent or recycling). Their relationships with recyclers, rental companies, and other exchange agents are key to making any system work.

Interviews were conducted in person, with semi-structured, open-ended questions that were recorded for analysis and support. A transcript of this recording became part of the “document data” to support the study’s validity and reliability. The purpose of the interview was to learn how retailers work with their pallet systems. These interviews were conducted on-site and included a tour of each retailer’s distribution centers to provide observable data of the case.

Additional documentation was collected regarding internal information, statistics, and the company’s vision and philosophy. Characteristics that define the system were studied: cost thresholds, the governance system (centralized or not), supply chain integration (vertical or traditional), company size (volume, turnover, number of distribution centers, and number of providers and customers), cultural factors (cooperative work, trust culture, and power or dependence feelings); and types of customers (regional, national, or international).

Analysis and Results

The qualitative data from the retailer interviews were analyzed using a model based on Stern and Reve’s Political Economy framework (1980), as depicted in Figure 1.

Data collected revealed two ways to classify the retailers: by level of integration and by operational orientation. Integration refers to how the retailer makes pallet decisions based on their level of supply chain integration (vertical and virtual, possibly through alliances). It considers their knowledge of pallet-related costs, their relationships with suppliers and pallet providers (accounting for cooperation, competition, and power), and operational variables.

The second dimension for classifying the retailers relates to their operational orientation. Some retailers were found to be concerned with the costs of distribution and product prices at a retail level. Others were found to be more concerned with speed and service value from within the supply chain. The

retailers were classified based on “Price” or “Speed” depending on the focus of their operations, management practices, and market strategies.

A price-oriented focus signifies that specific functional costs are less relevant than overall costs for some retailers (Bowersox, Closs, and Stank 1999). To reduce costs, trade-offs may be made in transportation, inventories, and overhead costs. Retailers that focus more on the final retail price of the product than on the service and value added to those products by pallets are considered to be price-oriented.

Speed is defined as the time between the customer placing an order with suppliers and having the item available and ready for purchase by consumers (Bowersox, Closs, and Cooper 2007). Retailers looking to speed up their operations and improve efficiency are considered to be speed-oriented. This orientation was measured by looking at those management and operational practices that can lead retailers to reduce time and labor operations.

The two orientations emerged from an analysis of how the pallets are used by the retailers, along with several other factors. The researchers looked at each company’s cost-analysis approach, which goals they strive for in operations, the depth of their relationships with suppliers, and how they compete in the market. The characteristics considered to classify the retailers by orientation are presented in Table 2.

The retailers were plotted on a conceptual map with two dimensions: level of integration and operational orientation. These groups were subsequently divided into four quadrants, as shown in Figure 2. The researchers looked at similarities among each quadrant with respect to pallet operations, and at how a retailer’s business orientation guides their decision-making.

The set of retailers in each quadrant was analyzed under both an economic (internal factors) and a socio-political (external factors) approach. The internal factors of the dyad (manufacturer/retailer) include knowledge of costs and the use of transaction-specific pallet assets. The external factors and relationships encompass power in the market, competition and cooperation with suppliers, their preferences for specific pallet systems, and environmental factors that affect each company’s decision-making processes.

Operational orientation turned out to be a key element in selecting a pallet system, as highlighted by

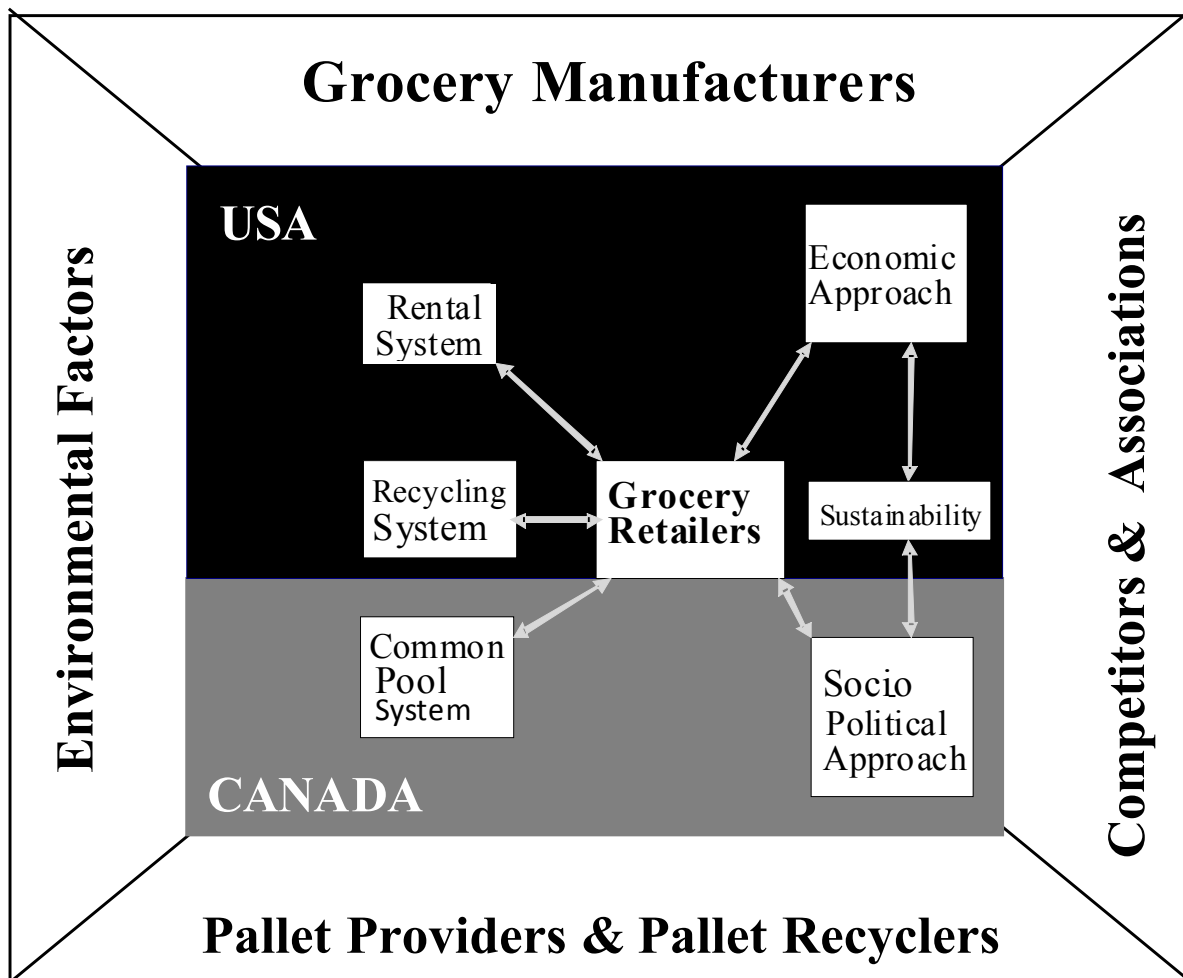


Figure 1. Model for Evaluating Pallet Systems.

the similarities among members of Quadrants I and IV. These speed-oriented retailers have analogous requirements for selecting a pallet system. By contrast, the differences between Quadrants II and III are dramatic because the capabilities in the DCs are different. In Quadrant II the merchandise is moved within the DC by conveyors, reducing the need for pallets for internal operations. On the other hand, Quadrant III, which is also price-oriented, uses more conventional storage methods. This creates a need for a storage platform, which is the same as for Quadrants I and IV. These price-oriented companies consider platforms differently, but the similarity between Quadrants I, III, and IV demonstrates that

capabilities and operational practices are decisive in selecting a pallet system.

A high knowledge of costs was found mainly in Quadrant I, where vertical and virtual integration give a broader view of the supply chain. The second factor that favors the knowledge of costs is the speed/service orientation, because all operational processes are analyzed to reduce both time and costs; this gives more visibility to the costs of each pallet system, and the decision-making is done more through accounting support than by perception. The knowledge of costs, benefits, shared norms, and opportunities affect a decision to support or not support a change to the status quo (Ostrom 1990).

Table 2. Operational Orientation.

	Price-oriented	Speed-oriented
Perception of pallets	Increase the price of the products	Improve and accelerate operations
Operations	Conveyors	Conventional - rack storage
Operations needs	Not pallets	Pallets
Business relationship	Transactional	Relational
Operation performance	Velocity	Speed up
Improve efficiency	Cross-dock backhauling	Cross-dock, just-in-time, lean operations, Six Sigma
General cost consideration	Price of products	Cost performance - cost functions
Information sharing	Limited	Open
Marketing strategy	Price	Service

Retailers in all four quadrants used third-party services. For some, this only involved pallet sorting, but it ranged all the way up to management of the whole distribution center. The higher the retailer's knowledge of costs, the better the service they expected from the third parties.

Analysis of Quadrant I: High Level of Integration/Speed Orientation

This quadrant is populated by US-2, US-3, US-4, CA-2 and CA-3. These five retailers are regional; the largest distributes in 13 states. They have a higher knowledge of costs and higher degree of integration than do the other retailers in the sample.

The retailers in this quadrant have a high level of vertical and virtual integration. They have strong relationships with their suppliers and readily share information with them. One U.S. and two Canadian retailers provide their suppliers with inventory visibility, and two U.S. companies even allow some of them to manage their own accounts.

They are speed-oriented, with just-in-time practices, reducing the amount of time spent in responding to market demands. Their market strategy is differentiation. This combination of

speed-oriented operations and integration allows them to see benefits throughout the supply chain, not just in warehouse operations.

Operationally, technology is attendant in management software, voice recognition, and conveyors in picking areas. They use conventional operations, with some exceptions. This entire set of retailers is the most likely to evaluate the possibility of automation or robotics, particularly to reduce high labor costs.

US-3 and CA-2 have a high level of communication with their suppliers and are looking to increase visibility in their supply chains. All five firms cooperate extensively with their suppliers, which has reduced the level of conflict in the supply chain and improved efficiency. At the same time, collaboration with third party services—for transportation, pallet management, and/or sorting and recycling—is common practice for Quadrant I retailers. This demonstrates openness, showing trust and cooperation with external firms when they see the possibility of improving supply chain efficiency.

Quadrant I represents the most active retailers—those who are the most capable of, and open to, promoting change. U.S. retailers have had problems

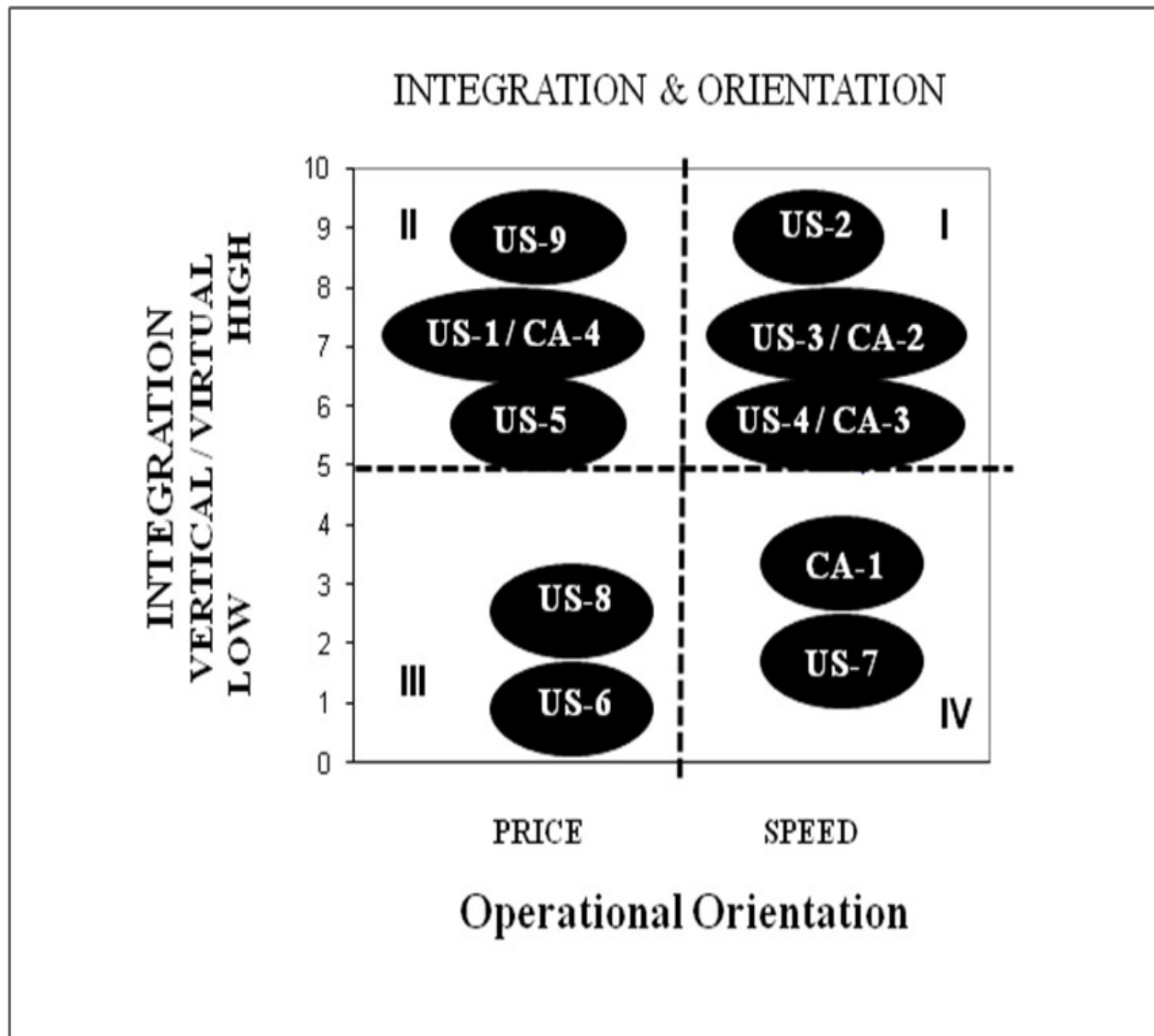


Figure 2. Classification of the Retailer by Operational Orientation and Level of Integration.

with CHEP in the past; despite the problems, they still work with CHEP for national and international operations. One Canadian company is aware that the CPC common pool system costs 30 percent less than the rental system, but the management is more complicated. The Canadians continue to work with CPC because competition between the two pallet suppliers keeps rental pallet prices low.

Analysis of Quadrant II: High Level of Integration/ Price Orientation

Quadrant II is populated by US-1, US-5, US-9 and CA-4. Three of these are national distributors. These retailers have a high level of integration and are price-oriented. They are vertically integrated within the supply chain, except for US-5, which

exhibits more internal integration than external. In addition, US-9 and CA-4 have more virtual integration than the other two firms.

Their price orientation stems from their being more concerned with explicit product prices from their suppliers than with supply chain efficiency. These four retailers use conveyors to cross-dock, yet receiving and shipping the merchandise is highly labor intensive. This group makes the greatest use of backhaul operations from suppliers as a way to reduce merchandise prices and to have more control of their operations. They are willing to sacrifice time in handling operations for a reduced price on their products; they are highly focused on optimizing cubic space in the trucks to reduce transportation costs.

Agreements with suppliers are very strict because these retailers purchase and receive on a daily basis, keeping low or no storage inventories. This reduces costs, but exposes the retailers to shortage risks. The three national distributors would not collaborate with competitors; only one retailer had calculated the costs for sorting and returning each kind of pallet. With this knowledge of operational costs, they seemed more interested in participating in a common pallet pool than did the other retailers in this quadrant.

Retailers in this group are not open to sharing information, such as inventory visibility, and account management. They work with suppliers to reduce inventories and coordinate mixed loads and in-store displays, looking for more efficiency and cost reduction. The exception in this group comes from one Canadian chain, which has open communications with its retailers, allowing inventory visibility, and with some large suppliers, allowing them to manage their own accounts.

This group has strong relationships with third-party service providers (3PS), who provide important support services, but the retailers do not give them complete access to their company's information. Retailers in this quadrant are not interested in pallet management; they want to concentrate on their core business of grocery distribution and prefer to hire other companies to deal with pallets. DCs that are unionized do not have the option of hiring third-party services.

Analysis of Quadrant III: Low Level of Integration/ Price-Orientated

US-6 and US-8 comprise Quadrant III, which is only represented by U.S. regional retailers; these companies have no vertical integration and low virtual integration with their suppliers. Both retailers stated that there is little internal communication between their purchasing and logistic departments. Their operations are price-oriented, with little information shared with suppliers.

The retailers in Quadrant III have a low knowledge of pallet costs. They see these costs as embedded in the price of the products. This is a symptom of the lack of communication between the purchasing and logistics departments. They consider pallets to be part of the cost of distribution, but the costs are not broken out, so they do not know the cost of their own internal handling operations. On the other hand, they know all about the revenue from whitewood pallets, as well as the cost for returning rental pallets, giving them a fragmented vision of their pallet costs. As the perception of costs is linked to bounded rationality (relative knowledge), decisions will be made based on that information.

The power of these two retailers is relatively low in the market, so they have joined a cooperative of 20 small- and mid-sized retailers, TOPCO, which combines their purchasing efforts to compete with national and larger retailers. US-6 and US-8 compete in regional markets and have collaborations with retailers outside their distribution areas. These retailers use their own trucks to pick up 50 percent of their inbound shipments to reduce prices and to control merchandise. They say that they cannot see how all retailers could work together in a common pool, despite belonging to a cooperative whose goal is to get better prices for all of its members by buying in volume. The concept is the same: collaboration toward a common goal. Pallets are not perceived in this way, though, because they are not a core part of their businesses.

Both companies emphasize that they are aware of the revenue they are making from recycling pallets and other materials while reducing energy consumption. The two retailers are working with third parties—one for pallet management and the other for transport services to return their rental pallets—because they cannot compete with the

price. These retailers have a cordial relationship with CHEP, but they monitor the relationship carefully. US-8 had problems with them in the past so they do not trust the rental company. Nor do they feel it is a fair relationship, creating conflicts between the dyads. US-6 is happy working with rental pallets because they have reduced their expenses for white pallets by 90 percent over the last two years.

The retailers in Quadrant III are the most resistant to change. They are comfortable with the current pallet system options in the market and feel they know how to benefit from them, so they are not interested in changing the status-quo.

Analysis of Quadrant IV: Low Level of Integration/ Speed-Oriented

Quadrant IV is represented by US-7 and CA-1. Both have a low level of integration because their companies are not vertically integrated, but some of their functions are centralized. They have virtually integrated their relationships with suppliers. They are speed-oriented with lean or just-in-time operations. The two retailers have conventional warehouses, with no mechanized or automated systems.

Technological advances are found in their management. CA-1 has a complex management system that can break down costs and inventories to provide more visibility to upper management, but the information is not shared with departments or divisions. US-7 is working on its software to add pallet management as a new activity so it can oversee operational costs, which will be divided into three activities: inbound freight, internal operations, and outbound freight.

Pallet-cost knowledge is relatively low in Quadrant IV. CA-1 considers pallets to be a cost of distribution. Operational costs relate to sorting and managing pallets. US-7 considers pallets to be an overhead cost on outbound movements, and to be embedded in the product cost on inbound movements, so it does not do any accounting for the total cost of its pallet systems.

Quadrant IV retailers are well aware of the revenue generated by whitewood pallets. US-7 derives the difference in costs between whitewood and rental pallets through the suppliers' allowances from CHEP. Suppliers will add other requirements to these programs—to promote communications in

the supply chain and reduce costs—so the allowance invoice is not strictly related to pallets.

Quadrant IV retailers have conventional operations, requiring pallets to both store and move all of the merchandise. Retailers are increasing their cross-dock practices for store-ready loads or displays as a way of reducing labor costs, handling operations, and time, reducing total supply chain costs.

Their relationships with suppliers are good, improving service value and efficiency. US-7 is placing orders electronically with most of its suppliers and shares inventory levels with the larger suppliers but does not allow any of them to manage their inventories. US-7 is looking to balance service value and cost, with a program focused on cases/time movements. The most important factor is consistency, because they are looking to reduce safety stock and inventory costs. CA-1 has been working with all of its suppliers to increase collaboration and trust. They are sharing information with some vendors, and some of the large suppliers are managing their own inventories. CA-1 considers this practice to be a win-win relationship. Both retailers have scorecards for evaluating their suppliers.

Both retailers also cooperate with their competitors. CA-1 is actively involved with the Canadian Retailers Association. US-7 (like the Quadrant III retailers) is part of TOPCO; they are collaborating with U.S. retailers in other regions.

The retailers in Quadrant IV have different relative power in the market, so they have different business practices. CA-1 perceives that while they have the ability to ask for a specific type of pallet, they do not do so because they believe it would increase costs in their supply chain. On the other hand, US-7, with less power, has a pallet penalty policy to reduce pallet quality problems.

Both retailers work with third-party logistics providers. CA-1 is working with seven of these companies for transportation, sorting, consulting, and warehouse facilities. These collaborations demonstrate how open CA-1 is. US-7 collaborates with a pallet repair company and a frozen warehouse facility.

CA-1 uses a mix of CPC and CHEP pallets. They have been working with CPC since its inception. CA-1's relationship with CPC has more conflicts than their relationship with CHEP because they need

to manage the CPC pallets, repair them, keep inventories, and pay annual and CTS web-system fees. The initiative to use rental pallets (CHEP) came from suppliers. CA-1 does not see the pallet costs as embedded in the product nor the transportation costs they incur for returning pallets from the stores, nor in the sorting process—which is shared with other pallets and recycling products. This suggests that bounded rationality regarding pallet costs is skewing the decision-making. In this case, CA-1 is looking for an alternative system, to reduce both management costs and conflicts over pallets.

Discussion

A high level of integration did not show itself to be decisive in the selection of a pallet system. Retailers with a high level of vertical integration have implemented more technological processes—such as conveyors, automation, and robotic operations—to increase efficiency, which makes a big difference in product management and pallet considerations. In this format, the pallets are not always needed for handling in the warehouse; thus some retailers do not see the advantageous function of pallets in the distribution process.

Operational orientation turned out to be a key element in selecting a pallet system. The similarities among Quadrants I, III, and IV demonstrate that capabilities and operational practices are decisive in selecting a pallet system. The speed-oriented retailers—Quadrants I and IV—are aware of the benefits of competition between pallet providers and try to balance their options in the market to guarantee themselves the best price service. Speed-oriented retailers have more flexible operations, which allow them to change or adapt faster, and are open to new initiatives and ways to improve operations. Even though they are conscious that capital investments will be needed, they are looking to improve the supply chain in the long run and are willing to invest in it if they can see the benefits.

A high frequency and volume of transactions were found to affect the relationship between food suppliers and the retailer, leading to the retailer having a better knowledge of costs, and will favor virtual integration. Retailers with a high level of virtual integration with suppliers are looking at the next step—increasing trust between the dyads—as a result of this collaboration.

The speed/service orientation makes the costs of each pallet system more visible, and the decision-making is done through accounting support rather than perception. They were also found to be more likely to consider investing in plastic pallets and/or a common pallet pool system.

All of the retailers use third-party services. Retailers with a higher knowledge of costs are more likely to hire third-party services to improve efficiency. Retailers in Quadrant I are more focused on their core businesses and are able to recognize when a third party can be more efficient and cost-effective.

Collaboration was revealed as the most important factor for improving efficiency in the supply chain. All of the retailers are working more closely with food suppliers to improve efficiency. They have seen how these relationships have changed in the last five years and they have recognized the benefits accrued from the changes. Relationships among U.S. retailers are very competitive; they have a long way to go before their relationships could be defined as collaborative. In the Canadian market, where the retailers have a long-term relationship with each other, they know which problems they need to solve together as a trade.

This research found that an industry-wide, industry-owned, reusable pallet pool probably could not be implemented in the U.S. grocery industry now because none of the retailers are powerful or cooperative enough to promote and sustain this initiative. This is despite the fact that most of the retailers use the same pallet providers. The U.S. retail sector points out that food manufacturers are better candidates for supporting a pallet pool initiative because they are the first to select the pallet system and invest in it. However, the retailers have the power to reject a system, so their cooperation would be essential. Thus a common pallet pool in the U.S. would need to be initiated by the food suppliers, which, in turn, would lead to its being supported by the retailers, as happened in Canada.

Third-party pallet providers, such as rental pallet companies and pallet management program providers, are the most viable answer when dealing with a reusable pallet pool whether or not it is commonly owned. Retailers perceive the asset management and reverse logistics of returning pallets as their most problematic areas, which makes them areas of opportunity for third-party logistic companies.

Each of the grocery retailers takes a different approach to doing business. The retailers have diverse perceptions and define their worries in a variety of ways. The organizations may vary across countries and cultures but the key problems remain the same: how to coordinate the use of resources by numerous individuals in order to obtain optimal rates of production and revenues (Bromley et al. 1992; Ostrom et al. 2002). Still, some retailers are not able to see the socio-economic benefit that either a common or privately owned pool could bring to the company. Pallet systems are not thought of as a way to achieve the environmental goals these companies seek.

Conclusion

The use of the Stern and Reve framework to study distribution channels as social political economies guided the researchers to construct a model to study the dyads—food manufacturers' and pallet suppliers' relationships with retailers—under a broader view than has been done in the past. This study demonstrates how the framework can be used to study different relationships in the distribution channel. The RT, HBT, and TCA were linked to analyze the value of those relationships.

The revelation of the socio-political aspects involved in the decision-making process to adopt, develop, or accept a specific pallet system contributes to the literature on packaging logistics. This research found that that corporate philosophy and cultural factors affect the decisions of their logistics managers. Socio-political aspects are increasingly gaining importance in the relationship between suppliers and retailers. Speed-oriented retailers who focus more on socio-political factors, such as the value of relationships with suppliers, place more weight on decision-making than on the cost of the pallet system itself. Pallet selection for them becomes more of a negotiation based on operational benefits for both the retailers and their suppliers.

Increasingly, logistics executives in grocery chains are recognizing the importance of collaboration in the supply chain as a strategic tool. Many of them pointed to the importance of developing those relationships to compete in the national and international markets. This research focused solely on U.S. and Canadian grocery retailers, but future research could extend the scope to other geographic settings to assess the development of grocery supply

chains and the integration of packaging logistics issues.

Additional research in the packaging logistics arena can employ the Political Economy framework to further understand the role of pallets within grocery supply chains. The use of the Political Economy Paradigm can be employed to study relationships and decision making between two or more actors within the supply chain, or how special deliveries, such as store ready pallets, full loads, 3PL assembling loads, can affect the supply chain.

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