Assessing the Mutuality of ECR Benefits, Costs and Risks

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Abstract

The adoption of ECR has been slow in many regions, despite its many potential benefits to manufacturer, distributor and retailer within a supply chain through reduction of inventory level and operating costs. There has not been any well developed theory that can explain this slow uptake. In this paper, we argue that the inherent characteristics of ECR have actually created barriers to its own adoption. As an inter-organisational system, ECR adoption requires cooperation and trust between trading partners, which are not likely to happen unless costs, benefits and risks of ECR implementation can be mutually shared. We show using two case studies conducted within one supply chain that an unequal distribution of costs, benefits and risks among manufacturer, distributor and retailer is inherent in the implementation of Cross-Docking, which typifies the overall ECR program. We also describe how one party in the supply chain is attempting to solve this problem of mutuality. The findings of this study lead to a new direction in understanding the barriers to adoption of ECR and inter-organisational systems in general.

Keywords: Efficient Consumer Response, Supply Chain Management, Exploratory Research, Case Study, Adoption, Australia.
Introduction

Efficient Consumer Response (ECR) has been perceived by a number of companies in many regions as a key catalyst for supply chain reform (Szymankiewicz, 1997). In its attempt to re-engineer grocery industry supply chains, ECR promotes efficiency initiatives in four areas: promotion, product development, product replenishment and store assortment. These four initiatives are facilitated by a number of programs and enabling technologies, especially electronic commerce technologies, which eventually integrate all players within a supply chain. The ultimate objective of ECR is thus to reform a supply chain in such a way that products can be brought smoothly and continuously from manufacturer to consumer, as a result of timely, accurate and paperless information flowing from consumer back to manufacturer. Partnerships among participants of a supply chain play a crucial role in achieving the objective of ECR (Kurt Salmon Associates, 1993; Martin, 1994).

According to the ECR vision (Kurt Salmon Associates, 1993), supply chains within the grocery industry must undergo a total transformation. Participants within a supply chain need to work together to maximise the efficiency of the whole supply chain, in order to achieve one common goal, that is to deliver better value to consumer (Kurt Salmon Associates, 1993; Karonis, 1997; Szymankiewicz, 1997). With collaboration and integration among the players of a supply chain through the use of information technologies, the boundaries between these players will gradually disappear (Preiss, Goldman et al., 1996). Manufacturer, distributor and retailer within one supply chain can thus be considered as a single entity, which can be thought of as a virtual organisation, pursuing one common goal (Preiss et al., 1996; Marshall, Burn et al., 1999). As a result, competition will shift from company against company to supply chain against supply chain (Daugherty, Ellinger et al., 1996; Montezemolo, 1997).

A number of studies have been conducted in the United States, Europe and Australia to examine the potential benefits obtainable from ECR (Kurt Salmon Associates, 1993; Krum, 1994; Coopers and Lybrand, 1995; Leggett, 1996; Mathews, 1996; Report, 1996; Ross, 1996). Despite the many benefits of ECR, adoption of ECR has been slow in many regions (Kurt Salmon Associates, 1995/6; Kurt Salmon Associates, 1997; Coopers and Lybrand, 1998). Explaining the slow uptake of this inter-organisational reform with considerable benefits is an important theoretical problem that has not been adequately addressed in the ECR literature. The virtual organisation literature (Grenier and Metes, 1995; Preiss et al., 1996; Allen, Colligan et al., 1999; Marshall et al., 1999) is of some help. Specifically, the model of critical success factors for virtual organisation proposed by Marshall and McKay (1999), appears to be relevant to addressing the slow adoption of ECR. They argue that due to the interdependent nature of the activities of virtual organisations, all members in such an organisation need to have a common purpose, share risk, trust each other, and have mutual benefits (Marshall and McKay, 1999). A number of other authors agree that without these four factors, virtual organisation cannot be successfully achieved (Grenier and Metes, 1995; Hart and Saunders, 1997; Karonis, 1997; Allen et al., 1999; Marshall et al., 1999) and we argue this applies equally to inter-organisational initiatives such as ECR (Karonis, 1997). In addition to these four factors, we believe ‘cost sharing’ should be considered along side ‘benefit sharing’.

In this paper we examine the issue of mutuality of benefits, costs, and risks between retailers, distributors and manufacturers in ECR adoption, using two case studies conducted within one supply chain. The first case study looks at one element of ECR which typifies the whole approach, namely Cross-Docking, as part of the Continuous Replenishment Program. Cross-Docking is a good example to address the inter-organisational aspect of ECR, as it promises substantial cost savings, requires relatively simple technology to adopt, but requires good communication, cooperation, and trust between trading partners. We use this case study to
show that certain aspects of the approach itself, while capable of producing substantial supply chain wide efficiencies, inherently give rise to an imbalance in the distribution of benefits, cost, and risks amongst the participating parties, which is particularly unfavourable for manufacturers. This indicates that Cross-Docking, and inter-organisational reforms in general, imply the need for participating parties to re-negotiate trading terms if mutuality is to be achieved. The second case study describes the efforts of one manufacturing company in the same supply chain to better position itself in such negotiations using a detailed Activity-Based Costing study of their processes.

The analysis of these cases shows that the ideal state envisioned by ECR cannot be reached through individual self-interested activity of the participants. Given the additional plausible assumptions that parties will be unwilling to adopt reforms without a satisfactory division of benefits, costs and risks, and that such a re-distribution involving supply chain wide negotiation, cooperation, and trust will be difficult to achieve amongst separate corporate entities, we argue that ECR reforms by their very nature present barriers to their own adoption. By considering the entire supply chain, as opposed to individual organisations as a unit of analysis, this study leads to a new direction in understanding ECR adoption.

Research Methodology

Two case studies were conducted with one leading manufacturer and one leading retailer in Australia. The data collection techniques employed were semi-structured interviews with a number of managers and individuals involved in ECR-related projects of the companies and site inspections. The unit of analysis in this study is the entire supply chain, which includes manufacturer, distributor and retailer. The case studies are thus not intended to be comparative but rather to build a richer understanding of a single supply chain. Comparative studies of other supply chains are underway. The case study conducted with the participant retailer also allowed us to embrace the distribution function, since the participant company manages its own distribution to individual retail stores (supermarkets).

In the first case study (retailer/distributor case) four managers were interviewed. They consist of the Logistics Planning Manager, the National Supply Chain Manager, and two Distribution Centre Managers. Two distribution centres were deliberately involved and inspected for the purpose of this study in order to examine the operation and economics of the traditional “pick-and-pack” approach of handling goods and the “cross-docking” approach advocated as part of ECR. The recorded factual data collected from the site inspections and interviews with management were analysed and the benefits, costs and risks involved in implementing cross-docking and the distribution of each among the players of a supply chain were identified. Where participants’ opinions were expressed, they were quoted in the text. In the second case study (manufacturer case), interviews were conducted with the Supply Chain Development Manager and a Project Analyst who is involved in the activity-based costing of the company, to further assess the impact of cross-docking on the entire supply chain and how the mutuality issue can be resolved.

Retailer / Distributor Case Study

The first case study was undertaken with one of the big five supermarket chains in Australia. It has 410 stores (supermarkets) throughout Australia and has been in business for 84 years. This company employs more than 52,000 workers and serves over 4.5 million customers per week, with an annual turnover of over AU$ 19 billion.

All alternative product replenishment approaches proposed by ECR (“Cross-Docking”, “Flow-Through” and “Direct Store Delivery”) are prevalent at this company, although at present only
for limited product ranges. With Cross-Docking, suppliers deliver individual stores’ orders to a Distribution Centre (DC). Goods are then sorted into their destinations at the DC and dispatched. Thus, the inventory level at the DC is almost zero at any time. Flow-Through is one step more advanced than Cross-Docking, in which goods (specific to stores’ orders) delivered by suppliers are brought to the dispatching area of a DC, to be loaded to a distributor’s truck, ready to be delivered to stores. There is no sortation required at the DC. Direct Store Delivery (DSD) employs direct delivery from suppliers to stores, by-passing DC or distributor. At the moment, approximately 90% of the products at the stores of the company under study come from its own Distribution Centre, while 10% (perishables) are supplied directly by suppliers (DSD). Out of this 90%, only slow moving items are handled by Cross-Docking, while very high demand items are handled by Flow-Through operation.

The company's Distribution Centres have recently been integrated into a new business entity. At the moment, a service fee is charged to the State supermarket head office, not individual stores. Thus, the lower the operating costs at the Distribution Centres, the less the supermarket has to pay for the logistics costs to get products on the stores’ shelves. This company will soon commence a new user pays arrangement, whereby each Distribution Centre will charge each customer (store) for the costs of replenishing the store. This will allow higher cost transparency between Distribution Centres and stores.

This case study analyses the improvement in efficiency and cost savings that can be achieved by distributor (Distribution Centres) and retailer (stores) through Cross-Docking. The operation and economics of two of the company’s distribution centres, one using traditional Pick-and-Pack operation and the other using Drop-Docking, were studied in detail through site inspections and interviews with management. In the next sections, these two distribution approaches are discussed and analysed comprehensively.

Pick-and-Pack Operation

The Distribution Centre with the traditional Pick-and-Pack operation handles medium to fast moving items. It will have been operating for 10 years as of November 1999. This DC handles 775,000 cartons per week on average, within 350,000 square feet. A Warehouse Management System and a Computer Aided Ordering system known as Reorder Inventory System (RIS), with some basic forecasting functionality are used to manage the inventory and ordering. These two systems interface with each other.

The average handling cost per carton at this DC is 89 cents, with the following breakdown:
- 21 cents is direct labour cost for picking
- 68 cents is indirect costs, which include administration, consumable and fixed overhead costs.

Figure 1 summarises the process of Pick-and-Pack operation at this Distribution Centre. The following sub-sections discuss the main business activities involved in the Pick-and-Pack operation.

Ordering

Stores place orders to this Distribution Centre everyday via EDI, using an internal fibre optic network. These orders are independent of the replenishment orders placed by the Distribution Centre on the suppliers. These supplier orders are larger and less frequent and are triggered by an Order Point / Order Quantity system. Each product has a pre-determined order quantity, order point and safety stock level. The Reorder Inventory System (RIS) identifies items that have reached the re-order point (arrow a in Figure 1) and generates a recommended order quantity for each item (arrow b). In the ordering area, reports generated by the RIS are printed on a daily basis. After reviewing and making necessary adjustments to the recommended
orders, purchase orders will be sent to suppliers, via EDI, fax, or phone, depending on the supplier’s capability.

Receiving

When goods arrive from a supplier, they are accompanied by a paper based Delivery Docket. Suppliers need to unload the pallets at the correct receiving bay as determined by the DC and at the time allocated. Upon arrival at the DC, information about the delivery is entered into the Warehouse Management System (arrow c). The inventory database will then be updated accordingly (arrow d). The Warehouse Management System issues a “put away” instruction slip and a bar coded pallet label (arrow e) for each pallet. Each pallet is then taken by a forklift to its location (arrow l). All forklifts are equipped with a radio frequency terminal which communicates with the Warehouse Management System. After storing the pallet at the required shelf, the barcode on the shelf is scanned to allow the Warehouse Management System to keep track with the inventory (arrow f).
Dispatching

In the assignment area, due store order details are obtained from the Warehouse Management System (arrow g). After getting the details about the inventory required (arrow h), labels are generated by the warehouse system for each due store order, detailing the time required to complete the assignment. The inventory level will then be updated accordingly (arrow i). The instruction on which pallets to be moved down from the inventory shelves to the reserve/picking slot is made available (arrow j). The required pallets are moved to the reserve slot by a forklift (arrow 2). Goods are then picked up from the reserve slot as required (arrow 3) then the pallets will be moved back to the inventory shelves (arrow 4). All items for individual store will be consolidated into one pallet, ready for dispatching (arrow 5).

Cross-Docking Operation

The second Distribution Centre studied uses the Cross-Docking approach. At the moment, Cross-Docking is only used for slow moving items (indent items), such as imported general merchandise. It has been operating for 6 years, with the throughput volume of 120,000-140,000 cartons per week, within 10,000 square feet. Thus, this operation handles 1/6 the throughput of the Pick and Pack operation using only 1/35 the floor area. The average handling cost per carton is 70 cents, with the following breakdown:

- 50 cents is direct labour cost;
- 20 cents is overhead cost, including consumable costs such as stationary, wrapping, and so on, and fix overhead costs of insurance, electricity, and building.

Thus, the majority of cost is salary intensive, with small overhead costs. This labour cost could be further reduced to 25 cents, if all suppliers were barcode compliant.

Figure 2 summarises the Cross-Docking operation. Each process is described in detail in the next sub-sections.

Ordering

Each store orders directly to suppliers and suppliers deliver the consolidated goods to this Distribution Centre on the due date. Stores place their orders every four days according to a roster.

Receiving

In the Cross-Docking operation, all deliveries come through one receiving area from approximately 330 suppliers, of which 30 are seasonal and 300 deliver daily. Each pallet delivered by suppliers has 80 to 90 store orders on it, which are packed in cartons. One carton is for one store and it may contain multiple items. Delivery dockets (arrow a in Figure 2) are checked against the expected delivery (store purchase order), available from the company’s internal network (arrow b). At the moment, 25% of suppliers have the ability to produce bar coded labels for the carton which indicate the destination store. Upon receiving cartons from non-barcode compliant suppliers, proprietary barcode labels are created at this DC, to indicate the store location (arrow c). Random manual checks are still performed on 10% of a particular supplier’s deliveries, to ensure that the supplier conforms to the actual orders (arrow 1). Bar coding for non-compliant suppliers and inspection of goods are the most labour intensive part of the operation.

Sorting and Despatching

After each carton has been bar coded for the store number and randomly checked, the cartons are sorted according to their destinations using a re-configurable automatic sorting line. Each
carton is loaded onto a conveyor belt (arrow 2). A scanner along the conveyor belt reads the barcode on the cartons and diverts the cartons to the assigned side bay (arrow 3). The assignment of side-bays to stores is determined from the store delivery roster displayed on a computer (arrow d). At the end of the line, all cartons of the same destination will be consolidated into one pallet and shrink-wrapped for security during the trip and loaded into a container (arrow 4). One container is allocated for one state.

![Figure 2. Summary of Cross-Docking Operation](image)

**Case Analysis and Discussion**

**Pick-and-Pack Operation**

The description of the Pick-and-Pack approach indicates that this operation deals with infrequent, large deliveries from suppliers, since suppliers impose a minimum acceptable re-order quantity for the items they supply. In addition, the existence of buffer stock with an average holding stock of 12 days leads to a need for an IT infrastructure and sophisticated warehouse management systems to manage the entire operation.

The consequences of having such an operation differ for manufacturer, distributor and retailer.
For manufacturers, the Pick-and-Pack approach places low Electronic Commerce infrastructure requirements for information sharing, since there is no critical timing between the incoming and outgoing goods. Buffer stocks at the DC are used as a substitute for informational coordination of manufacturer and retailer activity. In addition, this operation allows manufacturers to have high production efficiency through shipping large orders. The drawback of this operation to manufacturers is that there is no visibility of individual store demand patterns, since orders are placed by Distribution Centres or distributors, instead of by individual stores. As a result, manufacturers have no access to the information required for advertising and target marketing.

For the distributor, this operation involves high costs since it is labour intensive and inefficient. There is multiple double handling of goods, from the receiving and storing, to the dispatching, as shown in Figure 1. It also requires high investment in Information Technology infrastructure due to the need to manage the large buffer stock within the constraint of finite capacity. Problems with space may arise due to inaccurate forecasting for seasonality which may lead to high inventory levels, threatening to overload the capacity of the warehouse.

For retailers, this operation is highly reliable, since replenishment of goods can almost be guaranteed by the existence of buffer stock at the DC. Thus, the problem of being out of stock on the shelves can be avoided. The inefficiency of this operation at the DC or distributor side, however, causes retailers to pay a high cost for product replenishment.

**Cross-Docking Operation**

Unlike Pick-and-Pack, the Cross-Docking operation is characterised by small, frequent deliveries from suppliers and to individual stores. With this approach, manufacturers receive orders from individual stores. The need for buffer stock at the DC is eliminated by the high degree of informational coordination between manufacturer deliveries and retailer requirements. The fundamental emphasis of this operation is on the sortation of store orders at the DC which requires only modest levels of technology investment and thus eliminates the need for sophisticated IT infrastructure. It is more dependent on Electronic Commerce compliance of trading partners, as well as partnership and trust. The efficiency of this operation is high since there is no double handling of goods. Table 1 below summarises the differences between Pick-and-Pack and Cross-Docking operations identified from the case study.

<table>
<thead>
<tr>
<th></th>
<th>Pick-and-Pack</th>
<th>Cross-Docking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suppliers’ Delivery size</td>
<td>Large</td>
<td>Small</td>
</tr>
<tr>
<td>Buffer stock level</td>
<td>High</td>
<td>Nil</td>
</tr>
<tr>
<td>Systems requirement</td>
<td>Sophisticated</td>
<td>Simple</td>
</tr>
<tr>
<td>Role of DC</td>
<td>As a warehouse</td>
<td>As a sorting centre</td>
</tr>
<tr>
<td>Efficiency of operation</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Efficiency per square feet</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Overhead costs</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Store demand transparency for suppliers</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Suppliers’ reliability requirement</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Suppliers’ EC requirement</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Trust and partnership requirement</td>
<td>Low-Medium</td>
<td>High</td>
</tr>
</tbody>
</table>

**Table 1. Summary of the Differences**

The consequences of Cross-Docking for the various supply chain parties are as follows. Since orders are placed by individual stores, the manufacturers have high visibility of individual store demands. This allows them to have more stable production planning and lower inventory level, and to perform more efficient promotion. Dealing with individual store orders, however,
may put manufacturers at risks of reducing the quantity of batch production, depending on stores demands. In addition, implementing Cross-Docking requires manufacturers to have Electronic Commerce infrastructure to enable information sharing with distributor and retailer, allowing accurate replenishment to be done in a timely manner. Manufacturers need to be capable of receiving and sending business documents in EDI format, as well as producing a bar coded Serial Shipping Container Code (SSCC) to identify shipments with EDI messages. Furthermore, manufacturers need to possess more complex order processing infrastructure to deal efficiently with small individual store orders.

For the distributor, the Cross-Docking operation is very efficient, since it does not require a large Distribution Centre area, complex computer systems, and reduces non-value added handling activities. Thus, it involves low overhead costs in handling cartons, low IT infrastructure requirements and reduced risk of overloading warehouse capacity. With the current operation cost of 70 cents per carton, as opposed to 89 cents per carton for the Pick-and-Pack operation, cost savings of 19 cents can be obtained per carton. The current average volume handled by Cross-Docking operation of 140,000 cartons per week gives the company savings of $26,600 per week (equivalent to $1,383,200 per year). This savings could be further increased by up to $61,600 per week (equivalent to $3,203,200 per year), should all suppliers are barcode compliant. If the average volume of 775,000 cartons per week handled by Pick-and-Pack operation were to be handled by Cross-Docking operation, there would be significant cost savings that can be obtained. Other cost savings can be obtained from reduced damaged products as a result of reduced double handling and reduced expired products since warehousing is eliminated. In addition, with 100% compliance to ASNs using SSCCs and scan-packing by suppliers, random checking would be simplified and, thus, costs could be further reduced. Random checking could be practically eliminated with increased trust between the DC and supplier.

Retailers can experience lower logistics costs as the result of higher efficiency operation at the DC. The cost saving obtained by the distributor (DC) will be passed on to the retailer (individual stores) through reduced service charged in delivering products to the stores, and this is particularly easy to negotiate when the distributor and retailer have corporate links. In addition, since products are not stored in the warehouse, they will have longer shelf life. On the other hand, the Cross-Docking approach requires retailers to have IT infrastructure to automate the replenishment process, through the implementation of Computer-Aided-Ordering and EDI for sending purchase orders. The risk of Cross-Docking for retailer is if suppliers fail to deliver on time, stock outs may occur.

Table 2 summarises the distribution of benefit, cost and risk of implementing Cross-Docking for manufacturer, distributor and retailer.

<table>
<thead>
<tr>
<th></th>
<th>Manufacturer</th>
<th>Distributor</th>
<th>Retailer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits</td>
<td>Low</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Costs</td>
<td>High</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Risks</td>
<td>Medium</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>

Table 2. The Distribution of Benefit, Cost and Risk

As argued earlier, Cross-Docking requires cooperation and trust between trading partners and these are unlikely to happen unless costs and risks are shared and benefits are mutual. The above analysis demonstrates that Cross-Docking implementation inherently gives rise to an imbalance in distribution of costs, benefits and risks among the participants of a supply chain. Manufacturers, in particular, appear to receive the least benefits and incur the greatest costs in implementing Cross-Docking within a supply chain. Unless every party experiences mutual benefit, cost, and risk, it is less likely that Cross-Docking will replace the traditional Pick-and-Pack operation. The savings obtained by distributor and retailer cannot be passed on to the
consumer, if high costs are incurred at the manufacturer’s side. This inherent problem of mutuality is likely to arise in implementing other elements of ECR and inter-organisational systems in general. In the second case study, we show what can be done about solving the problem of mutuality in the light of Cross-Docking implementation specifically, and ECR adoption in general.

Manufacturer Case Study

The second case study was conducted within a leading manufacturing company in Australia. It operates in approximately 80 countries, employing around 300,000 people, with a turnover of $55-60 billion per year. The case study concerns the company's Activity-Based Costing (ABC) project and interviews were conducted with the Supply Chain manager and a Business Analyst of the company.

The context of this second case study is revealed in the following interview excerpt: “There has been a power shift between retailers and manufacturers in the last decade. Retailers are now in a better position compared to manufacturers. With the position they have, they know they are winning, and therefore, are not particularly interested in conducting Activity-Based Costing study” (Business Analyst). Given that there has been this power shift and that manufacturers appear to be the potential losers in ECR program as demonstrated in the first case study, it will be difficult for manufacturers to re-negotiate trading terms with retailers to ensure mutual sharing of costs, benefits and risks. Manufacturers therefore need concrete evidence to support them in trading term re-negotiation. One approach in obtaining the evidence is by understanding the actual impact of ECR program on the current cost structure through Activity-Based Costing (ABC) studies. Therefore, the manufacturing company involved in this second case study is actively engaged in an Activity-Based Costing study as a key driver of their ECR projects.

The ABC project involves examining potential changes to the operating cost structure of the company which would result from the implementation of elements of ECR, such as Category Management, Cross-Docking, Flow-Through, and Vendor-Managed Inventory. The company is seeking high cost transparency, allowing them to be well prepared in re-negotiation of trading terms with the customers (retailers), as more retailers are shifting towards continuous replenishment, with different methods of distribution operations as introduced by ECR. With greater understanding of the cost structure, the company will be able to make better decisions in negotiating trading terms with retailers, to ensure that costs, benefits and risks will be mutually shared.

The ABC project is a complex and challenging project, as process mapping or transaction analysis has to be done to identify major process activity categories. Cost drivers and driver rates per each activity category need to be determined to compute the total cost of the activity category (Preiss et al., 1996). In relation to product distribution, for instance, the project attempts to understand the detailed cost structure of getting each product from the end of the factory, to storage, and to the customer, using different distribution methods. For this purpose, the ABC project team is examining the breakdown of costs of single activities and determining the cost drivers involved in each. This exercise requires enormous discussion, thinking, verifying with the facts, and correcting data, to ensure that the data reflect the actual situation. The total cost of moving each product from end of production to customers is then computed by a software program, based on the agreed information.

The analysis has to be done for all products manufactured and for all major customers since the costs of supplying different products to the same customer differ and so do the costs of supplying the same products to different customers due to different pallet configurations. For customers with different pallet configurations, the company has to break down goods already
on the pallet, to adhere to customers’ pallet configuration. In such a case, additional costs are incurred by the manufacturer. As the concept of ECR has emerged within the Australian grocery industry, the company also realised a need to streamline and improve the efficiency within the supply chain by eliminating double handling of goods and aligning costs with customers which can be achieved through re-negotiation.

From this case study, we can see that complex business modelling and negotiations are required to ensure equal distribution of costs, benefits and risks of ECR. The ABC project, as an action taken by the company in this case study to enable effective re-negotiation of trading terms, however, can only provide a partial solution to the mutuality problem, since this company has access to data for part of the total supply chain only. This type of study of the cost structure needs to be extended beyond individual company’s boundary, to provide a global solution to the problem of mutuality. This means that other parties within the supply chain (distributor and retailer) need to cooperate in conducting ABC studies and work together to ensure equal distribution of costs, benefits and risks of ECR. Other independent, external bodies within the industry may also be required to assist companies in achieving the mutuality.

**Conclusions and Future Research**

The analysis of the first case demonstrates how efficiencies can be improved and cost savings can be gained from the implementation of Cross-Docking, as one of the initiatives proposed by the Efficient Consumer Response. Ideally, all participants of the supply chain will gain benefits from Cross-Docking. Manufacturers / suppliers, for instance, will get more transparent individual store demands, and hence, they will have more stable and flexible production, less inventory level, and better planning for promotion and production. For distributors, it will lower the operation costs of replenishment, reduce warehouse space requirements, reduce the inventory level, leading to reduced handling and damage, and increase the efficiency of DC per square feet. With reduced operating costs at the distributor side, stores will enjoy lower costs and hence are able to minimise the price inflation of grocery products charged to the consumer leading to higher sales, better quality (less damage) products, longer shelf life.

However, the study further reveals that the benefits, costs and risks involved in implementing Cross-Docking are not equally distributed among the players. While manufacturers experience some benefits from Cross-Docking, higher costs and risks will be incurred as they need to deal with individual store orders, rather than large, consolidated orders from retailers’ Distribution Centres. These increased costs are inherent to the Cross-Docking approach which requires the use of smaller orders and electronic communication among participants to achieve its efficiencies. These additional costs and risks need to be shared among the participants of the supply chain, so that the mutuality of benefits obtained from Cross-Docking can be realised by all parties. However, since there has been a power shift between manufacturers and retailers, manufacturers need to look for concrete evidence to better re-negotiate trading terms with their customers, to ensure mutual sharing of benefits, costs and risks of getting involved in ECR. Therefore, manufacturers are more proactive in conducting Activity-Based Costing studies. Global solutions, however, requires the scope of the ABC studies to be extended to the entire supply chain which requires the involvement of distributor and retailers to conduct similar studies or assistance from external bodies in re-distributing costs, benefits and risks of ECR.

This study suggests a proposition, which requires further theoretical analysis and empirical testing, that the very approach of electronic commerce enabled inter-organisational systems, such as Cross-Docking and other components of ECR, creates a barrier to their implementation. By emphasising the use of electronic communication between parties and the use of smaller, more frequent replenishment quantities in order to increase efficiency and control uncertainty through the coordination of activities across organisational boundaries, these systems necessitate a re-negotiation of product cost / price arrangements between parties.
if the distribution benefits, costs, and risks is to be acceptable to all parties. This means that the supply chain wide coordinated activity envisioned in these inter-organisational systems cannot be reached simply by individual self-interested activity on the part of participants but rather requires them to engage in a form of explicitly negotiated activity involving trust and cooperation which is not particularly easy to firms coming from a laissez-faire, free-market, competitive environment. The difficulty in adopting this new modus operandi, even where a common goal is agreed among parties, can be a major barrier to the adoption of ECR.

By studying specific elements of ECR within one supply chain, the results of this study provide a more in-depth understanding of how ECR can improve the business procedures of the Australian grocery industry, and suggests that more empirical and theoretical attention should be given to the question of how an industry as a whole can achieve mutuality of benefits, costs and risks among the participants in ECR. This study thus enriches previous studies in assessing ECR benefits which mostly focused on individual organisations as the unit of analysis (Krum, 1994; Mathews, 1996; Report, 1996; Ross, 1996; Kurnia, Betts et al., 1999) and in particular, explains the observation of our previous survey study (Kurnia et al., 1999), that Australian retailers are more advanced than manufacturers in adoption of supply chain reforms, while manufacturers have been more proactive in conducting Activity-Based Costing programs.

References


Consumer Response.


