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Efficient Consumer Response (ECR) in Australia : The Australian Grocery Industry in 1996

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Executive Summary
Efficient Consumer Response (ECR) is a management strategy which involves re-engineering the entire grocery distribution supply chain to eliminate inefficiencies, excessive costs and non-value added costs for all supply chain participants. ECR originated in the United States during 1993 in response to alternative store formats and their supply chains being able to sell grocery products at consistently lower prices when compared to the traditional supermarket.

The US grocery industry's main inefficient practices which ECR seeks to address include complex deals between the seller and buyer, forward buying, diverting and inefficient promotional activities. Forward buying occurs when the buyer purchases additional inventory during a discount period and sells the inventory at regular prices after the discount period has ended. Diverting is when a buyer purchases additional inventory during a discount period and re-sells the inventory immediately at a profit to buyers in other regions that had not been offered the discount.

The business practice initiatives considered necessary for the successful implementation of an ECR strategy include integrated electronic data interchange (EDI), continuous replenishment program (CRP), computer assisted ordering (CAO), flow through distribution (cross-docking), activity-based costing (ABC) and category management (CM).

This paper reports the results of a survey of 1,500 members of the Australian grocery industry providing insight into the extent of inefficient business practices that ECR seeks to address and the extent of the adoption of the business practice initiatives that are necessary for an ECR strategy. This report also gives an indication of the knowledge and commitment to the ECR strategy within Australian.

The findings of this research indicate that the inefficient business practices of deal selling and buying, and forward buying are prevalent among grocery industry supply chain members and that the adoption of an ECR strategy is likely to benefit the Australian grocery industry. The extent of this benefit and the size of the likely cost savings with the implementation of ECR is beyond the scope of this initial research, but we anticipate will be the focus of future ECR research within Australia.

Abstract
Efficient Consumer Response (ECR), a management strategy which involves re-engineering the entire grocery distribution supply chain to eliminate inefficiencies, excessive costs and non-value added costs for all supply chain participants, is a topic of considerable interest to the grocery industry in both North America and Europe. In Australia, however, ECR is only just beginning to attract attention from members of the grocery industry. This paper reports the results of a survey of 1500 members of the Australian grocery industry, providing a "snap-shot" of awareness, experience and future intentions concerning this important topic among members of the grocery community.

Introduction
Efficient Consumer Response has become the buzz word of the 1990s for the grocery industry worldwide. So far very little research has been conducted on this topic within Australia. Indeed, we have so far been able to identify only a single report, sponsored by the Grocery Manufacturers of Australia (GMAust) and conducted by Coopers & Lybrand, which was released in October, 1995. The study, whose results were partially presented at a commercial seminar in August 1996 (Arentz 1996), attempted to:

- identify the key supply chain issues in Australia;
- identify opportunities to remove significant costs from the supply chain;
- assess the relevance of ECR developments in other countries such as the US.

This paper presents the results of a survey of ECR knowledge and usage within the Australian grocery industry. This survey is the initial phase of a long term research project whose main purpose is to evaluate ECR as it applies to that industry. The research question under investigation by the project is: "Can efficient consumer response (ECR) be applied beneficially to the Australian Grocery Industry"? The paper initially discusses the origins and nature of ECR and then presents the results of the survey into Australian ECR usage, commenting on usage of technologies and management strategies followed by a discussion the likely future directions for Australian ECR.

The Origins of ECR
The term "Efficient Consumer Response" (ECR) was first used in the United States of America (US) at the Food Market Institute (FMI) conference during January, 1993 (Robins 1994). ECR evolved from the grocery industry's need to re-examine its supply chain due to the fears and pressures from competitors in a variety of alternative store formats from the traditional grocery retail store format, the supermarket (Snyder 1994; Triplett 1994).

During the late 1980s and early 1990s many US organisations involved in grocery retailing became concerned that the industry was losing its competitive edge in the sale of grocery products in comparison to other retail channels which were now also involved with selling grocery products (Fox 1992; Garry 1992; O'Neill 1992; Garry 1994). During the 1970s and 1980s as overall US grocery sales slowed, due to the slow down in population growth, consumers "eating out" and spending less of their disposable income on food eaten at home (Garry 1995), and alternative store formats now aggressively selling grocery products (Newton 1993), grocery industry organisations sought to increase their profits at the expense of their supply chain trading partners, leading to adversarial relationships at the seller/buyer interface. The complexity of deals between grocery trading partners and the performance measurement systems used lead to excessive inventories throughout the supply chain, with sellers continually offering deals to to "push" products into the supply chain (Schlossberg 1992; Teinowitz 1993).

The key performance measure for the seller has traditionally been sales and shipments, while the buyer has been concerned with gross margins. In an attempt to maintain gross margins sellers would start with very high selling prices which would later be discounted for promotional activities or to meet selling objectives within a given time period. Buyers would seek to increase their gross margins by buying additional inventory during the discount period and selling at regular prices after the discount period had ended (investment or forward buying) or by re-selling it immediately at a profit to buyers in other regions that had not been offered the discount (diverting) (Harding 1995). The use of inefficient promotional activities, forward buying and diverting resulted in complex deal structures between buyers and sellers. These inefficient practices which created additional transportation, administration and warehousing costs were tolerated due to the resulting higher margins. But, as nearly all sellers

and buyers within the grocery supply chain today are engaged in complex deals (including forward buying, diverting and promotional activities), no real competitive advantage is gained, yet the additional high costs remain.

Several major studies conducted before 1993 showed that through better logistics, better use of information technology and the implementation of quick response (QR) techniques certain alternative store formats could deliver grocery products at consistently lower prices to their consumers when compared to the traditional supermarket (Robins 1994).

As a result of this perceived threat of alternative store formats (McKinsey & Co. 1992) and a need for the grocery industry to become more efficient to compete with these store formats, a joint-industry task force, headed by David Jenkins (the then chairman of Shaw's Supermarkets), was formed in mid-1992. The US industry groups represented on this task-force included (Kurt Salmon Associates 1993; Sansolo 1993):

- American Meat Institute (AMI);
- Food Marketing Institute (FMI);
- Grocery Manufacturers of America (GMA);
- National Food Brokers Association (NFBA);
- Uniform Code Council (UCC).

This task force commissioned Kurt Salmon Associates (KSA) to complete a study of the grocery supply chain. KSA was chosen because of its heavy involvement with QR. The resulting publication "Efficient Consumer Response: Enhancing Consumer Value in the Grocery Industry" (Kurt Salmon Associates 1993) has served as the foundation or black book document for the ECR movement (Mathews 1994) and David Jenkins is widely considered the father and champion of ECR (Sansolo, 1993). The Kurt Salmon Associates (1989) report described and outlined the waste and time lost due to inefficient business processes throughout the grocery supply chain and suggested that the US grocery industry as a whole could reduce their supply chain management costs by as much as $30 billion with the ECR management strategy.

What is ECR?

ECR calls for the creation of a timely, accurate and paperless flow of information relying heavily on Electronic Data Interchange (EDI) and strategic alliances between supply chain members (Sansolo 1993). According to Dutton (1993) ECR promotes the development of a demand-driven grocery supply system, where members of this supply chain work together in partnership and mutual trust to streamline the business processes to provide maximum consumer value at minimum cost. ECR is a visionary management strategy which involves re-engineering the entire grocery distribution supply chain to eliminate inefficiencies, excessive costs and non-value added costs for all supply chain participants (deRoulet 1993).

The overall aim of ECR is to transform the grocery supply chain from the current "push" system with inflated inventories at all levels, into an efficient "pull" system based on consumer demand at the point of sale. The goal of ECR is to take out of the supply chain costs which do not add consumer value (Robins 1994). ECR is about producing efficiencies in the grocery supply chain within the four core business process areas (Kurt Salmon Associates 1993) of efficient store assortment, efficient replenishment, efficient promotions and efficient product introductions.

To achieve these efficiencies ECR encompasses the six major activities (deRoulet 1993) of:

- integrated electronic data interchange (EDI);
- continuous replenishment program (CRP);
- computer assisted ordering (CAO)
- flow through distribution (cross-docking);
- activity based costing (ABC);
- category management (CM).

To achieve these activities all members of the supply chain must become effective users of information technology, use efficient logistics to move products, have flexible and responsive supply techniques (Muller 1994).

The 1996 ECR Survey - Monash Department of Information Systems

The present survey, conducted within the Electronic Commerce Research Group of Monash University's Department of Information Systems (MIS_ECR96), was undertaken to discover whether the Australian Grocery Industry can benefit from the ECR strategy. Industry supply chain members were therefore surveyed to:

- determine the extent of inefficient business practices which the ECR strategy seeks to address;
  if the Australian grocery supply chain makes use of the same inefficient business practices as exist in the US, the implementation of ECR is likely to benefit the Australian grocery industry;
- *identify the current use of business activities (supply chain initiatives) that are necessary for the adoption of the ECR strategy*;
  Australian organisations could be implementing business activities necessary to adopt the ECR strategy without even being aware of this strategy; those organisations implementing these activities are likely to be in a position to adopt and benefit from the strategy;
- *identify those organisations that are aware of the ECR strategy to discover whether their organisation (and the supply chain as a whole) can benefit from the ECR strategy*;
- *determine the reasons for adopting ECR by those organisations which have decided to pursue such a strategy.*

Preferred participants were thus those organisations directly involved in the grocery supply industry which considered themselves to be members of the grocery supply chain. Mailing lists for this survey were obtained from two grocery industry journals, with the mailing lists from these two major sources of grocery industry supply chain members being combined. Surveys were posted to the senior executive at the head office of all organisations listed in the journals, ignoring duplicates; and to the senior executive, predominately the State manager, at the State head office (for those organisations having a State office listed) until the number of surveys posted reached 1,500. While the sample population was clearly not a fully representative one, we believe that it provided the best possible approximation for the target population of the Australian grocery industry supply chain members.

Analysis Of Results

Distribution and Response to the Survey

As might be expected, the majority of grocery industry organisations are located in the two most highly populated States of New South Wales and Victoria. This resulted in the majority of responses originating from New South Wales and Victoria with a strong positive correlation (Pearson correlation coefficient (r) = 0.99) existing between the distribution and response by state. The survey resulted in 386 usable responses, giving an unadjusted response rate of 25.7%.

Table 1 shows a comparison of the distribution and usable responses by industry type. The industry type responses exceed 386 due to a number of respondents indicating that they belonged to more than one industry type. A strong positive correlation exists (Pearson correlation coefficient (r) = 0.95) between the distribution and response by industry type. The distribution industry type was obtained from the industry journals which furnished participant names, which meant that many organisations were listed as belonging to more than one industry type. In this situation, the first listed industry type was recorded as the only industry type.

From the 1,500 ECR surveys posted to individuals within the Australian grocery industry supply chain organisations 592 (39.5%) were returned and 908 (60.5%) were not returned. This resulted in 386 completed and usable responses, yielding a 25.7% unadjusted response rate. Of the 592 (39.5%) returned surveys, 206 (13.7%) were considered unusable for analysis because 192 (12.8%) were returned uncompleted and 14 (0.9%) were returned completed but considered unusable because the respondent did not indicate that their organisation was a grocery supply chain member. These 14 were not used as part of the analysis, as this survey was only concerned with responses from organisations that considered themselves to be a grocery supply chain member. With 206 responses rejected as not being usable for analysis and 386 usable responses, the effective response rate therefore becomes 29.8% or approximately 30%.

Respondents' Profile (Demographics)
About one quarter of the respondents considered their organisation to be part of a chain, with most of the remaining two thirds classing their organisation as "independent", or not part of a chain. The remaining 14 "Other" respondents indicted that their organisations were either a multi-national, a cooperative, or an international subsidiary.

Organisational group (size of the organisation)
Based on the survey participant's response to the size of their organisation in relation to the number of employees we grouped each respondent's organisation as either a small business, medium enterprise or large corporation. Our definition of a small business and medium enterprise was adopted from the Australian Bureau of Statistics as reported in Cameron (1996, p.143), which states that, "... a 'small business' is one employing fewer than 20 full-time equivalent employees for non manufacturing industries and fewer than 100 for manufacturing industries; and a medium-sized enterprise is one employing fewer than 500...".

For the purposes of this survey, all organisations with 100 or fewer employees were grouped as a small business; more than 100 but less than 500 employees as a medium enterprise; and more than 500 employees as a large corporation. The vast majority of respondents organisations were small businesses (53.9%), with large corporations (17.6%) being the smallest group. The small business and medium enterprise organisations together constitute the small and medium-sized enterprises (SMEs) which make up over 80% of the organisations responding to the survey. The SMEs have a mean number of 93 employees with a standard deviation of 117 and a median of 40 employees.

Annual turnover
The survey question about the participants organisation's annual turnover had one of the highest "none" response rates (9.1%) of any survey question. Several "no response" replies to this question even indicated that their organisation's annual turnover was not available because of its confidential nature. We assume that these organisations believe that their competitors maybe able to gain a competitive advantage if they were aware of their annual turnover.

	Distribution		Response	
Industry Type	Frequency	Percent	Frequency	Percent
Manufacturer	963	64.2%	256	59.3%
Wholesaler	20	1.3%	58	13.4%
Distributor	315	21.0%	43	10.0%
Retailer	93	6.2%	27	6.3%
Broker	109	7.3%	39	9.0%
Other	0	0.0%	9	2.1%
Total:	1500		432	

Table 1. ECR survey distribution and usable responses by grocery industry type.

Suppliers and Customers
Over 60% of the respondents had fewer than 100 suppliers, with an average number of 39 suppliers. Less than 40% of respondents had fewer than 100 customers, with 60% having 500 or less customers.

Supply chain Practices

Respondents' replies to questions concerning their supply chain practices indicated the extent of inefficient supply chain practices within the Australian grocery industry, which the ECR management strategy seeks to address, including:

- *deal selling/buying.* The issue of deal selling and deal buying seems to be very relevant to the Australian grocery industry. Over 90% of respondents are involved in some sort of deal selling or buying, with more than half the respondents (50.2%) being involved in this activity the majority of time they have to make a sale or purchase;
- *forward buying.* The inefficient practice of forward buying also appears to be an issue within the Australian grocery industry with over 70% of survey respondents indicating some sort of involvement in this practice. Even though the majority of respondents (51.3%) indicated they do not use forward buying the majority of the time, the practice appears to be wide spread within the grocery industry.
- *diverting.* The business practice of diverting does not appear to be widespread within the Australian grocery industry. Less than 17% of respondents indicated that they took part in some type of diverting activity, with the majority of these respondents indicating that they were only involved in this practice "sometimes";
- *inefficient promotional activities.* Fewer than 43% of the respondent's indicated their involvement with inefficient consumer promotional activities. From this group, the majority (approximately 33%) are only involved in these promotional activities occasionally. Involvement in inefficient consumer promotional activities should therefore be considered only a minor issue, and not a real concern for the Australian grocery industry. Inefficient trade promotional activities, however are a real concern due to the heavy involvement in deal selling/buying which results in forward buying as indicated above.

Business Activities/Initiatives

This section outlines the extent of the current use of business and related activities that are considered necessary for the adoption and implementation of the ECR management strategy. These activities include:

- electronic data interchange (EDI)
- computer assisted ordering (CAO)
- continuous replenishment (CRP)
- activity-based costing (ABC)
- cross-docking
- category management
- bar coding

Electronic data interchange (EDI)

Table 2 shows the respondents' level of EDI usage. The most significant response is that over one quarter (28.8%) of the respondents indicated that they are currently using EDI, but only 5.2% are using EDI as part of an ECR strategy. Over one fifth (21.3%) are planning to evaluate EDI, but of these only 2.6% are planning to evaluate EDI as part of an ECR strategy. There are 15.2% of respondents currently evaluating EDI, but of these only 4.4% are evaluating EDI as part of an ECR strategy.

Usage level	Frequency	Percent
Never Heard of EDI before	16	4.1%
Will NOT be evaluating	18	4.7%
Plan TO evaluate	72	18.7%
Plan to evaluate as part of ECR	10	2.6%
Currently evaluating	40	10.4%
Currently evaluating as part of ECR	17	4.4%
Evaluated, but NOT implementing	19	4.9%
Evaluated & plan to implement	34	8.8%
Evaluated & plan to implement as part of ECR	14	3.6%
Currently using	91	23.6%
Currently using as part of ECR strategy	20	5.2%
Committed to ECR best practices	32	8.3%
Other	3	0.8%

Table 2. Respondents level of electronic data interchange (EDI) usage.

Computer assisted ordering (CAO)

As Table 3 shows, approximately one fifth (21.2%) of the respondents indicated that they are currently using CAO, but only 4.1% are using CAO as part of an ECR strategy. Nearly a quarter (23.6%) of the respondents are planning to evaluate CAO, but only 4.4% are intending to evaluate CAO as part of an ECR strategy. Over one fifth (21.5%) of respondents have either not heard of or will not be evaluating CAO.

Usage level	Frequency	Percent
Never Heard of computer assisted ordering before	49	12.7%
Will NOT be evaluating	34	8.8%
Plan TO evaluate	74	19.2%
Plan to evaluate as part of ECR	17	4.4%
Currently evaluating	35	9.1%
Currently evaluating as part of ECR	13	3.4%
Evaluated, but NOT implementing	20	5.2%
Evaluated & plan to implement	25	6.5%
Evaluated & plan to implement as part of ECR	11	2.8%
Currently using	66	17.1%
Currently using as part of ECR strategy	16	4.1%
Committed to ECR best practices	12	3.1%
Other	14	3.6%

Table 3. Respondents level of computer assisted ordering (CAO) usage.

Continuous replenishment (CRP)

Table 4 shows the two most significant responses in relation to CRP. Over one quarter (27.5%) of respondents had not heard of CRP before receiving this survey and approximately one quarter (24.6%) are planning to evaluate CRP, but only 5.7% are planning to evaluate CRP as part of an ECR strategy. Only 15.1% are currently using CRP with only 2.1% using CRP as part of an ECR strategy.

Usage level	Frequency	Percent
Never Heard of continuous replenishment before	106	27.5%
Will NOT be evaluating	24	6.2%
Plan TO evaluate	73	18.9%
Plan to evaluate as part of ECR	22	5.7%
Currently evaluating	31	8.0%
Currently evaluating as part of ECR	21	5.4%
Evaluated, but NOT implementing	11	2.8%
Evaluated & plan to implement	9	2.3%
Evaluated & plan to implement as part of ECR	12	3.1%
Currently using	50	13.0%
Currently using as part of ECR strategy	8	2.1%
Committed to ECR best practices	9	2.3%
Other	9	2.3%

Table 4. Respondents level of continuous replenishment (CRP) usage. (**Note**: total percent does not equal 100% due to non response by some respondents.)

Activity-based costing (ABC)

The most significant responses from table 5 in relation to ABC are that 29.8% indicated they had never heard of ABC. The only other significant response is that 18.9% are currently using ABC, but only 1% are using ABC as part of an ECR strategy. 15.5% of respondents are planning to evaluate ABC, but of these only 3.6% are intending to do so as part of an ECR strategy.

Usage level	Frequency	Percent
Never Heard of activity based costing before	115	29.8%
Will NOT be evaluating	34	8.8%
Plan TO evaluate	46	11.9%
Plan to evaluate as part of ECR	14	3.6%
Currently evaluating	35	9.1%
Currently evaluating as part of ECR	13	3.4%
Evaluated, but NOT implementing	12	3.1%
Evaluated & plan to implement	25	6.5%
Evaluated & plan to implement as part of ECR	6	1.6%
Currently using	69	17.9%
Currently using as part of ECR strategy	4	1.0%
Committed to ECR best practices	7	1.8%
Other	5	1.3%

Table 5. Respondents level of activity based costing (ABC) usage. (**Note**: total percent does not equal 100% due to non response by some respondents.)

Cross-docking

Table 6 shows that only 12.1% of respondents are currently using cross-docking with only 1% using cross-docking as part of an ECR strategy. A significant number, over one quarter (26.4%) of respondents have not heard of cross-docking, whereas just over one fifth (20.2%) plan to evaluate this activity. Of those respondents planning to evaluate cross-docking only 4.7% intend to do so as part of an ECR strategy.

Usage level	Frequency	Percent
Never Heard of cross docking before	102	26.4%
Will NOT be evaluating	49	12.7%
Plan TO evaluate	60	15.5%
Plan to evaluate as part of ECR	18	4.7%
Currently evaluating	29	7.5%
Currently evaluating as part of ECR	19	4.9%
Evaluated, but NOT implementing	16	4.1%
Evaluated & plan to implement	11	2.8%
Evaluated & plan to implement as part of ECR	10	2.6%
Currently using	43	11.1%
Currently using as part of ECR strategy	4	1.0%
Committed to ECR best practices	4	1.0%
Other	20	5.2%

Table 6. Respondents level of cross docking usage. (**Note:** total percent does not equal 100% due to non response by some respondents.)

Category Management

Table 7 shows that by far the most significant response in relation to category management is that almost half (48.4%) the respondents indicated they are currently using category management, but of these only 2.8% are using category management as part of an ECR strategy. The next most significant response being that 12.7% indicated that they had never heard of category management.

Usage level	Frequency	Percent
Never Heard of category management before	49	12.7%
Will NOT be evaluating	29	7.5%
Plan TO evaluate	34	8.8%
Plan to evaluate as part of ECR	5	1.3%
Currently evaluating	18	4.7%
Currently evaluating as part of ECR	6	1.6%
Evaluated, but NOT implementing	8	2.1%
Evaluated & plan to implement	12	3.1%
Evaluated & plan to implement as part of ECR	8	2.1%
Currently using	176	45.6%
Currently using as part of ECR strategy	11	2.8%
Committed to ECR best practices	19	4.9%
Other	9	2.3%

Table 7. Respondents level of category management (CM) usage. (**Note**: total percent does not equal 100% due to non response by some respondents.)

Figure 1 summarises the responses of this group of tables, showing the proportion of respondents involved in each of the various ECR strategies.

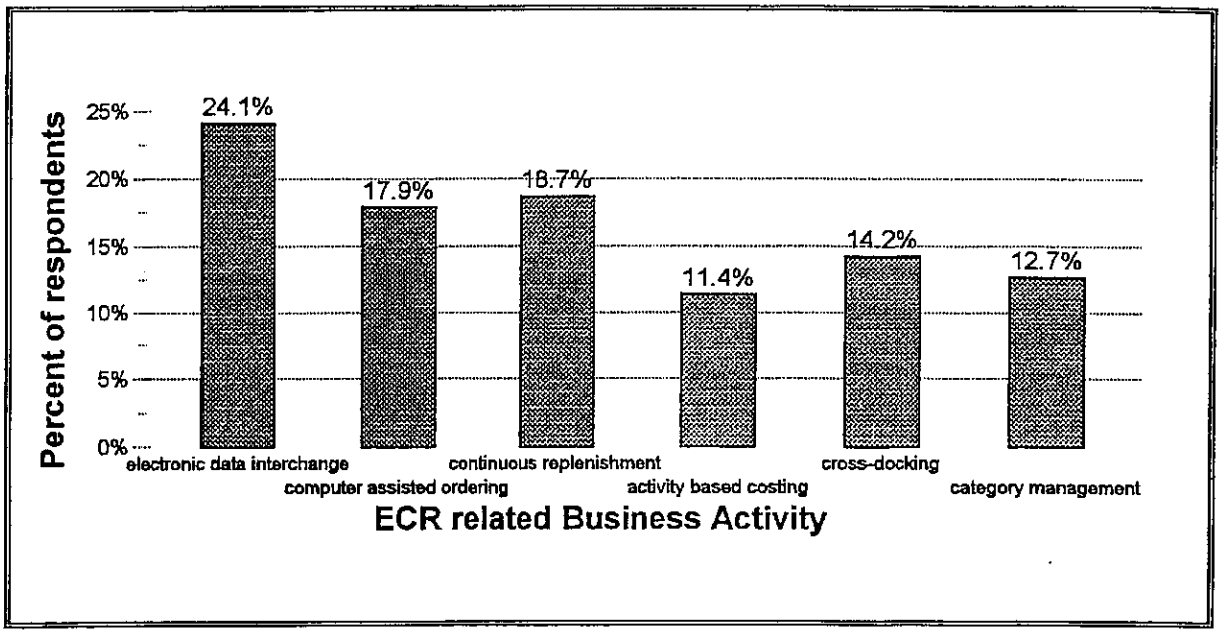

Figure 1. Respondent's involvement in the various business activities as part of their ECR strategy.

Bar coding

Closely associated with the business activities necessary for the successful implementation of ECR is point of sale (POS) scanned data. In turn the POS scanned data rely on inventory being bar-coded. Over half (54.1%) of respondents have all inventory passing through their organisation bar coded, with over four fifths (83.1%) having more than three quarters of their inventory bar coded. Only 12.4% of respondents, however, have all the inventory passing through their organisation based on POS scanned data, with only 21.7% having more than three quarters of their inventory replenishment based on POS scanned data. Nearly one third (31.1%) of respondents have no inventory passing through their organisation based on POS scanned data.

ECR within Australia

Just over a third (33.7%) of the respondent organisations were not aware of the ECR strategy, while nearly double this number (61.1%) were aware of ECR before receiving this survey. Approximately two fifths (40.4%) of the survey participants are actively engaged in pursuing an ECR strategy. 156 respondents indicated that their organisations are actively pursuing an ECR strategy. Table 8 contains details of the reasons why these respondents organisation's are pursuing an ECR strategy.

Factors	Frequency	Percent
Pressure from trading partner(s)	72	46.2%
Threats from alternative store formats	13	8.3%
Improve efficiency of your organisation	94	60.3%
Improve efficiency of overall supply chain	70	44.9%
Cost savings to your organisation	70	44.9%
Cost savings to overall supply chain	52	33.3%
Other	10	6.4%
Maximum:	**156**	

Table 8. Factors which have led the respondent to pursue an ECR strategy. (Note: total percent does not equal 100% due to multiple responses by respondents.)

Crucial to the implementation of an ECR strategy is the need for trading partners to form strategic alliances (Sansolo 1993; Martin 1994; Quinn 1994). Over three quarters (76.2%) of the respondents who indicated that they are pursuing an ECR strategy have begun forming strategic alliances with their trading partners. But a present the majority of alliances (48.7%) have only been formed with less than 25% of the respondents trading partners.

Conclusion

The survey results show that interest in ECR in Australia is growing. While grocery industry members are not all using ECR, there is clearly considerable interest to learn about the area. Indeed, a number of questionnaires were returned from respondents not engaging in ECR, requesting copies of the survey results.

Responses relating to inefficient business practices suggest that deal selling/buying and forward buying which inadvertently push excessive inventories into the supply chain are prevalent in Australia. Australia is thus more than likely to be a "push system", like the US grocery industry, where inventory is continually pushed into the supply chain by deals offered by suppliers, which in turn leads to forward buying by customers. There is therefore likely to be excess inventory in the supply chain and, as a result, the Australian grocery industry is likely to benefit from the adoption of the ECR strategy which attempts to address these inefficiencies. The present survey does not indicate the extent of the excess inventory and associated costs, but we anticipate investigating this issue in later phases of the overall research project.

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