

GROCERY DISTRIBUTION IN THE 90's

**Strategies for
Fast Flow Replenishment**

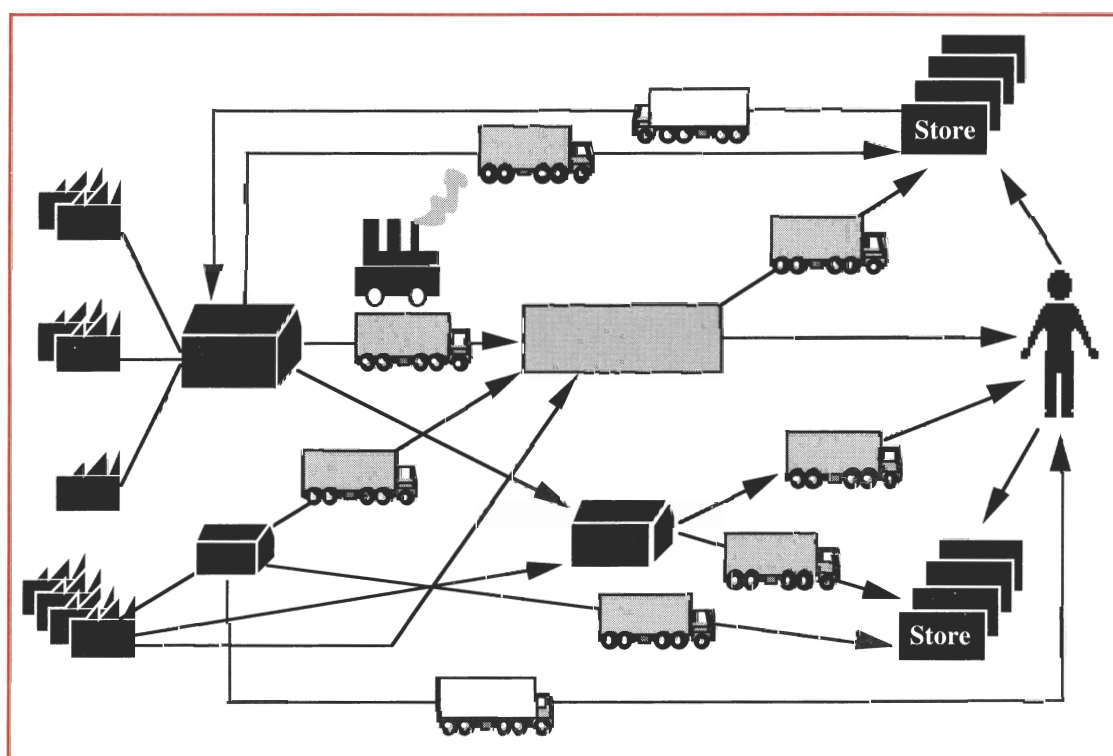
PROJECT III

**THE COCA-COLA RETAILING RESEARCH GROUP
EUROPE**

June 1992

Grocery Distribution in the 1990s

Strategies for Fast Flow Replenishment.



June, 1992

A Research Study Conducted by

ANDERSEN
CONSULTING

ARTHUR ANDERSEN & CO., S.C.

for

THE COCA-COLA RETAILING RESEARCH GROUP - EUROPE

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INTRODUCTION

The purpose of the study was to clarify trends and opportunities which will influence retail distribution in the next five years. This report is based on interviews with leading European companies in the grocery business. Our panel included retailers, wholesalers, third party distributors, manufacturers and technology suppliers. The survey was conducted by Andersen Consulting, London, in co-operation with its European offices. They also interpreted the findings based on their considerable experience in the retail business in Europe and the USA, and especially the knowledge gained through their research and development centre, SMART STORE 2000.

The report was commissioned by the Coca-Cola Retailing Research Group, Europe, a group of 14 leading European retailers co-ordinated by Coca-Cola, which is dedicated to the advancement of the grocery retail industry. Each year the group commissions a study into a topic of particular interest.

The report contains two main sections:

Executive Summary

Main Report

- 1 Social Climate
- 2 Business Climate
- 3 Developing Trends
- 4 Summary of Problems and Opportunities
- 5 A Framework for Action

EXECUTIVE SUMMARY

This Executive Summary describes a vision for grocery distribution in the 1990s. The vision is supported by the research that is detailed in the Main Report. The research showed that nearly all of the elements of this vision are taking place within Europe today; certainly all of them are taking place somewhere around the world.

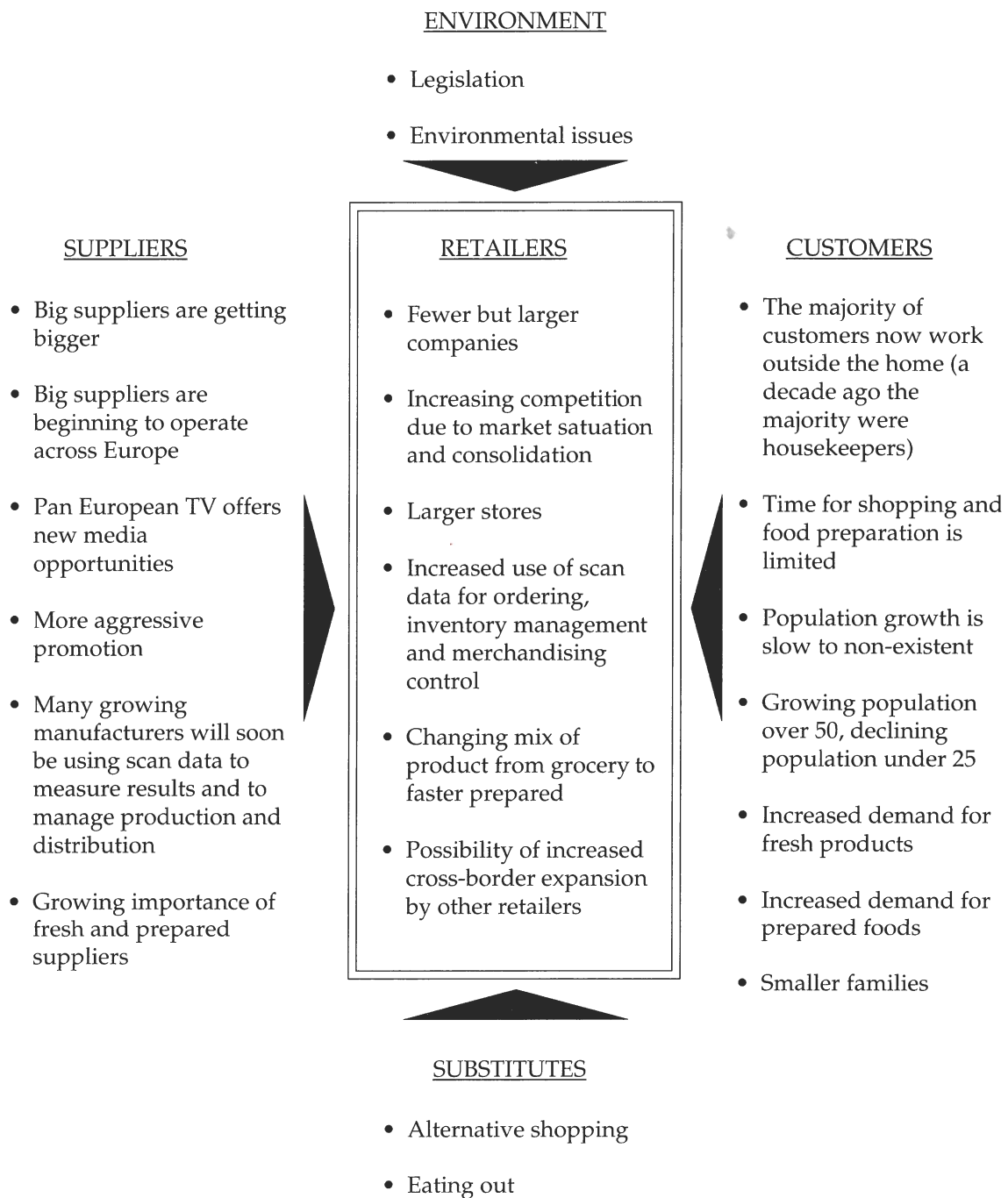
A NEW GENERATION OF LOGISTICS CHALLENGES

Our research found a wide range of attitudes about the future of grocery distribution. Some things do seem clear, however. The most successful retailers are not just revising or updating their current programmes. They are re-engineering their organisations to cope with the changes and demands of the 90s. Most others are emulating what the most successful companies did in the 80s. The differences are great. The gap in productivity and profits between the leaders and the followers will widen perceptibly in the next few years.

Our research also revealed a series of imperatives which, in our opinion, will have a decisive impact on the future of grocery distribution and logistics management:

- Distribution strategies will be dictated by the need to be more responsive to the demands of consumers.
- The functions of buying, logistics, marketing and merchandising will be re-aligned in a very different way. Today's organisations and related measurement systems are inconsistent with the logistics needs of the 1990s.
- The ability to measure the total costs associated with getting a product to the shelf will be critical.
- Product flow strategies will replace the "inventory mentality". Inventories will be reduced. Store out-of-stocks will be reduced.
- Scan data and electronic communications will keep the retailer and his suppliers in daily touch. This means that optimum inventory levels can be maintained all along the pipeline.
- Mutual benefits for consumers, manufacturers and retailers should increase as unnecessary cost is taken out of the supply chain and responsiveness improved.

THE PRESSURES FOR CHANGE



THESE COMPLEX INTERNAL AND EXTERNAL FORCES ARE DRIVING FUNDAMENTAL CHANGES IN LOGISTICS

FORCES FOR CHANGE

The radical change in customer needs, fewer and larger stores, larger and more powerful manufacturers and the growing importance of fresh and prepared foods, all combine to present great challenges to the grocery retailer. The most progressive companies around the world are implementing most, if not all, of these programmes:

- Re-organising the company to separate procurement and distribution from merchandising, marketing, and sales
- Re-organising the distribution process, its relationship to its suppliers and its internal organisation, especially to the merchandising side of the business
- Creating new liaisons with all types of suppliers. By co-operating in this way much can be accomplished. Objective study can bring to light problems inhibiting efficient flow of products to the consumers. Forming retailer/supplier study groups will require a radical change from the traditional buyer-seller relationship which has existed for many years.
- Implementing programmes and systems to make everyone at every level in the distribution function more quality orientated - in this instance, we define "quality" in this way... "Quality exists only in the mind of the ultimate consumer". (Deming)
- Challenging every step in the distribution process. The goal here is to reduce the cost and time necessary to bring products from their source to the ultimate consumer. This applies to the traditional grocery manufacturer, the manufacturer of prepared and private label foods and farmers, as well as the retailers.
- Developing systems to measure the costs and performance of the distribution function more accurately.
- Putting new kinds of distribution facilities in place.
- Improving and extending the use of scan data to drive store re-ordering, reduce inventories and speed up deliveries. The benefits of inventory reduction and speed of product flow should benefit the retailer and the manufacturer or producer as well as the customer. Only by providing mutual benefit will the system endure and the business grow.
- New formats now developing in the U.S. may appeal to European entrepreneurs and become a part of the business. If this does come to pass, the new processes noted above will be adapted and accelerated.
- Socio-political issues in the near east and the former USSR may bring crisis which could have profound effects on grocery distribution.

KEY PROGRAMMES

A. Demand Side and Supply Side Processes

Grocery retailers and manufacturers are developing a new system for the distribution and merchandising of their products. This comes as a natural reaction to the needs for reducing costs and adapting stores, products, and package sizes for unique consumer needs. At the retail level there are two separate but closely related processes. The processes involved include new organisations, new policies, and new procedures. Also important are monitors to define and measure the expectations for each process. Finally, information systems are being developed to give employees all the needed feedback for continuous improvement programmes.

Demand Side Process - The demand side process objective is to maximise the market performance of each store. All decisions influencing what the consumer sees in the store (assortment, price, service and ambience) are the responsibility of the demand side process. It has three essential and logical functions:

- **Marketing** - The strategic positioning of a store so that it dominates its market profitably. The strategy is documented in the stores' marketing plan which serves as the benchmark to measure continuous improvement. The benchmarks would cover: consumer, store layout, category management and competitive strategies.
- **Merchandising** - The tactical activities of category yield management including pricing and assortment made daily and weekly, with the purpose of meeting the marketing profile established for each store.
- **Operations** - The daily and weekly operations of the store to meet its goals in merchandising and marketing as well as store operations.

Where stores require more and more unique profiling, the demand side process will become more and more de-centralised.

Supply Side Process - The supply side process is dedicated to the lowest true cost replenishment. This, of course, is done while maintaining objective service levels and quality standards. This is a very dynamic process which must adjust to constant changes in demand side strategies. It also has three essential functions:

- **Network Planning** - The strategic network positioning of plants, suppliers, distribution centres and cross-dock facilities to continuously improve these supply side processes. Network assumptions, such as stock turn, are documented to serve as benchmarks.
- **Network Management** - The daily matching of store level demand with production, inventory availability and other network considerations. Cost effective product flow at required service levels to the stores is the key performance measurement.
- **Network Node Management** - The daily and weekly operations of the various nodes in the network (e.g. distribution centres, cross-docks, manufacturing plants) to ensure they are performing at or above expectation.

The supply side process will be managed on a centralised basis for best overall control of the process. It is anticipated, however, that "product flow" focus and the greater responsiveness needed locally will shift certain operational responsibilities to the market level.

Four essential common requirements needed to make the demand side/supply side concept work are as follows:

- Management Performance Cost - The practical DPP based cost which defines the delivered cost to store shelf (including recycling cost). This is the basis for the separation of the demand side and supply side performance. It is also required for assessing the continuous successful operations of each store.
- Constant Review of the Total Process - A constant review of the total system to ensure that the product arrives in the hands of the customer in the most cost efficient manner possible and that quality and service expectations are maintained. This priority must override all individual departmental concerns.
- Performance Planning - Retailers and manufacturers working together on category and product strategies which will then be used in both demand side and supply side processes.
- Point of Sale Information - This is the critical information both for demand side performance evaluations and for supply side replenishment.

B. Category Management through Partnerships

This type of partnershiping is an objective programme of co-operation between buyer and seller. Its purpose is to improve the sale of the product category of mutual interest. The goal is to provide the ultimate consumer with the best possible product at the best possible price.

The retailer enters into the programme for three basis reasons:

- It provides additional trained personnel at no cost.
- It brings a different, more specialised and focused attention to important categories of the store.

- It brings new information on the product, logistics and marketing in general.

The manufacturer enters into the programme for five reasons:

- It brings new and otherwise unattainable emphasis to the categories' importance.
- If it is successful in increasing category sales, the manufacturer will benefit as a major supplier.
- It trains future manufacturing executives in retail concepts.
- It brings new knowledge to the product management group.
- If all factors are equal, the effective manufacturing partner should expect to gain additional business simply because he is there and helpful.

To be successful this programme must be based on and operated with a great deal of trust. The retailer must trust the manufacturing executive assigned to the company. He or she must be included in the plans and the day to day meetings concerning the category(s) in which he/she is involved. The manufacturer's delegate must be treated as a member of the "family".

The manufacturer must discipline itself to release its delegate from all selling functions. As a matter of fact, the manufacturer must be prepared to accept the rejection of some of its secondary brands or slow moving lines in the category in which it has a delegate. The manufacturer's delegate cannot be held responsible for these rejections. He or she can and should be asked to explain to the manufacturer's sales and marketing executives why the rejections happened. But, a "partnering" delegate must not be held responsible or the entire system will break down.

C. Improved Logistics Through Partnership

The concept of partnershiping can be extended from the demand side to the supply side. Indeed, this is how partnershiping is most clearly developing in Europe today:

- Retailers and manufacturers are working together to align key elements of distribution, from packaging to delivery scheduling, with a focus of lowering the delivered cost to the store shelf.
- Manufacturers are sharing distribution centres and transport. In principal, retailers could also share these facilities but have as yet proven less enthusiastic than the manufacturers. We believe this will change with time.

D. Cross-Docking

The most effective adaptation of this system involves two key factors. The first is a warehouse with receiving and shipping facilities but with no storage space. Product is received and immediately prepared for shipment. The second factor is a communication system in which manufacturers receive daily sales data on their products only. After establishing optimum store inventory levels, the manufacturer takes responsibility for maintaining them. The benefits are mutual. The manufacturer can produce his products as needed in the stores. Both retailers and manufacturers save on warehousing and the financing of excessive inventories.

It is interesting that some European retailers came into cross-docking via the handling of fresh and chilled prepared products. US retailers came into cross-docking via dry grocery and clothing items. Together the Europeans and the Americans have proved that the system is viable on all sides of the business.

Cross-docking will bring with it the most significant use of automation technology. Sortation machines utilising bar coding are now available. This equipment will eliminate the high level of manual effort currently involved in cross-docking.

E. Quality Programmes

Quality programmes begin with the ultimate consumer's definition of the term 'quality'. This type of programme requires top management commitment on a continuing basis. Quality programmes also demand a commitment to participative management; to be effective, front line managers must be taught to be coaches not 'slave drivers'. Front line employees must be listened to and encouraged to think about their jobs. They should also be encouraged to be critical of those things they feel could be improved. Experience has shown that this works. It is the only way to achieve continuous improvement.

In logistics, cross-disciplinary teams can be very effective in studying the movement of product through the system. Teams could include plant employees, warehouse employees, drivers, store personnel and possibly consumers. Given the assignment of "How can we improve our distribution system?", results are usually positive.

F. Managing Costs in the Distribution Pipeline

Since the objective of the supply side is to deliver product to the consumer at the minimum cost, it is clear that the total cost of supply of a product to the store shelf becomes the critical performance measure for the supply side operation. Furthermore, cost modelling is the supply side's tool for determining which channel to use for any product, especially in view of the:

- Renewed stress on existing distribution channels, with a drive for increased responsiveness as well as reduced cost.
- Emergence of partnerships between manufacturers and retailers, in an attempt to reduce distribution costs.
- Formation of new sales and distribution channels, such as non-store based shopping, with radically different profit and cost profiles.

This clear focus on cost has serious implications:

- Retailers will need to adopt the "total cost of supplying a product to the store shelf" as the primary measure of their distribution (supply) operation.
- Systems will be enhanced to support this measurement, in some cases through applying existing DPP concepts and operating standards. This can be done practically through the concepts of handling patterns.
- The adoption of the total cost performance measure will need to go hand-in-hand with the re-definition of the organisation structure and responsibilities associated with splitting the supply and merchandising activities.

G. Using Scan Data in Supply Side Management

Scan data has traditionally been used to provide a much sharper profile of product sales by stores. However, our findings show that leading retailers are now using scan data (in place of shelf stock counting) to drive store replenishment, realising huge savings in store labour. This technique has often been avoided due to the difficulty in ensuring the accuracy of the scan data, but the problems can be overcome, unleashing the full potential of scan data.

Since the US embraced scanning earlier than Europe, there are many more industrial resources available. One ready service is Andersen Consulting's SMART STORE 2000 in Chicago where current programmes and equipment in a laboratory store can be seen.

A further opportunity for exploiting scan data arises from syndicated data services such as Nielsen or Information Resources. These services provide accurate market share data in the larger markets and specific data on key items in most major grocery categories. When this data is fed into artificial intelligence programmes, elements of category yield management can be automated.

EXTERNAL ISSUES

Certain external issues may have a powerful impact on moving product effectively. The two main issues which can be predicted with certainty are waste management and the effects of urban crowding. The two possibilities that may occur are war in the East and another fuel shortage as severe as that in 1972. These issues are not discussed in the Main Report, but should be borne in mind. There is a good deal of political uncertainty in both of these areas. Needless to say we do not predict and we do not wish for either of these possibilities to occur. However, in planning for the 90s, both are considered possibilities and would have a profound effect on business.

Waste Management

Today Germany is thought to have the strictest laws on packaging and re-cycling. The Environmental Minister, Klaus Toepfer, has issued an ordinance that requires high levels of re-cycling. The target by 1995 is 80% plastic and paper, and 90% glass, tin and aluminium. This could prove to be a model for EC planning. The industry has responded by developing a company to handle disposal and re-cycling. For more complete details see the Packaging Section within Chapter 3 of the Main Report.

The Effects of Urban Crowding

One has only to approach any major city in Europe between the hours of 7am and 10am to be reminded how severe traffic has become. Current estimates are that internal EC traffic will rise between 8-12% per annum. It is hard to imagine where the cars will go. Problems also exist with noise control, pollution and the use of rail. Interestingly, only one retailer in our research has made it a policy to locate distribution centres next to railway tracks.

Possible Fuel Shortage

Among the richest oil producing countries in the Middle East there are three political categories: the extremely conservative Iran; the moderately conservative Saudi, Kuwait and the Emirates; and the radical forces of Iraq and Libya. There are also some non-oil producing states which can have powerful effects on the peace in that area of the world; Jordan, Egypt and Israel.

The Iran-Iraq eight year war and the more recent and brief Gulf war, and the almost daily clashes demonstrate that internal strife is a fact of life in the area. This is the area from which Europe gets most of its oil today. Add to this instability the inherent hostility to Israel and the general bias against the non-Moslem world and the picture is indeed not the best.

If western Europe and the US governments were following an aggressive programme for the development of alternative sources of energy, the future would look much brighter. But such does not seem to be the case. In view of these conditions, it would appear that the most progressive companies must plan for possible disruptions of energy. This could immobilise or severely limit movement of both customers and trucks from time to time.

Possible Armed Conflict in the East

History shows that political instability, loss of national respect and general deprivation is often the cradle for serious conflict. Such is the state of affairs in much of the "Eastern Bloc" countries and the former USSR. What the effects of a major war in this area might be are impossible to predict since the geographic areas and the countries involved are yet unknown. This, however, does not mean that a progressive company should not consider the supplies and products they now receive from the general area formally called USSR. What are their options in the event that those supplies and products were suddenly no longer available? To be caught without a plan could be very costly.

NEW FORMS OF RETAILING

Warehouse Clubs

For nearly a half century the US has served as Europe's laboratory for the study of new ideas and formats in retailing. Currently the traditional US retailer is seriously concerned with the warehouse club.

The warehouse club is a large, extremely basic retail facility. It offers little or no service and a wide but not necessarily complete range of products. Prices are very low. The warehouse club gross margins are below 10%.

This year it is reliably estimated that warehouse clubs will turnover US\$35 billion with 80% of their sales in items comparable to supermarkets. This gives them somewhere near 8% of the grocery business in the US.

The warehouse club charges each "member" an annual fee. This fee represents what would be approximately 2% net profit on the average customer's annual purchases; the membership fee also acts as a magnet to draw the customer back to the store.

Will this format last? It is not the first time for a warehouse club format in the US. Approximately thirty-five years ago, an almost identical format was launched in San Diego, California. Those "clubs" did well until they began to compete with each other. The competition of "club" with "club" reduced the customers per store, and without high volume the "club" could not function.

This new generation of "clubs" has spread out geographically to a much greater extent. Also, consumers have changed. The supermarket competition is no longer a novelty. Consumers are much more oriented to "stock-up shopping". The answer to the long term viability of warehouse clubs should come within the next two or three years. By that time there will be enough competition between clubs to tell the story.

We feel that the warehouse club is worthy of mention here since the streamlining of procurement and logistics plays such an important role in their philosophy of operations.

Will warehouse clubs come to Europe? Yes. Will they enjoy the same success as they currently enjoy in the US? Only time will tell. The key will be whether they will be able to sell merchandise in their stores with as great a price difference as they have in the US.

Deep Discount Drugs

A recent phenomenon in US retailing is the Deep Discount Drug chain. This new format is growing fast. As of now there are 900 stores in the US and the number is still growing. The stores are averaging US \$8-10 million per store in annual turnover.

This format may be a purely American phenomenon, arising from the regular promotional cycle on products and the ability to buy heavily discounted merchandise in one part of the country and tranship it quickly and inexpensively to another area. Most of these stores sell "deal" merchandise almost exclusively.

In any event a business which can grow quickly from nothing to US \$8-10 billion is worthy of note. Since the entire image is one of price, the Deep Discount Drug store, like the warehouse club, must be very good at procurement and logistics. If the supermarkets' operation is to effectively compete with them there is no alternative route. Procurement and logistics must be first rate.

Discount Malls

More important in fashion and general merchandise than food is the newest shopping phenomenon in the US. These are extremely large, very simple shopping malls. Large manufacturers with strong brands and retail chains use these malls or markets for their over-runs, excess inventories, "special purchases" and slightly imperfect merchandise. These malls tend to be built in rural areas near big cities. They attract customers from a very broad geographic area.

At this time grocery sales in these malls are low to non-existent. Non-food retailing is well represented, however. Because of the availability of good stores offering low cost food much nearer the average consumer's home, the only possibility for a change might be the inclusion of large and outstanding perishable departments which might make it worth the trip.

Some stores in these malls have a consistent selection of products in inventory. Some are quite inconsistent in range. It depends on the operating philosophy of the individual manufacturers. In any case, it is an attempt for the manufacturers to sell directly to the consumer.

Home Delivery and Drive-In Stores

All our preceding discussion has been based around the traditional store concept. However, other methods of shopping are being tried by leading retailers, including home delivery and customer collection of pre-picked orders. Many of the scenarios are based upon separating out the tedious activity of purchasing staples from the interesting activity of selecting ingredients for a meal.

Opinions are polarised on both whether home delivery and drive-in shopping will work, and how long it will be before it has a large share of the market. Perhaps the key to its short-term success is greater belief and vision within the industry. But one thing is certain: the impact of alternative shopping on the distribution pipeline will be considerable, when it arrives. It could change the shape of the network, the type of automation required and the approach to space in stores.

THE DIMENSION OF CHANGE

Every business publication, every learned professor, every consultant speaks of the importance of change. There is no question that change is the way of the future. The question is what to change and how to go about making this happen in the most effective way.

It is our concerted opinion that the greatest danger at this point, is to adapt or attempt to improve our existing, established systems. The degree of sophistication in technical developments which exist today is revolutionary. The degree of competitive sophistication among the leading companies in grocery distribution has reached new professional levels. No one in their business can afford to make small improvements on old systems. The race has quickened and the consolation prizes, if any are to exist, will be meagre.

The concepts and the techniques we have touched on here are but the beginning of a long parade of improvements. Our role is to serve the consumer - to make the work of selecting and assembling the daily necessities of life easier, less expensive, and more pleasant.

MAIN REPORT

CHAPTER 1: SOCIAL CLIMATE

Retailers are being confronted by an increasing number of changes which lie outside their control. They must adapt changing:

- demographics
- consumer behaviour and lifestyle.

All trends in distribution must be set against the changing demographical picture in Europe. Although certain countries are experiencing growth in overall population size, the long term trend across Europe is for zero growth or even decline. Retailers will need to fight for an ever decreasing food spend. In addition, pressures on manpower may result in new innovations in the area of automation.

Trends in Total Population and Projected Growth

	Population	% Total Population Change			
	1989(M)	1989-1985	1995-2000	2000-2005	2005-2010
Denmark	5.1	-0.5	0.1	-0.9	-0.9
France	56.2	1.6	1.4	1.0	0.5
Italy	57.5	0	-0.2	-1.0	-1.18
Spain	38.8	3.1	1.7	0	1.2
UK	57.2	1.6	1.2	0.6	0.5
W. Germany	62.0	-3.2	-0.8	-1.7	-2.1

Source: IGD FEB 91 / EMD 8

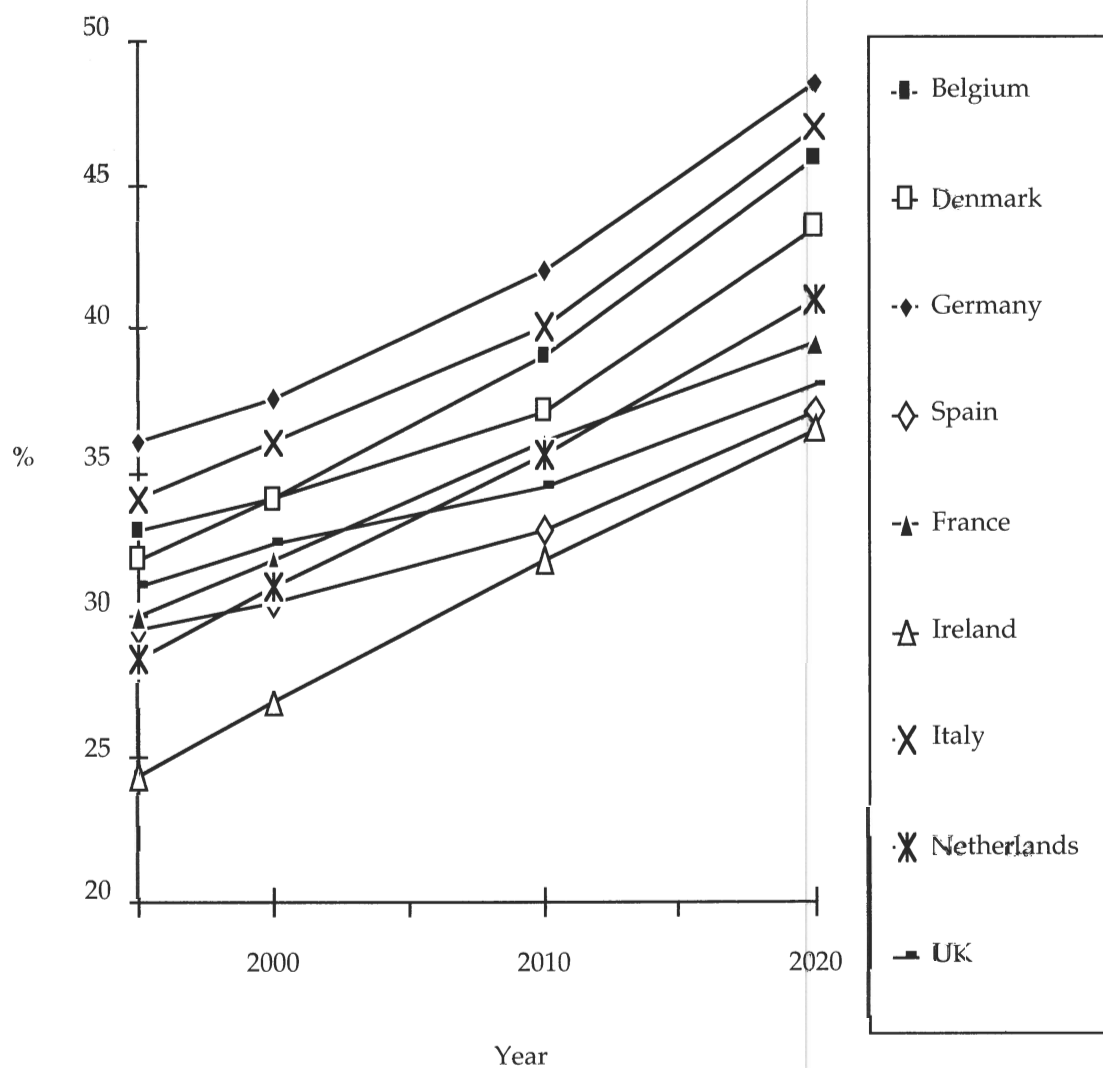
The average European is clearly getting older too. The number of consumers in the over 50s age group is rising steadily, resulting in a changing demand of product size and type as well as store location, and new bandings of income. Retailers will need to provide for consumer tastes that reflect the diet of an ageing population and their preferences for store location and transport.

Fewer products geared to children will be required, and more targeted at the older consumer. Economy family packs will decrease and marketing strategies must focus on the habits of the middle and older age groups as they become a major force in consumer spending over the next 20 years.

The household composition in Europe is also changing: one person households are on the increase and households with five or more occupants are decreasing. This is attributable to young adults leaving home earlier, a sharp decline in the marriage rate, more older people, more women working and rises in the divorce rate.

The meal time is becoming unstructured, with products being eaten at different times of the day, and even when the meal is consumed *en famille*, more often than not different family members eat different pre-prepared dishes, again resulting in smaller portion sizes being required.

Forecast number of 50+ year olds in Europe (percentage of total population)



Source: Eurostat

Sales of reheatable convenience foods rose 5% a year over the past few years in Europe and this is expected to continue¹. The chilled food sales in Europe are projected to rise from \$36.7bn to \$46.3bn between 1988 and 1993². Tomorrow's consumer will also be more sophisticated in the type of products that he/she demands. Increasing mobility means that more people are familiar with a wide variety of ethnic foods. In addition, cross-border migration will continue to result in large immigrant populations demanding ethnic food types from retailers.

Retailers will be under increasing pressure to adapt local store ranges to local shoppers' needs. Our research indicated that some leading retailers are already responding by tuning their product ranges on a store by store basis. This clearly has numerous store operations, performance measurement and logistics implications.

Consumer behaviour and lifestyle will also affect retailers. Although EC consumers spent some ECU 405 bn (US\$ 370 bn) on food through the retail trade in 1989, in real terms expenditure growth has been, and will continue to be, marginal. Without exception, spending on food as a proportion of total consumer expenditure has been falling in EC member states³.

Consumers are also more health and diet conscious. Demand for low fat dairy products, fresh fruit and vegetables is expected to increase.

Top sales growth of products in health and fitness categories: 1989

Country	No.1	No.2	No.3
France '89 vs. '88	Fresh Fruit Juice 145.1%	Light Margarine 25.2%	Cereals 19.8%
Italy '89 vs. '88	Yogurt 24.9%	Mineral Water 23%	RTE* Cereals 12.6%
UK '89 vs. '88	Mineral Waters 62%	Low-fat Margarine 21.6%	Yogurt 15.5%
W.Germany '89 vs. '88	Cereal † 7.8%	Mineral Waters 6.5%	Yogurt 4.5%

Notes: measurement periods may vary, figures are based on sales in national currency

* Ready-to-Eat

† Excluding Bichermuesli

Source: Nielsen

Retailers also face an increasingly sophisticated and demanding customer for whom the price/quality relationship is key. Coupled to the increasing demand for fresh products, retailers will have to tighten their distribution networks in order to ensure safe and speedy deliveries. In addition, food hygiene laws are being tightened and keeping the cold chain intact from point of

¹ Marketpower, London 1989

² Frost and Sullivan, 1989

³ "Food distribution in Europe into the 1990s", The Corporate Intelligence Group

manufacture to point of sale will be vital. This is especially so if temperature sensitive product labels reveal whether product temperatures have exceeded the regulatory norm. The demand for organic and preservative free products will put additional pressure on retailers to ensure a speedy stockturn.

CHAPTER 2: BUSINESS CLIMATE

Business *always* appears to be getting harder. However, developments in the business climate during the 1980s, that are continuing into the 1990s, really are making life tougher for most players in the grocery industry. In this section we focus on the two prime factors that are increasing competition and making operations more difficult:

- Industry consolidation
- Environmental and legislative pressures.

INDUSTRY CONSOLIDATION

Manufacturers

The grocery food industry in Europe is consolidating. Manufacturers who are attempting to achieve economies of scale, build or acquire brand names and market share, and are consolidating further through mergers and acquisitions. This is not limited to small and medium sized companies; large multinationals are also seeking further acquisitions and the establishment of strategic alliances.

The packaged grocery food market worldwide is worth \$2,000 billion a year. The largest market share is held by Nestlé (1.5%)⁴. In the past three years, mergers have been less visible because of the absence of takeovers concerning two leading companies, such as previously occurred between Nestlé and Rowntree. However, consolidation has continued; for example, United Biscuits made 12 acquisitions in continental Europe in an 18 month period during 1990 and 1991. Further large and small scale consolidation of European manufacturers is expected, as suppliers search for quality acquisitions which broaden product range and strengthen geographical customer bases. European participants consider that survival against large American competitors requires the achievement of economies of scale in global marketing and distribution.

Retailers

As the diagram on the following page illustrates, the food retail industry is already highly concentrated in many countries.

Over the next 5 years, the respondents expect the drastic consolidation of retailers to continue. The majority of respondents felt that the multiples would clearly be the surviving store type.

According to respondents, the greatest rationalisation is expected in Norway, Spain and Italy where chain stores currently have the lowest market share. Retailers in Germany, Denmark and the Netherlands are already fairly consolidated. The high market share of existing dominant players, coupled with strict legislation protecting small stores, make it likely that the overall consolidation in those countries will be less.

⁴ Sunday Times, 8.9.91, p.4.3

Food stores: share of turnover, 1988

Food store chain organisations

Share of Turnover (%)	Top 5	Top 10
90+	Finland	Austria Germany Switzerland*
80+	Sweden* Switzerland	Denmark
70+	Austria Germany	Netherlands
60+	Denmark	Belgium Great Britain France
50+	Belgium Great Britain Netherlands	Ireland
40+	France Ireland	Italy
30+		
20+	Italy	Greece Spain
10+	Greece Norway Portugal	

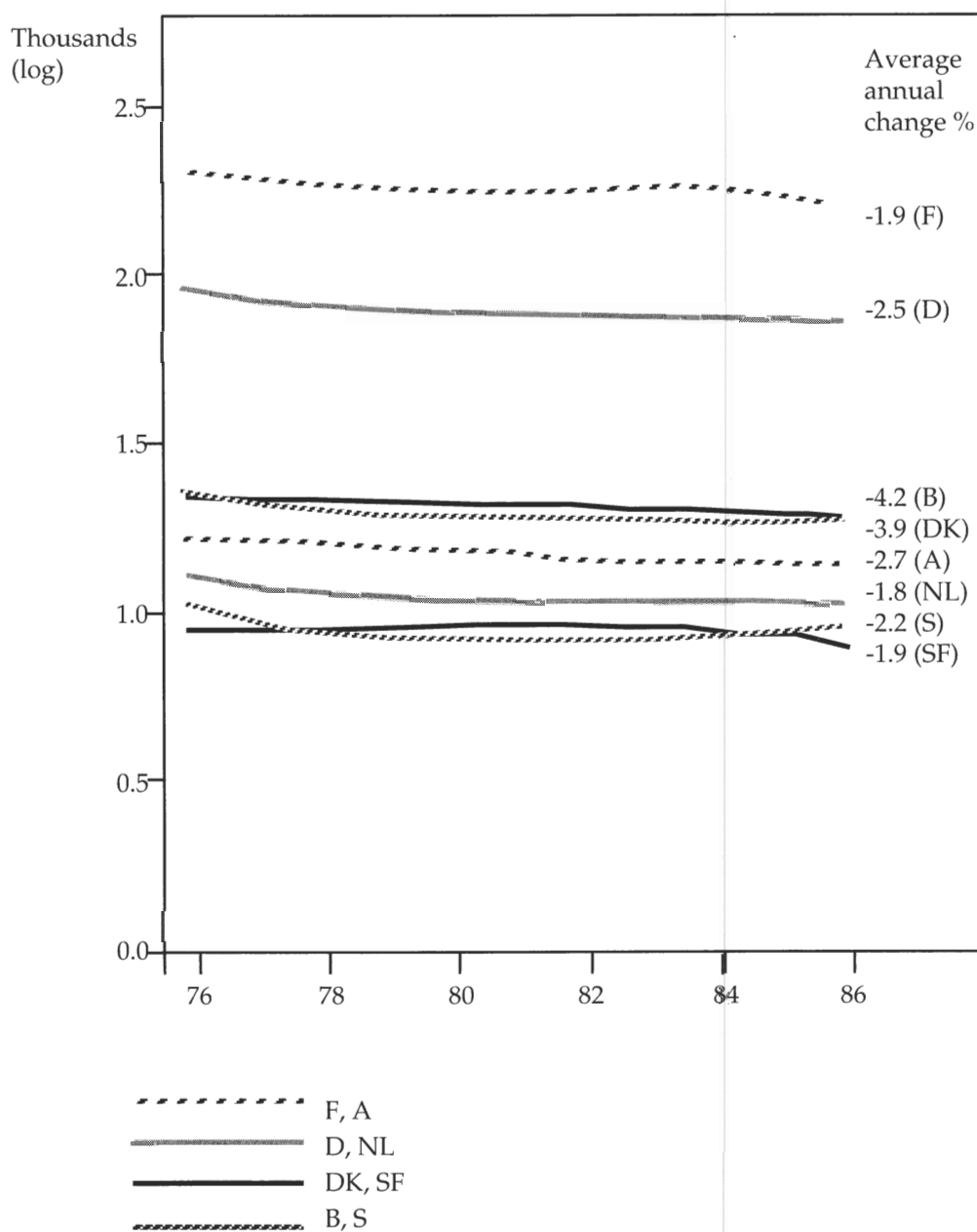
Note: * Estimated
Source: Nielsen

The growth of chain stores of all types is expected to force many independents out of business. For example, in Germany, large supermarket chains and discount chains are growing at the expense of the independents. Growth in multiples will mainly occur through new store openings. In certain markets such as France and the Netherlands, there will be more growth through acquisitions, such as the recent Carrefour/Euromarche buy out. Both this and franchising activities will grow because of laws restricting new store developments. Acquisitions will be used in some countries to build a presence quickly in a new market. For example, West German retailers have purchased former East German chains to develop store networks quickly.

Stores

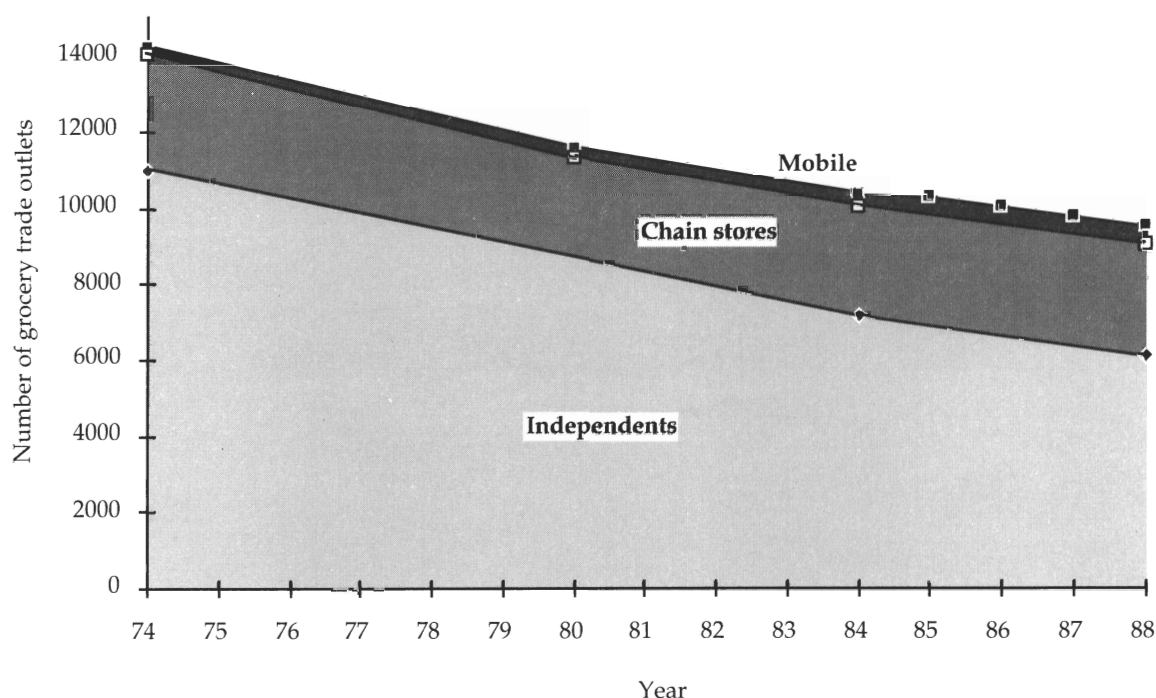
In addition to the overall retailer consolidation under way, the supply chain is being streamlined further by a decrease in the number of stores within chains.

Trends in overall store numbers



Many small independent retailers have been replaced with fewer larger multiple stores. As the graph below indicates for the Netherlands, while the overall number of stores has decreased by 4648, the multiples have increased their market share from 22% to 30.5%. This streamlining is expected to continue across Europe and should, in principle, further reduce cost to store shelf.

Store trends in the Netherlands



Source: CRK

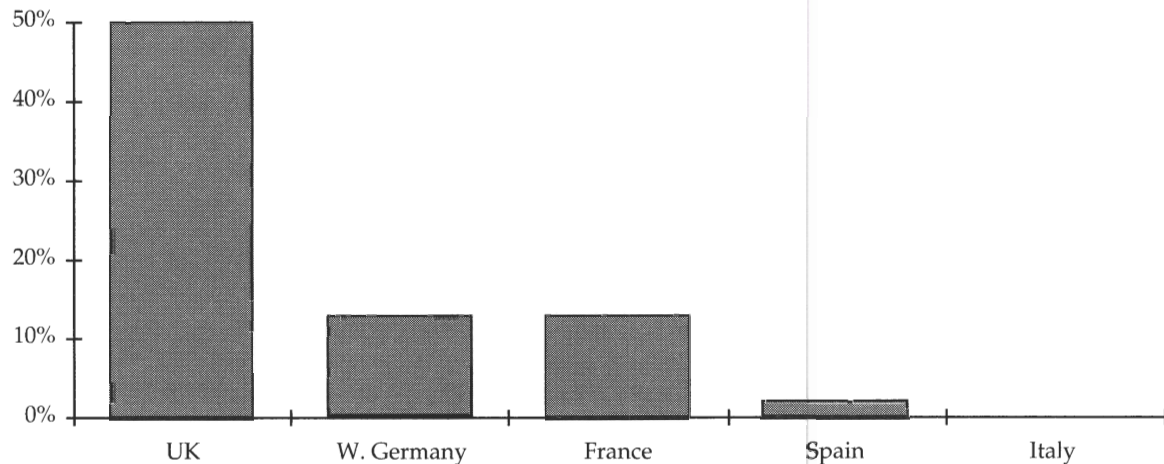
The size of the store is in part limited by the type of retailer. For example, most discount stores are firmly clustered in the small store size area, reflecting the limited number of products carried. Gateway, however, is experimenting with a 14,000 article discount store in the UK. This could potentially change the nature of UK discount stores.

Third Party Distributors

The third party distributors will also consolidate in those markets where they already have significant exposure, such as the United Kingdom, France and the Netherlands. In Spain and Italy, where market penetration is weak, respondents believe that numbers will increase as more retailers use third party distributors. Product distribution from manufacturer to retailer will be carried out by specialised companies hired by manufacturers for this purpose. Use of third party distributors in Germany is expected to remain weak even after the 1992 legislation has opened up the market. German retailers and manufacturers who have invested in distribution, are unlikely in the short term to switch to third party distributors. Once third party distributors are established in those presently low penetrated markets, consolidation is expected to follow.

The trend towards retailers' adopting of centralised distribution centres (and therefore third parties' adoption also) shows no sign of abating; the number of warehouses is decreasing, their size is increasing and the number of stores being supplied by each is growing.

Third party share of grocery multiples distribution: 1988



Source: Financial Times Conference on Transport

Finally, third party distributors will need to cater for changing manufacturer needs by offering more pick-ups from manufacturers as well as facilities for common transport arrangements.

ENVIRONMENTAL AND LEGISLATIVE PRESSURE

Environmental and legislative pressures are also continuing and further costs will be imposed on companies as environmentally friendly goods are forced into the marketplace. Waste disposal, air pollution and noise pollution costs will all increase. Pedestrian zones and laws further restricting delivery times in towns and cities will further aggravate transport restrictions.

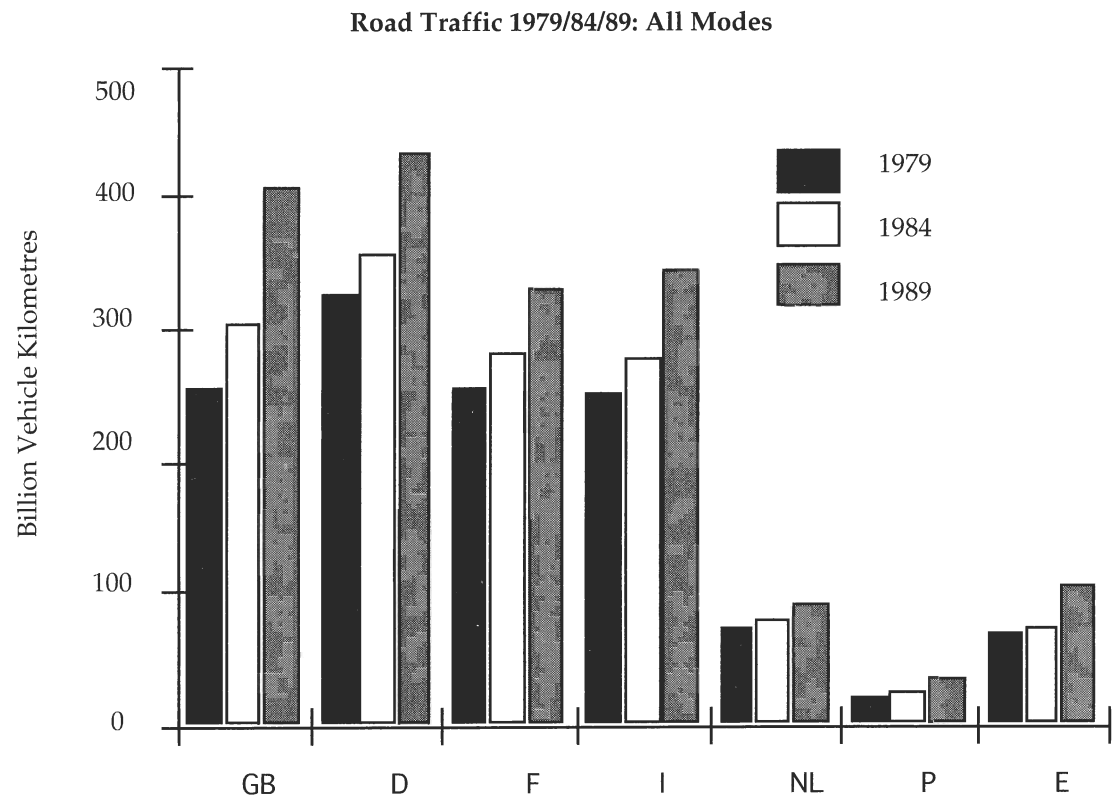
Legislation in the area of store development and employees' charters will further constrict companies. It is likely that by the end of the century all major European countries will have laws restricting new store development, like the German *Baunutzverordnungsgesetz*⁵ or the French *Loi Royer*⁶.

New employee charters will affect distribution operations. Transport scheduling will be constrained by restricted drivers' working hours. Distribution centre operations will be more costly to run in shifts.

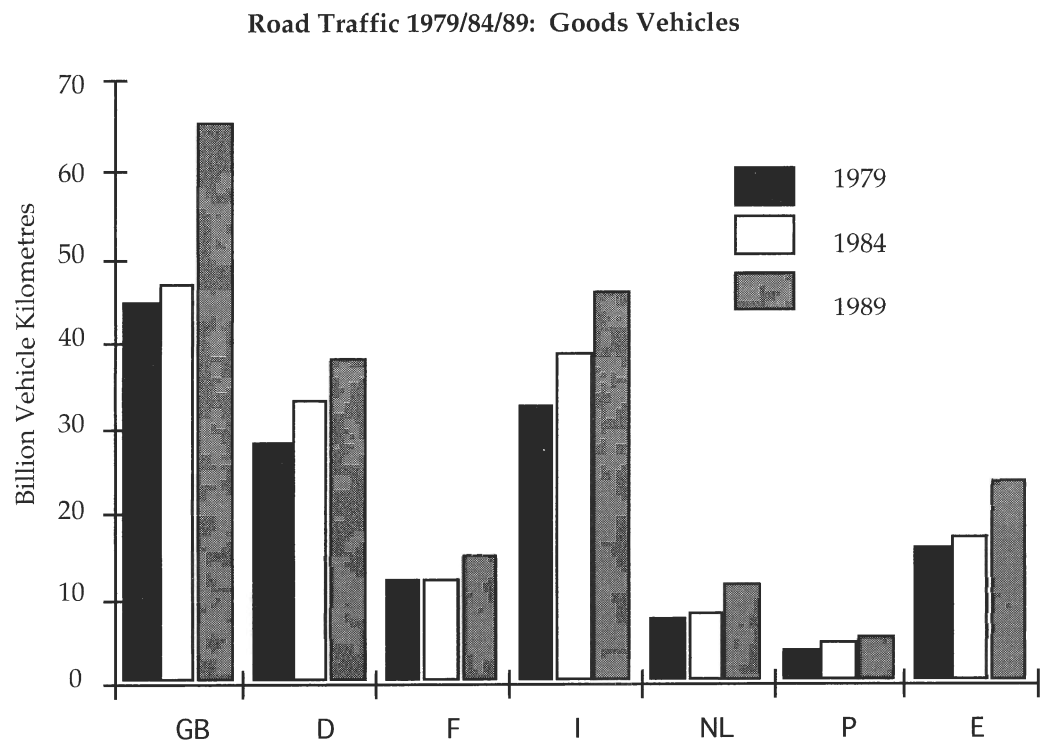
Finally, whilst having to deal with new consumer demands and legislation, the retailer's and manufacturer's logistics task is being made more difficult by increasing traffic levels and congestion. The combined effect of these pressures will be to limit trends towards longer opening hours and multi-wave deliveries to stores through the working day.

⁵ The *Baunutzverordnungsgesetz* limits new store development to those outlets under 800m² in size.

⁶ The *Loi Royer* is designed to protect small neighbourhood stores by limiting large stores development.



Source: TSGB 1991



Source: TSGB 1991

CHAPTER 3: DEVELOPING TRENDS

The pressures facing the industry are immense. Many retailers and suppliers are only now progressing towards a 1980s distribution model. However, the leaders have moved on. They are taking a fresh approach and making radical changes to:

- Their overall distribution philosophy and approach
- The network structure
- The detailed infrastructure they use to implement distribution.

We examine each of these below, identifying overall trends and the leading techniques being adopted by pioneers of the 1990s.

3.1 THE 1990S DISTRIBUTION PHILOSOPHY

New motivational and organisation of factors are facilitating change and creating opportunities for new types of improvements in distribution in the 1990s. Two key factors are driving this:

- The need to focus more clearly on the consumer
- The desire to move to a truly Just-in-Time product flow operation, which we term Fast Flow Replenishment when applied fully to the grocery supply chain.

Both these factors encourage different aspects of partnershiping, as discussed below.

Category management - maximising demand

This social and industry climate is giving rise to a changing profile of consumer needs and fiercer competition. As a result the fine-tuning of a store's product range to its customers ("Category Management" as it is known in the US) is becoming a critical element in the retailer's armoury. This seemingly innocuous change in retailing policy has a significant impact on the distribution operation, since the product range is continually changing. Distribution channels need continual reassessment and the danger of obsolete inventory increases the desire for a stockless distribution chain.

As discussed in the Executive Summary, combined merchandising initiatives by manufacturers and **retailers** is arguably the most effective response for both parties, and it could form a key **aspect of partnershiping**.

However, our research revealed that whilst manufacturers were keen to pursue this concept, European retailers generally show little enthusiasm for it yet.

ABC Retail has established many stores in a small area, each with a finely tuned format and range targeted at different customer needs; at one cross-roads he even has four stores, one on each corner. By careful monitoring of his sales, ABC has established that his stores are not extensively competing with each other. But ABC realised that the market is dynamic and he has to respond to both the consumer and his opposition. He is continually fine-tuning his product ranges, which makes the stocking policy at the warehouse very difficult. If only he didn't have to hold stock at all...

Partnershiping and the optimal supply chain

Within both manufacturers and retailers there is a company-wide realisation that distribution is an important part of the business and that all aspects of the business can contribute towards its successful execution. There is also acceptance by the distribution function that the distribution operation may need to be sub-optimised in order to optimise the overall performance of the company. Optimising the whole supply chain, rather than just one component of the chain is the key.

More importantly, however, leading companies realise that it is not just enough to optimise within a company, it is necessary to optimise the supply chain from manufacturer to consumer within a product flow environment. This is in stark contrast to the philosophy of the 1980s where both manufacturer and retailer optimised their respective supply chain, but they did little to work together to optimise the overall supply chain.

Our research revealed that both manufacturers and retailers are interested in moving towards a Just-in-Time philosophy and partnershiping, but that manufacturers are clearly better prepared for the more radical options. To understand the dividing line, it is necessary to look more closely at the Fast Flow Replenishment concept and partnershiping to optimise the supply-side operation.

The overall driver behind Fast Flow Replenishment is to eliminate as much stock from the supply chain as a whole. To achieve this, product is moved to a location when and only when it is required, and ideally no inventories are maintained. This leads naturally to the idea of a retailer using a cross-docking facility to eliminate stock from its part of the supply chain (see 3.2 Network Trends - Changing the Rules).

But rather than push the stock up the supply chain to the manufacturer, the retailer should assist the manufacturer to eliminate stocks too - this benefits the retailer as the manufacturer's costs are reduced.

The key factor to help the manufacturers eliminate stock is information. A supplier who knows the sales and likely demand of a retailer can gear his production accordingly. The use of electronic data interchange (see Chapter 4: Infrastructure Trends - Systems, EDI) is a key enabler in this area allowing this information to be passed rapidly. This sharing of data is one type of partnershiping, and our research revealed that leading edge retailers have embraced the idea whole heartedly as part of the drive toward a Just-in-Time/Fast Flow Replenishment operation.

These Fast Flow Replenishment techniques have been used for a number of years by leading UK retailers and suppliers of chilled prepared meals. Typically a forecast order will be sent to the manufacturer by EDI a week ahead, indicating the likely requirement. The final order is then sent through perhaps as late as noon of the day of production, and the finished meals supplied overnight to a retailer's cross-dock for delivery early the following day.

The way forward is to apply the same techniques to the production and flow of packaged goods.

Whilst the cross-docking techniques apply to all fresh products, the Just-in-Time manufacturing method cannot be applied to all. Notably vegetables, for which the harvesting time is still largely determined by weather conditions, resist Just-in-Time production. For these products, the new challenge relates to fast haulage to the cross-dock, as fresh vegetables are sourced increasingly outside their country of sale.

Clearly, the use of Fast Flow Replenishment techniques present a great opportunity for the industry. However, further savings in distribution can be brought about by means other than elimination of inventory through Fast Flow Replenishment. The sharing of facilities and transport also provides opportunities for cost cutting. These changes represent a further fundamental restructuring of the network, and are explored further in Section 3.2 Network Trends - The Impact of Partnerships. The research revealed a very clear divide between manufacturers and retailers in this area, with only the manufacturers interested in this type of partnership.

At this stage, the most clear cut examples of active partnershiping between manufacturers and retailers are concerned with detailed operational issues. Individual retailers and manufacturers are focusing on clear mechanisms to eliminate infrastructure 'clutter' in the supply chain. The process may be initiated by either party but is based upon a suggestion that is seen to be beneficial to at least one of the parties. Both sides then assess the cost impact to themselves, and if need be, a negotiated change in price is agreed. We have termed this style of partnership the 'marginal negotiation partnership' and it is most often used to improve packaging and delivery patterns.

The account liaison team from manufacturer XYZ approaches the supply chain team of Retailer ABC, and asks if there are any changes in packaging they would like to aid distribution. Retailer ABC looks at this and through its supply chain accountant establishes that it can save 4 ECUs a case on handling some products in the distribution centre and store, if the case packaging is changed. XYZ goes away and investigates the suggestion and concludes that it would cost him 2 ECUs a case extra, and responds by saying that it would not be possible without an increase in price. The matter gets referred to the ABC's buying department and XYZ's account manager. They negotiate a price increase of 3 ECUs a case for the change in packaging and each is happy as it has saved or made an extra 1 ECU a case overall.

In addition to this bilateral action, industry-wide initiatives are being attempted to improve infrastructure. Our research revealed examples of supermarket chains creating industry forums in their own countries to develop standard product handling specifications. As well as established trade associations, 11 European retailers have formed Associated Marketing Services (AMS), a European group aiming to develop better co-operation between the

participating companies and their suppliers. Improvements in the overall efficiency of the supply chain can then be shared by the group's members.

The importance of cost measurement

Given the forces for change outlined above, it is clear why there is a widespread recognition that co-operation offers good prospects to the retail trade, if each partner is prepared to sacrifice part of his freedom in return for greater opportunities. But this is at best only half of the key issue.

Such a partnershiping philosophy is now borne from necessity, not foresight.

Moreover, the lack of adequate supply chain cost information available to a significant number of retailers, for either logistics planning or the tactical evaluation of alternative supply chain handling patterns, is a major shortcoming. Without such information, many retailers will not be able to convert distribution philosophy to real business profit improvements. Worse still, they lay themselves wide open to negotiating poor partnershiping deals and profit deterioration. It is therefore not surprising that the leading retailers are assigning skilled accountants to work with the supply chain teams to assess the costs of detailed options, within the distribution chain.

In summary, the use of cost data is key to both demand and supply side partnershiping.

3.2 NETWORK TRENDS

This section covers the macroscopic view of the distribution operation, specifically:

- the trends in the number and size of manufacturers, perishables suppliers, wholesalers, retailers, third party distributors and haulage companies.
- the nature of the operations run by the above and the relationship between them
- the number of supply, stock holding, cross-docking points and retail outlet locations.

The changing shape of the distribution network is considered in five stages:

- Streamlining the network: how simplified, more closely controlled supply chains are being established at present.
- Reengineering the network: given that streamlining is not an adequate solution to the major 1990s challenges, this stage introduces more fundamental changes.
- The impact of partnerships: how co-operative relationships can redefine the network.
- Changing the network 'rules': the results of taking inventory reduction to its logical conclusion.
- Alternative shopping: the possible impact of non-store based shopping.

STREAMLINING THE NETWORK

Streamlining will dominate network reorganisation over the next two to three years, before the effects described in The Impact of Partnerships and Changing the Rules are felt by the industry at large.

In addition to the natural streamlining that occurs through industry consolidation (see Chapter 2, Business Climate), further rationalisation is occurring through the elimination of production sites and distribution centres.

Production sites

Manufacturers are decreasing the number of their production sites to take advantage of increased economies of scale and the single European Market is providing an additional incentive. Focused manufacturing appears to be the preferred strategy - the logic of one category of product line per factory appears to lie in the economies of scale achievable on capital investment and the reduction in raw material inventories⁷.

The number of factories in use throughout Europe varies widely depending on product type and whether manufacturers are largely national. 80% of the respondents had plans for or had just finished a consolidation exercise. Perishable producers and beverage producers tend to organise production on a national basis or are bound to geographical areas by the nature of their product. Packaged goods suppliers appear to be the likeliest candidates for pan-European consolidation, whereby products are produced in one country for sale in others.

⁷ However, the effect of high interest rates may be artificially boosting this view. Centralised production can help reduce inventory and set up costs during periods of high interest rates.

While centralised production may facilitate economies of scale and long production runs now, the use of quick response techniques may alter this picture. Manufacturers need to evaluate whether they are optimising according to today's business environment or according to where the business will be tomorrow.

Manufacturers are generally far more international in their outlook than retailers. All the marketing management functions are being centralised with the exception of Sales & Marketing. In sales & marketing there is no clear trend because manufacturers wish to organise their sales organisation according to customers' buying departments. Fewer manufacturers are holding stock at the factory, instead preferring to send shipments from the production line directly to their central distribution centres.

Distribution centres

In many countries across Europe, retailers, manufacturers, wholesalers and third party distributors are closing local warehouses and replacing them with central/regional distribution centres.

The number of manufacturers' stockholding points among respondents varied too widely to draw a conclusion about the scale of this reduction. However, two national manufacturers had only one central distribution centre and another three were in the process of further rationalising their operations. In addition, previous research shows that manufacturers are reducing stockholding points significantly. Reductions to one central point for non-perishable suppliers are most likely in national markets.

None of the respondents manufactured on a pan-European scale, so conclusions concerning the emergence of single stockholding points for Europe cannot be drawn from the primary research. There was scepticism amongst respondents about the feasibility or even desirability of one central stockholding point. Again this is supported by previous Andersen Consulting research which reveals that pan-European operations are not generally reducing to one warehouse, but typically to around five for all of Europe. Our respondents felt that the location depended upon the distances needed to travel; the respondents were either beverage producers (who produce locally because of volumes and weight and therefore are likely to have one warehouse per country) or perishables (no central stockholding as such) or a national producer of personal products.

Manufacturing respondents, when pressed for a preferred location for one central European stockholding point, settled on the golden triangle (southeast England, northeast France, Benelux and northwest Germany) and the southern border between Germany and France.

The limited impact of streamlining

The research confirmed the current preoccupation with streamlining. This is partly because it is near the top of today's agenda for many organisations.

However, the fundamental point is that streamlining will represent only a short term simplification of the network before the long term effects increase the number of different distribution channels. Why? Because streamlining represents a marginal rationalisation of the 1980s method of operation. It is not an adequate response to the fundamental product flow and partnership step changes which will emerge in the 1990s.

RE-ENGINEERING THE NETWORK

Another trend in distribution re-engineering is at the embryonic stage. Retailers who have explored the economies of scale of centralised distribution centres are finding that mere streamlining does not result in the most effective network structure, even for current market demands.

Some degree of experimentation has taken place. What could be seen as fine-tuning of existing arrangements could also be regarded as the first step towards the radical re-engineering of future distribution practices outlined in the Executive Summary. This is evident in the following ways:

- Distribution centres arranged by product type.
- Direct deliveries.
- Rail versus road.

Distribution centres arranged by product type

The trend among leading retailers and wholesalers is to arrange their distribution centres according to product characteristics. This does not mean the traditional split of frozen vs ambient, but rather **fast vs. slow** movers. An increasing number of retailers are setting up one or two centralised warehouses which stock their slow moving products. The limited range of fast moving products is then held at several regional distribution centres/transshipment points. The slow-movers warehouses feed these fast-movers distribution centres.

Orders for slow moving items are picked to stores' requirements at the slow moving distribution centre. These are then sent to the appropriate fast moving distribution centre. Upon arrival the roll-cages or pallets are simply placed in the relevant store space within the dispatch area. They wait there until the remainder of the fast-movers have been sorted and picked. The entire batch is then placed in a truck and shipped to the store. This method may superficially appear foolhardy, since extra handling of the slow movers is incurred. However, safety stock is a high proportion of the total stock when low stock levels are held, as is the case for slow movers. By consolidating stocks overall into one location, the overall amount of safety stock is reduced. For slower movers, leading retailers have shown that the savings in safety stocks outweighs the extra handling costs.

This arrangement of splitting fast and slow movers appears to be more prevalent among supermarkets and discount operations. Its potential significance should not be overlooked. It could start to pave the way for the shift to a product flow mentality and the radical change to full application of cross-docking practices. Some of the key ingredients are present: the segregation of slow-movers accompanied by greater questioning by the retailer of what

additional commercial benefits he gets from warehousing them instead of imposing further on the manufacturers; for the fast-movers, the focus on maintaining product flow through closer working with the manufacturers and exploring cost, service level, and further logistics options.

At the same time there are tactical developments driven by current cost issues, such as the move away from completely composite distribution centres. More retailers are removing frozen from their composite distribution centres as they are finding that the cost incurred of performing extra frozen delivery drops is outweighed by the extra costs associated with composite vehicles. The exact trade-off is dependent upon the product throughput and the delivery patterns. The move away from full-composites (holding frozen, chill and ambient) is facilitated by the increased demand for chilled products. The vacated frozen area can easily be turned into extra chilled space to handle the increase in perishables (one of the key consumer purchasing shifts referred to earlier) and a separate frozen distribution centre established. Our research revealed that the use of semi-composites⁸ to handle fast moving product ranges is increasing accordingly. This also could be regarded as one of the first steps towards radical re-engineering to the product flow practices outlined earlier.

Direct deliveries

The current delivery patterns across Europe vary quite considerably by country, with, for example, the UK using a high percentage of centralised distribution and Spain having a high percentage of direct deliveries.

However, an overall trend did emerge for Europe, with 67% of our respondents expecting direct deliveries to decrease (the remainder of respondents did not express an opinion or expected it to remain constant).

However, there are isolated cases where retailers feel that they have gone too far and for select product categories are reinstituting direct delivery. The case for direct delivery varies by product type: on mainland Europe, fresh products were far more likely to be direct delivered, but this is less prevalent in the UK where fresh produce is usually cross-docked. Newspapers, milk, bread are more likely to be direct delivered. The product types that appear to be moving back out of centralised distribution centres are large size and high stock turnover products (e.g. cereals, beverages). This could be yet a further early indicator of a radically different product flow mentality being adopted for the vast majority of products later in the 1990s.

Transport within the network

In the short term, road will remain the preferred method of supply. Future environmental constraints and potential cost savings for goods shipped over 300 miles are making several manufacturers and retailers consider supplementing this with rail. Accordingly, the long term prospects for rail use are significant. This issue is considered in the Transport section of 3.3 Infrastructure Trends.

⁸ Semi-composite describes a distribution centre which carries a limited range of temperature controlled products. A semi-composite could include ambient, produce and chilled, but not frozen; or frozen and chilled, but not ambient.

THE IMPACT OF PARTNERSHIPS

The desire to minimise costs by optimising the entire supply chain is leading to a growing recognition that co-operative relationships within the industry must increase. These relationships take one of three forms: supplier partnerships, supplier/retailer partnerships and retailer partnerships.

The research indicated that retailers are unlikely to enter partnerships in the short term in a way that will impact the network structure (for instance by sharing distribution centres). However, among suppliers traditional types of partnerships, such as product licensing, marketing agreements are being augmented by new ones i.e., common transport agreements and strategic distribution alliances. The rising cost of distribution and the increasing pressure on margin is causing suppliers to consider alternative methods of getting the product to the market.

Increasingly, suppliers in the grocery food industry can be classified into those that regard distribution of their product as part of their core business and those that do not. The trend is for suppliers to pool their distribution arrangements in order to minimise cost. Over 80% of the suppliers we spoke to were either considering common transport arrangements or had already entered into them. In addition, a number of retailers indicated that manufacturers approach them sporadically asking to be put in touch with potential common transport arrangements.

A common transport arrangement could take the shape of a strong distribution supplier distributing another supplier's products. Examples here include:

- The distribution are of MD Foods, a major European supplier, (to which manufacturers deliver products according to store orders to MD Foods distribution centres, which then get delivered either to the retailers distribution centre or direct to the store).
- Northern Foods Transport.

In addition, there is an opportunity for several suppliers to band together and have a third party manage joint distribution for them.

The advantage to the retailer of common transport arrangements is fairly clear. Several different manufacturer products are delivered at the same time. This decreases the number of deliveries for the retailer; one full truck instead of three one-third loads.

The question of true partnershiping between retailer and supplier is not a simple issue. Commercial secrecy, the belief that respective goals are not totally compatible (although some clearly are) and old habits all act as constraints. The more obvious alignments of practices for mutual cost savings are already being explored. In some instances, rapid supplier response times have enabled the merchandising of new unique shortlife products by the retailer. However, it is when a major changing of the rules occurs during the 1990s, in line with product flow initiatives, that retailer/supplier partnershiping will become much more real.

Manufacturer XYZ has grouped together with five other non-competing manufacturers, to share a warehouse and transport. The facilities are run for them by a third party distributor.

XYZ chose its partners carefully, as it wanted to ensure the resulting drops sizes to its retail customers would be large enough to ensure efficient transport, and to make it attractive to the retailer to accept direct delivery.

Retailer ABC realised that as it would take roughly full loads from XYZ's group, no extra congestion would occur at the store, and it would eliminate its transport costs and warehouse inventory. It was even prepared to pay a little more for the products to gain the benefit.

Of course, the group could not always arrive at this arrangement. But nothing was lost, as they could carry on with their normal style distribution out of the shared facility.

CHANGING THE RULES

In the past, the drive towards local warehouses removed some stock from the back-room. Currently, the drive towards centralised distribution centres is removing excess from the back-room as well as dramatically decreasing the level overall. In an attempt to reduce levels further, the leading edge retailers are now looking at the entire supply chain.

The result is that an increasing number of retailers believe stock should be held at the manufacturers site (29%) or not at all (29%). If the manufacturers and distributors are included, the view is even more dramatic: 46% of respondents believe that stock will be held at the manufacturer. While this might not be the manufacturers' motive for "partnershiping arrangements", it is clearly a high agenda topic for the retailers. As it happens in practice, it will trigger the many product flow related practices identified in the Executive Summary.

These retailers believe that cross-docking is the way to eliminate stock altogether. This would represent a fundamental change to the network with significant repercussions for many organisational issues. Instead of using warehouses (where stock is held) as staging posts between the point of manufacture and the store/consumer, a cross-docking facility can be operated instead. The cross-dock receives stock in and sends it out with no intermediate storage, either the same day, or the following morning following a night-time delivery. The benefits of centralised warehousing associated with transport load consolidation and control are maintained, but stock is eliminated from the supply chain particularly when cross docking is used in conjunction with just-in-time manufacturing.

However, to (effectively) implement cross-docking (or quick response as it is sometimes known), a number of obstacles must be overcome.

Firstly, the physical mechanics need to be resolved. Two possibilities exist: manufacturers ship pallets or cases on a product basis to a retailer who sorts them by store or the manufacturer picks for the store (probably into roll cages) and the retailer merely sorts the roll cages by store. The possibilities for the retailer performing the sortation are examined further under the Automation of Distribution Centres section within 3.3 Infrastructure Trends.

Secondly, the lead time from ordering to supply must be short: 24 hours to be really effective. The order fulfilment levels need to be high, and a degree of trust is required by the retailers that this will be the case. This can be a significant barrier: one retailer stated that he would never cross-dock because in the event of poor manufacturer performance he would not be able to source from another supplier before significant damage was done. Clearly, a sustained period of excellent performance from the manufacturers is required before retailers will be truly comfortable with the idea of cross-docking.

Finally, having overcome physical handling and order fulfilment, there remains the more indirect barrier of promotions and bulk buys. These have their attractions to manufacturer and retailer, but are apparently not compatible with cross-docking.

However, this incompatibility is not entirely genuine. A bulk buy which results in stock sitting in a warehouse clearly does not represent elimination of stock from the supply chain. Equally, whilst the purchase may be good for the retailer on that product, he may well be paying for other retailers' bulk-buys on other products.

From the manufacturer's perspective, the product that sits in the warehouse cannot be considered good either. After all, his objective is not to flood a warehouse but to temporarily flood the consumer market with a cheap product, i.e. to generate consumer demand and increase his market share. The result of flooding a retailer's warehouse one month will probably be reduced sales next month - not much of an achievement for the manufacturer.

If a fast response operation exists, then as consumers respond to a promotion by buying more, rapid response cross-docking will allow full replenishment of the shelves. In comparison, when stock is held by the retailer and replenished on a lead time of several days, the retailer must hold a high level of stock in case a promotion is successful.

In reality, a truly stockless supply chain is not yet possible. The manufacturer will need to carry some, albeit little, buffer stock at his distribution centre. At present, manufacturers are not geared up for the level of flexible manufacturing that is required and the extremely short lead times that are needed. In addition, many retailers are not yet willing to allow the sales information flow that must occur for such an operation to work.

The closest examples to this kind of operation are those operated by perishable meal producers. They receive a forecast order a week out and then a firm order 24 hours before delivery, which determines exact production runs. The current view of packaged goods manufacturers is that the perishables approach is not feasible for them.

ALTERNATIVE SHOPPING

Although quite significant on their own, the trends towards stockless distribution centres, cross-docking and common transport arrangements allow the overall network structure to maintain a familiar look; the overall flow is from manufacturer to store via distribution centres, with singles picking only occurring by the consumer in the store. The advent of alternative shopping could cause a radical change in the network.

The research revealed strongly polarised views on the prospects for alternative shopping methods, including home/telephone ordering and home delivery. It appears that home shopping will increase at least as a niche market. Demographic and lifestyle changes could tilt the balance towards large scale home shopping; there are more single person households, working hours and the number of old people are both increasing. Additionally, a snow-ball effect may be encountered sooner than anticipated, as several large companies are performing trials.

Different kinds of alternative shopping will have different effects on the network and to a lesser extent infrastructure.

In the simplest case, the order could be picked from the store shelf by the retailer to be either collected from the store by the purchaser or delivered to his home. Assuming the volumes are low this would leave the existing network and infrastructure largely unaltered.

At the other extreme, the size of the store could be reduced, and singles picking would occur not in the store but from specialised distribution centres equipped with automated carousels to support high speed singles picking. A very rapid response would require many such distribution centres, thus to a large extent decentralising distribution.

There are a number of intermediate scenarios:

- An 'idea-centre' is a supermarket where shoppers primarily look for food/meal ideas rather than for staple shopping.
- Stores may become 'idea-centres' which are visited by the customer and would allow both conventional and some alternative shopping.
- Goods could be picked up by consumers from collection-points, situated conveniently around large towns and cities; these may or may not be the picking points.
- A two-tier service level might be defined, one for weekly, staple orders and another for rush orders, charged at a premium; the balance between these two would change the number and location of picking centres.

Alternative shopping is in its infancy and the best direction has yet to be established. Retailers are well placed to undertake it, but in the presence of a slow take-up by them, manufacturers and wholesalers may step into the breach.

3.3 INFRASTRUCTURE TRENDS

SUMMARY OF INFRASTRUCTURE TRENDS

The key areas for change in the distribution infrastructure⁹ of the grocery food industry are as follows:

- Delivery patterns: the decline in direct to store delivery.
- Inventory Control: the use of re-ordering models to control inventory levels better.
- Automation of Distribution Centres: partial automation supporting flexibility will be used.
- Transport: the long term use of rail to transport products from manufacturer to retailers' distribution centres.
- Packaging: the increased use of returnable packaging.
- Systems: the use of information technology to control activities and improve performance measurement.
- Performance measures & organisation structure: the key to winning in the 1990s will be optimising the entire company through accurate performance measures.

DELIVERY PATTERNS

Trends in delivery patterns are very difficult to gauge because they are driven by a number of interwoven factors; retailer and store type, store size, product volume and type, and the type of distribution strategy followed. There are, however, a number of viable trends.

The first concerns control of the frequency and timing of delivery to stores from retailer distribution centres and manufacturers. Most retailers dictate the delivery pattern (68% of respondents). In addition, within the retailer, store requirements are increasingly dominating distribution centre demands. Many retailers indicated that the frequency of deliveries to stores would increase to match a store replenishment philosophy. There are increasing attempts by retailers to force deliveries both at the store and distribution centre level into strict delivery time slots, so as to simplify the planning operations.

At the same time as increasing the accuracy of direct deliveries from manufacturers to stores, retailers are generally reducing the number of direct deliveries, in favour of centralised distribution. This issue is examined further in the Re-engineering the Network section in 3.2 Network Trends.

Delivery patterns from distribution centre to store are also changing; retailers are trying to maximise the use of their transport assets, while responding to store needs. Retailers would rather run ten vehicles three times a day than thirty vehicles once. Store level labour scheduling becomes easier, because one person can be used for three staggered deliveries instead of three people at once. Staggered deliveries also result in more products in a store with the same shelf space and no back-room space. However, these desired changes face two challenges. Firstly, the tighter the use of assets, the greater the vulnerability and the knock-on effect of breakdowns

⁹ *Distribution Infrastructure* can be defined as all aspects of product handling throughout the supply chain, ranging from ordering and delivery patterns through to transport and packaging.

in the chain; this factor is increasing the demand for dynamic planning tools. Secondly, every store needs to be replenished in time for opening hours. While a staggered 24 hour system would eliminate this problem, retailers expect that delivery patterns will be further constrained by noise control legislation and delivery restrictions. In addition, retailers with stores in town centres also face restrictions because of pedestrian zoning.

INVENTORY CONTROL

The model used for calculating purchase order quantities dictates the level of stock held in warehouses, for products not being directly delivered or transhipped. As such, it is the key to inventory levels within today's distribution network, and requires serious attention until cross-docking is adopted.

A wide variety of models were used by respondents, approximately half of which were incorporated into systems which automatically generate purchase orders. Re-ordering was triggered by both stock levels and fixed review intervals; the re-order quantities were generally determined either by direct store requirements, ordering up to a fixed level of stock in the warehouse, or by statistically forecasting sales; safety stock was either implicit in the order-up-to-level or statistically calculated.

There was a clear correlation between the type of model used and the stockturn for frozen foods and non-perishable ambient foods, both of which tend to be staple sellers, distributed through distribution centres.

Those retailers using an automated model, based on a fixed review interval and statistical calculation of forecasts and safety stocks, on average turned frozen and non-perishable food stock every thirteen days. All other respondents turned their stock every twenty-three days on average; (one retailer who was approaching a cross-docking situation with very short lead times from its suppliers was excluded from the analysis).

These statistical models are most effective for staple sellers, for which they separate underlying sales trends from random sales variations. The trend is used to determine the forecast and use the random variations to determine the safety stock. If the re-ordering parameters are not set correctly or forecasts vary too much from actual sales, the model will warn the operators so that action can be taken. As with any model, manual intervention is required to handle promotions, further limiting its applicability. Nonetheless, the value to be gained for staple, non-promoted products that represent a very significant proportion of inventory is substantial, and warrants consideration by most grocery retailers.

Despite the apparent disparity between the quality of the re-ordering models, less than 30% of retailers were dissatisfied with their purchase ordering and inventory control systems. These systems functions, however, did have the highest number (13%) of highly unsatisfied users. The majority of respondents used their re-ordering model for historical reasons and it is likely that as awareness of the potential grows, more retailers will be adopting systems supporting statistically based re-ordering.

These sophisticated models require a small team of highly trained specialist staff to operate them. Whilst this heightens the difficulties associated with staff retention, it brings other benefits, including the ability to review re-ordering parameters frequently. This is critical to the effective use of re-ordering models. The majority of respondents believed that their parameter review interval was too long, typically between one and two years for those using manual models.

LAYOUT AND OPERATION OF DISTRIBUTION CENTRES

The **Layout** of distribution centres is not a critical issue for most respondents. Their key objective at present is to arrange distribution centres according to product flow (fast vs. slow). Given that the current focus is towards optimising the overall distribution structure with the expectation that cross-docking will increase, it is not surprising that improvements in traditional storage and pick layouts are not of the highest priority. Although present consolidation trends mean that size in general is increasing, this is expected to decrease in the long term as more product is cross-docked.

The trend towards picking according to store requirement could produce a standard approach to warehouse layout in the long term: distribution centre layouts shifting from purely ABC driven locations to a combination of ABC driven locations and store sequenced layout or weight sequenced layout. The principal behind these methods is that the saving in store labour outweighs the additional warehouse labour. However, experience in this area indicates that the break-even point is dependent on the diversity of the product range and the size of the store, and the research results did not reveal a conclusive trend.

The interest in cross-docking also affected the **operational improvements** envisaged by the respondents. Increased use of cross-docking and decreasing stock levels eliminate the need for many traditional warehouse features. As one retailer responded when asked about operational improvements: "why optimise the detail of stockholding when you are trying to get rid of stock?" Accordingly, there were no discernible trends in picking or storage methods such as gravity feed systems, though there was a move towards narrow aisle storage for slow-moving products, supported by man-to-product cranes. However, it is clear that leading retailers have achieved considerable operational efficiencies through the use of leading retail software packages such as Dallas and WorldWide Chain Stores. These software solutions in particular provide efficient picking control and routing and well-timed let-downs (the movement of full pallets to the picking locations).

With regards to cross-docking itself, many mainland European retailers do not have extensive experience in this area. Delivery of fresh/frozen produce, the traditional cross-docked product, is undertaken by the manufacturer, a third party distributor or food broker specialising in fresh/frozen. As a result, although respondents were interested in ways to improve operations, they were unclear on how best to achieve this, though product rather than order picking was used for manual cross-docking.

AUTOMATION OF DISTRIBUTION CENTRES

In the 1990s there will be an increase in the number of 'islands of automation' within distribution centres, with a variety of partial automation techniques becoming prevalent. Full automation remains unlikely for three reasons :

1. The move away from storage and pick to cross-docking changes the type of operation needed,
2. The payback period for full automation is too long, and
3. There is an increasing need for flexibility to cater for changing store and product needs.

None of the respondents planned to implement a fully automated distribution centre, although some were in use. Respondents considered the pay-back period to be too long, with estimates varying from five to infinite years; most respondents felt it was around seven years. This had not changed significantly over the past 5 years and is not expected to change in future. According to respondents, automation is only cost-effective with a pay-back period of 3 years or less. Present full automation techniques reduce the ability of the distribution centre to respond to changing store needs and product characteristics. Use of cranes on tracks only makes sense if significant changes are not needed before the costs have been recovered. Installation also requires high volumes and, in most cases, throughput was simply not achieved due to changing store requirements. Significantly, these views were supported by the automation suppliers, who saw their offerings being more suited to industries other than grocery.

Whilst full automation is not favoured, respondents will not forsake automation altogether. Areas within distribution centres will be automated where benefits are perceived. The key criteria for future use is whether it is flexible enough; technology must be able to support and adapt to changing store requirements since retailers want store requirements to drive distribution, not vice versa. A good example of flexible partial automation is provided by bar coding. Bar coding can be implemented in a distribution centre effectively, the overall product profile or the cycle of receipts and deliveries can then be changed fundamentally, and the bar coding will still provide good support for the operations. However, doubts that even partial automation equipment is flexible enough is clearly a barrier to its implementation.

Furthermore, uncertainty about the exact consequences of cross-docking represent a barrier to all types of automation. Despite this, respondents identified several techniques that would find greater use in the future. These are summarised in the following table.

Respondents' current and expected future levels of automation

	Current use				Future use			
	High (60%+)	Medium (25-60%)	Low (<25%)	Not in use	High (60%+)	Medium (25-60%)	Low (<25%)	Not in use
Barcoded pallets	5%	9%	41%	45%	70%	9%	17%	4%
Barcoded product cases	5%	23%	36%	36%	77%	9%	9%	5%
Barcoded pallet numbering	5%	9%	45%	41%	57%	17%	17%	9%
Barcoded locations	0%	14%	50%	36%	54%	14%	18%	14%
Radio links for HHTs ¹⁰	5%	10%	19%	66%	43%	9%	22%	26%
Radio links for truck-mounted terminals	0%	10%	29%	61%	52%	9%	17%	22%
Automatic guided vehicles	0%	10%	15%	75%	19%	14%	38%	29%
Automated pallet handling	0%	5%	25%	70%	13%	17%	40%	30%
Automated unit/case picking	0%	10%	15%	75%	17%	17%	40%	26%
Sortation machines for transshipment	5%	5%	25%	65%	52%	9%	26%	13%
Conveyor belts	5%	10%	25%	60%	52%	13%	26%	9%

Note: Table shows percentage of respondents

Source: Andersen Consulting Company Survey, 1991

The use of barcodes on pallets and product cases, in order to improve the management of receiving and distribution, is set to increase further. However, barcoded pallet locations and pallet numbers are not expected to be in as much use. It is quite logical that if the amount of storage and pick is decreasing, the usage of traditional locations will also decrease. Barcodes on pallets and product cases also do not limit flexibility.

¹⁰ Hand-held terminals

The use of radio linked hand-held terminals (HHT) and truck-mounted terminals were identified as a high growth area. Respondents planned to use HHT's in the areas of picking and cross-docking for receipt and departure, and truck-mounted terminals for cross-docking and traditional pallet receipt and putaway. Again, this type of technology is flexible and can be adapted to changing requirements.

Other areas considered to be of interest were the use of sortation machines and conveyor belts for cross-docking. One retailer is trying to install a sortation operation for chilled and fresh produce using barcoded trays and scanners. This sortation operation picks product for up to twenty stores at a time.

Technology automation suppliers generally agreed that automated cross-docking would increase with the arrival of better automation technology. However, they felt that given new packaging requirements, and the use of cross-docking and common transport arrangements, it would be more likely for manufacturers to be product picking for retailers.

The distribution centre manager of ABC retail has just completed the installation of radio linked truck mounted terminals to help in the storage and picking of product.

He watches as the driver sits at his truck and gets an instruction through his terminal to put away a product in a particular location.

The driver picks up the product and scans it to confirm its the right product. Before he puts it away, he enters the check digit displayed on the location (the operational research team has found this is easier and more reliable than scanning a pallet location). The system indicates an error and the driver realises that it is the wrong location, so he moves it to the next slot.

Just as he finishes, he gets an instruction to let down a product, which he completes before the next put away.

His manager is delighted with the system. It gives him timed performance on individual work units and the ability to mix put away and let down with immediate delivery of instructions. He saved 25% of his trucks and he knows of other retailers who have improved even more.

TRANSPORT

There are no major changes in transport arrangements expected in the short term. Road will remain the preferred way of getting product to the shelf. It is regarded as the most flexible, fast and cost-effective method. Even given rising fuel costs and legislative restrictions, no respondent felt that in the long term trucks would be replaced for delivery to store. In fact, road transport is set to increase in both the EC as a whole and intra-country. Overall, total road freight is expected to grow by 4-6% annually with intra-EC content rising between 8 and 12%¹¹.

The productivity of the transport fleets is improving and should limit the effect of freight activity growth. The utilisation of any given transport fleet is being raised through the gradual move to fewer larger vehicles, the adoption of improved logistics systems and the improvements in vehicle and goods handling technology at depots.

However, in the long term, despite the political inertia and long term nature of investment, the respondents did envisage significant changes in the transportation area. There will be an increase in the use of rail to transport goods from the manufacturer to retailer's distribution centres. Many major retailers are seriously considering the use of rail as an alternative to road in this area. However, at the moment the theoretical benefits of rail cannot be unlocked easily. With current technology, both manufacturer and retailer facilities would need to be re-sited next to railway tracks. Only one of the retailers has made a policy of siting distribution centres in this manner.

Further advances in technology to support bimodalism (transporting by road for part of the route and by rail for the remainder) are needed before a viable switch can occur. More rail freight companies will need to provide road services alongside rail.

New technology must be in greater use before rail will be cost-effective. Examples of new technologies include:

- Piggy-back wagons that mount a whole road truck on a rail carriage without the use of cranes.
- Road Railers, which are road trailers that can be mounted on two separate train wheel assemblies (bogies) to form a type of rail carriage.

Additionally, before rail can be truly effective across Europe, all dimensions of wheel assemblies, the height of trailers and the coupling will need to be standard throughout Europe.

In addition, a cultural shift will need to take place within national rail companies. Despite their thoughts to the contrary, national rail companies are handling rail traffic, not controlling it. Current EC thinking is striving to make the national railways aware that customer requirements should be the prime consideration. National governments are also offering incentives to companies choosing rail over road¹².

Both national and EC legislation will have a long-term cost impact:

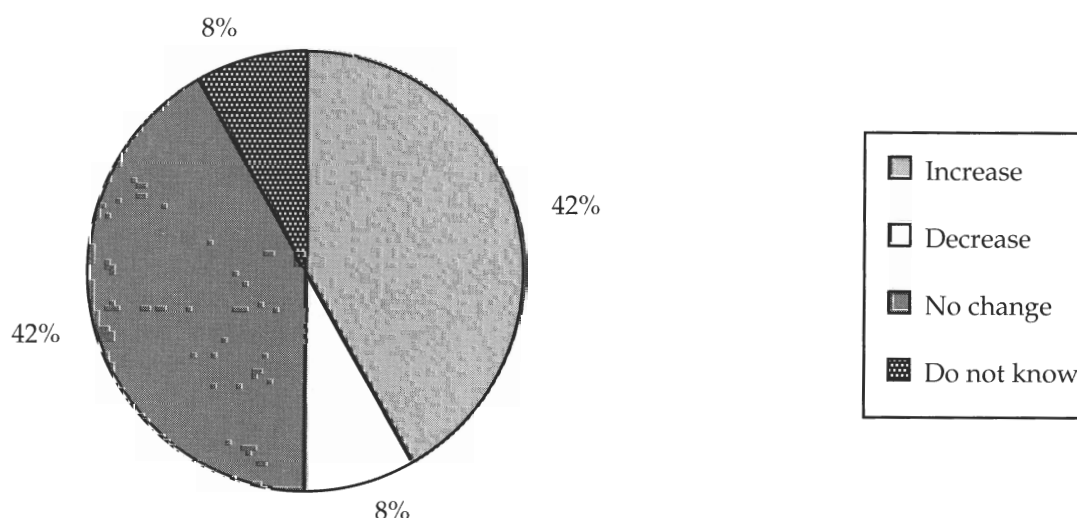
- noise control
- traffic congestion
- traffic pollution
- temperature control operations.

¹¹ Source: Knibb, Gormezano & Partners, UK.

¹² Malcolm Rifkind, the UK Transport Secretary, (July '91).

The use of composite trucks will increase according to the majority of respondents. However, several stated that they had undertaken a stringent costing exercise and found that the cost/benefit equation did not merit the use of composite trucks¹³. Use of composites will probably be highly dependent upon the size of deliveries and how far the company has moved towards a stockless environment. If the deliveries are typically full truck loads for fresh and frozen products and the retailer does not make use of multidrops (delivering to several stores using one truck) and top-ups (the delivery of extra goods to the store during the working day), it is unlikely that they will find composites cost-effective.

Respondents anticipating change in use of composite trucks



Source: Andersen Consulting Company Survey, 1991

¹³ It is unclear whether the remaining respondents have costed composites properly, given the trend towards semi-composites.

PACKAGING & PRODUCT TECHNOLOGY

Packaging

The 1990s will bring major changes to packaging. Demands by the environmental lobby that retailers and manufacturers be made responsible for the recycling of product packaging materials will have a dramatic impact on distribution. The logistics infrastructure will need to cope with an increase in returnable/recyclable packaging and less heavily packaged goods. The likelihood of national/EC legislation to address this issue is very high according to the respondents. 85% believed that there would be an EC law on returnable packaging within the next 7-10 years. Retailers and manufacturers are striving to perfect their use of packaging materials, before the regulatory institutions impose rules on them. A number of retailers employ full time packaging specialists whose only role is to address this.

The biggest impact of recyclable/returnable packaging will be that a distribution infrastructure designed to handle a predominantly one way flow of goods will have to adapt to an increased two way flow. In order to recycle the products, retailers and manufacturers will need to increase their backhaul operations. This will increase the complexity of transport planning. Store deliveries will need to accommodate pick-ups as well as drop-offs. This will increase the size of the delivery window needed at the store and distribution centre. There will be extra incentives to maximise the available space on a truck. Extra storage space at the store and distribution centre will need to be found to accommodate packaging awaiting pick-up.

As a result of these pressures, the industry will need to design packaging that is returnable/recyclable on a greater scale than it is today. Although many retailers already use multi-use pallets, trays and roll cages, the packaging that is currently thrown out at the distribution centre and store level will need to be made returnable. One way of is to replace the current cardboard boxes with a system of plastic trays and sides which can be built up into boxes and collapsed when not in use.

Increased standardisation of all types of packaging will also be necessary in order to avoid dramatic cost increases. For example, packaging will need to limit the types of plastic in use so not to create major sortation problems.

The effect of packaging legislation will also force the distribution infrastructure to develop new ways of handling less heavily packaged goods. Secondary packaging¹⁴ is already under review by many manufacturers and retailers. The difference between primary and secondary packaging can be illustrated by the following example. A shrink-wrapped crate of bottled drink is delivered. The plastic and the crate are considered to be secondary packaging, the former inessential, the other solely for transport. The bottle in which the drink is sold is regarded as being primary (essential) packaging. The shrink-wrap could easily be eliminated, leaving the recyclable plastic crate and the recyclable glass (or plastic) bottle.

However, not just inessential packaging will need to be re-thought. Primary/handling packaging will need to be redesigned. Display packaging that acts as handling packaging will become increasingly common. The above example is fairly clear cut. However, in the case of toothpaste, the tube clearly represents primary packaging. But what about the box, is it primary or secondary? The consumer buys the toothpaste and once at home throws the box away. Should the toothpaste be sold on a special rack (which is also used as the transport packaging) in the store? The distribution infrastructure will need to handle this issue of merging primary and secondary packaging such that product protection is not compromised.

¹⁴ Secondary packaging includes transport packaging and all other materials such as plastic wrapping, paper and cardboard which is merely used for advertising.

In addition to the recycling issues, there are also some clearly discernible trends underway in the area of barcoding and pallet sizes:

- The use of barcoding will continue to increase, especially on product cases and pallets. Despite this increasing use, however, there is no clearly discernible trend as yet in terms of standardisation on one type of barcode.
- Developments in pallet sizes may revolutionise the product picking area. Our research revealed increasing use of the Europallet and the Düsseldorfer pallet (which is half the size of the Europallet) on mainland Europe. In addition, retailers are looking at quarter size pallets. This development means that full pallet picking is feasible even for smaller stores. In addition, use of four full quarter size pallets makes better use of space in a truck than different layers on one full sized pallet. This is a trend in which UK retailers have little interest at present.

ABC Retail in Germany is already experiencing the effects of recycling laws. The environment minister, Klaus Toepfer, has issued a Packaging Ordinance which asserts that "the causes of packaging pollution—trade and industry—are in the future to be responsible for taking back, recycling, re-using and disposing of their products". Although it is a phased approach, the target is that by 1 July 1995 80% of plastics and paper and 90% of glass, tin and aluminium must be sorted and recycled. Two 'incentives' have been established for the industry: a) a mandatory deposit of up to 50 pfennigs per item, and b) consumers have the right to return packaging to the shop where it was bought, retailers have the right to return it to the manufacturers and these in turn can return it to the packaging companies.

In response the industry, as intended, has established a company, Duales System Deutschland (DSD), to provide a national disposal and recycling system which should form a parallel system to the existing local authority household rubbish disposal service. DSD will handle the collection and recycling of packaging material for the industry.

ABC Retailer has been working on developing a modular, reusable transport packaging system. The system is based upon trays for bottom and top of box, and a frame for the sides. The frame is then sandwiched between 2 trays to form a complete box. On its own, the tray can be used as display packaging on the shelf.

Product technology

Developments in product technology include irradiation and genetic engineering. Most respondents were unclear of the future in these areas. However, most retailers felt that they would not be affected. Irradiation was considered to be a non-issue. Consumer opposition is too great at present. Use of gas mixture to preserve wrapped fruit and vegetables was expected to continue.

SYSTEMS

Current status and investment

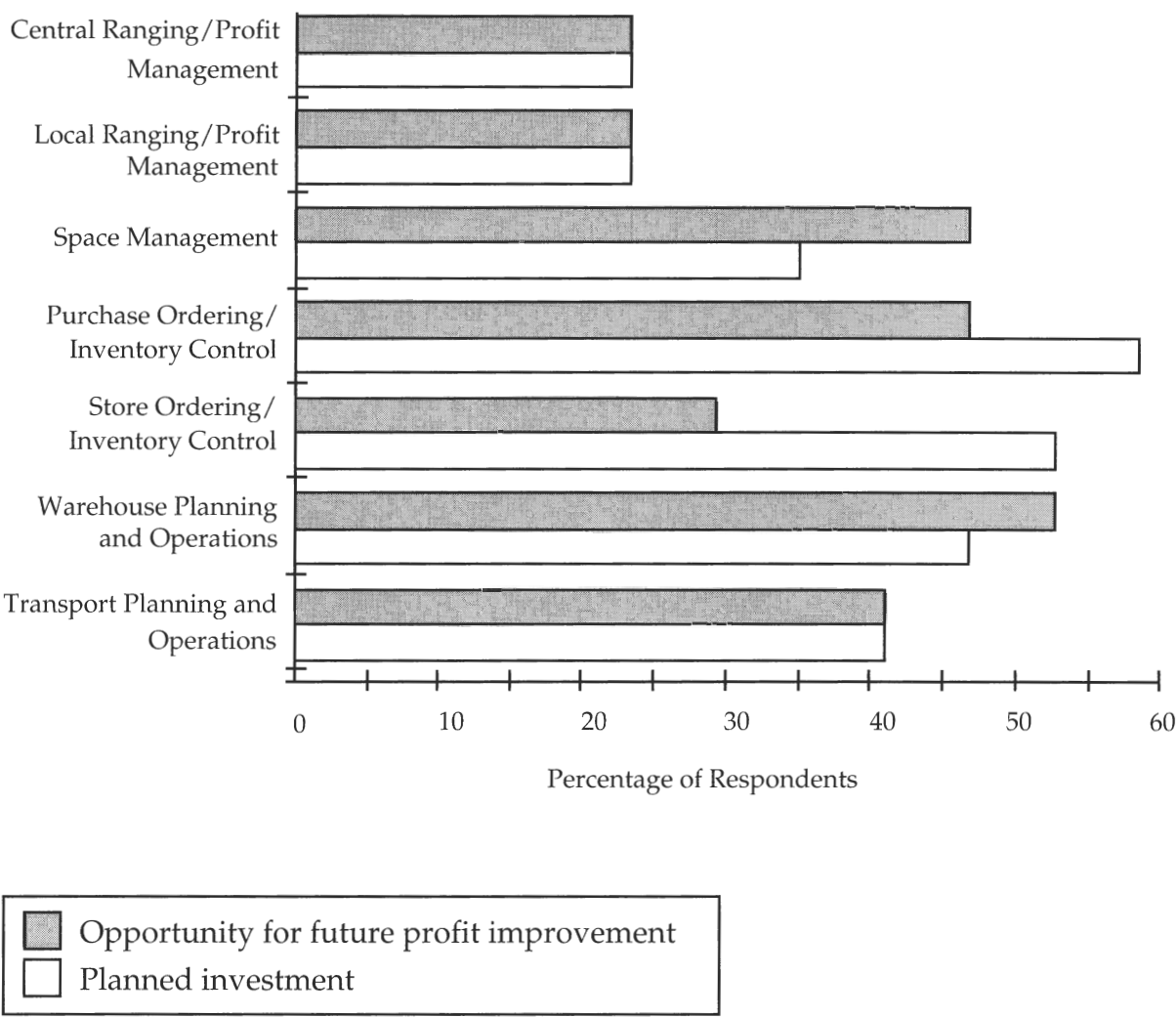
The use of information technology within respondents' organisations is increasing as more companies realise how it can improve operational efficiency.

Most retailers have installed **store related systems**; local or central ranging, EPoS and store ordering. Space management is a key store related area where system penetration is less pronounced. A quarter of retailers with space management systems indicated that they were totally satisfied with their system at present, but the majority of retailers are dissatisfied. However, even among retailers expressing satisfaction, the majority explicitly stated that further innovation would still need to follow. The area of local ranging systems is under investigation by a number of retailers currently using centralised ranging systems. Current central ranging systems cannot provide sufficient item level detail to truly adapt ranges to local store needs. As retailers become more consumer focused, it is likely that demand for this type of system will increase.

In the **distribution** area, however, a relatively high proportion of respondents continue not to use systems extensively. Distribution centre operations and performance measurement systems are the most common, with 85% of the respondents using them. Of those 20% were totally satisfied with their systems. Warehouse planning and transport planning, operations and performance measurement systems are not very prevalent and the level of dissatisfaction is high in these areas.

Clearly, expenditure on distribution systems has been lacking in the past and there still appears to be a bias towards store-based systems. The greatest areas for profit improvement were seen to be Purchase Ordering/Inventory Control and Store Ordering/Inventory Control.

Planned investment vs. opportunity for future profit improvement



Source: Andersen Consulting Company Survey, 1991

Respondents' views of their systems

	DOESN'T HAVE	TOTALLY DISSATISFIED	SOMEWHAT DISSATISFIED	SOMEWHAT SATISFIED	VERY SATISFIED	NOT ANSWERED
Central Ranging/Profit Management	24%	6%	6%	24%	28%	12%
Local Ranging/Profit Management	53%	0%	17%	12%	0%	18%
EPoS	0%	6%	12%	35%	35%	12%
Ordering/Inventory Control	12%	12%	12%	24%	28%	12%
Store Ordering/Inventory Control	6%	12%	12%	28%	24%	18%
Space Management	24%	6%	6%	34%	18%	12%
Warehouse Planning	40%	6%	12%	24%	0%	18%
Warehouse Operations	24%	5%	11%	24%	18%	18%
Warehouse Performance Measures	28%	0%	12%	24%	18%	18%
Transport Planning	35%	12%	6%	29%	0%	18%
Transport Operations	40%	6%	12%	24%	0%	18%
Transport Performance Measures	40%	0%	18%	18%	6%	18%

Source: Andersen Consulting Company Survey, 1991

Development opportunities

The future development of systems will be diverse, ranging from easily delineated applications running in traditional technical environments through to management systems crossing several applications, best implemented with advanced systems architectures.

Six key systems development areas were identified by the research as having the greatest potential impact on distribution. The functionality of each is discussed below. EPoS and EDI developments are also dealt with separately below, as they were a particular focus of the research and enablers to fundamental distribution changes.

- **Overall performance measurement systems** will be required, focusing on the cost of delivery to the store shelf, in total and broken down by each stage of the operation. These will supersede current DPP models as they will be driven directly by transaction systems. These systems will be critical as they will provide the necessary information to evaluate the trade-offs that are introduced by partnerships and compare the costs of the alternative sales and distribution channels that will emerge. Such measurement systems also highlight performance of all the critical success factors for effective total supply chain management.
- **Stock replenishment and just-in-time techniques** will be used to implement the sophisticated re-ordering models described in the Inventory Control section. Information technology is key to inventory control, since the statistical models for purchase ordering are very complex and are practically impossible to implement manually. Even without sophisticated models, savings in labour requirements can be realised by using automated facilities to generate initial purchase orders.
- **Transport management systems** are emerging that allow repetitive load and route planning during the operational day. These systems allow an effective response to actual events such as picking/cross-docking and vehicles delays, and they lead to better vehicle and driver utilisation. Additionally they can be used as the basis of driver performance monitoring. These complex, rule-based systems are best implemented using Artificial Intelligence techniques.
- **Warehouse labour management systems** will be enhanced in a similar way to transport planning systems, allowing reallocation of warehouse resources in response to actual events. Maximum benefit will be derived when dynamic transport planning and warehouse planning are integrated and used to direct all detailed warehouse operations.
- **Systems** will need to support the 24 hour operation of distribution centres, demanding fault-tolerant hardware and software that can be backed up during operation.
- **Barcode technology and radio linked terminals** will provide a new level of integration between the distribution centre activities, and systems will be used more for measuring distribution centre personnel performance.

ABC Retailer wanted to maximise the utilisation of transportation space in order to decrease costs. Management decided that a dynamic transport scheduling system would provide the best solution. Optimisation of transport space was achieved in the following way:

- *In order to schedule the available transport, knowledge or accurate forecasts of despatch quantities was required. ABC Retail achieved this by linking its store order data into the modelling system.*
- *All despatch units across the distribution centres were standardised into a modular system to simplify the scheduling of the transport cube.*
- *ABC Retailer recognised that all distribution objectives must be subordinate to overall company objectives in order not to sub-optimize company objectives. As a result, management decided that the overall objective was to provide the most cost-effective supply operation for replenishing the stores within defined service levels. It had considered vehicle fill and the number of journeys as potential drivers, but decided that incorporating additional parameters was necessary to optimise the overall economics. In order to maximise transport utilisation, it had introduced a concept of pooling store orders, with minimum and ideal quantities (and schedules) being defined by the store ordering system. The dynamic vehicle scheduling system would then fine-tune volumes and delivery routes to meet minimum orders most cost-effectively. This objective would then control the assembly sequence of products due to be transported.*
- *But far from being a theoretical tool, this system deals with operational reality. Because of the uncertainty experienced in transport scheduling due to traffic congestion and vehicle breakdown, the system provides for flexible assembly. Work can be brought forward and the system rerun if space needs to be filled or a truck is unavailable. In addition, the system takes into account existing transport constraints, such as:*
 - * *tractor/trailer relationship*
 - * *branch restrictions¹⁵*
 - * *labour restrictions¹⁶*
 - * *product restrictions¹⁷*
- *Stores were pleased with the new system as the minimum and ideal quantities meant that their service levels were met but they also benefited from lower distribution charges.*
- *Physical design was also taken into account in order to ease bottlenecks. Daily routes were also established whenever possible to aid in planning.*

Implementation of this system, based on artificial intelligence, has resulted in ABC Retailer increasing transport utilisation by over 10%. Cost savings have been substantial. Management is still monitoring the status and is re-planning as necessary to ensure the optimal transport network.

¹⁵ site, access, times

¹⁶ cases, allowed journeys

¹⁷ order cycle, chilled vs ambient

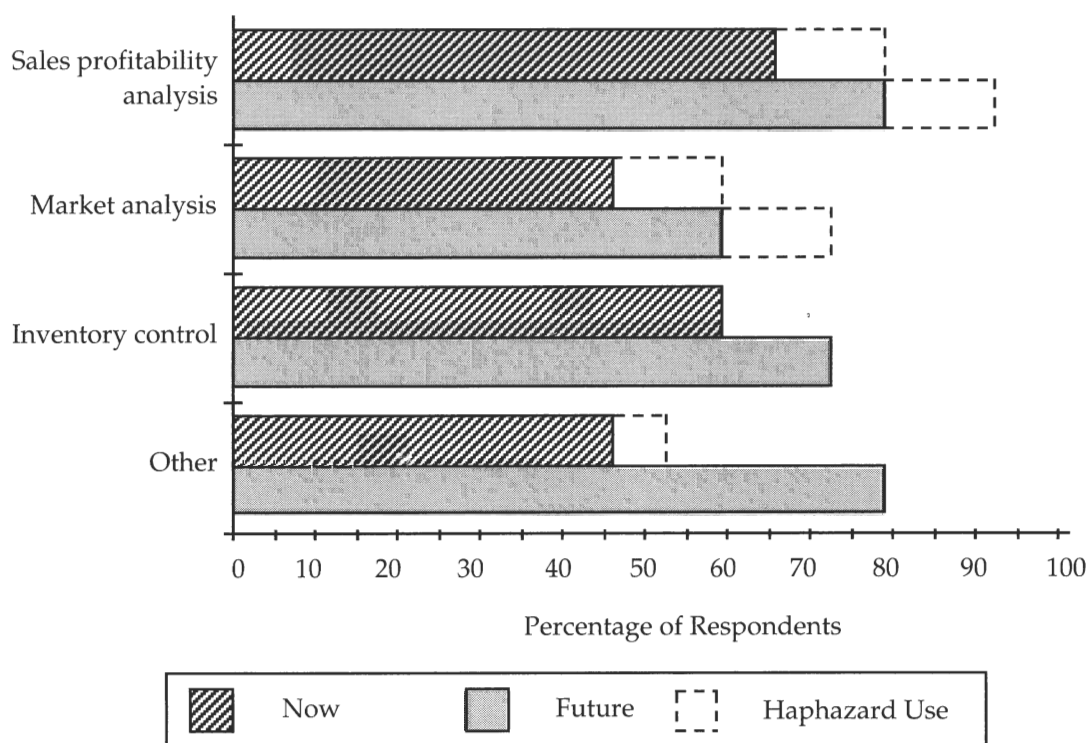
EPoS

EPoS (Electronic Point of Sale equipment, usually incorporating scanning of bar codes) is being used by all the retailers we surveyed to a greater or lesser extent. The trend points clearly to greater breadth and depth in the future use of data captured via EPoS.

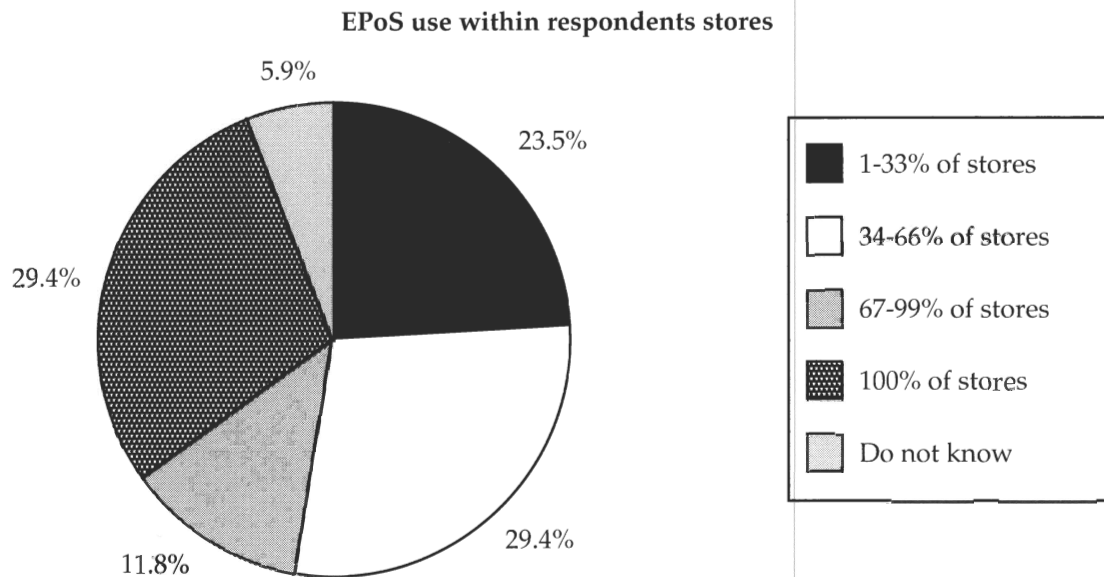
While usage of EPoS is widespread among respondents, the level varies considerably, from sales reporting to full integration into the distribution systems. The level of satisfaction appears to be tied to the level of penetration and usage. Those making full use of the data in terms of ranging, stock control, and profit management felt that the high EPoS investment was being paid back, whilst those who saw EPoS simply as a labour saving device at the check-out lane were quite negative about its benefits.

At present, EPoS is primarily used for sales profitability analysis, market analysis and some forms of inventory control. The use of EPoS data to completely drive inventory control was rare, but definitely on the increase. As the penetration of EPoS increases, respondents will use EPoS in more complex ways, such as ordering, sell one/make one and even as data to drive expert forecasting systems.

Present and future use of EPoS among respondents



Source: Andersen Consulting Company Survey, 1991



Source: Andersen Consulting Company Survey

The single most critical distribution issue concerning EPoS data is whether to use it to derive store inventory level and drive store replenishment: only by doing so will the full potential of EPoS be realised. This is currently being piloted by some retailers, but successful implementation requires that barcoding data must be accurate. The absence of accurate barcode data has significant operational repercussions related to under/over stocking but they can be overcome by a number of methods including:

- strong check-out discipline
- elimination of back-room stock at the end of the day to identify any over stocks due to poor EPoS data
- filling shelves at the end of the day in accordance with a strict planogram to identify understocks caused by poor quality EPoS data. (It would be more difficult to implement this method in a store open 24 hours a day).

The use of EPoS data in this way allows significant time to be saved in the replenishment cycle for stores. This has two consequences:

- Firstly, current multi-wave replenishment of stores is performed on the basis of an end of day stock count, giving rise to one order that is split into several waves. With EPoS driven stocks, multi-wave orders could be based on usage during the day.
- Secondly, the shortened order lead time provided by EPoS driven inventory makes cross-docking of supplies from manufacturer more feasible, when used in conjunction with EDI. Forward order schedules could be placed and refined with manufacturers one or more times a day and the manufacturer could have forward visibility to help him schedule his work, allowing a greater window for physical operations.

Finally use of EPoS data can be used as an input unit to store traffic analysis, in efforts to maximise the net margin of the store through increased sales of the most profitable products.

Retailer ABC had for a long time used EPoS to collect sales data. Whilst this helped with ranging, ABC was unconvinced that it was cost-effective.

Of course, if shelf stock counting could be largely eliminated, EPoS would pay for itself in short time. Accordingly, ABC started a study that showed the biggest barrier to using EPoS data this way was the quality of the bar coding and the accuracy of its check-out operations.

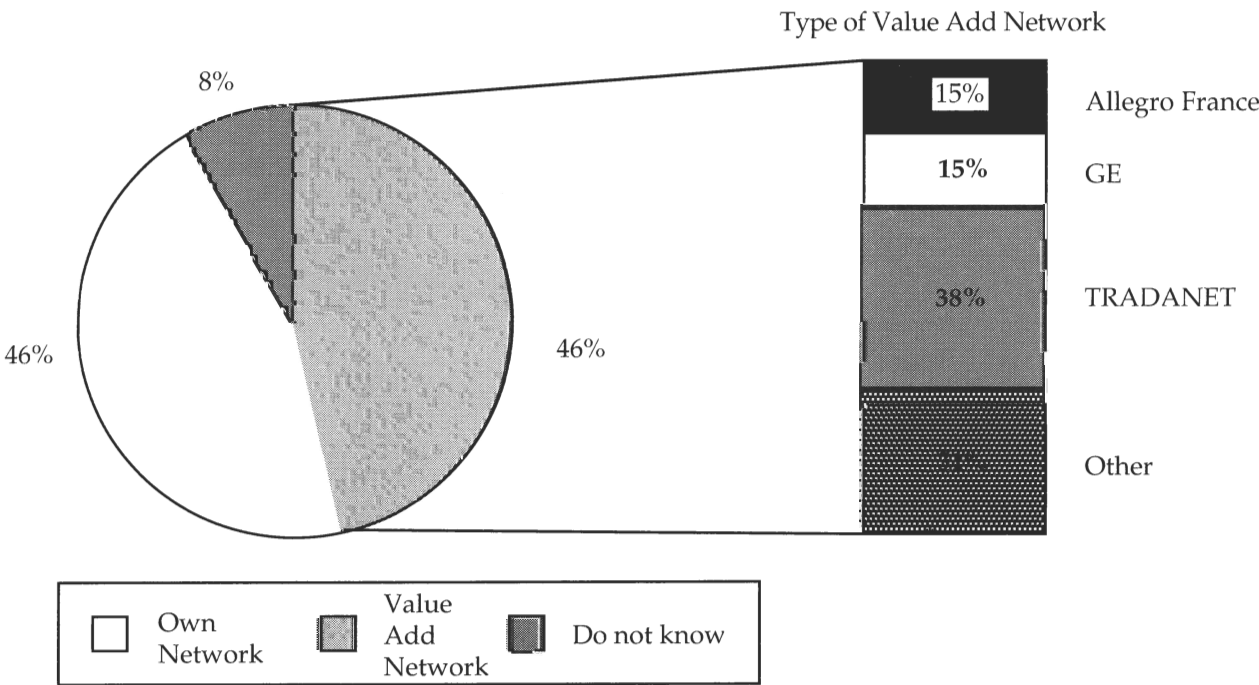
ABC took a tough line, and removed poorly and wrongly-coded products from the shelves. It also implemented a training program to enhance the quality of the check-out process. ABC now uses EPoS to derive all its store stocks and generate store orders by comparing them with store layout data.

EDI

The use of EDI is also expected to increase. 50% of the respondents do not use EDI at present. Retailers plan to use EDI for more functions in the future. The majority of respondents are adopting it as a method to save labour and shorten lead times. Some leading retailers are whole-heartedly endorsing EDI as a strategic tool enabling dramatic cost savings. One retailer de-lists manufacturers who refuse or are unable to join the EDI network.

















































Among those with EDI, the use of industry standard protocols and Value Added Networks was limited.


EDI Value Added Network penetration amongst respondents





Source: Andersen Consulting Company Survey, 1991


Current vs. future usage of EDI

Retailer to Manufacturer	Current	Future
Provisional orders		
Firm orders		
Forecast orders		
Sales by product/store/area		
Credit & debit notes		
Proof of delivery		
Response to substitute suggestions		
Costs		
Customer data		
Other		
Manufacturer to Retailer		
Prices of promotions		
Standard product prices		
Product list		
Ingredients		
Promotional packs		
Stock levels		
Sales history		
Out of stock		
Substitutes		
Costs		
Customer data		
Delivery schedules		
Invoice		
Other		

Over 66% = 

33-65% = 

1-32% = 

0% = 

Source: Andersen Consulting Company Survey, 1991

The Tradacoms standard is extensively used in the UK and is the best established in Europe. It is often implemented using the Tradanet Value Added Network.

Use of standards elsewhere in Europe is limited, but there are two emerging standards:

- **EDIFACT**, which is a standard language allowing the definition of new EDI transactions. In theory it offers both a standard and the flexibility associated with a home-grown EDI to define a company's own transactions. Ironically its growth has probably been limited by the fact that it does not impose transaction formats; however, suggested formats are slowly being defined to help overcome this. EDIFACT usage is growing very slowly but is expected by many to become the dominant standard in mainland Europe, and possibly even in the UK, in the long term.
- **X.400**, a communications standard that can be used in conjunction with protocols such as EDIFACT and Tradacoms, allows the use of the public telephone network as a mailbox mechanism. By utilising X.400, the public network could be used in a similar way to a Value Added Network, though some system development effort will be required to utilise it. The value of X.400 is that it will offer a relatively easy, low cost entry into EDI for companies with small communications volumes, and may therefore help proliferate EDI throughout the industry.

Cross-border EDI was not currently operated by any of our respondents, although one retailer was investigating the options. The lack of standards and Value Added Networks being the prime reason for lack of use. However, previous research has indicated that Value Added Network suppliers are establishing communication gateways across borders and are often supporting more than one protocol. This opens up the opportunity for pan-European EDI. The benefits to be gained from EDI will be compounded by pan-European distribution, so this may be an emerging trend for the future.

As with systems generally, it is the specific design of EDI systems that is key to achieving benefits and not merely the use of EDI itself to replicate earlier paper transactions. For example, some retailers have moved to receive invoices by EDI rather than re-engineering their accounting functions to agree price files electronically and initiate supplier payments from approved product receipts. The latter offers far higher benefits.

Retailer ABC recognised the need for EDI, especially as it is complementary to cross-docking, but its early attempts were fraught with difficulties in managing communications and agreeing message formats with its suppliers.

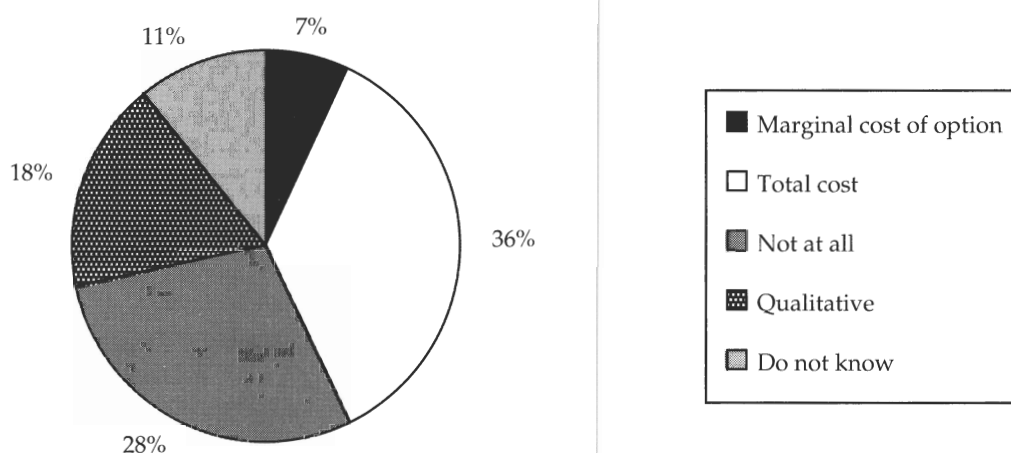
However, ABC took a policy decision three years ago to use Value Added Networks and start migration towards EDIFACT as a standard. Now in 1995, with all its suppliers using EDIFACT, ABC uses EDI for nearly all its ordering, even across country boundaries.

ABC is now implementing a policy of only dealing with suppliers who can accept EDIFACT orders.

PERFORMANCE MEASUREMENT

All the retailer respondents use traditional distribution performance measures, relating to the efficiency of individual operations within the supply chain (e.g. case picked per hour, percentage vehicle fill). Whilst these measures provide a basis for low level control of the business, they do little to help optimise the overall supply chain and in particular do not support evaluation of changes that might be considered as part of a partnership agreement. Such an assessment requires a knowledge of the total cost of supplying a product to the store shelf, or at least how that would be affected by the proposed distribution change.

How respondents include logistics costs in product cost analysis

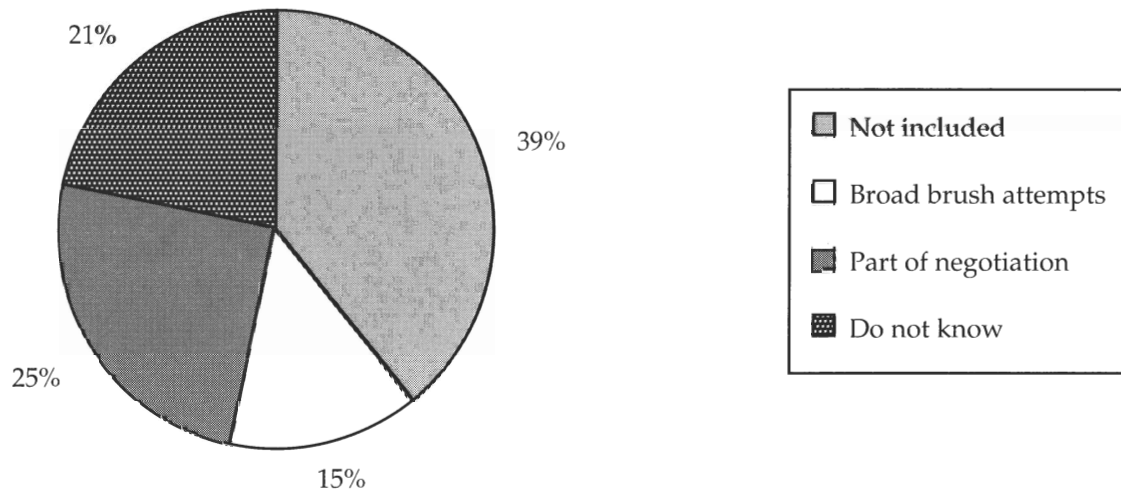


Source: Andersen Consulting Company Survey, 1991

A significant proportion of retailers did not attempt to measure the total cost associated with supply of a product even as a measure of performance for the distribution operation. This is indicative of two problems:

- The absence of low level cost information by product associated with each distribution operation.
- The inability to summarise low level costs where they are available into an overall performance measure, often due to inadequate systems integration. In contrast with the majority of retailers, the leading companies have fairly sophisticated costing mechanisms in place, some under the guise of DPP models.

The inability to capture or effectively process cost data at the product level has led some retailers to measure costs at the product group level. Care needs to be taken to group the products according to their physical handling characteristics, which gives rise to different bands from the merchandising categories. This compromise method of measuring cost can be of practical use in making basic supply side decisions.

Respondents including distribution service included in price negotiation

Source: Andersen Consulting Company Survey, 1991

As a consequence of the lack of available distribution cost information by product, and also the ingrained culture of buyers being measured on and working with gross profit figures, 39% of retail respondents did not include distribution costs in the negotiations performed by buyers or decisions made by merchandisers. A further 15% included consideration of distribution operations on a highly approximate quantitative or entirely qualitative basis only. The consequences of this approach are significant:

- Buyers and merchandisers may optimise sales or gross profit, but sub-optimize net profit, since they may favour products for which the distribution cost is relatively high.
- The more advanced space management systems, designed to direct store space towards more profitable products, will fail in the absence of accurate "total cost to shelf" information.
- More difficulty is encountered in controlling service from manufacturers to the retailers; the retail respondents that were most successful in getting manufacturers to meet delivery slot windows, are the ones that include distribution costs and service considerations in their buying negotiations.

The need to measure total product cost is heightened by the emergence of multiple sales and distribution channels such as those arising from alternative shopping, shared distribution facilities and cross-docking options. Cost comparison between channels will be required frequently as the dynamics of the supply chain change in response to consumer demand.

Retailer ABC had great ideas for changing the distribution network and infrastructure and working with suppliers to reduce costs. However, every time he considered a change he couldn't accurately evaluate whether or not it was beneficial. Even worse, his net profits were languishing despite the fact that his gross margins were high.

He realised that accurate total cost measurement was a key and implemented an advanced system to track total product cost, including distribution and inventory carrying costs.

Now he makes accurate trade-offs and has reduced his cost. Additionally, he realised that some products with a high gross margin had a very poor net margin and has eliminated these from his range.

ORGANISATIONAL STRUCTURE

International vs National

Retailers tend to copy their domestic market management style in foreign countries. Central control is only retained when there are only one or two stores which do not merit a brand new company infrastructure. The only function that was identified as being organised on an international basis was buying group activities.

Centralised vs. Decentralised Organisation

Activity \ Type of management	Central	Country By Country	Regional	Local
Ranging	0%	67%	0%	33%
Sourcing	17%	49%	17%	17%
Buying	0%	33%	0%	67%
Distribution	0%	50%	33%	17%

Note: Table shows percentage of respondents

Source: Andersen Consulting Company Survey, 1991

The same name/format tied to management functions would appear to argue in favour of European distribution. However, management is very much on a national basis. Retailers have no plans to centralise their international retailing activities and manage them in the same way manufacturers have centralised production scheduling. National chain management is still difficult at present and on an international scale the complexity will increase further. More importantly, retailers believe that 'retail is local'. Retailers believe they must stay in touch with market demands and that international management would find it difficult to cater successfully for local tastes and requirements.

National Centralisation

The general trend among the respondents has been towards centralisation of all activities within each country. The majority of ranging and sourcing activities are decided centrally, 75% and 88% respectively. Buying was nearly evenly split between local and central. However, all the advanced distribution retailers¹⁸ have organised their management functions centrally. Their comments show that there is a trend towards regionalisation among the decentralised companies. There is a concern about demotivating store managers; it is felt this will be overcome by the use of more advanced computer technology which will allow greater, informed local control. But the respondents also believed that central overview and joint decision making will also be required for sound overall management.

¹⁸ Retailers who make use of an advanced distribution network or who are using regionalised distribution centres, making extensive use of technology in planning and operating their network, have very low direct delivery to stores and tight control over delivery schedules.

Store management in the domestic market

Activity \ Type of management	CENTRAL	REGIONAL	LOCAL
	%	%	%
RANGING	76	6	18
SOURCING	88	6	6
BUYING	41	6	53
DISTRIBUTION	44	31	25

Note: Table shows percentage of respondents

Source: Andersen Consulting Company Survey, 1991

In the case of ordering the picture was less clear cut. Leading UK, Spanish and Italian and Danish retailers organise all ordering centrally. The remaining retailers ordered locally or regionally. Splicing the data by type of store revealed that two thirds of supermarket and discount chains placed their orders centrally. The hypermarkets were the most decentralised.

Supply chain management

The previous section on performance measures discussed the use of total cost of product delivered to the store shelf (or consumer) as the key measurement for the distribution function, and as a basis for buyers and merchandisers undertaking negotiations and performing ranging. The use of this performance measure clearly provides a mechanism for not only optimising the performance of each part of the organisation but also for optimising the performance of the whole organisation, since the individual objectives of distribution, buying and merchandising departments are in harmony.

However, for this to be applicable the structure of the retailer and the objectives of each department need to be correctly defined:

- The supply chain department should have the objective of minimising cost to the store shelf and since this includes cost of the product, inventory carrying costs and the cost of the product. Both the buying department and the physical distribution departments must report to the supply chain manager.
- The Merchandising function should have responsibility for maximising net profit, given the cost to the store shelf achievable by the supply chain department. Merchandisers, whilst working with the marketing departments of manufacturers, will focus on satisfying the end consumer and in so doing will place new demands on the supply chain function.

Clearly at some stage, the merchandising department (perhaps in conjunction with the marketing departments of a manufacturer) will consider activities that affect the supply chain, such as a change in packaging or an in-store promotion. The rigorous assessment of changes requires an overall view of both the supply and demand side and one or more dedicated accountants. A small dedicated team, that might be termed the 'Supply Retail Management Team', should take responsibility for costing and co-ordinating such changes. This team would liaise closely with both the merchandising and supply chain departments, and may be housed in either.

Such Supply Retail Management Teams have already been established in several manufacturer and retailer respondents. Usually they report to the distribution director, but they are quite distinct from the physical distribution department, and consider all aspects of the business.

Although the trend towards centralisation has been clear to date, there are pressures that would modify or in selected cases reverse this trend in the future.

Given relatively flat sales, the need to maximise the market potential of each individual store will increase. There will be a need for greater detailed consideration of local ranging, leading to potentially greater local management involvement. Both local and central management will be able to assess profitability information achieved via improved technology and shared data.

The new focus on local ranging may give rise to a continual change in product ranges and the quantities of each product held in the store. Both of these factors will place great demands on the supply side of the operation, both in terms of sourcing product and distributing it in the most cost-effective way.

CHAPTER 4:

SUMMARY OF PROBLEMS AND OPPORTUNITIES

Clearly there are a huge number of changes occurring within the distribution operations of the grocery industry today. What are the key problems facing the players, and what are their primary opportunities?

In many respects these problems are perennial, but they carry greater force than before:

- Competition is increasing with the progressive consolidation of the retail industry. This is heightening the ever present pressure on costs.
- In many countries population growth is approximately static and overall food spending in real terms is decreasing. This, together with the increased competition, requires a renewed focus on consumers demands, with the ability to continually re-tune the product range in each store.
- Compounding the difficulties associated with these external pressures, retailers face internal problem: the lack of clear responsibility for net profit generation and cost control, which in turn is partly due to the inability to measure costs accurately.

Retailers can respond to these problems with a number of different approaches:

- They can work more closely with suppliers, who are currently perhaps retailers' most under-utilised resource. The opportunities to work with manufacturers cover detailed operating procedures, joint management of products and ultimately changing the nature of the distribution network itself. Whilst working with manufacturers may appear threatening to some retailers, in reality they do not have to relinquish any control. Indeed, any retailer working closely together with a manufacturer can achieve a clear advantage over those who are not.
- By truly embracing the Fast Flow Replenishment philosophy, eliminating stock from the chain altogether rather than just pushing it further back up, they can optimise the whole chain rather than part of it (the 1980s approach). This should include the use of cross-docking, possibly shared with manufacturers and other retailers. These measures all help to reduce the cost of delivering a product to the store shelf and also increase responsiveness to changing consumer demands.
- Adoption of a wide range of technology including EDI, EPoS, cost measurement systems and warehouse automation (e.g. bar coding, radio terminals and sortation equipment) all help to reduce the overall cost of delivering products.
- Most fundamentally, however, many retailers need to change their organisational structure to provide clear alignment of the critical performance measures to individuals' and departments' responsibilities. By changing the organisation structure, retailers will be able to focus upon the separate tasks of reducing costs and maximising net margin through improved merchandising - furthermore, it will also allow them to improve their interface to manufacturers.

George, the Supply Chain Manager of Retailer ABC, admires the opening of his latest cross-docking facility and has few regrets over the closure of the last stockholding point.

Putting product away and retrieving it again costs money, not only through increased labour but also in terms of an inventory carrying cost. The old methods look curious to today's young managers, but they would hardly recognise the organisation of seven years ago at all.

The old departmental structure with buyers and merchandisers reporting to top management up one route and distribution up another, has been replaced. Today, merchandisers determine a precise product range and pricing strategy for each store, focusing it clearly on the consumers in its catchment area. Their job is to work out the true consumer demand and how to satisfy it. It is George's job to arrange the supply of the specified product range to the store shelf as cheaply as possible within defined service levels. And as this includes sourcing the product as cheaply as possible, he has not only the distribution manager reporting to him but buying also.

The supply chain team and the merchandisers work in harmony, since their objectives are compatible: the supply chain team must minimise the total cost of supplying a product to the store shelf, whilst the merchandisers must maximise overall net margin, given the total cost.

George's attention focuses back on his new cross-docking facilities. It contains the latest sortation technology and splits the contents of pallets into roll-cages in little time.

Of course not all George's cross-docking is done this way, since some manufacturers will pick whole roll-cages for him more cheaply than he can. The system merges these roll-cages with the one filled by the sortation machine to form a full store load.

So, this is how ABC delivers much product to the store itself, but with several manufacturers now forming groups, an increasing volume is delivered directly from their shared warehouses to the stores. Through grouping, the manufacturer can deliver full loads to the store and keep the number of drops down to a manageable level.

George's distribution manager regularly reviews which delivery method should be used, using the systems that allow him to measure and model the total cost per case of delivering product to the store. He tries to work as closely as possible with the manufacturers, not only on optimal delivery methods, but packaging also, in an attempt to minimise costs. Together, they have come up with some big improvements, and generally the manufacturers are very helpful, though the role of the buyers in helping manufacturers understand and meet requirements should not be underestimated!

Using cross-docking in this way puts tremendous time pressure on all parties. The store must have just the right amount delivered, since it has eliminated virtually all its backroom stock. The replenishment has to be turned round within 12 hours, so all orders are generated directly from EPoS sales data and the computerised store layout and transmitted to the warehouse or manufacturer using EDI. The pure sales data and forward orders are also sent, as the manufacturers find this useful for production scheduling.

The manufacturer must hit a tight delivery window and ABC must schedule their sortation and transport in synchronisation. This used to be a real stumbling block, but the new shift planning system based on artificial intelligence takes account of the current status of all operations together with the dynamic delivery schedule to stores and has alleviated much of the difficulty, rescheduling an entire cross-docking and transport shift-wave almost immediately.

He is sure that ABC has a leading edge solution and its logistics advantage will be a critical success factor in beating its traditional competitors. Just as he feels perfectly contented, George wonders about DEF, who are doing rather well, offering a variety of alternative shopping scenarios, with optional customer collection or home delivery service.

Is it really as simple as some people make out? Is the traditional store not only outmoded, but also the most expensive element left in the supply chain?

With a wry smile, he thinks back to his jokes of the old days: "if only we didn't have stores we would have far fewer problems!" He muses, "given current trends, perhaps it's becoming a true example of the old saying 'many a true word is spoken in jest'?"

How to turn these approaches into plans is explored in the next chapter, "A Framework for Action".

CHAPTER 5: A FRAMEWORK FOR ACTION

The previous chapter, Problems and Opportunities, identified the critical areas that retailers need to address. Taking advantage of their opportunities requires fundamental changes, and they may seem difficult to relate to your own organisation and therefore hard to implement. Accordingly, we outline a series of questions below, that are designed to assist retailers in reviewing their current position and formulating an action plan

Organisation and Performance Measurement:

- Is there one department (the Supply Chain department) that has responsibility for minimising the total delivered cost of a product to the store shelf?
- Does the Supply Chain department have true control over costs; is it responsible for buying as well as physical distribution?
- Is the Merchandising department responsible for identifying consumer demand and satisfying it with well focused product ranges and promotions?
- Is the Merchandising department responsible for maximising net margin given the total cost (after stock/space costs) of delivering a product to the store shelf?

The clear splitting of the supply and merchandising (marketing) activities is fundamental to the concepts of:

- assigning responsibility for driving down the total cost of delivery
- assigning responsibility for obtaining the correct focus on consumer demand and net profit management.

The total cost of delivering a product (including product cost, distribution costs and inventory carrying costs) is an essential measure since a change that decreases cost in one area can increase the cost in another. This issue should be targeted for continuous review and improvement. Of those who have applied DPP models, we do not see evidence of the feedback systems being in place to compare adequately the actual performance being achieved with the model assumptions.

As the focus on consumer demand increases in the 1990s with a flat market environment and increased competition, it will become more important to tie in the merchandising activities at each store with profit management responsibility. To make this effective, one group of people (the merchandisers) will need to have final responsibility for both.

Partnershiping:

- Is total cost of product delivered to the store shelf used as the criteria for evaluating an infrastructure by partnership?
- Who is responsible for infrastructure partnershiping, and what clear conclusions have we reached for each product group?

- Have we fully evaluated network level partnershiping; have we shared costs so that joint manufacturer/retailer distribution facilities can be evaluated for cost effectiveness?

Maximum profit can be gained by working with the manufacturer to reduce the overall cost associated with each product. For infrastructure changes (such as a change in packaging or delivery frequency) cost data does not need to be shared, since the retailer and manufacturer can separately cost out the change and then negotiate to a mutually beneficial product price. This technique is not effective for fundamental network changes, since cost modelling is required to find the optimal network configuration. Leading retailers are already using partnershiping at an infrastructure level, but there is little evidence of retailers tackling network issues yet. Groups of manufacturers are significantly ahead in this area.

Logistics Strategies and Distribution Techniques:

- When was a fundamental re-evaluation of the network structure last performed, and did it address these basic questions?
- Who should own the cross-dock or warehouses? The manufacturer, retailer or a third party?
- Does it make sense for each retailer or each manufacturer to have distribution centres or warehouses in the same areas?
- When is an item cross-docked instead of going into the warehouse?
- What are the trade offs in the fixed costs of cross-dock facilities versus the fixed costs of warehouses?
- Have we evaluated the impact of manufacturers forming partnerships?
- How often are alternative channels reviewed for each product; how are these assessed if total cost of delivered product is not used as the criteria?
- Has cross-docking of more product ranges been considered and costed?
- Has the latest partial automation been evaluated and in particular sortation equipment for cross-docking? What was the outcome of this evaluation?

The increased number of distribution channels, and the more tactical management of them, reinforces the need for accurate total product cost measurement.

Cross-docking will increase dramatically in the future: retailers have found it to be effective for fresh products and experience in this area shows it to be practical and more cost effective than traditional distribution methods for a wide range of products.

Systems:

- Are we using EPoS to derive store inventory levels and therefore drive store replenishment?
- Are we using EDI not only for transactions such as purchase ordering, invoices, credit notes and proof of delivery, but as an aid to manufacturers' planning through the provision of forward orders and sales information?

- Have we been sufficiently radical with EDI, eliminating traditional Accounts Payable/Receivable tasks? Or have we simply added a limited electronic dimension to our existing paper-driven process?
- Do our systems provide total product cost (including inventory carrying cost) as a performance measure for the supply chain team, and net margin figures by product for the merchandising department?
- Are these performance measures driven from common core systems rather than fragmented models, so that the information is always consistent? Are the right feedback systems in place to ensure that we are not just planning costs but also evaluating actual costs against plan?

Few retailers are using EPoS data to derive store stocks. But this is how the largest labour cost savings are realised and it is an essential step to being able to move to an effective cross-docking operation for a broad range of products, since lead times become so critical.

Since product cost information is a cornerstone for many of the fundamental distribution changes, the data must be accurate and used consistently: specifically, the net profit upon which the merchandisers are measured must be derived from the total cost information on which the supply chain department is measured. Achieving this requires systems beyond the basic DPP models used by some retailers today.

Flexibility for the Future:

- Have we considered the effects of an oil shortage?
- Have we formally assessed the market for alternative shopping?
- Have we evaluated the implications of alternative shopping for our distribution network?
- What are our organisational barriers to moving towards alternative shopping?

The arguments in favour of alternative shopping are very persuasive and the opportunity is being taken seriously by several of Europe's leading retailers and manufacturers. The network required to support alternative shopping is likely to be very different to today's network, with, in the extreme, decentralised warehouses with partially or fully automated singles picking.

Clearly, if large scale alternative shopping emerges, the first major players will have a clear advantage. At the moment entry into this market appears to be constrained by short sighted vision rather than a concrete assessment of the potential.

And if retailers cannot get product to the consumer in a high-service, cost-effective way, it may end up going through a shared manufacturer facility rather than the retailer. We have seen this occur already in other retail formats in other parts of the world (e.g. pharmacy and apparel).

APPENDIX: GLOSSARY OF TERMS

Alternative Shopping - Any method of shopping not utilising a customer visiting a traditional store and physically picking his shopping from the shelves.

Buying Group - An organisation offering the benefits of centralised buying to its retail members. Services provided include close links with suppliers, product testing, buying negotiations and administrative and organisational services.

Composite - As in composite truck/warehouse. A multi temperature vehicle/storage facility that can handle products with different temperature needs.

Convenience Store - A self-service store of usually between 1,000 and 3,000 sq.ft, located close to housing, offering an extensive range of food and non-food products and long opening hours.

Cross-docking - Goods are received during day, sorted according to stores, and shipped to stores within usually a 20 hour period. The goods are not stored. They are moved across from the receipt side of the dock to the despatch side of the dock.

Direct Delivery - Delivery by manufacturers direct to retail outlet.

EPoS - Electronic Point of Sale.

Eurobrand - Can be one of three types of product:

- (a) same product, same packaging Europe-wide, such as Coca-Cola
- (b) same product, different branding Europe-wide, such as Kellogg's Corn Flakes
- (c) same packaging, different product, such as Timotei hair products.

Europe 1992 - Legislation ratified by the European Commission and parliament designed to produce a common European market after December 31 1992. No customs barriers, harmonious business laws etc.

Grocer - A retailer with food sales accounting for at least 50% of its total turnover.

Hypermarket - A self-service retail outlet offering a wide range of food and non-food products at competitive prices. A hypermarket has a sales area of at least 2,500m² and provides ample parking spaces for its customers. This definition is not officially recognised in the United Kingdom (see Superstore below).

Idea-Centre - An 'idea-centre' is a supermarket where shoppers primarily look for food/meal ideas rather than for staple shopping.

Independent Retailer - A retailer owning and operating between 1 and 9 outlets.

Indirect Delivery - Delivery by manufacturers to retailers warehouse.

Large Store - A large store is defined in the United Kingdom as a grocery outlet of between 10,000 and 25,000 sq.ft.

Mixed Business - A retailer with food sales accounting for less than 50% of its total turnover.

Multiple Retailer - A retailer owning and operating ten or more outlets with the same fascia.

Partnership - Any activity undertaken co-operatively by two separate companies. Manufacturer/retailer partnership can cover category management, distribution infrastructure and, in principle, network changes.

Planogram - A layout of a store's shelves showing products and quantities.

Quick response - A technique utilising just-in-time and cross-docking concepts.

Semi-Composite - Semi-composite describes a distribution centre which carries a limited range of temperature controlled products. A semi-composite could include ambient, produce and chilled, but not frozen; or frozen and chilled, but not ambient.

Superette - A self-service retail outlet offering a basic range of products and with a sales area below 400m². Superettes are usually only served by one check-out. This term applies mainly to outlets in France and Belgium.

Supermarket - A self-service retail outlet selling predominantly food products and with a sales area of between 400 and 2,500m². In the UK a supermarket is defined as a store with a sales area of between 4,000 sq.ft. and 10,000 sq.ft.

Superstore - A superstore is defined in the United Kingdom as a self-service retail outlet of at least 25,000 sq.ft. in sales area.

Transshipment - Purchase of product in country different to country of sale, whereby the product is shipped across borders.

