

Increasing the Logistics Efficiency of Irish Food Exports





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SUMMARY

This report is concerned with the impact on the competitiveness of the Irish food processing industry of the logistics process in the food chain including transport, storage and distribution.

The research found that the Irish food sector in general has to date shown a strong capacity to accommodate the increasingly demanding requirements of its export markets. Transport and logistics costs vary widely depending on the nature of the goods (particularly the weight to value ratio) and destination. Transport costs as a percentage of consignment value were in the range 3% to 5% for many goods delivered to Britain, while the typical range to the continent was 4% to 10%. In many cases there appears to be prima facie evidence of excessive storage time along the chain, with storage accounting for over 80% of time between production and delivery in 50% of the product chains surveyed.

A survey of food exporters revealed a wide range of sophistication in logistical practice, depending on the exposure of individual firms to sophisticated market demands. Considerable scope exists for information transfer, benchmarking and best practice in the industry. A survey of British retailers indicated that Irish food suppliers were perceived to be less flexible in accommodating changes in demand, reduced order lead times and last minute changes in orders than their best non-Irish suppliers. In addition, a complementary survey of suppliers revealed that both the level and quality of monitoring of customer service by suppliers had considerable scope for improvement. Reduced order lead time in Germany poses a challenge.

The study recommends:

- Increased supply chain integration between food producers and other supply chain members.
- Accelerated and broader range of usage of information communication technologies.
- Increased information transfer and benchmarking of logistics practices in the food industry.
- The inclusion of flexibility in logistics solutions developed by food producers and logistics service providers.



- Increased application of food engineering, packaging innovations and other technologies in the development of logistics solutions.
- Greater co-operation between food producers in logistics activities.
- Increased focus on logistics customer service criteria and strategies to improve customer service performance.
- A focus on improvement programmes and on-going monitoring of key trends and performance indicators.

INTRODUCTION

This report is concerned with the impact of the logistics process, including transport, storage and distribution in the food chain, on the competitiveness of the Irish food industry. Its high export orientation, combined with the unique characteristics of food products and the demanding requirements of its customers means that logistics is of critical importance to the competitiveness of the industry.

Irish food exports

The Irish food industry is highly export oriented with 55% of enterprises engaged in export activity (Central Statistics Office, 1997). In 1997, the Republic of Ireland exported in excess of 3 million tonnes of food, worth more than IR£4 billion to countries around the world. The greatest proportion of food exports is destined for EU countries, with Great Britain remaining the single most important destination. In the same year, some 1.9 million tonnes of food, valued at IR£1.6 billion were imported. Between 1992 and 1997, food imports accounted for between 57% and 69% of food exports in volume terms. With respect to individual countries, in 1997 exports were greater than imports for all of Ireland's top 10 trading partners with the exception of Spain. This has implications for the food backloading (i.e. return journeys) potential of the haulage industry.

Approximately half of Ireland's food exports are in the ambient temperature requirement category, about one quarter to one third are in the chilled category and between 10% and 20% are in the frozen category. Thus there is



a requirement for temperature control for about half of the volume of exports. The need for temperature control appears to be increasing over time particularly as frozen food exports increase in volume.

About two thirds of imports are in the ambient category while about 10% are in the chilled category and 6% in the frozen category. The need for temperature control for imports is less than for exports; however, it is increasing due to the increased

amounts of chilled food produce being imported.

With targets for future growth of the industry oriented towards the export market, the demand for transportation equipment, port handling and ferry facilities can be expected to increase making logistical efficiency even more important.



▲ *Continental Irish Food Exports*

Factors influencing logistics competitiveness in the food industry

Logistics is fundamental to the competitiveness of the Irish food industry. It impacts on costs, revenues and ultimately profitability. With increasing emphasis on such initiatives as Efficient Consumer Response (ECR) and Just-in-Time (JIT), Irish food manufacturers need to develop efficient and effective logistics strategies to compete in the market place. The specific nature of food products (e.g. relative low value of food products), together with the markets and customers served however imposes some additional costs and constraints on the food industry. Ireland's peripheral location is also a limiting factor.



Trends in food retailing

There are a number of food retailing trends in Europe which have an important bearing on all food producers competing in Europe. However, the position of the Irish-based food producer is especially challenging, given that deliveries originate from a peripheral island location. The first of the trends is the growing dominance of large supermarket multiples in northern Europe, especially in Britain which means that retailers are in a position to impose tight performance requirements on their suppliers. The increasing concentration of retailing, both nationally and internationally, exacerbates this effect.

Another trend is the growing usage of information technology by retailers to communicate their requirements along the supply chain. This allows them to achieve tight control of suppliers without the ownership costs that would traditionally have been necessary. Case study analysis indicates that the IT policies of Irish food manufacturers are strongly influenced by the requirements of their customers in the UK grocery market. During the course of the study, British retailers strongly advised many of their suppliers to adopt EDI (electronic data interchange) for ordering purposes. Other structural changes are related to the emergence of new channels of distribution through home shopping and the foodservice sector. New channel possibilities could well involve bypassing some elements of traditional retailing.

Trends in retail food distribution

Prior to the centralisation of distribution, delivery to outlets was primarily on the basis of direct store delivery (DSD) from manufacturers' local warehouses. However, retailers found that greater control of product at outlet level, in terms of availability and quality, was achieved by taking title of the product at a central depot (regional distribution centre (RDC)) where the costs of quality assurance, for example, could be spread over greater volumes of product. The introduction of this intermediary, between the outlets and the manufacturer, increased the transparency of the supply system and thereby assisted the development, collection and dissemination of supplier performance measures by reducing the number of direct contact points. Current performance measures used include delivery accuracy, quality, arrival time, vehicle turnaround time and invoice matching.



The shift towards delivery into RDCs also resulted in a dramatic reduction in retail stock levels as the RDCs assumed primary responsibility for grocers' stockholdings. In the absence of a smoothly operating and integrated chain, this could increase the risk of out-of-stocks

Consolidation centres

Recent innovations in the supply chain have involved the establishment of consolidation centres on the suppliers' side, mirroring the retailers' RDCs. This means that retailers' RDCs may be serviced by a number of hub warehouses located throughout Britain, at which orders and consignments are re-consolidated by destination (having arrived consolidated by origin) prior to dispatch. This improves the productivity of the RDCs and offers small manufacturers the possibility of distributing product to an entire network of retail outlets with just one drop (see Table I). Within such a framework, the role of the RDC appears to be shifting from one of stock location to sorting. However, as stock levels at RDCs are further reduced, the extent of interdependency among channel members within the chain increases dramatically necessitating increased responsiveness from suppliers.

Some consolidation centres offer additional services such as stock-holding, re-palletisation, re-labelling, and inward and outward transport services (coupled-consolidation).



*Irish Food Products ▶
in a British RDC*



Table I: Benefits of Consolidation to Supply Chain Partners

Partner	Benefits
Manufacturer	Greater market penetration
	● small firms able to service multiples
	● ability to service greater number of RDCs
	● enlargement of potential territory
	Provides for more cost-efficient full load deliveries
	Ability to focus on core competencies due to single point delivery
Transport Provider	Reduced transport costs
	More efficient use of vehicles
	● improved scheduling of vehicles due to standardisation of routes
	● reduced miles driven with less than full loads
Retailer	More efficient use of RDCs
	● greater potential for cross-docking
	● maximises full load deliveries into RDCs
	● improved labour productivity at RDCs
	Lower inventory levels
	Increased frequency of delivery
	greater product variety
	improved product alignment with customer demand
	Shorter time in stock resulting in increased shelf life to the consumer.

Source: Collins, Henchion and O'Reilly, 1998

Coupled-consolidation offers the additional advantages of providing an integrated service, greater transparency and reduced monitoring costs. Case study analysis for this study indicates that while there are strong efficiency gains to suggest that the use of consolidation is a priority for food manufacturers, the benefits of coupled consolidation (i.e. where the consolidator provides the in-bound logistics services into the consolidation centre) are being undermined by a loss of flexibility at production level, particularly in the case of smaller suppliers with short shelf-life products. In effect, transport dictates production schedules. However, it is possible that some of the negative effects of coupling can be reduced through the use of information technologies and increased information sharing in such areas as production forecasts, delivery planning and sales forecasts.



Cross- Docking Operation



The foodservice sector

Unlike the grocery sector, the foodservice sector is highly fragmented with over 300,000 outlets and 200,000 buying points in the UK. Given the large number of consumption points, expenditure is spread thinly. From a supplier's perspective, an important feature is the extensive use of intermediaries, with almost 80% of supplies to the foodservice sector routed through wholesalers and cash & carry outlets.

The IGD point to a number of issues pertaining to the foodservice sector and identify a number of areas of specific concern to suppliers (Institute of Grocery Distribution, 1996).

Professionalism: Caterers believe that they are receiving relatively poorer service; thus there are likely to be opportunities for suppliers to bring the experience gained from dealing with grocery retailers to bear in the foodservice sector.

Flexibility: Caterers have quite different unitisation requirements compared to grocers.

Reliability: The cost of a stock-out is, in relative terms, much higher to a caterer. Thus caterers tend to maintain portfolios of suppliers for each particular product. Greater service levels would greatly enhance the possibility of sole suppliership.

Information technology: Caterers' IT investments will increase, suppliers may be able to differentiate themselves from competition by providing enhanced assistance and advice.

The trend towards centralised procurement policies along with the increasing importance of brands in the foodservice sector means that increased monitoring of supplier performance and the activities that take place along the supply chain are likely.



Logistics customer service

A survey was carried out to identify the importance British retailers and wholesalers place on different measures of logistics performance. In addition, it sought to measure the perceived performance of Irish food firms supplying the British market vis-à-vis competing suppliers. All variables listed in the questionnaire, scored highly on the importance scale suggesting there is little scope for under-performance on any of the variables (see Table II).

Table II: Logistics Variables: Importance¹ and Relative Performance²

	Retail importance	Best Irish- based supplier	Best non- Irish based supplier	Sig. ³
Correct barcodings	6.8	6.5	6.4	
Quality on arrival at premises	6.5	6.4	6.5	
Advance warning of supply problems	6.5	4.8	5.4	
Delivery on time at premises	6.4	5.1	5.9	*
Correct (1st time) quantity on arrival	6.3	5.4	6.0	
Conformance of documentation with requirements	6.1	5.9	6.2	
Cost competitiveness	6.1	5.1	5.0	
Ability to accommodate variations in demand	5.9	5.1	6.0	**
Use of compatible IT systems	5.9	5.7	6.4	
Ability to accommodate changing delivery specifications	5.8	5.6	5.4	
Ability to accommodate reduced order lead-times	5.7	3.4	5.5	***
Invoice matching	5.7	5.9	6.0	
Ability to accommodate delivery scheduling adjustments	5.3	4.4	5.4	*
Ability to accommodate last minute changes in orders	5.2	4.8	6.1	***
Visibility of manufacturers stockholdings	4.1	4.9	5.4	

¹On a scale of 1 to 7, 1 = no importance, 7 = of critical importance

²On a scale of 1 to 7, 1 = unacceptable, 7 = excellent

³Significance levels*** 99%, **95%, *90% levels.



The most important variables are those associated with product rejection at depot or short deliveries. The retailer-perceived weaknesses of Irish based suppliers relate principally to the ability to be flexible and to accommodate shortening order lead times. Performance was related to inventory location with ratings improving where Irish manufacturers have a GB inventory location. This suggests that Irish suppliers may have to reconfigure their supply chain and maintain inventories in the immediate market place.

A parallel survey of Irish food manufacturers found that their level of measurement of customer service is a cause for concern with about half of the firms surveyed not monitoring their service to their customers in a systematic way. Furthermore, the elements measured may not be appropriate. For example, results from the above survey indicates that product quality is an important GB grocery supplier selection criterion, yet only one-third of the product chains measured damage on a systematic basis.

Logistics survey of Irish food exporters

A detailed logistics survey of a sample of Irish food exporters was carried out during 1997/98. Data was collected for 78 product chains. The data collection required personal interviews with 45 food exporters and 46 transport providers. The cost data was supplemented by in-depth interviews with a small panel of haulage industry and shipping experts. The main findings were as follows:

Transport and logistics costs vary widely depending on the nature of the goods (particularly weight to value ratio) and destination. Reported transport cost as a percentage of consignment value varied from just over 1% to under 25%. Calculated logistics cost as a percentage of consignment value varied from 1 to 40%. For a wide range of goods delivered to Britain the transport costs as a percentage of consignment value were in the range 3% to 5%, while for many goods exported to the Continent the typical range was 4% to 10%. Logically, the higher the percentage, the more transport or logistics costs takes from the exporter's margin and the more it weakens the product's market penetration capability.



The ratio of standstill time to total time was over 80% for half of the product chains. This indicates a high level of inventory cost in the industry. Some of this was incurred in transit, e.g. while on the ferry, but more was incurred at consolidation points for reasons of good customer service and efficient use of transport equipment. However, for some products a significant proportion of total standstill time occurred at the point of production. This was partially due to production costs (i.e. the need for economic production runs outweighs the increased inventory costs) and maturation reasons (e.g. cheese needs to ripen or mature before being dispatched). However some was due to poor matching of demand and supply and could be avoided. When storage time at origin is excluded from the calculation of total logistics costs, only 11 product-chains have a ratio exceeding 80%.

Unit transport costs depend on vehicle occupancy and utilisation levels in both directions. The Irish haulage industry is generally very efficient at achieving high utilisation levels. A survey of 46 hauliers for this study revealed that hauliers get backloads for an average of 98.9 % of outward journeys (range 90-100 per cent). They need to be flexible to achieve such a high level of backloading. This is achieved by sourcing non-food backloads and taking different loads for part of the journey so that several loads may be required to reach home. For instance, trucks returning from the European

*Drop-floor
Trailer* ▶





mainland may collect one load to Great Britain and one from Great Britain back to Ireland. In addition, they are willing to take on board such developments as drop-floor trailers and high cube trailers to improve vehicle utilisation.

Typical average logistics (transport and inventory) costs were in the range of 80p to £1.20 per kilometre. Calculated total logistics costs varied by distance, origin, destination, product and mode. As expected, origins close to port had lower costs. However there were some exceptions which were influenced by product characteristics. More distant destinations, e.g. Scandanavia, Italy and Greece incurred higher costs than the UK for example. Products which required storage at origin for production or maturation reasons incurred higher costs than those produced to order. In addition, the costs of transport for ambient goods was found to be lower than for other product categories. Ro-ro unaccompanied was the cheapest mode according to this survey. However this was very much influenced by destination and distance with ro-ro unaccompanied loads all being destined for the UK while lo-lo, which would be expected to be cheaper, was destined for more distant markets and therefore incurring higher transport and inventory costs due to the time factor.

Product chains were categorised into three types based on their logistical sophistication. Approximately one third were found to have sophisticated logistical capabilities. The likelihood of these characteristics is greatest when the destination is Britain, the exporter is not small in size, the traffic mode is ro-ro unaccompanied and the customer is not a (further) processor.

With regards to IT, the phone and fax are extensively used in all product chains. Some firms are using e-mail while few as yet make extensive use of the internet. Some of the larger exporters who deal mainly with British retailers indicated that they already had, or soon would have, EDI connections.



CONCLUSIONS

- In general terms, the Irish food sector has shown its capacity to accommodate the requirements of its export markets. Irish food firms have increased their exports in recent years and the research results do not support any differences in cost competitiveness between Irish based suppliers and their UK competitors.
- Overseas retailers and other customers of the food industry are increasingly relying on a range of logistics criteria other than pure cost to set the performance standards required from their suppliers. Among the most important of today's delivery requirements are on-time delivery and conformance to retailer requirements regarding information processing/transfer using ICT systems. Increasingly, the effective operation of the supply chain is dependent on the smooth operation of administrative support functions.
- The Irish haulage industry is quite fragmented and lacking in scale. However, this study showed that the Irish haulage industry is generally well organised to minimise its disadvantages.
- The survey of food exporters revealed a wide range of sophistication in logistical practice, depending to a degree on the exposure of individual firms to sophisticated market demands. There is therefore considerable scope in the industry for information transfer, benchmarking and best practice.
- Current business practices in the food industry stress the need for greater co-ordination of activities throughout the supply chain to ensure the faster, better, more efficient and more responsive service to the final consumer. This is reflected at industry level by the growth of the Efficient Consumer Response (ECR) initiative. Retailers require that their suppliers adopt efficient replenishment practices that respond quickly and flexibly to their needs. This has significant implications for the strategic location of inventories and final (customer-specific)



processing activities. Evidence from Britain indicates that there is increasing use of information as a substitute for inventory along the supply chain.

- A survey carried out with British retailers indicated that Irish food suppliers were perceived to be less flexible in accommodating changes in demand, reduced order lead times and last minute changes in orders than their best suppliers.
- Recent trends in retailing have required increased delivery frequency and reduced order lead time in British multiples. German multiples have indicated that they plan dramatic reductions in order lead times in the next four years with typical lead times as low as 12 hours.
- The major perceived supply risk for Irish exporters continues to be ferries. An analysis of survey responses indicated that the perceived risks associated with either sea crossing delays or product damage in transit were lower than anticipated.

*A Truck
Blockade in
France* ▶





- The various ICT options now available and the general thrust of retailer strategy favour an increased use of information by exporters to reduce the risk of unforeseen demands. Exporters should aim to anticipate rather than be reactive to consumer demand.
- The foodservice sector continues to grow throughout Europe, representing a significant market opportunity for food suppliers. The distinction between the sectors is becoming increasingly blurred, suggesting the possible emergence of a common supplier base. Replenishment and procurement practices among British grocers and foodservice operators are converging.
- Logistics costs include storage as well as transport costs. In many of the chains we examined there appears to be prima facie evidence of excessive storage along the chain, with storage time accounting for over 80% of time between production and delivery in 50% of chains. Typical average logistics costs were in the range 80p to IR£1.20 per kilometre.

Recommendations

Supply chain integration Food manufacturers must become more closely integrated with their customers, sharing problems and information and conforming with their information technology requirements. Retailer-supplier collaboration offers many opportunities to increase efficiencies in the supply chain and offer benefits to the producers in terms of preferred supplier status, lower costs, more comprehensive consumer and market information and increased logistics customer service levels.

Inventory optimisation Food producers must assess the extent to which stock being kept in their supply chain is unnecessarily adding to their costs or alternatively is assisting them in meeting the increasing pressure over order lead times.



Food producers must assess the benefits of long production runs against the inventory costs imposed and rigidities created. In addition, firms should investigate ways of reducing inventory at origin. Possibilities include a shift of inventory downstream in the chain, with the postponement of the final stages of production (e.g. packaging) until the last possible moment when demand is more easily forecast; and the discovery of innovative forms of value adding distribution.

Information communication technologies Irish food producers must accelerate the introduction and use of various forms of information communication technologies to their operations (a) to help reduce inventory levels and (b) help integrate product chains.

Information transfer and benchmarking As there is a wide range of sophistication in logistical practice among food exporters, there is considerable scope in the industry for information transfer, benchmarking and best practice.

Flexibility In light of impending changes in overseas markets such as reducing order lead times, Irish food producers should give considerable priority to the maintenance of flexibility in their approach to developing logistics solutions.

Application of food technology to logistics Producers and research institutions must investigate opportunities to enhance their logistical capabilities through intelligent application of food engineering, packaging innovations and other technologies.

Opportunities for producer collaboration Opportunities exist for shared logistics activities between food manufacturers located in the same region.

Customer service Irish food manufacturers need to focus on improving their customer service levels given their poor performance in this area and their relative good performance in terms of cost competitiveness. Manufacturers



must identify customer service attributes of importance to individual customers. Evidence from this study suggests that there is a mis-match at present between what customers require and value, and what manufacturers are monitoring.

Improvement programmes and on-going monitoring This report provides information on the characteristics and circumstances of sophisticated logistics chains, and therefore useful pointers for firms seeking to improve their performance. These should be the special focus of improvement programmes. The trends and indicators identified in this study should continue to be monitored.

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